RECORD-KEEPING IN THE ANTENATAL CARE REGISTER IN TSHWANE DISTRICT, GAUTENG PROVINCE

by

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in the subject

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at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: Dr JM MATHIBE-NEKE

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DECLARATION

I declare that **RECORD-KEEPING IN THE ANTENATAL CARE REGISTER IN TSHWANE DISTRICT, GAUTENG PROVINCE** is my own work and that all sources that I have used or quoted have been indicated and acknowledges by means of complete references and that this work has not been submitted before for any other degree at any other institution.

10 February 2017

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SIGNATURE   **DATE**

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RECORD-KEEPING IN THE ANTENATAL CARE REGISTER IN TSHWANE DISTRICT, GAUTENG PROVINCE

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ABSTRACT

The importance of adequate completion of clinical records and data collection tools at a health care facility is widely acknowledged. This study was conducted in order to explore and describe the completion of the ante-natal care (ANC) register by midwives in Tshwane Metsweding District, Gauteng Province, South Africa. A sequential mixed method approach consisting of quantitative and qualitative phases was employed. To collect quantitative data, 155 entries of variables completed in the ANC register were assessed using a checklist. Subsequently, qualitative data were collected through two focus group discussions with midwives to understand their experience regarding the completion of the register. The findings revealed that the completion of the ANC register is generally poor. Midwives indicated that the register is a good data collection tool. Recommendations to improve record-keeping such as the implementation of an electronic ANC register were made.

Key words

Antenatal care; antenatal care register; prevention of mother-to-child transmission.

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Dedication

I would like to dedicate this project, firstly, to God Almighty Father, my creator, my source of inspiration, wisdom, knowledge and understanding. To my grandmother who taught me how to be wise and never to rely on anyone but myself. I wish she was here to witness this moment. To my mother who as a single parent natured me and ensured that I prioritise education and remain strong amidst all the challenges in life. I love you Mom. To family who understand my weirdness but remain supportive, helpful and respectful. To my husband and children who sacrificed their time and supported me through the process. To my dearest friends who encouraged me and showed me unconditional love.

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I love you all.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

ANC	Ante-Natal Care
ARV	Anti-retroviral
ATT	Attenuated Tetanus Toxoid Vaccine
AZT	Azidothymidine
CDC	Centre for Disease Control and Prevention
CHC	Community Health Care
DOH	Department of Health
EDD	Expected Date of Delivery
EC	Eastern Cape
HB	Heamoglobin Level
HIV	Human Immuno-deficiency Virus
HPCSA	Health Professional Council of South Africa
ICAP	International Centre for Aids Care and Treatment Programs
ID	Identity Document
KZN	KwaZulu-Natal
LNMP	Last Normal Menstrual Period
NDOH	National Department of Heal th
NGO	Non-Governmental Organization
NDOH	National Department of Health
NIDS	National Indicator Data Set
NPSA	National Patient Safety Agency
PHC	Primary Health care
PMTCT	Prevention of Mother to Child Transmission of HIV
RH	Reproductive Health
RPR	Rapid Plasma Reagin
SANC	South African Nursing Council
TB	Tuberculosis
WHO	World Health Organization
UNHCR	United Nations High Commissioner of Refugees
UNICEF	United Nations Children's Fund
UNISA	University of South Africa

CHAPTER 1

ORIENTATION TO THE STUDY

1.1   INTRODUCTION

Chapter 1 presents the background information of the study and highlights the rationale of the study, aims and objectives, significance of the study, definition of concepts, research question, an overview of the research methodology, an outline of chapters, the scope and limitation of the study and the conclusion for the chapter.

1.2   BACKGROUND TO THE RESEARCH PROBLEM

Antenatal care (ANC), also referred to as prenatal care, is the obstetric and nursing care recommended for women during pregnancy. It is aimed at targeting the population of pregnant women in order to screen and detect early signs of risk factors for disease. This screening is followed by timely interventions, with the aspiration of reducing maternal and perinatal mortality and morbidity (Ngxongo & Sibiya 2013:92) (Ngoxo & Sibuya 2013:2). The integration of Prevention of Mother-to-Child Transmission of HIV (PMTCT) interventions into ANC as well as reporting thereof became critical as both PMTCT and ANC services were provided in an integrated approach. Furthermore, there was recognition that health information is essential for monitoring the delivery of health programmes including the delivery of ANC/PMTCT services to enable timely monitoring and evaluation, resulting in improved delivery of services and programmes through the review of data and records (Mphatswe, Mate, Bennet, Ngidi, Reddy, Barker & Rollins 2012:176).

Mphatswe et al (2012:176) further highlighted that health records are essential for monitoring and evaluation of programmes and routine data collection at facility level, and is the basic source of information. Therefore, accurate and complete record-keeping is essential for providing the clinical information. Stevens and Pickering (2010:44) mentioned that poorly written records can lead to doubts about the quality of the nursing practitioners' work. A further study conducted by Prideax (2011:1450) on nursing documentation and record-keeping revealed that the quality of nursing documentation

continues to be of a poor standard. Furthermore, Pattinson (2007:16) mentioned that in order to ensure high standards of record-keeping and maintain protocol guidelines, the quality of the work by health workers must be checked frequently. Therefore, periodic assessment of clinical records such as the ANC register is often necessary to improve the quality of care and record-keeping/completion. The importance of data and record-keeping in health programs cannot be overemphasised. This recognition led to Government and Non-Governmental Organizations (NGOs) working together to support proper documentation and good record-keeping for ANC service (Dernberger 2014:10). This is in line with the WHO health systems building block.

The six building blocks identified by WHO that form essential building blocks for a well-functioning health system includes; leadership/governance, health care financing, health workforce, medical products/ technology, information and research as well as service delivery. Thus, health information is a critical component of a well-functioning health system as it is used by policy-makers, planners, health care providers, development partners and the general public to track health-system performance, to support better health policies and make effective health-related decisions. Furthermore, a well-functioning health information system in needed to ensure the production, analysis, dissemination and use of reliable and timely health information by decision makers at different levels of the health system(WHO 2007: 03). As part of ensuring a reliable data collection system exists in South Africa, the National Department of Health (NDoH) identified a Minimum Data Set in 1999.

The National Indicator Data Set(NIDS) is a list of data elements that facilities are required to collect and report on, on a monthly basis. Rohde, Shaw, Hedberg, Stoops, Venter and Mashishi ([s.a.]:195), described the NIDS as a list of approximately 200 indicators, with the underlying 'raw' data elements required to calculate the indicators. Standardised forms that are sometimes called registers are used in health facilities to assist health care practitioners to collect data for reporting and monitoring of programs. The introduction of the 2008 South African (SA) Prevention of Mother-to-Child Transmission (PMTCT) guidelines reinforced the integration of HIV care for pregnant women into routine Ante Natal Care (ANC). Therefore, Midwives were allowed to prescribe anti-retro viral (ARV) prophylaxis to prevent transmission of HIV from the infected mother to her unborn baby (NDoH 2008:16). As indicated in the 2008 SA PMTCT guidelines (NDoH 2008:62), the PMTCT NIDS was revised and expanded into six core indicators and seven expanded

indicators which were incorporated in the DHIS. All provinces were required to report on the additional PMTCT indicators. Whilst the researcher worked for an NGO called the International Centre for Aids Care and Treatment Programs (ICAP) to support health facility staff to implement the PMTCT program, it was observed that the registers used at that time did not make provision for recording and reporting of the PMTCT data elements that are stipulated in the NIDS.

To address the gap, ICAP worked with the Eastern Cape (EC) Department of Health provincial government to develop a longitudinal ANC register that included ANC and PMTCT data elements. The longitudinal register allows reporting on intervention data and outcomes of ANC. In these registers, retrospective or prospective ANC and PMTCT interventions received by pregnant women and outcomes can be reported. WHO (2012:22) emphasizes that the availability of complete longitudinal data would be important to assess the quality of care and improve the follow up of pregnant women.

Longitudinal registers are set up so that each row represents a pregnant woman, and each column represents indicators of the pregnant woman's health status or health services received over time. Hence, the registers developed by ICAP capture information such as, demographic data which were not captured in the old registers that were used before 2009 in the public health facilities and data elements that were collected on the old ANC register elements were added into the new longitudinal register ensuring that only one register for ANC is completed. As such, ICAP developed a register that is longitudinal and integrates the old ANC and the PMTCT data elements as all these elements are important to ensure that routine and quality ANC is provided to all women including those who are pregnant and living with HIV.

The longitudinal registers developed by ICAP were piloted in the rural parts of the Eastern Cape in 2009 in one district. To enable the pilot, nurses and midwives were trained on the use of the registers and provided with continuous mentoring by ICAP staff. Results from the pilot indicated that the nurses acknowledged the registers. They had further mentioned that the registers assisted them in recording patient care and ANC data elements. Subsequently, the longitudinal ANC registers were adopted and implemented by NDoH in 2010. NDoH staff trained nurses and heath facility managers on the use of the new ANC register and the register was implemented at all public health facilities that provide ANC services in South Africa.

The purpose of documentation is to chronicle patient care. Therefore, it is essential to frequently review record-keeping/completion of data collection tools that influence patient care to ensure accurate record-keeping. In addition, it is an obligation of the state, as indicated in the Subject to National Archives of South Africa Act, 1996 (Act 43 of 1996), and the Promotion of Access to Information Act, 2000 (Act 2 of 2000) and the Nursing Act 50 of 1978 to keep patient records (South Africa 1996, 2000, 2005).

It is against this background that this study was conducted to identify data elements (variables) that are completed, partially completed or not completed in the ANC register. The study also investigated the reasons for completing or not completing the variables as well as to explore the perception of midwives regarding completing the ANC register.

1.3   RESEARCH PROBLEM

As indicated earlier, health information was identified by WHO as a critical component of a well-functioning health system as it is used by policy-makers, planners, health care providers, development partners and the general public to track health-system performance, to support better health policies and make effective health-related decisions. A study to identify challenges for Routine Health System Data Management in a Large Public Programme to Prevent Mother-to-Child HIV Transmission in South Africa (Mate, K. S, Bennet, B., Mphatswe, W., Barker, P., Rollins, N. 2009: 03) found that the best reported data element was "ANC client tested for HIV," reported 62.7% of the time, but completely reported (i.e. every month for 12 months) by only 9.2% of clinics (n=29). The most poorly reported data element was "PCR test to baby born of HIV positive woman at 6 weeks or later," reported only 12.7% of the time, with no site providing complete data for every month for the 12 month study period. Furthermore, data was missing from the clinics' registers between 4.5% and 41.0% of the time. The initial steps of the PMTCT pathway had the most available data, with data relating to later steps in the PMTCT pathway becoming progressively less available. The study also found that data collection was compounded by duplication and unnecessary complexity caused by a multiplicity of registers.

To address the challenges regarding the data collection, duplication of information and records, the National Department of Health developed an ANC register which

consolidates all the maternal and PMTCT data elements to facilitate recording, data collection and reporting. This was aimed at reducing duplication of records and data and hopefully improving completion of data elements for both PMTCT and ANC. However, a formal assessment of record keeping in the ANC register has not been undertaken to establish whether or not the register is being completed fully as well as the perception of midwives regarding recording or using the ANC register. Three questions, therefore, arise, namely: Are all the variables (data elements) completed in the ANC register? What variables are not completed? And why are they not completed? This is mainly because completion of the register is essential to gather the data needed for programs as well as to ensure that the patients received appropriate care and services. Therefore, this study was undertaken to identify variables that are completed or not as well as circumstantial reasons for not completing some of the variables by midwives in Tshwane District so as to improve recording and data collection.

1.4 AIM OF THE STUDY

1.4.1 Research purpose

The aim of this study was to explore and describe the completion of the ANC registers by midwives.

1.4.2 Research objectives

Research objectives are specific accomplishments that a researcher hoped to achieve by conducting the study (Polit & Beck 2012:81). The objectives of this study were to:

- Determine variables (data elements) that are not completed/completed in the ANC register.
- Evaluate completeness of the ANC registers by midwives.
- Explore the midwives' perceptions on completing the ANC registers and use of the register as a data collection tool.
- Propose recommendations to National Department of Health regarding the use of the ANC register.

1.5   SIGNIFICANCE OF THE STUDY

There is a significant amount of literature available on the value of good record-keeping (Prideax 2011:1450; Stevens & Pickering 2010:44; Mphatswe et al (2012:176). However, the researcher had difficulty in finding any literature on the views of midwifes who are using the longitudinal ANC register or on record-keeping and or completion of longitudinal registers although they are widely implemented in South Africa for both ANC and the HIV program. By identifying variables that are completed or not completed and the reasons for not completing the variables, this study aimed to contribute information that would provide more understanding on factors affecting completion and how to improve completion in longitudinal registers. Recommendations were made on how completion of the registers could be improved which will ultimately enhance the completion and recordkeeping in the ANC register.

This study also contributed to the improved quality of care and monitoring and evaluation of maternal health programme as well as increased awareness of the National Department of Health on issues affecting completion of the ANC register. Finally, the study added to the body of knowledge on record completion of longitudinal registers, developing data collection tools or clinical records by providing new relevant information that might assist in the development of data collection and clinical tools.

1.6   DEFINITIONS OF TERMS

The following are the key concepts in the study:

1.6.1 Antenatal care

Antenatal care means caring for the pregnant woman to ensure normal pregnancy, it aims to ensure the birth of a live child and the least possible damage to the mother (Vlok 1996:368). It helps prevent, identify and properly handle complications that can arise on account of pregnancy and child birth birth (Uche-Obasi 2012:03). (Uche-Obasi 2014:03).

6

1.6.2 Midwife

A midwife is a person who has been regularly admitted to a midwifery educational programme, and is duly recognised in the jurisdiction. The person has successfully completed the prescribed course of study in midwifery and has acquired the requisite qualifications to be registered. He/she would also normally be licensed to practice midwifery (Sellers 2004:xxxiii). For the purpose of this study a midwife is defined as a professional nurse who is working in a Primary health care facility, has completed her training and has been registered as a midwife by the South African Nursing Council. In addition, he/she must have used or is currently using the longitudinal ANC register.

1.6.3 Primary health care clinic

A primary health care clinic is a health facility from which a range of primary health care services are provided and is normally open eight or more hours a day depending on the needs of the community to be served (KwaZulu-Natal Department of Health 2001). For the purpose of this study, primary health care clinic (PHC) is a health facility that operates for eight hours and community health centres that operate for 24 hours in Tshwane District, offering antenatal care services.

1.6.4 ANC longitudinal care registers

Longitudinal is defined as information about a person or group that is gathered over a period of time (*Oxford Dictionary* 2016, sv "longitudinal"). Longitudinal care register is a recording tool where each return visit is completed against the same line in the register until either set or range of services is complete or a change of condition is established. It is usually for a particular group of services (ANC, immunisation, anti-retroviral treatment, etc (WHO 2012:56). For the purpose of this study, the ANC longitudinal care register implemented in 2010 by the NDOH was considered.

1.6.5 Data element

Data element is the main source of information in a data processing system. Any unit of data defined for processing is a data element (Bhana 2010:7). The Data Element is perhaps the most important building block of a database. It represents the "WHAT"

dimension, and explains what is being collected or analysed. In some contexts this is referred to an indicator, but it is sometimes referred to as a unit of collection and analysis. The data element often represents a count of something, and its name describes what is being counted, e.g. "number of first ANC visit or number of pregnant women tested for HIV". In this study data element shall be any unit of data defined for processing which are the elements that are completed in all the columns of the ANC registers implemented in 2010 that are required to be completed during women's antenatal visits.

1.6.6 Implementation

Implementation is defined as putting into effect or put into place (*Oxford Dictionary* 2016, sv "implement"). Programme implementation involves all the steps needed to put health promotion strategies and interventions into place and make them available to employees (CDC 2015:01). For the purpose of the study implementation was defined as putting into effect the use of the ANC registers.

1.6.7 Complete

Provide with item or items necessary to make (something) full or entire (*Oxford Dictionary* 2016, sv "complete"). It is also defined as having all the necessary or appropriate parts. For the purpose of this study complete means all variables are filled or completed in full and as required according to the pregnant women's clinical assessment, interventions and gestational age and instruction in the ANC register and the completion of variables is 90% and above

1.6.8 Partially complete

The Oxford Dictionary (2016, sv "partially complete") defines partially 'complete' as something that is complete to some extent, in some degree (Oxford Dictionary 2016, sv "partially complete") also defined as a portion of something, not the whole thing. Similarly, the word partially refers to a part of something only. For the purpose of this study partially complete is referred to as variables that are completed with some information however the information is not completed adequately as per the instructions in the register. In addition, the completion is between 90%- 60%, the completion will be deemed partial completion.

1.6.9 Not complete

Lacking some parts (*Oxford Dictionary* 2016, sv "incomplete"), also defined as not having all the necessary or appropriate parts. For the purpose of this study not complete comprises variables that are not filled/completed or columns for variables are left blank. If the percentage of completion is below 60%, this is well deemed not complete.

1.6.10 Completion

Is a noun and it is defined by the *Oxford Dictionary* (2016) as an act or process or finishing something; the state of being complete (*Oxford Dictionary* 2016, sv "completion"). In this study completion was defined as all variables are completed/ recorded as data elements completed/completed as required in the ANC register.

1.7 THEORETICAL FOUNDATIONS OF THE STUDY

1.7.1 Research paradigm

A research paradigm is a defined as a set of philosophical assumptions that guide the researcher's inquiry and the frame of reference for this study is the pragmatic paradigm (Polit & Beck 2012:761). Pragmatists consider practical consequences to be vital components of meaning and truth (Dures, Rumsey, Morris & Gleeson 2010:334). Furthermore, the above mentioned authors, highlight that pragmatism is not committed to any one system of reality, enabling researchers to draw on both quantitative and qualitative assumptions in their work. Hence, a mixed methods research approach was used in the study.

1.8 RESEARCH DESIGN AND METHOD

According to Polit and Hungler (2004:233), research methodology refers to ways of obtaining, organising and analysing data. Thus, methodological decisions depend on the nature of the research question and methodology in research can be considered to be the theory of correct scientific decisions (Karfman as cited in Mouton & Marais 1996:16). Methodology refers to how the research is normally undertaken and its logical sequence.

9

Mixed methods approach has been defined by Teddlie and Tashakorri (2009:07) as a type of research design in which qualitative and quantitative approaches are used. The approach is closely linked with types of questions, research methods, data collection and analysis procedures and or inferences made by the researcher. The main focus of this study was to explore and describe the completeness of the ANC register. This study adopted both methods by employing a quantitative checklist to identify and describe data elements that are completed or not completed. Furthermore, focus group discussions were held with Midwives to gain more understanding of their experiences in recording and completing data elements and their perceptions regarding the ANC register.

A study design refers also to a structured approach followed by researchers to answer a particular research question. A sequential explanatory design, which is quantitatively driven and consisting of two distinct phases was used in this study. As such, quantitative data were collected and analysed first, followed by qualitative data collection and analysis. The quantitative approach focused on hard generalisable data involving a formal writing style using an impersonal passive voice and technical terminology, whereas the qualitative approach was based on detailed, richly described observational data that is narrated (Polit & Beck 2012:56).

Hence, quantitative data were collected through a checklist and focus group discussions were held with midwives to understand their perception of the ANC registers and the factors which promotes or impedes proper recording in the ANC register. Subsequently, the results of both components of the study were converged in the study to try and get a holistic view of recording in the ANC register and what midwives' perceptions of the ANC registers are.

1.8.1 Target population

The target population refers to a complete set of people, objects or events that have common characteristics and meet the sampling criteria of the proposed study (Polit & Beck 2012:338). The units of study are the ANC registers implemented in 2010 in PHC facilities and Midwives who have used or are using the ANC registers working in the above mentioned health facilities.

1.8.2 Accessible population

These are elements or basic units of study that met the eligibility or inclusion criteria for the study and are available as participants of the study (Bothma, Wright, Mulaudzi & Greeff 2009:123-131; Polit & Beck 2012:339). The accessible population for this study were midwives practicing in PHC and the unit of study were ANC registers in health care facilities in Tshwane Metsweding district, Gauteng, South Africa.

The eligibility criterion for this research consisted of midwives who would have used or were at the time of the study using the ANC registers in Tshwane Metsweding District, Gauteng, South Africa.

1.8.3 Sampling

Guba and Lincoln (2004:210) Guba and Lincoln (2004:21) describe sampling as a process of selecting a sub-set of people or social phenomena to be studied, from the larger 'universe' to which they belong, in one of several ways so as to be either non-representative (based on simple convenience or choice of particular illustrative cases) or representative, based on probability theory. This is done to make the cases more typical of the universe from which they have been selected. In this study, both probability sampling and non-probability sampling were employed to the mixed nature of the research.

For the quantitative aspect of the study, probability sampling was used because quantitative methods attach more importance to generalising subset findings to the larger set from which the subset was selected. The Statistical Package for Social Sciences (SPSS) computer program was used to randomly select PHC facilities in the district. Subsequently, ANC registers from the PHC clinics were then randomly sampled depending on how many ANC registers are available in a specific PHC facility. All the ANC registers were collected and numbered. Every first PHC register in the health facility was selected for data collection to a maximum of two ANC registers per health facility. The researcher collected retrospective data dating back to 9 months before the actual data collection date. This was undertaken to ensure that the recording can be assessed on variables that should have been completed, as it is envisaged that the Ante natal care is care that is provided during pregnancy which lasts for approximately nine (n=9) months.

11

For the qualitative aspect, purposive sampling was used for selecting key informants for the focus group discussions. Purposive sampling picks its sub-set for non-statistical purpose (Guba & Lincoln 2004:21) (Guba & Lincoln 2004:212). Key informants were selected because they were currently using or have used the ANC register in the past two years and should be able to share information on the completion of the ANC register.

1.8.4 Data collection

Data collection is the capturing and translation of data for analysis (Polit & Beck 2012:367). For this study both structured and unstructured data collection methods were used.

To collect structured data, a check list with variables was designed by the researcher. The checklist was developed from the variables within the ANC register and was used to establish the completeness of the ANC register. This checklist identified data elements were completed, partially or not completed in the ANC register. It was deemed appropriate to use a checklist, as it is aimed at recording attributes and whether particular behaviours were observed. Thus, a checklist enabled the researchers to focus on the specific behaviour (Jackson 2008:85), such as full completion, partial completion or not-completed variables in the register. In addition, it allowed for conclusions to be made regarding the completion of the ANC register.

Unstructured data were collected through focus group discussions. Focus groups were a good option to explore Midwives' perception on recoding in the ANC register and circumstantial reasons for not completing variables because of their ability to capture real life data (Babbie 2010:323). Therefore, midwives who have used or are using the ANC register from the PHC clinics in Tshwane District were requested to participate in the focus group discussions.

1.8.5 Data analysis

Quantitative and qualitative data were collected and analysed separately for each component to produce two sets of data. Both sets were discussed and integrated in the results section to get a broader understanding of the phenomenon under investigation.

The use of descriptive statistics was a preferred procedure for the data analysis for quantitative data. This was mainly because part of the study focused on describing the data.

To analyse the qualitative data, the researcher used thematic analysis process. Braun and Clarke (2014:03) Braun and Clarke (2014:1753) define thematic analysis as a method of identifying, analysing, and reporting patterns (themes) within data. In addition, thematic analysis involves the searching across a data set of focus groups text to find repeated patterns of meaning. Themes and sub-themes were utilised to analyse and present qualitative data.

1.9   VALIDITY AND RELIABILITY

1.9.1 Content validity

Validity is defined by Polit and Beck (2012:457) as the extent to which an instrument measures what is supposed to measure. To meet this criterion, external experts in ANC, PMTCT and in monitoring and evaluation were consulted to review the developed checklist for content validity. After their review, a pilot with respondents who met the criteria was conducted to test the data collection tool.

1.9.2 Reliability

Polit and Beck (2012:459) define reliability as the degree of consistency or dependability with which an instrument measures the target attribute. The same authors' further highlight that reliability can be improved by greater precision in defining the categories or greater clarity explaining the underlying dimension for rating scales. To ensure consistency, in this study instructions on how to use the checklist and how to use the rating were included in the checklist to ensure ratings are clear and are applied consistently. The same checklist was used in all the ANC registers.

1.10 TRUSTWORTHINESS

1.10.1 Credibility

Credibility is referred to by Polit and Beck (2008:539) as the confidence in the truth of data and the interpretations of them, it is further mentioned that it involves two aspects: first carrying out the study in a way that enhances the believability of the findings and second, taking steps to demonstrate credibility to external readers. The sample was purposively selected as the key informants (midwives) that were invited to participate have in-depth knowledge and experience on using the ANC registers. This was done to ensure that data is collected from participants with the required knowledge and enhance believability.

Each participant was awarded an opportunity to voluntarily participate in the study so as to ensure that the data collection sessions involved those who were genuinely willing to take part and prepared to offer data freely. Furthermore, it was clarified to participants that they had the right to withdraw from the study at any point, and they were not required to disclose the reasons for their withdrawal to the researcher.

1.10.2 Dependability

According to Polit and Beck (2012:534), dependability is described as the stability (reliability) of data over time and over conditions. The dependability question is: would the findings of an inquiry be repeated if it were replicated with the same (or similar) participants in the same (or similar) context? Therefore, an in-depth methodological description of the study is provided to allow the study to be repeated by other researchers. In addition, the research design and its implementation, describing what was planned and executed on a strategic level is explained in detail.

1.10.3 Conformability

Conformability refers to objectivity, the potential for congruence between two or more independent people about the data accuracy, relevance and meaning (Polit & Beck 2012:539). This criterion is concerned with establishing that the data represent the information participants provided, and that the interpretation of those data is not figments

of the inquirers imagination. For this to be achieved the researcher ensured that the findings reflected the participant's voice and the conditions of the inquiry and not motivations or perspective of the researcher (Polit & Beck 2008:539). As such, an in-depth methodological description of the study is provided to allow the integrity of research results to be scrutinised and the responses to the discussions were presented to the participants to give them an opportunity to validate the study findings.

1.10.4   Transferability

Polit and Beck ((2012:540) describe transferability as a process which refers to the generalisation of the data, that is the extent to which the findings can be transferred or have applicability in other settings or groups. It is the responsibility of the investigator to provide sufficient descriptive data in the research report so that consumers can evaluate the applicability of the data in other contexts. Background data are provided to establish context of study and a detailed description of the phenomenon in question. This allowed comparison to be made with other studies or to allow replication.

1.11   ETHICAL CONSIDERATION

Ethical considerations refer to the protection of the rights of all those involved or affected by the research study. All ethical issues pertaining to the present study were adhered to. Participants were informed in advance that their participation was voluntary and that they were free to withdraw from the interview anytime they feel so. Before the study could be conducted, the ethical clearance was sought from the University of South Africa with reference number HSHDC/364/2014 (Annexure A). All the key informants were ensured of confidentiality and none of them was paid, coerced or forced to participate in the study. They were actually told that they were free to withdraw from the study at any time should they feel like doing so. Document analysis was also taken into consideration with reference to ethical measures.

1.11.1   Protecting the rights of the participants

The three ethical principles of beneficence, respect and justice were upheld to ensure that the respondent's rights were protected (Adams & Callahan 2014:01). The right to protection and freedom from harm of discomfort was considered. The right to self-

determination and full disclosure was ensured. The right to fair treatment and privacy was also considered.

1.11.2   Protecting the right of the institution

Ethical clearance was granted by University of South Africa and Tshwane Metsweding District Health Ethics Committee (Annexure C). The researcher ensured that the institution received a copy of the ethical clearance certificate and the research proposal with the request for permission to conduct the study at the institution (Annexure B).

1.12   SCOPE OF THE STUDY

The study focused on completion of the ANC register. The study unit was the ANC register and accessible population for the study were Midwives who had used or were using the ANC register in Tshwane Metsweding District, in the Gauteng Province of South Africa.

The scope of the study and results are contextual they only refer to those specific ANC registers and Midwives in Tshwane District. Primary health facilities and midwives were not using or who have not used the ANC registers were excluded from the study.

1.13   STRUCTURE OF THE DISSERTATION

The study consists of the following five chapters:

Chapter 1: Orientation to the study: this is the introduction and background to the study. It introduces the entire study and includes the study's objectives, its problem statement, the aims and significance of the study, the theoretical framework and an introductory section to the study's methodology.

Chapter 2: Literature review: this encompasses both national and international findings related to the topic being studied and the theoretical framework/theory informing the study is embedded within.

Chapter 3: Research design and method: this section comprises all the steps followed from data collections to analysis and report writing. It includes the research design, the study population, setting, data collection, data management, and analysis.

Chapter 4: The analysis, presentation, description and interpretation of research findings: This chapter is made of three main sections as indicated in the title. After the introductory paragraph comes the Analysis and presentation of data followed by a detailed description of research findings, after which a short conclusion are drawn.

Chapter 5: Summary, conclusions, limitations and recommendations: Following the collection and analyses of the data. This chapter includes summary of the study findings, the conclusion based on findings, recommendations and limitations.

1.14   CONCLUSION

This chapter provided a synopsis of the study, the methodology employed, the research design, data collection, analysis and ethical considerations that were taken into account during the study. It carries preliminary literature review, to be extended in Chapter 2, and background information that introduces the study.

CHAPTER 2

LITERATURE REVIEW

2.1   INTRODUCTION

This chapter examines the literature that was reviewed in relation to recording and completion of tools, as well as records utilised during ANC such as longitudinal ANC registers. The literature review focused record-keeping in antenatal care settings, record-keeping in the context of nursing and antenatal care records

2.2   RECORD-KEEPING IN ANTENATAL SETTINGS

2.2.1   Antenatal care and antenatal records

Antenatal care (ANC) is defined as health care of pregnant women before the birth of their babies). The care is aimed at detecting problems already present or those that can develop during pregnancy and to the child. ANC has a further role of improving the general health of women. Not only is the pregnancy examined, but also the general health and habits including risk factors for complications (Pattinson 2007:05). HIV and its complications are some of the conditions that can be detected and treated in pregnancy. ANC interventions are said to also have beneficial effects later in the women's life.

According to the South Africa's Maternity Care Guidelines (2015:34) maternity care guidelines, antenatal care attempts to ensure the best possible outcome for women and their babies. This may be achieved by screening for pregnancy problems, assessment of pregnancy risk, giving medication that may improve pregnancy outcome, provision of information to pregnant women and physical and psychological preparation for child birth and parenthood among others.

During the ANC all pregnant women are offered an HIV test in their first visit and those found to be infected with HIV are provided with ARV to prevent transmission of the HI virus from mother to the unborn baby. Strengthening linkages and integrating key aspects of ARV and antenatal care reduces delays between HIV diagnosis and treatment initiation

for pregnancy women (Van der Merwe, Chersich, Technua, Umuringu, Conradie & Covadia 2006:580). The same author's further stress the importance of integration of both PMTCT and ANC care, especially because both programmes target the same group of pregnant women thereby affirming the 2008 NDOH PMTCT guidelines.

With the above in mind, it is important to collect and record data to monitor delivery of programmes including the delivery of PMTCT (Mphatswe et al 2012:175). Minimum national set of indicators for the PMTCT programme were developed, these are indicators that should be collected and reported on at different stages of programme implementation process (NDOH 2008).

It was also logical to consider integrating recording of PMTCT interventions into ANC to enable reporting as well as monitoring the outcomes of both programmes to improve the quality of care. Several records are used during antenatal care to document care and collect. These include the maternity case record and ANC registers.

2.2.1.1 Maternity case record

Every pregnant woman coming for ANC services in public health institutions is issued with an ANC card now integrated into the maternity case record. This standardised national document is the principal record of record of pregnancy. It must be completed at each antenatal visit and retained by the mother until delivery, after which it will be kept for final referral. It is not necessary for health facilities to keep a duplicate record of the card South Africa 2015:13). The maternity case record serves to provide the woman a record of pregnancy, give health providers guidelines on history taken, examination, identifying problems during pregnancy and recording of action taken , enable health care workers to manage follow ups and facilitate record-keeping.

This record template was developed to standardise care during pregnancy, labour and delivery, as well as to guide interventions and to keep a comprehensive record of the pregnancy and birth. It was introduced as one of the key interventions to improve the care of pregnant women. It is envisaged that the use of the case record will overcome unnecessary delays of action/intervention, thereby enabling clear recognition of problems which will lead to prompt management. The MCR is used at all levels of care (South Africa 2015:14). This case record is given to the woman as a client-held record and should only

be retained in the delivery institution on discharge after birth, once a composite discharge summary has been written. The card is designed in such a way that it facilitates the integration of services. The sections of the card provide for implementation and recording of TB, HIV, sexually transmitted infections and cancer screening services. These are amongst the conditions that contribute to maternal and perinatal deaths in the country (Sibiya, Cele & Ngxongo 2014:53).).

Patient records are sometimes reviewed to assess implementation of guidelines and well as assess the quality of care. In addition to the maternity case record, ANC registers were implemented to collected data but to also keep record in the health facility as the MCR is patient held.

2.2.1.2   Longitudinal antenatal care/PMTCT registers

Standardised tools sometimes called registers are used in health facilities to record and collect data required for reporting and monitoring of programs. Stevens and Pickering (2010:44) highlighted that the consistency and the quality of data collected improves when standardised data collection forms or registers are used. The principle behind any set of standardised form is to routinely collect common standard minimum data elements at every visit to the health centre to inform and improve the quality of care (WHO 2008:97). The United Nations High Commissioner for Refugees (UNHCR) in their health information systems training manual recommends that ANC visits be documented in antenatal care registers. It is, therefore, essential to complete the antenatal history of the pregnant mother in an ANC register.

According to the *Merriam Webster Dictionary* (2016), the term 'longitudinal' is defined as repeated observations or examination of a set of subjects over time with respect to one or more study variables. Longitudinal registers are therefore health records set up so that each row represents a patient, and each column represents indicators of the patient's health status or health services received over time. In longitudinal registers each patient is entered only once and information from subsequent visits or events is entered on the same row during a follow up visit (WHO 2008:56). Rohde et al ([s.a.]:202) referred to the same type of registers as continuity of care registers. The authors further define the use of these registers as recording of events over a period of time for a single patient. As

such, retrospective or prospective ANC and PMTCT interventions received and outcomes can be reported (WHO 2012:22).

Longitudinal registers are essential tools enabling healthcare workers to better monitor patient care, ensure continuity from visit to visit and are the basis for quality improvement in the monitoring system over the whole duration of the pregnancy (Rhode et al [s.a.]:202). The WHO (2012:22) and Rhode et al ([s.a.]:202) further highlight that availability of complete longitudinal data would be important to assess the quality of care and improve the follow up of pregnant mothers.

However, Cheemvakaseemsook, Chapma, Francis and Davies (2006:367) cited evidence indicating that nursing documentation systems, especially the descriptive style such as the longitudinal ANC register, is inappropriate for the workload or responsibilities of clinical nurses. Inaccessible recording system leads to wasted time, high cost and uncomfortable charting. Rohde et al ([s.a.]:202) highlight that some of the disadvantages of continuity care registers being in busy facilities is that health workers do not take time to find the patient's entry, rather a new entry is created, defeating the objective of the register . Furthermore, if a patient receives services elsewhere, the register becomes incomplete. The same author mentions that it is a challenge to develop standardised tools for the different reporting needs at facilities. Therefore, data collection tools should be flexible enough to be customised for the type of service being provided, the client/patient flow expected and changes in reporting requirements (Rohde et al [s.a.]:202). In the light of these challenges it is therefore important to assess completion of the tools that are implemented and get views from the health care workers tool on how to adapt tools to be more user friendly so that decisions to adapt or continue using them could be made. Assessing completion of the ANC register will also provide insight into some of the challenges and opportunities for tools such as longitudinal registers.

2.2.2 Quality antenatal care record-keeping and improving program performance

Quality of care is defined as the standard of something as measured against other things of a similar kind; and the degree of excellence of something (*Oxford Dictionary* 2016). It requires continuous and dynamic adaptation of products and services to fulfil or exceed the requirement or expectation of parties in the organisation and the community (Choudhry 2005:10). Snyman (2007:47) clarifies quality assessment as a process of

measuring quality of care, consisting of numerous approaches which define quality of care, selecting indicators for measurement, collecting data and interpreting results.

Managing data is an essential part of performance improvement. It involves collecting, tracking, analysing, interpreting and acting on data for specific measures. Measuring health systems inputs, processes and outcomes is a proactive systematic approach to practice level decisions for patient care and the delivery systems that support it. Hence, data management also includes ongoing measurement and monitoring. It enables an organisation's quality team to identify and implement opportunities for improvement to its current care delivery systems and monitor progress as changes are applied (US DHHS 2011). An operational study conducted in KZN identified a participatory data driven approach as one of the approached to improve the program performance. Through employing this approach and strengthening supervision, the performance of key PMTCT indicators such as antenatal testing, CD4 testing among other improved. This methodology relied heavily on data and part of the process was to improve recording and reporting (Doherty, Chopra, Nsibande & Mngoma 2009: 05).

US DHHS (2011) highlights that part of quality improvement in an organization is to configure systems so that data elements are collected exactly the same way over time. A successful approach to reliable data collection includes proven tools, techniques, processes and frames. Therefore the Maternity Case Record (MRC) and the ANC register are critical tools for recording patients' information and could be used for assessing the quality of care and be used to collect data to evaluate program performance. However, good recording practices precede assessments and evaluations. If good records are not kept then the assessment of quality of care will indicate poor patient care or poo program performance. Therefore, continuous assessment of the use of recording tools such as the ANC registers and how they could be improved is necessary to improve efficiencies and their use.

2.3   RECORD-KEEPING IN THE CONTEXT OF NURSING CARE

Record-keeping is part of nursing practice with clinical and legal significance (Prideax 2011:1450). The main benefit of the record-keeping is improvement of the structured communication between healthcare professionals to ensure the continuity of individually planned patient care. Furthermore, Stevens and Pickering (2010:44) emphasise that

keeping good records is part of the nursing care given to patients as it is difficult to remember everything that was done and what happened during a shift. The authors further remarked that without clear and accurate nursing records for each patient, handover to the next team of nurses will be incomplete. A good nursing record also allows identification of problems that have arisen and the action taken to rectify those (Stevens & Pickering 2010:44).

A number of inhibitors such as lack of knowledge, lack of time, lack of consistent record systems, lack of continuity and lack of motivation to write were described as some of the challenges affecting good record-keeping. Literature highlights that nursing records are viewed as an inadequate tool for quality care evaluation as they did not include all caring activities that nurses carry out (Marinis, Piredda, Pascarella, Vincezi, Spiga, Tartaglini, Alvaro & Matures 2014:12; Taylor 2003).

The nursing process is a series of organised steps designed for nurses to provide excellent care. The process includes; assessment, nursing diagnosis, planning, implementation and evaluation. No matter which system or format is used documentation should reflect all the five steps. Hence, well organised records assist health care workers provide quality care. Protocols and guidelines give specific sequential instructions for treating patients with particular problems or need.

A health record is defined as any electronic or paper-based information completed about a person for the purpose of managing their health care aimed at providing a correct account of the treatment and care given and allows for good communication between health care workers. (Steven & Pickering 2010:44). In a study by the National Patient Safety Agency (NPSA) it was found that poor standards of documentation were a contributory factor in the failure to detect patients who were clinically deteriorating, the researchers concluded that poor standards of records keeping are detrimental to patient health and wellbeing (Prideax 2011:1450). Similarly, Stevens and Pickering (2010:44) mention that record-keeping can be a good or bad reflection of the standard of care given to patients: careful, neat and accurate records are the hallmarks of a caring and responsible nurse practitioner but poorly written records can lead to doubts about the quality of nurse's work.

Another consideration is the legal significance of nursing records. According to the law in South Africa and many other countries, if care or treatment due is not completed, it can be assumed that it has not happened (Stevens & Pickering 2010:44).

2.3.1 Obligatory and legal role of the nurse regarding record-keeping

To keep records is a requirement by the state as indicated in the Subject to National Archives Act (Act 43 of 1996), and the Promotion of Access to Information Act (Act 2 of 2000) (South Africa 1996, 2000). Hence, it is stated in the act that the person in charge of a health establishment must ensure that a health record containing such information as may be prescribed is created and maintained at that health establishment for every user of health services. Therefore, the Department of Health as the custodian of public health has an obligation to ensure that health practitioners keep appropriate records by providing appropriate tools, to enable the fulfilment of the law as stated in the nursing act.

This is underscored in the Nursing Act (Act 50 of 1978) which indicated that one of the acts or omissions in respect of which the Nursing Council may take disciplinary action is inability to keep clear and accurate records of all actions performed in connection with patient care (South Africa 2005). Therefore, nurse practitioners are responsible for maintaining accurate health records of the care they provide and are accountable if the information is incomplete and inaccurate (Prideaux 2011:1451). It is therefore important that nurses balance patient care with accurate record-keeping as a part of the statutory requirement. Furthermore, it is important that recording tools are reviewed and record-keeping is continuously improved to enhance the quality of records.

However, Prideax (2011:1450) highlight that the quality of nursing documentation continues to be of a poor standard. A study conducted in KZN evaluating PMTCT integration into routine maternal, child and women's health services (Horwood, Haskins, Vermaak, Phakathi, Subbaye & Doherty 2010:995) found that CD4 results are not frequently completed. Therefore, health care workers had to rely on patient reported results which might not be accurate. As such, the researchers concluded that record-keeping is poor, affecting the quality of care. The study recommended that accurate record-keeping is required and any break in the chain of activities will lead to a reduction in the expected benefits of the PMTCT programme. The evidence indicates that record-

keeping is critical for both patient management and programme monitoring and outcomes.

Mphatswe et al (2012:176) add to the fact that records are essential for monitoring and evaluation of health programmes. Routine data collection at facility level is considered the basic source of information. Hence, good record-keeping was emphasised as an essential element for providing the information.

2.3.2 Perceptions of nursing practitioners and midwives regarding record-keeping

Nursing practitioners are mainly responsible for maintaining accurate health records of the care they provide and are accountable if the information is incomplete or inaccurate. The purpose of documentation is to chronicle patient care; therefore it is essential to frequently review record-keeping that influences patient care (Prideax 2011:1451).

Cheemvakaseemsook et al (2006:361) and Prideaux (2011:1451) remarked that, many nurses feel that dealing with paper work gets in the way of nursing care and is a burdensome task which impinges on nursing practice. This dismissive attitude to documentation is also highlighted by McGeehan (2007:51) and Prideax (2011:1451) who suggest that many nurses do not view record-keeping as part of their main task leading to poor or incomplete records. Many nurses' judge written care plans as an unnecessary burden, separate from and additional to providing ongoing nursing care. Also, care plans are not thought to contribute to the planning or evaluation of care. These negative perceptions might result from the actuality that nurses value verbal communication or oral traditions to sort out thinking and validate opinions. Consequently, nursing documentation is devalued as an unimportant task and quality documentation is not produced (Cheemvakaseemsook et al 2006:361).

The same authors highlight that there is no recognition of the value of charting from other health professionals: doctors irregularly read nurses' notes and other nursing documentation are also disregarded. Lack of sufficient support for writing nursing diagnoses (e.g. consultants and supervision) leads to decreased motivation for nurses to persevere with continuous charting. Lack of a good monitoring system is also seen as an issue for quality charting. Therefore, it is concluded that support from organisations and

administrators plays a role in either motivating or limiting nurses' documenting performance (Cheemvakaseemsook et al 2006:361).

In their study, Dang and Sellier (2014:538) indicate that patients with higher overall medical record-keeping scores were more likely to be satisfied with their hospital stay, since nursing care perceptions strongly influences patient satisfaction This clearly indicates that record-keeping cannot be separated from clinical patient care.

All of the above highlight the importance of good quality record-keeping and complete records but most importantly how the perception of nurses regarding recording interventions in health records like the ANC longitudinal register influences record-keeping and/or completion of records. However, literature on how nurses perceive the use of the longitudinal registers is not readily available. The ANC longitudinal register consist of a set of variables that are associated with ANC that are completed during routine AMNC care. The variables are completed from the day the pregnant woman comes for their first ANC visit until the woman gives birth.

2.4   VARIABLES COMPLETED IN THE ANC REGISTER

The ANC register consists of 31 variables that are completed during the first ANC visit and continue to be completed during subsequent visits, until the women gives birth. The researcher grouped the variables into demographic information variables, variables associated with the obstetric history, variables related to screening tests, PMTCT and follow up variables.

a)   Demographic information variables

The name and surname, ID number, address and contact details, age at booking <18 years > 18 years are the variables that capture the demographic details of the pregnant woman. These are completed in the first ANC visit and the information is collected from the pregnant women during history taking. Once completed the variables are used to identify the pregnant women as well as identify the initial patient entry during subsequent ANC visits so that the information can be completed longitudinally. In addition to the demographic variables, the obstetric history is obtained from the pregnant woman and specific variable are completed in the register.

b)   Variables associated with the obstetric history

The variables last normal menstrual period (LMNP), parity (Para) and gravida (Grav) are collected during the first ANC visit as well. These are components of the obstetric history collected from the pregnant woman and recorded to evaluate the obstetric risk of the woman during the current pregnancy among others. Gravidity (Grav) is defined as the number of times a woman has been pregnant and parity(Para) is defined as the number of times that she has given birth to a foetus with a gestational age of 24 weeks or more, regardless of whether the child was born alive or was stillborn (Tidy 2014:01). Outcomes of previous pregnancies give some indication of the likely outcome and degree of risk with the current pregnancy. Furthermore, the number of previous pregnancies and deliveries will also influence the risks associated with the current pregnancy. If a women has had more than two miscarriages they are referred to a higher level of care for further investigation and management (Tidy 2014:01).

From the history as well, the variable- gestational age at booking is collected and thereafter midwifery calculations and estimations are conducted to establish the estimated date of delivery (EDD). These variables are important to determine whether or not the pregnancy is progressing well in line with estimated dates of delivery or if there abnormalities such as multiple foetuses or growth retardation evidenced by dates that do not correlate with the fundal height measurement (SF) or vice versa. Over and above the fundal height measurement (SF); this information is used to plot the pregnancy progression on the patient held ANC card or maternity record.

If the values are plotted either below the 10th centile or above the 90th centile the women is referred to a higher level of care for confirmation of estimated dates and exclusion of abnormalities. In order to identify risks associated with the current pregnancy. The variables – LMNP, para, grav, gestational age at booking and EDD are critical to complete in addition specific screening test are conducted to identify further risks of if there is a need for any treatment.

c)   Variables related to screening tests and treatment

The variables RPR testing, titre and treatment are variables that are associated with syphilis testing and treatment. Syphilis is a bacterial infection that can be transmitted during sexual intercourse and to unborn babies through the placenta during pregnancy or during delivery. Hence the variable titre and treatment are very important variables to complete as they indicate testing and treatment for syphilis if indicated.

One other test conducted is the rhesus factor (RH). If you are rhesus positive (RhD positive), it means that a protein (D antigen) is found on the surface of your red blood cells. If you do not have the D antigen, you will be rhesus negative (RhD negative). Most people are rhesus positive. Therefore it is important for midwives to conduct he test and record the result in the ANC register:

Other tests that are offered during the initial ANC visit include Hb screening which determines the haemoglobin level in the blood. Anaemia is a relatively normal finding in pregnancy and a haemoglobin level (Hb) of pregnancy can naturally lower to 10.5 gm/dL representing a normal anaemia of pregnancy.

By the same token, cervical cancer screening is conducted by performing a pap smear. The National Department of Health recommends screening once in ten years for women from 30 to 60 years for women with normal pap smears. However, if a woman was diagnosed with condylomata acuminata, or genital warts the woman should get a pap smear annually as they are at higher risk of developing cervical cancer. In pregnant women cervical cancer screening is only done if it is indicated.

The variable ATT is an abbreviation for tetanus toxoid vaccination immunisation which prevents neonatal tetanus. Tetanus is a bacteria that breeds in animal faces and soil. Tetanus is most commonly spread during birth in unsanitary conditions, specifically if the mother is infected and infects the child, or cutting the umbilical cord with unsanitary claps.

d)   Variables associated with HIV and PMTCT

Other variables that should be completed and are very critical and relate to identification of HIV infection in pregnant women and prevention to mother transmission of HIV

(PMTCT). These were added to the ANC register in 2010 as indicated in the previous chapter. The variables comprise of date counselled and tested for HIV, HIV test result, WHO staging, CD4 count result, date CD4 count result was given to patient, life- long ART, TB screening, INH prophylaxis. Some of these variable such as date counselled and tested, HIV test result, WHO staging are completed during the first ANC visit as the PMTCT guidelines indicate that all women should be tested for HIV using a rapid test during the first ANC visit and the HIV results should be provided to the woman and recorded. WHO staging is determined during history taking as part of previous and current medical history and physical examination of the woman. It assists to determine the progression of HIV infection as well as indicate eligibility for ART treatment. A CD4 count test was conducted as well to determine eligibility for ART treatment, in 2008 the CD4 level of 250 indicated eligibility for life long HIV treatment, in 2012 the CD4 threshold was increased to 500 and currently pregnant women are eligible once they are identified as HIV positive and not on anti-retro viral treatment.

The variables 12 weeks AZT and HB are also associated with HIV, more specifically AZT is the anti-viral drug provided to prevent mother to child transmission of HIV. If the woman's CD4 count was above 250, AZT instead of full ART was provided as prophylaxis against MTCT. The HB of pregnant women infected with HIV and not eligible for life long ART had to be checked prior initiation of AZT at 12 weeks. Hence, HIV infected pregnant women and a CD4 count of more than 250 with an HB of less than 8 were not HB had to be referred for management pf anaemia prior initiation of AZT, as AZT increases the risk of anaemia.

**e)	Variables completed during follow up visits**

Other variables that are completed during follow up ANC visits include subsequent ANC visits at 20, 26, 32 and 36 weeks, Repeat HIV test at 32 weeks visit, infant feeding counselling X4 and multivitamin supplementation. These variables are completed when pregnant woman come for their follow up ANC visits. Subsequent visits are completed to indicate whether or not the pregnant woman came for her follow up visits at regular intervals, the repeat HIV test is conducted for all women who initially test HIV negative to identify women that sero-convert from HIV negative status to HIV positive status during pregnancy in order to provide PMTCT interventions. All pregnant women should be provided with four counselling sessions on infant feeding, therefore the variables infant

feeding should be completed four times in the register to indicate that all four counselling sessions were provided to the pregnant woman. In South Africa, all pregnant women are supplied with vitamin supplements such as ferrous sulphate and/or folic acid. These are supplements that are important to ensure that the baby develops well and prevent iron deficiency in pregnancy among others.

All the above variables are completed/ recorded in the ANC register as the pregnant woman comes for all the ANC visits to ensure that both the pregnant woman and the infant are well during the pregnancy and to detect risks and ailments that could be prevent and/or managed.

2.5   CONCLUSION

Chapter 2 presented a discussion of the literature review from various studies relating to ANC registers. Standardised record-keeping tools like ANC registers are said to improve recording.   However, the researcher did not find literature on recording keeping in longitudinal register or perceptions of nurses regarding longitudinal registers. The next chapter will be presenting the methods used throughout the study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1   INTRODUCTION

This chapter covers the methodology used in the study. The discussion is structured around the research design, population sampling, data collection and data analysis as well as ethical considerations and measures to provide trustworthiness both phase one - quantitative and phase two- qualitative aspect of the study.

3.2   RESEARCH PARADIGM

Researchers have different beliefs and ways of viewing and interacting within their surroundings. As a result, the ways in which research studies are conducted vary. However, there are certain standards and rules that guide the researcher's actions and beliefs. Such standards or principles can be referred to as a paradigm (Michel 2008:39). According to Taylor, Kermode and Roberts (2007:05), a paradigm is "a broad view or perspective of something". Additionally, Michel (2008:40) cited that paradigms reveal how research could be effected and guided, it is stated that, "paradigms are patterns of beliefs and practices that regulate inquiry within a discipline by providing a lens, frame and process through which investigation is accomplished.

Therefore, to clarify the researcher's structure of inquiry and methodological choices, an exploration of the paradigm adopted for this study will be discussed prior to discussion of the specific methodologies utilised in this study.

3.2.1 Pragmatism paradigm

Pragmatism paradigm is often associated with mixed methods research and it provides a basis for asserting 'the dictatorship of the research questions'. A researcher following pragmatist paradigm considers that it is the research question that should drive the inquiry, and that the question is more important than the methods used (Polit & Beck 2008:310). In addition, pragmatism is identified as one of the conceptual orientations

associated with mixed methods research. Pragmatism opens the door to multiple methods, different worldviews, and different assumptions, as well as to different forms of data collection and analysis in the mixed methods study (Creswell 2003:13).

In this study the combination of actions and attitudes of Midwives impacts on record-keeping in the ANC register. Therefore, a mixed methods consisting of quantitative and qualitative approach was utilised to answer the research question.

3.3   RESEARCH DESIGN

A study design is defined as the overall plan for addressing a research question, including specifications for enhancing the study's integrity (Polit & Beck 2008:765).   It is also defined as a procedure for collecting, analysing, interpreting and reporting data in research. The research design helps to guide the methods and decisions that researchers must make during their studies and set the logic for making interpretations at the end of studies (Cameron 2009:53). A sequential explanatory mixed method design was used in the study.

Sequential explanatory design consists of two distinct phases: phase one- quantitative, followed by qualitative (Cameron 2009:104). In this design a researcher first collected and analysed the quantitative (numeric) data using a checklist that was developed to identify variables that are completed, partially completed or not completed in the ANC register.   The analysed quantitative data were used to develop questions for the focus group discussions. This was undertaken to triangulate quantitative data as well as to substantiate and make sense of the quantitative findings. In phase two, the qualitative (text) data were collected and analysed to provide an explanation as well as to elaborate on the quantitative results obtained in the first phase (Cameron 2009:104). This is in line with what Cameron (2009:81) highlight, as they stated that the design is most useful when the researcher wants to assess trends and relationships with quantitative data but also be able to explain the mechanism or reasons behind the resultant trends and relationships with quantitative data.

As such in this study, variables that were completed, partially completed or not completed were identified and described. Additionally, factors that promote or impede completion and the general perception of midwives regarding the use of the register as a data

collection tool were obtained. Hence, as highlighted earlier the design and methodology are divided in the two phases; Phase 1 − quantitative and Phase two, qualitative to highlight the processes the researcher undertook in this sequential explanatory mixed method study.

3.4   RESEARCH METHOD

Methodology directs the researcher in planning and implementing the study in a way that is most likely to achieve the intended goal. It is a blueprint for conducting the study (Burns & Grove 2009:745). Research methodology is further defined by Karfman (Mouton & Marais 1996:16) as ways of obtaining, organising and analysing data. As such, the methodology refers to how the research was conducted and its logical sequence. Henning, Van Rensburg and Smit (2004:36) further describes methodology as coherent group of methods that complement one another and have the ability to deliver data and findings that will reflect research questions and suit the research purpose.

In this study the researcher used the mixed methods approach. A comprehensive definition of mixed methods is provided by Creswell and Plano-Clark (2007:5); Polit and Beck (2008:309) and quoted by Cameron (2009:96) as follows; 'mixed methods design research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology it involves philosophical assumptions that guide the direction of collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone'. Furthermore, Ivankova, Creswell and Sheldon (2006:03), Tashakorri and Teddlie (2003:190) also define mixed methods as a procedure for collecting, analysing and mixing or integrating both quantitative and qualitative data within a single study for the purpose of gaining a better understanding of the research problem.

Ivankova, Creswell and Sheldon (2006:03), Tashakorri and Teddlie (2003) and Creswell (2005) also define mixed methods as a procedure for collecting, analysing and mixing or integrating both quantitative and qualitative data within a single study for the purpose of gaining a better understanding of the research problem.

The rationale for mixing both kinds of data within one study is grounded in the fact that neither quantitative nor qualitative methods are sufficient, by themselves, to capture the trends and details of a situation. When used in combination, quantitative and qualitative methods complement each other and allow for more robust analysis, taking advantage of the strengths of each. Perhaps the strongest argument for mixed method is that certain questions require a mixed method approach (Teddlie & Tashakorri 2009:20).

The main focus of this study is to describe record-keeping in the ANC register and to explore perceptions of midwives regarding completion and the use of the ANC register as a data collection tool. Following the literature review, this is a typical research question of a mixed nature, involving both quantitative and qualitative elements. Quantitative data was collected to describe record-keeping and the completeness of the ANC register. Furthermore and in order to explain the quantitative findings, qualitative data were collected to explore the perception of midwives who have used or are using the register. As highlighted above, both these methods were deemed essential to answer the research question.

As indicated earlier, the study was made up of two phases consisting of qualitative and quantitative phases respectively. The quantitative phase took precedence over the qualitative as explained below.

3.5   QUANTITATIVE: PHASE 1

The section below presents Phase 1 which is the quantitative phase of the study.

3.5.1 Sampling

A sample is a set of subjects selected from a population. It is further defined as the most basic unit about which information is collected. Key consideration in assessing a sample in a quantitative study is its representativeness (Polit & Beck 2008:340). In addition, the sample size needs to be planned based on the purpose of the research and the number of research parameters (Kelly 2010:1302). Polit and Beck (2008:340) further indicate that even though there is no precise formula to determine the accuracy of the sample size, a representative sample is important in quantitative research. In addition, the goal of sampling is to select a sample where the sampling error (or difference between sample

and population characteristics) is minimized. In that way, the sample best represents the population of interest, and generalizability, a hallmark of science and particularly inferential statistics is maximized as well (Miller & Salkind 2002:52).

3.5.1.1 Population

The unit of study was all the ANC registers that were implemented, defined as the total number of units from which data can potentially be collected (Fawcett & Garity 2009:153; Parahook 2006:256). Furthermore, Polit and Beck (2008:338) characterize a unit of study as the aggregate cases from which the researcher would like to generalize.

The accessible unit is a subset of the entire target population and meets the sampling criteria (Polit & Beck 2008:337). Therefore, the target units of the study was ANC registers in 68 provincial PHC facilities and the two CHCs because they all render ANC services and operate under similar conditions in Tshwane Metsweding district. The inclusion and exclusion criteria are as follows:

- ANC registers in primary health care facilities providing antenatal care services.

The exclusion criteria:

- PHC clinics that do not provide ANC services and have not implemented the ANC register.

3.5.1.2 Sampling

To ensure that the results are generalizable, random sampling was conducted so that each clinic register could have an equal opportunity of being selected and the sample can be generalised to a larger population (Marshall 1996:522). Hence, a list of all PHC clinics (70 clinics) where the ANC registers are implemented was requested from the district health information system and verified by the maternal health coordinator. To calculate further calculate the sample size, the number of total entries to be assessed for completion, the number PHC facilities (70) were multiplied with the total number of entries in the register (155). Meaning the total population of the study is 1550. The sample size was determined by using a sample size calculator at a confidence interval of 99% and an

error margin on 10(MacDonald 2008: 105). Therefore I achieve the sample size of assessing 155 variables, 7 ANC register had to be assessed for completion.

A computer program, Statistical Package for the Social Sciences, (SPSS) was used to randomly select the seven PHC facilities that have a register from the list that was provided by the maternal health coordinator. Most health facilities used only one ANC register therefore further sampling was not necessary. Hence, the data were collected from 5 primary health and 2 community health facilities. Seven (7) clinics register with a total of 155 entries were assessed for completion.

3.5.2 Data collection

A self-designed structured observation tool; a checklist with closed ended questions developed from the variables within the ANC register was used to analyse record-keeping in the ANC register, with a particular focus on determining data elements that were fully completed, partially or not completed as well as to determine overall completion of the register. Structured observation checklist was designed because firstly, observation checklists may be used to obtain descriptive data on the incidence of particular sorts of behavior or events (Sapsford and Jupp 2006: 61). The same authors further explain that the structure in observation allows accurate and objective measurement of a variable and is aimed at producing an accurate quantitative data on particular pre-specified observable behavior or patterns of interaction. It may be used to describe pattern of behavior among a particular group in particular setting (Waltz, Strickland & Lenz 2010: 202).

3.5.2.1 *Development and testing of the data collection instrument*

A structured observational checklist with frequency rating scales was developed to identify data elements that were completed, partiality completed or not completed. These rating scales that were included in the checklist defined how data should be captured to standardized data collection and to later quantify the observations, with one (1) indicating that the variable was fully completed, half (½) indicating that the variable was partially completed and zero (0) not completed. All the variables were listed in the checklist and a column under each variable was provided for rating the completion of the variable.

The checklist was piloted in one of the PHC clinics. Following the pilot, the checklist was revised to mimic the sequence of variables in the ANC register. This is because the initial checklist used the same rating scales however, the variables that were to be assessed for completion did not follow the sequence of the variables that were in the ANC register. Therefore, the researcher took longer to locate the variable/s that were being assessed for completion. By having the variables in the checklist mimic sequence of the variables in the ANC register, data collection was easier and quicker.

3.5.2.2   Characteristics of the data collection instrument

Data was collected by using an observational checklist containing variables to be measured. The checklist was in electronic excel spread sheet form. This check list was utilised to collect month to month data on the variables in the ANC register from September 2012 to September 2014; a total of 31 variables and 155 entries were assessed. Instructions on how to use the checklist and the rating scales were developed and applied during data collection process, to ensure that data collection is clear and consistent. The same checklist was used in all clinics that were selected for the study.

3.5.2.3   Data collection process

Data was collected by the researcher from seven ANC registers, 155 entries from the registers were utilised for data collection. The data was collected from variables completed in the ANC register from September 2012 to September 2014 to allow the researcher to evaluate recording for pregnant women from the start of their first ANC visit to the time when she has presumably delivered the baby. This enabled the researcher to make observations on the data that is complete for the duration of the pregnancy or ANC period. Data collection process took 4 hours per register. One register did not have all the pages for the period of data collection. Hence only 5 entries could be assessed.

The data were rearranged and transported to Excel for analysis. In the process of cleaning and verification, there was no missing data from variables assessed in the spread sheet.

3.5.3 Data analysis

Data analysis in the phase of the study was undertaken to identify data elements that were completed, partially completed or not completed. Quantitative data analysis was performed according to the variables listed in the ANC register and measured through an excel spread sheet, percentages were utilised to quantify completion of the register. Subsequently, descriptive statistics in the form of percentages were used to describe and synthesise data (Polit & Beck 2008:556).

3.6   INTERNAL AND EXTERNAL VALIDITY

Content validity is defined by Polit and Beck (2012:457) as the extent to which an instrument measures what is supposed to measure. This was ensured by consulting external experts in ANC, PMTCT and in monitoring and evaluation were involved in the review of the developed checklist for content validity.

Internal validity refers to the confidence we have that the results of a study accurately depict whether one variable is, or is not a cause of another (Rubin & Babie 2012:157). Creswell (2008:162) explains the threats to internal validity as the experience of respondents that may threaten the researcher's ability to inferentially report about the population under study. Several factors may threaten the internal validity of a study such as; history, maturation or passage of time, testing, statistical regression, selection and experimental mortality. To ensure validity, data was collected within 6 months of receiving permission from the Tshwane Dealth District (Annexure C) in order to reduce the historical changes of the work environment of the professional nurses. In addition, random sampling was used to minimise selection biases so that all subjects has an equal chance of taking part in the study (Creswell & Plano Clark 2011:240.)

The face validity of the checklist was evaluated by the supervisor who assessed whether the checklist was measuring what it needs to measure before utilising it by comparing with the constraints in the ANC register (Chen, Yen, Lin, Lee & Lu 2012:392).

The instrument was then piloted in one PHC facility in order to improve stability. The outcome of the pilot test was rearrangement of the variables to follow a similar sequence as the variables in the ANC register.

External validity is defined as the degree to which study results can be generalised to settings or samples other than the one studied (Polit & Beck 2008:451). To ensure external validity, the exclusion and inclusion criteria for selection of study units were listed. Furthermore, random sampling was used to increase generalisation of the findings.

This concludes the summary of phase one of the study, the following section describes the research method for phase two of the study.

3.7   PHASE 2: QUALITATIVE PHASE

Since, the research design was sequential explanatory, the second phase was to collect qualitative data through focus group discussions. Semi-structured focus groups composed of 5-8 midwives who have used or are using the ANC register from the PHC clinics in Tshwane district were held. These were convened to explore the perceptions of Midwives on the completion of the ANC register and the use of the register as a data collection tool. Abbas & Teddlie (2003: 309) indicates that focus groups are one of the data collection strategies for mixed methods research. The use of the data collection strategy was informed by the research objective which is to explore the perceptions of the midwives regarding the completion of the register. The strategy was selected as focus group are spontaneous, the researcher can learn how participants think and interact in an unstructured group situation. They can also be used for exploratory purposes and help the researcher to better understand and interpret information and findings results from earlier use of other data collection methods such a quantitative data collection.

3.7.1 Sampling

Purposive sampling was used for the qualitative phase of the study. Purposive sampling picks its sub-set for a particular, non-statistical purpose (Guba & Lincoln 2004: 30). Key informants were selected because they had information of experience regarding the subject under investigation. In the study midwives that have used or are currently using the ANC register were purposefully selected from PHC and were asked to participate in the study.

3.7.1.1   *Study population*

The population for the Phase 2 was all midwives working in Tshwane Metsweding District who have used the ANC register, as a population is defined as the total number of units from which data can potentially be collected from (Fawcett & Garity 2009:153; Parahook 2006:256).

3.7.1.2   *Sampling*

There are no rules for sample size in qualitative research. The sample size should be based on information needs. Consequently, the guiding principle in sampling is data saturation (Polit & Beck 2008:357). The research population for the qualitative aspect were midwives working in PHC clinic who are using or have used the ANC register.

The inclusion criteria were:

i.   Professional nurses registers with the South African Nursing Council.
ii.   Professional nurses with additional qualification in midwifery.
iii.   Professional nurses who have practiced in the ANC setting and have used or are using the ANC register.

The exclusion criteria were:

i.   Professional nurses who do not possess a qualification in midwifery.
ii.   Professional nurses who have not used the ANC register.

3.7.2 Data collection

In this study focus group discussions were conducted to explore midwives perceptions regarding record-keeping in the ANC register, to explain, make sense and provide deeper understanding of the quantitative data.

Predetermined questions were developed and used during the focus group discussions to address the research question. The researcher conducted each of the focus group discussion and used a recording device. The rights to autonomy and voluntary participation were explained to participants before seeking informed consent.

3.7.2.1   *Development and testing of the data collection instrument*

The result of the quantitative data depicting completion of the ANC register were used to develop the questions. The questions explored the midwives perception on completion of the register, the use of the register as a data collection tool, their ability to complete the variables in the register.

3.7.2.2   *Data collection process*

Two focus group discussions were conducted at different times of the day depending on convenience to participants and institutions. The duration of focus group ranged from 40 minutes to 120 minutes depending on active participation and the number of participants. The researcher initiated the discussions by introducing the study and the topic. In addition, ground rules were established to maintain focus and minimize disruptions. Consent was sought from participants and they were also made aware that participation is voluntary and that they can withdraw at any stage when they felt uncomfortable.

Only participants who have used the register or are using the register and were interested in the topic were recruited for the focus groups. The researcher as the facilitator of the focus group discussion, managed side conversations by reminding participants that it was important that one person be allowed to talk before others could respond or share their views. The researcher also indicated to participants that there was no correct or incorrect answer or viewpoint so as to encourage participant to share their views freely.

3.7.3 Data analysis

The purpose of data analysis is to organise, provide structure to and elicit meaning from research data (Polit & Beck 2008:334). Data was transcribed after each focus group discussion and thematic analysis in search of meaningful themes and sub-themes. Themes and sub-themes that emerged were then reported in narrative form.

3.8 ETHICAL CONSIDERATIONS

Ethics is described as a set of moral principles which protects both the researcher and the research participants in the process of conducting the research (Liamputton 2011:32). Ethical issues are important to address to ensure that the study is credible and does not contribute to physical or psychological harm to participants. The following steps were taken to protection of the research subjects rights.

3.8.1 Permission to conduct the study

Written permission was also sought from Tshwane District Ethics Committee, under whose jurisdiction the research sites fall (Annexure C). Further permission was sought from the facility management, this ensured that no harm would befall any of the nurses and patients utilizing their health facilities.

Ethical clearance for the study was granted by UNISA Higher Degree Ethics Comittee in December 2014 (Annexure A). In addition, permission to conduct the study was sought and granted by Tshwane Health District Ethics Committee (Annexure C). The following ethical principles were adhered to during data collection:

3.8.2 Confidentiality and anonymity

To maintain confidentiality and anonymity, the health facilities participating in the study were coded during sampling and the codes were to identify health facilities. During focus group discussions numbers were used as participant identifiers during discussions. Before data collection process started, the research purpose was explained to participants. The explanation assisted in the establishment of the trust relationship between the researcher and participants.

The explanation to participants included the duration of the study, the research methods, and expected nature of participation and how the results were going to be used. Furthermore, participants were informed of their right to participate voluntarily and that their confidentiality was protected. No monetary compensation was offered and participants were not coerced into participation. Written informed consent was obtained before data collection commenced (Creswell 2009:198). No health facility names or participant names were divulged in the research report.

3.8.3 The principle of self-determination

The right to self-determination was upheld by ensuring participants sign consent form that had information about the purpose of the study. Their right to voluntarily participation in the study was upheld by communicating to participants that they were free to discontinue their participation at any point without explaining reasons to the researcher.

The researcher also explained verbally what the research is about and how it will be disseminated.

3.8.4 The principle of beneficence

The term beneficence connotes acts of mercy, kindness, and charity, and is suggestive of altruism, love, humanity, and promoting the good of others (Beauchamp 2013:02). The study benefited health facilities and participants by allowing them to reflect on recording as one of the pillar of patient care. The midwives also had an opportunity to reflect and share their views, challenges and opportunities regarding recording in the ANC register without fear of victimization. The study results and recommendations were likely, in the future, to benefit the districts in identifying challenges regarding completion and data collection. Furthermore, the researcher conducted the study because it is the mandate of government to improve the health system including data collection tools.

3.8.5 The principle of privacy

Privacy was maintained throughout the study. The data collected were going to be used for the study only. Only the researcher, supervisor and the statistician will have access to the data.

3.8.6 The principle of fairness and researchers integrity

The right to fair treatment, the selection of study participants will be solely based on the research requirements. For the quantitative research, the sampling will be random and for the focus group discussions participant that have used or are using the ANC registers will be asked to participate in the study.

A permission was sought to use a recording devise during focus group discussions to assist in verbatim reporting during data analysis. The data collected will be kept safe for the next 5 years for reference and in case of any queries that may arise (Creswell 2009:91).

Participant did not incur any financial loss when participating in the study. No incentives were attached to the study. In addition the focus groups were conducted at the site to avoid travelling costs.

The researcher worked with her supervisor who is an objective expert to determine whether there are any substantial errors or omissions in the report. This was done to overcome misrepresenting the results.

3.8.7 Credibility

Credibility is referred to by Polit and Beck (2008:539) as the confidence in the truth of data and the interpretations, the authors further mention that credibility involve two aspects: first carrying out the study in a way that enhances the believability of the findings and second, taking steps to demonstrate credibility to external readers. To ensure that the study was credible, the researcher requested midwives from PHC facilities in Tshwane District to voluntarily participate in focus group discussions. This sample was

purposefully selected to ensure that only midwives with knowledge and experience on using the ANC registers participated in the study.

Every person who was approached was given an opportunity to voluntarily participate in the study to ensure that the data collection sessions involved those who are genuinely willing to take part and prepared to offer data freely. It was made clear to participants that they have the right to withdraw from the study at any point, and they were not even required to disclose an explanation to the researcher.

3.8.8 Dependability

Polit and Beck (2012:534) describe dependability as the stability (reliability) of data over time and over conditions. The dependability question is: would the findings of an inquiry be repeated if it were replicated with the same (or similar) participants in the same (or similar) context? An in-depth methodological description of the study was provided to allow the study to be repeated by other researchers. The research design and its implementation, describing what was planned and executed on a strategic level were explained in detail as well.

3.8.9 Confirmability

Confirmability is associated with researcher's objectivity and with use of instruments that are not dependent on human skill and perception (Shenton 2004:72). This criterion is concerned with establishing that the data represent the information participants provided, and that the interpretation of those data is not figments of the inquirers imagination. For this to be achieved the findings must reflect the participant's voice and the conditions of the inquiry and not the biases, motivations or perspective of the researcher (Polit & Beck 2008:539). An in-depth methodological description of the study is provided to allow the integrity of research results to be scrutinized. Collected data were also presented to the participants to give them an opportunity to validate the study findings.

3.8.10 Transferability

Polit and Beck (2012:540) describe transferability as a process which refers to the generalization of the data, that is the extent to which the findings can be transferred or have applicability in other settings or groups. It is the responsibility of the investigator to

provide sufficient descriptive data in the research report so that consumers can evaluate the applicability of the data in other contexts. Background data was provided to establish the context of study as well as a detailed description of the phenomenon in question to allow comparison to be made with other studies or to allow replication.

3.9   CONCLUSION

The chapter discussed the methodology. Mixed methods approach, and sequential explanatory design employed in the study outlined. This included the two phases of data collection. The collection instruments for both approaches were explored. Phase one of the study was quantitative followed by phase two which was qualitative in nature. This was done to triangulate the data. Data collection methods were observations using a checklist with rating scales and focus groups with midwives. The quantitative data analysis was completed before data collection in phase two was initiated. Following the data analysis in phase two, the two phases were integrated at the data interpretation stage. The next chapter will focus on analysis of data collected and interpretation from the quantitative as well as the qualitative phases of the study.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.1   INTRODUCTION

The purpose of this chapter is to present, analyse and interpret the data obtained during this sequential explanatory mixed methods study. This chapter further outlines the two phases of data presentation which are Phase 1 (quantitative) and followed by Phase 2 (qualitative).

The quantitative data is presented in tables. Furthermore, the quantitative data presentation and interpretation will be categorised according to groups of variables such as demographic data, and obstetric history variables, among others.   The results generated from the quantitative data formed a basis to develop an interview guide for the focus group discussions for the qualitative phase.

Focus group discussions were held with midwives to obtain their views and perceptions regarding completion of variables in the ANC register. Hence qualitative data is presented as themes and sub-themes. Both the quantitative and qualitative data were merged during the analysis of the results.

4.2   QUANTITATIVE DATA MANAGEMENT AND ANALYSIS

A researcher-developed observation checklist (Annexure E) with rating scales was used to assess completion of variables in the ANC register in seven primary health care facilities. The variables that were assessed for completion included demographic information, obstetric history, screening tests conducted during pregnancy, treatment and PMTCT variables as well as variables that were completed during follow up ANC visits. The observations were rated as 1 if the variable was recorded/ completed according to the instructions in the ANC register, 0.5 (½) if the variable was partially recorded, and 0 if the variable was not recorded.

Only five entries of register II were assessed for completion because the pages of the register were torn and only five entries for the period of the assessment could be found. Hence the analysis reflects only 5 entries for the register.

Quantitative data were analysed manually, the rating were transported in an excel spreadsheet and percentages for completion of variables calculated.

4.3   RESEARCH RESULTS

4.3.1 Sample characteristics

Longitudinal ANC register from seven health facilities were evaluated to collect quantitative data. Below is a presentation and discussion of the results from the quantitative analysis.

4.3.2 Completeness of demographic information variables

The variables that were assessed for completion included demographic information comprising the variables; name and surname, ID number, address and contact details and age at booking. These variables were recorded during the first ANC visit as part of the information collected from pregnant women. In addition, the variables were used to identify the patient and therefore, enables tracing of women who miss their appointments (defaulters) and could further be utilised to contact the pregnant woman in case of emergencies such as abnormal blood results that warrant urgent attention or treatment. Moreover, these variables are important for patient identification as midwives have to page back the ANC register during follow up visits to locate the initial patient entry, so that they can continue to record the interventions and variables on the same line during subsequent visits. Table 4.1 presents completion of demographic variables.

The data presented (Table 4.1) indicates that the ID number was consistently recorded with 99.4% of the entries in the all seven ANC registers analysed having the variable fully completed with only one entry that was not completed. This was followed by the variable name and surname with 97.4% of the entries fully completed and partially completed in 2.6%. In this instance, partially completed entries means only the name or only surname instead of both the name and surname were completed. Hahn, Wanjala, Marx (2013:07)

argues that data completion ranging above 90% as good and acceptable. Therefore, in this study the variables ID number and name and surname were fully completed. This implies the completion of the variable enables midwives to identify pregnant women. Furthermore, they will be able find the initial patient entry so that they can continue to record ANC care and interventions in the register during subsequent visits.

The variables, address and contact details as well as age at booking were least completed with 47.7% and 61.7% of entries fully completed in the registers. Similarly, these were the variables that were partially completed with 51.7% and 37.5% entries partially completed. For the variables address and contact details, it was found that most of the entries had only the address completed and not the contact details or vice versa. For the variable age at booking it was found that most of the entries had a tick(√) which only indicates whether the pregnant woman is older than or younger than 18 rather than the actual as per instructions. Hahn et al (2013:07) describe completion of less than 70% as inadequate. Therefore, the variables address and contact details as well as age at booking we found to be partially completed.

The address and contact details are used to trace the pregnant women or contact them in case of emergencies. Therefore if the variables are partially completed the midwives are might not be able to contact and trace defaulters if there is need. The UNHCR (2010:3) training module concurs and stresses that during ANC, basic demographic information should be obtained and recorded to enable identification and tracing the woman.

Table 4.1   Recording/completeness demographic information variables

Ratings	Name and Surname			ID number			Address and contact details			Age at booking <18 years > 18 years		
	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0
Register I (25 entries)	25	0	0	25	0	0	1	24	0	1	24	0
Register II (5 entries)	4	1	0	5	0	0	0	5	0	3	2	0
Register III (25 entries)	22	3	0	25	0	0	20	5	0	22	3	0
Register IV (25 entries)	25	0	0	25	0	0	4	21	0	3	22	0
Register V (25 entries)	25	0	0	25	0	0	20	5	0	21	4	0
Register VI (25 entries)	25	0	0	25	0	0	25	0	0	25	0	0
Register VII (25 entries)	25	0	0	24	0	1	4	20	1	18	6	1
Total number of entries = 155	151 (97. 4%)	4 (2.6%)	0 (0%)	154 (99.4)	0 (0%)	1 (0.6%)	74 (47.7%)	80 (51.7%)	1(0.6%)	93 (60%)	61 (39. 4%)	1 (0.6%)

The next section describes completion of variable that are associated with the obstetric history.

4.3.3 Completeness of obstetric history variables

Gestational age at booking, last normal menstrual period (LNMP), expected date of delivery (EDD), parity (Para) and gravity (Grav) are the variables completed as part of the obstetric history to evaluate the gestation and risks that are associated with the pregnancy.

Table 4.2 presents completion of variables completed as part of the obstetric history among others. Fully completion of obstetric history variables ranged from 65.2%- 30.8%. 65.2% of the entries for para and gravity were fully completed while 32.9% of the entries were partially completed. Most of the entries were partially completed such as age and booking, LMNP, EDD were partially completed with the percentage of the entries that were partially completed ranging from 69.5%- 56.8%. With regard to the partially completed variables, it was found that for the variable gestational age at booking, the midwives had to record the date, month and year. However, most of the entries included the month and year and not the date. This could have been due to the fact that some of the pregnant women were unsure of their date of their first day of their last normal menstrual period (LNMP) which was also completed in the register resulting in midwives not being able to complete the exact gestational age at booking. A very low percentage of the obstetric history variables were not completed.

Accurate reporting and recording of the LNMP variable affects the calculation of the variable estimated date of delivery (EDD), as indicated earlier, this is very important to assess foetal growth and identify fetal growth retardation early. The study found that for this variable, most of the entries had only the month and year completed and not the date. A considerable number of entries were still partially completed. Midwives recorded 0 for a woman with no children instead of recording P0 or recorded 1 under the variable Grav instead of G1 for the first pregnancy.

48

Hahn et al (2013:07) describe completion of data of below 80-60% as limited and from less than 60% as severely limited. This implies that the variables associated with the obstetric history are severely limited with very a low percentage of fully completed variables (65.2 % - 30.8%). Hence, the conclusion is that obstetric variables were partially completed. The implication of partially completing the variables is that midwives will not be able to access the full obstetric history which is necessary to establish whether or not the pregnant women need interventions and/ or should be referred to a higher level of care. This may lead to results in poor quality of care and later might have an impact on maternal and infant morbidity and mortality as ANC care is a preventative service to identify preventable causes that might have an impact on both the mothers and the infant's health.

Table 4.2   Recording/completeness of variables associated with the obstetric history

	Gestational age at booking			LNMP			EDD			Para			Grav		
Ratings	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0
Register I (25 entries)	4	20	1	18	7	0	15	10	0	19	6	0	19	6	0
Register II (5 entries)	3	2	0	1	4	0	0	5	0	1	4	0	1	4	0
Register III (25 entries)	15	10	0	6	19	0	7	18	0	13	10	2	22	10	3
Register IV (25 entries)	1	24	0	13	12	0	1	24	0	20	5	0	20	5	0
Register V (25 entries)	13	12	0	7	18	0	8	19	0	20	5	0	20	5	0
Register VI (25 entries)	22	3	0	18	7	0	13	12	0	23	2	0	23	2	0
Register VII (25 entries)	0	25	0	3	21	1	4	20	1	5	19	1	5	19	1
Total number of entries = 155	58 (37.5%)	96 (61.9%)	1 (0.6%)	66 (42,6%)	88 (56.8%)	1 (0.6%)	48 (30.8%)	108 (69.5%)	1 (0.6%)	101 (65.2%)	51 (32.9%)	3 (1.9%)	101 (65.2%)	51 (32.9%)	3 (1.9%)

4.3.4 Completeness of screening tests and treatment

Various screening tests such as RPR, RH, cervical cancer screening and HB are conducted to identify potential risks for both the pregnant woman and the unborn infant in order to take appropriate action to avoid further complications. In addition, immunization preventing infectious diseases such as tetanus (ATT) are provided. Presented below is the analysis of the variables associated with the screening tests and treatment thereof if indicated.

Table 4.3 depicts completion of variables associated with screening tests and treatment. The entries for the variables; titre and treatment for syphilis were fully completed compared to other variables with 73% and 62.7% entries respectly, fully completed. In addition, entries that are partially completed range from 65.8% for the variable RPR testing to 1.2% entries for cervical screening. With respect to partial completion of the variable RPR it was found that midwives ticked the column to indicate that the test was done instead of writing the RPR result. This variable (RPR) is linked to completion of the variable titre and treatment as failure to correctly complete the variable RPR leads to non-completion of the variables (titre and treatment). If the women had a negative RPR, midwives had to record - Not Applicable (NA) in the column for the variable titre and treatment as further tests and treatment are provided if the RPR tests is negative.

For the variable RH, midwives recorded whether the RH was negative (neg) or positive (pos) but the study found that midwives would just tick the column instead of recording neg or pos. Furthermore, HB is recorded as a value but similarly the midwives would just tick to indicate that the HB was measured but did write the value. The variable ATT was partially completed as well with 52.9% of the entries partially completed versus 33.6% fully completed entries. Most of the entries were ticked instead of recording the date ATT was given. Furthermore, ATT is given 3 times if it is the first pregnancy or if the pregnant women received the last dose more than 5 years ago, therefore midwives had to indicate by recording N/A in the other 2 columns for ATT to indicate that the pregnant women is only eligible for one dose of ATT but this was not done. In most of the entries only one ATT was ticked or date written and the other columns were left blank. This was captured as partially complete.

The partial completion impacted on the ability of midwives to identify ailments that could affect the mother and infant. These could not be identified and therefore not treated. Furthermore, low fully completion percentage indicates failure to provide appropriate screening tests and treatment during pregnancy. In addition, health care workers are not able to follow through the care if these are not recorded fully. Hence this affects the quality of the care provided during ante natal care.

While the variables associated with demographic information and obstetric history were fully or partially completed, in this group it was found that a higher number of entries for the variables were not completed. These ranged from 0.6% for RPR (partially completed at 66%) to 92% for cervical cancer screening. In addition other variables such as HB (27%) and ATT (13.5%) also had higher percentage of entries that were not completed.

The variable cervical cancer screening was least completed with 92.3% of the entries not completed. This is mainly due to the fact that cervical screening during pregnancy is highly debated. The South African cervical cancer screening guideline indicate that a women should be screened for cervical cancer from the age of 30 and this should be done at 10 year interval if there are no abnormalities (NDOH 2015:4). Therefore, midwives choose to wait until the woman has delivered a baby to do the pap smear which detects cervical cancer.

As described by Hahn et al (2013:08) the overall completion of data elements below 70% is very limited, therefore screening tests and treatment variable is partially completed excluding cervical cancer screening, HB and titre which were rated as not completed.

Table 4.3:   Recording/completeness of the screening tests and treatment

Ratings	RPR testing			Titre			Treatment			RH			HB			Cervical cancer screening			ATT		
	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0
Register I (25 entries)	1	24	0	1	2	22	0	2	22	16	8	0	2	6	17	0	1	24	18	7	0
Register II (5 entries)	2	3	0	1	0	4	1	0	4	3	2	0	2	0	3	0	0	5	3	1	1
Register III (25 entries)	21	3	1	2	0	23	2	0	23	6	12	7	3	2	20	0	0	25	21	4	0
Register IV (25 entries)	13	12	0	20	5	0	20	5	0	21	4	0	21	4	0	0	0	25	5	0	20
Register V (25 entries)	2	23	0	25	0	0	24	0	1	22	3	0	16	9	0	0	1	24	5	20	0
Register VI (25 entries)	9	16	0	25	0	0	25	0	0	20	5	0	7	18	0	10	0	15	0	25	0
Register VII (25 entries)	4	21	0	25	0	0	25	0	0	25	0	0	18	6	1	0	0	25	0	25	0
Total number of entries = 155	52 (33. 5%)	102 (65.8 %)	1 (0.6%)	99 (63.9%)	7 (4.5%)	49 (31.6%)	97 (62.7%)	7 (4.6%)	50 (32.7%)	113 (73%)	34 (22.4%)	7 (4.6%)	69 (44.5%)	45 (29%)	41 (26.5%)	10 (6.5%)	2 (1.2%)	143 (92.3%)	52 (33.6%)	82 (52.9%)	21 (13.5%)

4.3.5 Completeness of PMTCT variables

PMTCT variables are associated with screening for HIV infection as such if the woman is tested and found to be infected with HIV treatment to prevent mother to child transmission is provided. In addition, screening for TB should be conducted and treatment or TB prophylaxis (INH-Isonazid) be provided depending on the outcomes of the screening as HIV and TB co-infection is very common. These variable are completed during the first visit, and also during follow up visits as some of the test results such as CD4 count become available, while ongoing care such as AZT is provided.

Table 4.4 depicts completion of variables associated with HIV care and PMTCT. The entries of variables that were fully completed in this grouping ranged from 67% with the variable HIV test result, more fully completed than14 weeks ANC visit-AZT and HB with only 11.6% of the entries fully completed. The date when somebody was counselled and tested and the HIV test result were either fully completed or partially completed with no entries that were not completed.

Partially completed variable raged from 43.9%- 9% for the entries for the variable 14 weeks ANC visit-AZT and CXT. It was found that for the variables date counselled and tested, date CD4 count results given midwives recorded ticks instead of the actual date. Similarly, the entries for the variables -HIV test results, WHO staging among others, midwives recorded ticks instead of the actuals results. These were rated as partial recording. For the variable 14 weeks ANC visit-AZT and HB, the HB was not recorded/completed in most of the entries that were assessed.

Variables that were not be completed in this group include CXT (co-trimoxazole prophylaxis) with 78.7% entries not completed followed by variable INH prophylaxis with 67.7%, Lifelong ART with 60%, 12 weeks ANC visit - AZT and HB with 56.7% and 45.1% entries not completed for 14 weeks ANC visit - AZT. As mentioned earlier, none of the entries for variables date counselled and tested and HIV test were not completed. However for the rest of the variable in this group 78.7%-17.4% of the variable were not completed. Therefore except for variable date counselled and tested which were partially completed, the rest of the variables were not completed.

The implication of high entries that are not completed is the inability to identify and properly treat women with HIV in line with the previous PMTCT guidelines. Moreover, South Africa has a very high incidence of TB and TB/HIV co-infection. Hence, it is important for all HIV infected women to be screening for TB, treated if found to have been infected or given TB prophylaxis if TB negative (INH prophylaxis). These data elements are very critical to complete and follow through as both TB and HIV are the leading cause of maternal mortality in South Africa. Moreover, these variables determined whether a women was eligible for long life ART or PMTCT prophylaxis, therefore failure to complete them might lead to women not lifesaving ART treatment.

Table 4.4   Completeness of PMTCT/HIV variables

	Date counselled and tested			HIV test results			WHO staging			CXT initiated			CD4 count results			Date CD4 count result given to patient		
Ratings	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0
Register I (25 entries)	16	9	0	18	7	0	15	10	0	2	3	20	11	12	2	7	15	3
Register II (5 entries)	0	5	0	0	5	0	0	0	5	0	1	4	0	4	1	1	3	2
Register III (25 entries)	19	6	0	19	6	0	2	2	21	3	2	20	2	0	23	2	0	23
Register IV (25 entries)	18	7	0	17	8	0	7	18	0	2	1	22	11	14	0	2	15	8
Register V (25 entries)	21	4	0	24	1	0	21	4	0	9	2	14	18	6	1	15	6	4
Register VI (25 entries)	25	0	0	24	1	0	17	2	6	3	5	17	19	6	0	9	12	4
Register VII (25 entries)	2	23	0	2	23	0	5	20	0	0	0	25	1	24	0	0	0	25
Total number of entries = 155	101 (65.2%)	54 (34.8%)	0 (0%)	104 (67.1%)	51 (32.9%)	0	67 (43.2%)	56 (36.1%)	32 (20.7%)	19 (12.3%)	14 (9%)	122 (78.7%)	62 (40%)	66 (42.5%)	27 (17.4%)	36 (23.2%)	51 (32.89%)	69 (44.5%)

	Lifelong ART			TB screening and treatment			Izonazid prophylaxis (IPT/INH/ TB prophylaxis)			12 weeks ANC visit- AZT and HB			14 weeks ANC visit-AZT and HB		
Ratings	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0
Register I (25 entries)	12	8	5	13	7	5	6	12	7	15	3	7	9	8	8
Register II (5 entries)	0	0	5	0	3	2	1	1	3	0	1	4	0	1	4
Register III (25 entries)	2	0	23	10	2	13	1	0	24	2	0	23	2	0	23
Register IV (25 entries)	6	3	16	2	16	7	0	1	24	0	22	3	1	22	3
Register V (25 entries)	4	17	4	21	3	1	0	0	25	2	9	14	3	12	10
Register VI (25 entries)	1	9	15	19	4	2	7	11	7	4	9	12	3	9	13
Register VII (25 entries)	0	0	25	21	3	1	4	6	15	0	0	25	0	16	9
Total number of entries = 155	25 (16.1%)	37 (23. 9%)	93 (60%)	86 (55.5%)	38 (24.5%)	31 (20%)	19 (12.3%)	31 (20%)	105 (67.7%)	23 (14.8%)	44 (28.38%)	88 (56.7%)	18 (11.6%)	68 (43.9%)	70 (45.1%)

4.3.6 Completeness of follow up visit variables

During follow up ANC visits, the variable subsequent visits at 20 weeks, 26 weeks, 32 weeks and 38 weeks, repeat HIV test should be conducted at 32 weeks. Four infant feeding counselling sessions should be provided to all women irrespective of their HIV status. Multivitamin supplementation ought to be provided, and all the above mentioned interventions should be completed in the ANC register. All women who test HIV negative during the first ANC visit should be rested to exclude the window period and early sero-version period. These interventions are important to ensure good outcomes for both the pregnant mother and her unborn baby.

Table 4.5 depicts variables that were completed during follow up visits. The completion of the entries were very low with number of entries that were fully completed for the follow up visit variables ranging from 14.8%-2.6%. With respect to the partially completed variables, the variable subsequent visit had to be completed according to the basic antenatal care schedule at 20, 26 weeks, 32 weeks and 36 weeks depending on the gestation of the pregnancy during the first ANC visit. However, some of the follow up visit columns were completed and others were left blank which resulted in the rating of partial completion. In addition, repeat HIV test was sometimes ticked instead of the date and result recorded. For the variable infant feeding, four columns are allocated in the register as 4 infant feeding counselling sessions were supposed to be provided. However, it was found that not all the four columns were completed as well. Entries that were partially completed for this grouping ranged from 78%-1.3%. Subsequent visit were partially completed (78%) than multivitamin supplementation (1.3%).

The entries that were not completed range from 14.8%-85%, 85% of the entries for multivitamin supplementation were not completed. According to Hahn et al (2013:08), the high percentage of not completed variables indicate challenges in the quality of the information systems at clinic (health facility) level. This highlights the fact that even through recording is deemed essential the quality of recording is still an issue that needs to be addressed.

Table 4.5   Recording/completeness of care during follow up visits

	Subsequent ANC visits			Repeat HIV test			Infant feeding counseling X4			Multivitamin supplementation		
Ratings	1	0.5	0	1	0.5	0	1	0.5	0	1	0.5	0
Register I (25 entries)	0	24	1	0	5	20	1	23	1	0	0	25
Register II (5 entries)	0	2	3	0	0	5	0	0	5	0	0	5
Register III (25 entries)	0	2	23	0	0	25	0	19	6	2	0	23
Register IV (25 entries)	0	24	1	1	15	9	3	15	7	15	0	10
Register V (25 entries)	3	22	0	1	21	3	3	22	0	6	0	19
Register VI (25 entries)	1	24	0	0	10	15	0	1	24	0	0	25
Register VII (25 entries)	0	23	2	0	17	8	1	14	11	0	0	25
Total number of entries = 155	4 (2.6%)	121 (78.0%)	30 (19.4%)	2(1.3%)	68 (44.8%)	85 (53.9%)	8 (5.2%)	94 (60.6%)	54 (34.8%)	23 (14.8%)	2(1.3%)	132 (85%)

For the total number of 155 entries assessed for completion in the ANC register; variables name and surname were fully completed within a range of 90%-99%. The rest of the variable were fully completed at less than 70%. In addition, most of the variables were either partially completed or not completed. Furthermore, the variables completed during follow up visit have the far less completion percentages than other groups of variables. These completion percentages depict poor recording and completion of the ANC register. The high level of poor completion as noted in the tables require further exploration of perceptions of midwives regarding completion of the register. Nurses and midwives are the main point of contact for women during pregnancy and were therefore consulted to provide more detailed information regarding level of completeness of the register and their perception on recoding/completing the ANC register through focus groups discussions. Hence, focus group discussions were held. The next section will present qualitative findings.

4.3   QUALITATIVE DATA MANAGEMENT AND ANALYSIS

In order to enhance quantitative results, two focus group discussions were conducted over a two-day period, at two locations and in two different sub-districts. The objective was to collect qualitative data. The focus group discussion questions (Annexure D) were developed utilizing quantitative results from phase one. This was meant to gather more information on record-keeping/completion in the ANC register. This ensured that the midwives' perceptions on the recording/ completing the ANC register were explored, and that findings would complement the quantitative data.

The first focus group was held at on 29 September 2015. The second focus group took place on the 10th of November 2015 and five midwives participated in each focus group discussion. The two groups were the only participants that availed themselves for the discussions.

4.3.1   Demographic characteristics of participants

A total of ten (n=10) participants attended the two focus group meetings around the Tshwane districts. Additional demographic characteristics are provided in table 4.6 and table 4.7 here-under:

Table 4.6   Demographic profile of participants in focus group 1

Names	Age	Level of education	Number of years as a midwife
Participant 1	37	Master degree in nursing	15
Participant 2	47	National diploma in nursing	27
Participant 3	36	National diploma in nursing	16
Participant 4	32	Degree in nursing	10
Participant 5	54	Diploma in nursing	16

The first focus group discussion was held with five midwives. As depicted in Table 6, participants were females with an age range of 32-54 years. They had significant experience in providing midwifery services ranging from 10-27 years. In addition, they

were all working in ANC services as well as coordinating the Expanded Programme of Immunization in their respective health facilities in Tshwane district. All were qualified as general nurses and midwives with three of the midwives having completed a four-year diploma in nursing, which includes general nursing, midwifery, community nursing and psychiatry nursing, one had a post graduate degree and one had a master's degree.

Table 4.7   Demographic profile of participants in focus group 2

Pseudonym	Age	Level of education	Number of years as a midwife
Participant 6	46	Degree in nursing	21
Participant 7	35	Diploma in nursing	10
Participant 8	53	Degree in nursing	17
Participant 9	49	Degree in nursing	14
Participant 10	55	Diploma in nursing	18

The second focus group was held with five midwifes who worked at various health facilities in the Tshwane District. As presented in Table 4.7, the age of the participants ranged from 35-55 years and all of them had more than 10 years' experience in working as midwives in various settings such as a hospital and/or primary health care services. All of them were professional nurses with a degree or a diploma in nursing which includes general nursing, midwifery, community nursing and psychiatry nursing. All the focus group participants volunteered to participate in the focus group discussions.

4.3.2 Focus group discussion format

Each focus group discussion lasted for 75 minutes. During the discussions the researcher welcomed and provided an opportunity for participants to introduce themselves. The background to the study was provided. Subsequently the researcher initiated the discussion with interview questions.

4.3.3 Qualitative data analysis and findings

From the focus group discussions, midwives shared their experience on using and completing the ANC registers and major themes emerged across the transcripts: experience on using the register, support of the register as a monitoring tool, motivational aspect to complete the register, as well as improving the ANC register. Sub-themes were

also identified for each major theme. The themes and sub-themes addressed both midwives experience on completion of ANC register as well as the role of the register. Table 4.8 illustrates the major themes and sub-themes that were identified after reviewing the groupings and coding.

Table 4.8   Summary of the main themes and the sub-themes

Main theme	Sub-theme
1. Experience on using the ANC register	• Size of the ANC register
2. Effectiveness and efficiency in data collection	• Simple and easy to complete
3. Ability to complete the ANC register	• Duplication • Incomplete variables
4. Motivational aspects for completing the ANC register	• Comprehensive • Integrated essential HIV care elements • Guidance to plan interventions • Tracing of defaulters
5. Improving the ANC register	• No improvements necessary • Training

4.3.3.1   Theme 1: Experience on using the ANC register

The midwives shared their negative and positive experience regarding the use of the ANC register. One of the resonating issue that was reported was the fact that the register takes long to complete, this includes finding the patient entry and recording the variables. In addition, they indicated that the register as too big, in terms of size, and did not fit in their work spaces. Therefore, for this theme, and the sub-themes were identified as: being time consuming and voluminous size.

Sub-theme: Size of the ANC register

Four of the participants mentioned that the register was too big and filled up most of their work spaces. One participant (p8) expressed her frustration, saying:

> "I don't think the ANC register is normal…I suggest that the size of the register be reduced because it's so thick."

Participant (p6) remarked:

"they gave us one big book for the clinic."

This indicates that participants are of the view that the size of the register is too big should therefore be reduced so that it can be accommodated in their working space. Over and above the fact that it is time consuming, the thickness seems to be more frustrating to the midwives as they do not have adequate space for the register in their respective workstations. The statements made by the nurses are line with available literature as Garrib, Stoops, McKenzie, Dlamini, Govender, Rohde and Herbs (2008:550) argue that poor design of paper based data collection tools is one of the barriers to good data collection.

4.3.3.2   Theme 2: Effectiveness and efficiency in data collection

With regard to supporting the ANC register as a data collection tool, midwives indicated that the ANC register was simple to use, it guided them on the interventions and/care they need to render to the pregnant women and the register enables them to trace defaulters. Below are more details regarding the sub-themes that emerged.

Sub-theme: Simple and easy to complete

Participant mentioned that the ANC register was simple to use, the data elements were easy to understand and to complete. Some went on to highlight that they did not even need training on the register as it was simple to complete.

Participant (p6) mentioned:

> "The data elements are very simple and understandable to my experience. Because it is clear, it tell u the name of the patient, age, the HIV status…"

Participant (p8) said:

> "its user friendly and the data is very simple and understandable".

Participant (p1) pointed out:

"When working at the ANC unit, we are seeing patients and that is the time I saw the ANC register for the first time and I started using it, it was not difficult to complete."

Participant (p4) saw one positive aspect of the ANC register as a compact document, which enabled capturing of every data element. She said:

"I feel it is much better because it is in one book. If it was not in one book, we were going to have our ART register and our TT register. We were actually going to have different books on one table for something that can be squashed in one booklet and help us."

As mentioned in the earlier section midwives felt that the design of the register impends recording ("it was too big"). However, they still found it to be comprehensive, they highlighted that it reduced duplication of records which was found to be one of the factors affecting data collection and collation (Garrib, Stoops, McKenzie, Dlamini, Govender, Rohde and Herbs 2008:550). This indicates that the variables are important but the design might be the problem leading to inadequate completion.

4.3.3.3 Theme 3: Ability to complete the ANC register

Participants shared their views on record-keeping and completing the ANC register. They indicated that the register is simple to use. However, some of the shortcomings were identified such as duplication of the information in the register and in other tools. Midwives also indicated that the register is tedious to complete and this might therefore lead to missing data as midwives might omit to complete some of the required information.

Sub-theme: Duplication

Most of the participants verbalised their frustration about completing numerous ANC records with the same information such as the ANC register and the patient held card. Moreover, midwives have to take the history, do physical examination as well as conduct all the necessary test during the first visit.

Five participants indicated that the ANC register was a duplication of records.

Participant (p1) said:

> "Sometimes it is difficult to fill in everything in the register because remember you have to fill in the ANC card (which has the same information), take bloods, take history, estimate the gestational age and come back to fill in the ANC register."

Participant (p7) expressed her view thus:

> "You record in the patients file, in the register and in other registers we have. The same information is recorded in all these other documents."

Participant (p6) shared the same sentiments and said:

> "Why can't they combine all the documents into one?"

The above- mentioned views from participants indicate that a lot of information is required to be completed, not only in the ANC register but also in other tools. In the United Nations Children's Fund (UNICEF) (2010:02) tool kit on diversion and alternatives to detention it is indicated that the instruments should help in collecting the right amount of information (neither too little, nor too much) and appropriate information which is relevant to the programme plan and specific indicators. Furthermore, a study district information system in rural South Africa for that duplication of data collection adds to the work burden and negatively impacts data collection and collation(Garrib, Stoops, McKenzie, Dlamini, Govender, Rohde and Herbs 2008:551).

Sub-theme: Incomplete variables

Whilst most of the participants mentioned that it was easy to complete the register, four participants stated that they did not complete some of the variables in the ANC register.

In this regard, one of the participants (p10) referring to recording the 32 weeks retesting for HIV for all women who tested negative in the first visit, stated that:

> "That one is still very difficult because actually, we do not even fill in the part whereby we say patient needs to be tested at 32 weeks. So we miss that part because of the book itself."

She further mentioned that the reason for not completing the element is due to the fact that they have to page back to find the initial patient entry. She said:

> "We do not want to go outside to look for the book and again look for the patient because it is time consuming and we are working on waiting time. Our waiting time is specified, so we are avoiding that yet, we are doing the procedure but not filling it inside the book."

Furthermore, the missing values could be caused by the delay in receiving laboratory results, which affects the completion of variables such as titre for syphilis, TB screening, CD4 count test. Also, the shortage of staff and high volume of clients in clinic was said to be challenges resulting in midwives not having adequate time to complete the register. The participants present this as a big challenge in the process of completing the ANC register. In addition, the participants indicated that the ANC register is monotonous to complete. As such, the completion is done on multiple records.

However, one of the participants (p4) argued that:

> "The ANC register is about understanding why you are doing it. Then, if I know and understand why I am are doing it, the time factor is pushed to the side". This indicates that if midwives are well trained and they are aware of the value of completing the ANC register. They will do their best to complete the variables."

The UNICEF (2009:02) tool kit on Diversion and Alternatives to Detention supports this as it indicates that data collection instruments and reports should be useful to those filling them in.

Participants suggested that extra support staff were required to deal with the administration part of the ANC register and nurses do the registeral part. Above all, the negative feature of the ANC register: The one resounding complaint or constraint across all participants is time consuming in the process of completing the register. They strongly objected to the inconvenience brought about by the time consumed. They objected to long queues (first day visit) of patients, seize and space of the ANC register. Garrib, Stoops, McKenzie, Dlamini, Govender, Rohde and Herbs (2008:552) in their study that evaluated the district health information system in rural South Africa suggested that dedicated clerks in each clinic with responsibility for data collection and validation would improve data quality.

4.3.3.4 Theme 4: Motivational aspects for completing the register

One overwhelmingly motivational aspect mentioned by participants was the informative nature of the ANC register. They indicated that the register has integrated HIV care elements and they will therefore complete one register that has all the essential elements.

Sub-theme: Comprehensive

On this note, the following views were shared by participants: Participant (p1) said:

> "At least we have this information about the patient. Even if we miss the patient file we know that in the ANC book we can get everything about the first visit. This patient booked on this day, and they did an HIV test, patient tested negative or positive, you gave tetanus; you did test for syphilis and all that. So we have lot of information". In addition (p6) mentioned that "the ANC register can also be used as a duplicate to the file in case the patient loses or the file is misplaces or the card."

Participants (p9) agreed and mentioned:

"It is a patient record and therefore it had all the patient information so whenever we need information we always get it from the register."

While participant (p2) saw the positive aspect in the process of collecting data. She said:

"I think this register is very important for data collection. Because it gives us the pregnant women holistically and their comprehensive picture according to gestation."

This indicates that the midwives view the ANC register as a comprehensive tool among other benefits such as tracing of defaulters and ability to get all the patient information from the register.

Three participants indicated that the ANC register is a good tool as it is very comprehensive. They highlighted that it contains all the variables (data elements) that are important for both ANC care in line with the gestation of the pregnancy.

Participant (p1) mentioned the following:

"I think this register is very important for data collection because it gives you the pregnant women holistically, it gives you are comprehensive picture of the pregnant women according to gestation. Participant (p7) went on to say the "even if you cannot find the patient file, you know in the ANC book you can get everything."

Participant (p5) pronounced:

"It helps to monitor the pregnant woman to know which intervention you need to render according to the gestation and the HIV status."

Even though most of the participants agreed that the register is a good tool, one participant had contradictory views.

Another participant (p9) stated that:

> "Time, spent on the ANC patient's register is very long. This is because I have to go back to previous pages and look for information about the patient yet as a nurse in a busy clinic I have limited time to do so."

She indicated that one book was provided to record the ANC variables therefore all the nurses working in the clinic have to go out of the working stations to complete the register which is very impractical. She sounded very frustrated during the discussion. The participant mentioned that she was not trained on the ANC register and only one big book was provided to the whole clinic. She seemed very resistant to change and had mostly negative views about the ANC register

Sub-theme: Integrated essential PMTCT/HIV elements

An indicated in Chapter 2, the ANC register was revised to include data elements relating to HIV and PMTCT. Participants indicated that it assisted them to remember to screen women for HIV.

Participant (p2) remarked:

> "It also enables us to determine the number of women who are HIV reactive and non-reactive. Those who are on ART on different regimens and those who have encountered some possible complications during antenatal care are found in this register. We find out that this one had bad obstetrical history and I can determine if the patient needs to be sent for to the caesarean section in future."

Sub-theme: Guidance to plan interventions

All participants acknowledged the importance of the ANC register. They described it as a tool that helps them to record data elements and provides them with a comprehensive picture and keeps up to date information. Participants reported that the register plays a very significant role as it provides guidance on the information to be completed, how to monitor the interventions that should be provided during pregnancy and indicates the care that has been provided to the woman.

Participants (p2) mentioned:

> "It plays a significant role because it guide you and provides you with information you need to monitor intervention to be provided and progress of the pregnancy."

Participant (p4) verbalised:

> "It actually gives you a clearer picture … when did this one start get their first dose of ATT, and all those things."

Participant (p7) said:

> "It has a lot of information that you can gather about the patient because it records their initial visit and the follow ups, HIV status, HB status and any other thing and whether you have initiated the on ARVs or not."

Rohde et al ([s.a.]:203) in their chapter on information for primary health care conclude that the continuity register such as the ANC register enables rapid verification that all mandated activities have been performed and is also useful for validation of data submitted. In the same breath, the same authors further indicate that the information recorded the ANC can be utilised to complete or update the patient held ANC card if the patient has lost the card. Both the ANC register and the patient held ANC card contain the same information.

Sub-theme: Tracing of defaulters

Participants mentioned that the ANC register enables them to trace defaulters and follow up on women who do not return for their return visits and as it has comprehensive information.

Participant (p4) mentioned:

> "It helps you during defaulter tracing because one glance at the register you will know which parts are missing and you might be able to actually see whether you have defaulters or not."

Participants (p9) and (p5) shared similar sentiments and said:

> "I also want to add defaulter tracing as well, it gives you to have an idea of how many women you are expecting e.g. if you are expecting 10 people back are they all back or what happened. You can send a team out to go look for the mother …"

Participant (p5) said:

> "It also assist with being able to follow up or do a continuous follow actually up care with these women and their unborn child because on every visit you will be recording."

From the quotes shared above, in one way or the other all participants pointed out that the ANC register is a very good quality tool for continuity of care documentation. It enables the end users to intervene and capture the entire data elements. Further, it enables end users to gather all the obstetric information of the patients. It also assists the nurses to remember and to talk about the breastfeeding and methods, as well as the maternal nutrition to patients.

Participant (p3) mentioned:

> "It also helps you to remember to talk about breast feeding and feeding methods as well as maternal nutrition."

In addition, to the above they indicated that the ANC register gives a lot of information regarding screening tests that are conducted during pregnancy. Finally, they asserted that the data elements were very simple and understandable. These positive aspects applied mostly to midwives who have served longer than 15 years and placed in sections where they interact regularly with the ANC registers.

Other respondents reported that the shortage of staff aggravates the completion of the ANC register. Mathibe-Neke, Lebeko and Motupa (2013:151) allude to shortage of staff in this case, midwives as a significant factor that contributes to underutilization of the labour record (partograph). This support the views held by midwives that staff shortages impact on recording keeping and completion of the ANC register.

Several participants indicated that there was not enough time to complete the ANC register due the high volumes of pregnant women coming for ANC in the clinics. Therefore, midwives prioritize clinical care and do not complete the register adequately. Chemvakaseemsook et al (2006: 364) cited the fact that nurses devalued documentation as an unimportant task resulting in quality documentation not being produced.

The other negative constraint in the completion of the ANC was attributed to duplication. They observed that filling the ANC register is monotonous. This was acknowledged by WHO (2008:02) indicating that nurses are overburdened by excessive data and reporting demands from multiple and poorly coordinated sub-systems. This confirms the fact that midwives may be completing the similar records for different requirements such as the ANC registers and the maternity case record. Both these records are completed during ANC period and contain similar information. However, one is patient held (Maternity case record) whilst the ANC register is kept in the health facility.

In addition, they indicated that one book for the entire register causes delays in the process of completion. The respondents stated that they have to fetch the book where it is located and attend to numerous patients. Nevertheless, shortage of staff was also emphasize as a challenge.

4.3.3.5   Theme 5: Improving the ANC register

In relation to the improvement of the ANC register, participants presented interesting views

Sub-theme: No improvements necessary

There was an indication of being satisfied with the format of the register as expressed by participant (p2):

> "I appreciate the register, would not change anything, as we are talking about integration currently this register has all element's from 12 weeks of gestation until the mother delivers and you continuously implement interventions according to the needs. This is good integrated register."

Participant (p6) mentioned that:

> "I think now they have come up with a good idea of combining the registers so that we have only one register where we complete everything so that the data is complete and accurate."

In addition participant (p1) remarked:

> "Yes, I do support it because if you look at it, it helps you during defaulter tracing. Also one glance at the register you will know which parts are missing and what to do. All this needs to be done correctly, but without the register I might not be able to actually see whether a client has defaulted or not."

Participant (p5) said:

> "Yes, it also assists with being able to follow up or do a continuous follow up care with these women and their unborn children because at every visit you we have to record."

To add to the above, the role of ANC register is indisputable as it plays an informative role to all users. It enhances preventive measures for all patients, particularly pregnant women. The respondents therefore acknowledged that besides their limited understanding of the usage of the register and the lack of training, they still insisted that its use is indispensable.

Some of the participants expressed satisfaction with the register and the way it is being used. When asked about how they would like to modify the register participant (p1) shared the following response:

> "I wouldn't to change anything because this register assists to treat a woman comprehensively the only thing I would recommend is more training so that more people can be able to use it, if you are on leave everything turns upside down because some of the nurses cannot fill in the register."

Participant (p4) wants innovation and suggests:

> "I would suggest that since DHIS is introducing the new tick sheet; at ANC we should not change this register as it will be used by the department to gather information. Also it is because there are certain elements that are not on their tick sheet but are in the ANC register. So keeping this register will help them and us to come and get the information from the ANC register rather whenever needed."

These views are contradictory to what some of the participants said earlier about the design of the register. It was highlighted that the register is too big however, some of the participants mentioned that they will not change anything about the register.

Sub-theme: Training

The training provided to participants seemed variable as some of the participants mentioned that they were never trained on the use of the registers whilst some of the participants said they were mentored on the use of the register by someone who was trained on it.

Participant (p3) mentioned:

"When working at the ANC unit, we are seeing patients and that was when I saw it the first time. I started using it even though I didn't have training on it"

Participant (p1) mentioned

"I was mentored to use the ANC register by a sister who was trained on the register"

However, training was highlighted as a key facilitator in the completion of the ANC register.

Participant (p1) recommended more training and emphasized:

> "More training should be conducted so that more people can be able to use it, if you are on leave everything turns upside down because some of the nurses cannot fill in the register."

A study conducted in South Africa found significant improvement in all key PMTCT indicators after the PMTCT intervention which included conducting a roadshow to orient staff pm the PMTCT protocol and monthly support visits by a senior nurse (Doherty et al 2009: 409). Similarly, after an intervention study that included training on data collection, monthly review of data and data audits at individual facilities, a study found data completeness in the studies antenatal care clinics improved from25%- 63 %(Mphatswe et al 2012: 170). This stresses the importance of training and support to strengthen the capacity of health care workers to complete the register adequately.

Both the quantitative and qualitative findings will be merged in the next section

4.4 OVERVIEW OF THE RESEARCH FINDINGS AND INTEGRATION OF QUANTITATIVE AND QUALITATIVE FINDINGS

The quantitative data analysis has indicated that the completion of the registers is variable and that missing values or gaps appear in the completion of the ANC register. The quantitative data analysis indicates that data completed during the first visit which includes demographic data (ID number and name and surname were more fully completed with completion of above 95%). The variables address, name and surname were partially completed mainly due to following the instructions of the register. Variables; subsequent ANC visits, repeat HIV test, infant feeding counselling X4 and multivitamin supplementation were not completed fully ranging from 14%- 1.3%.This affirmed by information that was collected during focus group discussions that implies that it is difficult

to complete the register during follow up visits and that midwives do not complete the 32 weeks retesting due to the thickness of the register and the requirement of paging back to find the initial patient entry so that they can continue to complete the entries as they provide ANC services.

The obstetric history variables had the most partially completed variables. This could be attributed to the fact that most of the information for the variables are duplicated in the ANC register as well as in the patient held card among other tools. As well as the fact that clients had to provide obstetric information to the midwives, the ability of the client to recall some of the important dates such as the LNMP impacts on the recording.

Furthermore, HB, titre and cervical cancer screening has a high number of entries that were not completed. One of the participants mentioned that the test results were sometimes delayed and therefore impacted negatively on the completion of the screening tests.   While the midwives did not mention the reason for not completing specific variables, the controversies around cervical cancer screening are highlighted in the earlier sections. Although the completion of the register is not good, midwives still acknowledged the register as a good tool that assists them to offer care during pregnancy.

Most of the participants held the views that the ANC register consumes time, one book for entire register vs daily great number of patients (pregnant women) and shortage of staffs result in missing values/ no effective completion. Some participants talk about duplication of information, and others appreciated the register being informative. Majority of participants claim no improvement to the ANC register and suggest an extra data capture or enrolled nurse to assist in filling administration part and nurses filling the registeral part. The qualitative data indicates that missing data/incompleteness can be attributed to the design of the ANC register which impacts on workload as consequence fatigue; and to the lack of sufficient staffs to respond to.

The finding is that missing data or incomplete data arose from common causes. These include, data produced using subjective judgments, leading to omission; systemic errors in information production that leads to lost data; lack of sufficient computing resources limits access; fatigue with the instrument; interruptions while taking the survey; and items are missing by design (David 2015:06; Strong, Lee & Wang 1997:41; Horton & Kleinman 2007: 79). The focus group discussions analysis concurs with some of the common

causes of incompleteness of the ANC registers mentioned above as some of the participants mentioned that completing the register is time consuming and highlighted that some of the data elements are out dated such and the 32 weeks HIV retesting. Annual revision of the register, reduction in size and training were some of the recommendations to improve recording in the ANC register.

4.5   CONCLUSION

Focus group discussion analysis was about finding views and opinions on the completion of ANC register as well as corroborate the quantitative findings. The quantitative data analysis on the completion has indicated that missing values or gaps appear in the completion of the ANC register and qualitative findings provided reasons for the poor completion of the register as well as recommended improvements to improve the use of the register. Chapter five focuses
 on the conclusion and recommendations of the study.

CHAPTER 5

SUMMARY, CONCLUSIONS, LIMITATIONS AND RECOMENDATIONS

5.1   INTRODUCTION

Chapter 5 presents the summary, conclusion, limitations and recommendations based on the objectives of the investigation and study findings. The completion of variables (data elements) in the ANC register was described and further explored through mixed methods research approach consisting of two phases-quantitative and qualitative. In first phase, quantitative data were collected and analysed, thereafter qualitative data were collected in the second phase. This was undertaken in order to explain quantitative findings as well as acquire a holistic understanding of completion and the use of the ANC register as a data collection tool.

5.2   METHODOLOGY

The purpose of this study was to describe and explore completion of the ANC register by midwives. In addition, the study objectives were to:

- Determine variables (data elements) that are not completed/completed in the ANC register.
- Evaluate completeness of the ANC registers by midwives.
- Explore the midwives' perceptions on completing the ANC registers and use of the register as a data collection tool.
- Propose recommendations to National Department of Health regarding the use of the ANC register.

The study was conducted in Tshwane Metsweding health district. The unit of study was the ANC register implemented in PHC facilities. In addition, focus groups discussions were held with key informants which were midwives who have used or are using the ANC registers in the same district working in PHC facilities. Focus group discussions were held to obtain their views on factors that contributed to completing the register and their perception regarding completing the register.

A mixed methods approach was employed. An observation checklist with rating scales was utilised to collect quantitative data from seven ANC registers with 155 entries in the register assessed for completion. Descriptive statistics in the form of tables and percentages were used to present quantitative data. Following quantitative data collection and analysis, qualitative data was collected. Qualitative data were categorised into themes for analysis purposes. Both quantitative and qualitative analysis were merged in the discussion section.

5.3 SUMMARY BASED ON THE STUDY OBJECTIVES

This section presents the summary of the study in relation to the four study objectives spelt out in Chapter 1.

5.3.1 Objective 1: To determine variables that are completed or not completed in the ANC register

To determine variables that are not completed or completed in the ANC register data analysis focused on the description of entries that were completed, partially completed and not completed. The study found that the variables ID number and name and surname which are part of the demographic variables were adequately completed with completion percentage of more than 95% for both variables. Besides the ID number and name and surname some of the entries of the variable were partially completed with less than 90% of the variables fully completed. Variables associated with the obstetric history also had a very low percentage of variables that were not completed peaking at 1.9%. However, in this group of variables, most of them were partially completed peaking at 69.5% and fully completed peaking at 65.2%. This is because for most of the variable the midwives are not yet required to page back the register to find the patient entry yet.

The entries for screening tests start to highlight the challenges of completion of the variable as this is where a number of entries for the group of variables are not completed however, the percentage of variable that were not completed were still low. The picture starts worsen as we assessed entries for PMTCT variables, with more entries not completed. Midwives highlighted challenges in getting the results back from the labs as well as controversies around cervical cancer screening in pregnant women. This indicates

that completion of the register for screening tests, HIV/PMTCT variables and follow up partially complete.

The picture drastically changes when the variables associated with follow up visits were analysed. In this group most of the variables are not completed with the percentage of not completed variables peaking at 85%, partially completed variable peaking at 78% and fully completed variables peaking at 14.8%. Hahn et al (2013:07) concurs, the author indicates that completion of less than 60% are deemed inadequate. Furthermore, the study found that variables that are completed during follow up visit had higher are not completed than other groups of variables.

The findings of the study indicate that the overall completion of the register is low with very few entities fully completed. The demographic data, screening tests and PMTCT were partially completed and follow up care variable not completed.

5.3.2   Objective 2: To evaluate completeness of the ANC registers by midwives

With regards to evaluating the completeness of the register, quantitative data pointed out that the register is not adequately completed. However, variables completed during the first visit are fully completed or partially complete than follow up visit variables which have high number (percentage) of not being completed. Additionally, participants admitted to not completing some of the variables such as 32 weeks HIV retesting because they do not go back to find the initial patient entry. Rhode et al ([s.a.]:203) concurs with this and warns that in busy facilities, health workers do not take time to find the patient's entry, rather a new entry is created, defeating the objective of the register. The same author points out that if a patient receives service elsewhere, the register becomes incomplete. However, new duplicate entries in the register were not found as Rhode and colleagues point out. However, midwives not taking time to find the initial patient entry and leaving some of the variable in the register such as the follow up variable not completed aligns with literature and in this study it resulted in a number of variables that are not completed. However, many positive aspects of the register were mentioned.

Participants mentioned that they register easy to complete. However, judging from some of the reactions they seem to be frustrated by the workload as well as the effort it takes to complete the register. However, some of the participants highlighted that if health care

workers know and understand why they have to complete the register then it makes completion bearable. This might point at change management and positive reinforcement of some of the tools that are newly introduced. Pattinson (2007:66) warns that to maintain protocols and implementation of guidelines the quality of work by health care workers must be frequently checked. Patient records are sometimes reviewed to assess implementation of guidelines and well as assess the quality of care. The researcher evaluation of completeness of the register is that the ANC register is not complete but however a good tool. Thus, completion can be strengthened with adequate mentoring and management support.

5.3.3 Objective 3: To explore the midwives' perceptions on recording and usefulness of the ANC register as a data collection tool

Information gathered from the focus group discussions indicates that the participants are pleased with the ANC register as they mentioned that it is a comprehensive tool especially as it includes PMTCT elements and it guides them with regards to on-going interventions or care that has to be provided to pregnant women. Furthermore, they said that it assists them in collecting the information needed for routine reporting and reported that it is a good data collection tool. However, midwives complained about the register and mentioned that the register is monotonous and that the information completed in the ANC is duplicated in other records such as the maternity case record. In addition, participants mentioned that the completion of the register is tedious and time consuming. They indicated that during busy days they defer completion of the register to times when the clinic is less busy, or use other health care workers such as enrolled nurses or data capturers to complete the register. All these factors affected the completion of the register.

Participants admitted to not completing some of the variables such as 32 weeks HIV retesting because they do not go back to find the initial patient entry. As highlighted earlier, participant's not taking time to find the initial patient entry aligns with literature and in this study it resulted in high number of variables that were earthier partially completed or not completed.

With regard to what participants would like to change about the ANC register, most of them indicated that they would not change anything, however the size of the register

needs to be reconsidered. They indicated that it would assist to complete the register better if they get additional staff such as data clerks to complete the register.

5.4   CONCLUSIONS

The overall completion of the register is very low. Furthermore, the study found those variables that are completed during the first visit are more likely to be completed than those that are recorded during subsequent visits. It was further found that the size of the register, duplication of records, the need to page back to register to find the initial patient entry impacts on completion of the register. The study findings concur with Cheemvakaseemsook et al (2006:367) on the facts that descriptive style tools such as the ANC register, are inappropriate for the workload or responsibilities of clinical nurses leading to inadequate recording resulting in overall poor completion of the ANC register. De Marinis, Piredda, Pascarella, Vincenzi, Spiga, Tartaglini, Alvaro and Matarese (2010:12), Taylor (2003:754) and Horwood et al (2010:996) further warned that a number of inhibitors such as lack of knowledge, lack of time and lack of motivation to write were described as some of the challenges affecting good record-keeping therefore affected completion of the ANC register.

The general agreement from all midwives that the ANC register is a good data collection tool however, this is contrary to what literature indicates regarding longitudinal registers, as Rohde et al ([s.a.]:202) highlights that continuity of care registers are not useful for counting services provided at month end (usually used with a tally sheet for this reason). Whilst midwives say that the register is a good data collection tool, quantitative data indicate that completion of the variables is very low. This means that the data that are reported are not accurate as most of the variables are not fully completed. Prideax (2011:1450) and Horwood et al (2010:995) indicate that while nurses acknowledged the necessity of record-keeping, few feel that it is a useful practice. This is in line with information gathered from the focus group discussions as all the midwives who participated in the study deemed the ANC register as a necessary data collection tool. However, quantitative data points to poor completion of the register. This might lead to the conclusion that the ANC register is not a good data collection tool as the information reported is not accurate.

Participants agreed that the ANC register is a comprehensive tool and guides them to provide the care the pregnant women require. They also indicate that it can be used to update the patient held card if it is lost. Rhode et al ([s.a.]:203) concurs and points out that information completed in continuity care registers such as the ANC register can assist with updating the patient card of lost. Forbes (2012:03) in their best practice guidance on information and record-keeping indicate that one of the practices for good record-keeping is to keep a duplicate record. Since not all health facilities keep patient duplicate files in the facilities, the ANC register could serve as a duplicate record for the pregnant women. Though the information is duplicated in other records it is important that the ANC register should contain similar information to serve as a duplicate record.

Therefore, the ANC register is still a useful tool. However, factors that impede completion such as the size, time to complete it takes should be addressed. Below are recommendations to the national department on how to strengthen completion of the register.

5.5   RECOMENDATIONS

The following are recommendations to the National Department of Health as the custodian of patients' records and as the department that developed the register.

5.5.1 Recommendations for clinical practice

The study found that one of the factors that affects completion of the register is the physical size of the registers, as well as the requirement to page back the register during subsequent visits. Therefore, it is recommended that the national department health should revise the register to decrease its size and or implement an electronic register which will assist in reducing paper tools. However, the capacity of health care workers and human resource for inputs in the electronic system should be considered.

Moreover, participants complained of duplication and monotonous nature of completion of the register and other ANC tools. It is proposed that the register includes less descriptive data where possible and more simple methods such as ticks or crosses be used to complete information in order to make it easier for midwives to complete the ANC register with ease and avoid monotony

Literature points out that shortage of staff continues to impact negatively on good record-keeping practices and the quality of care. The study found that participants sometimes rely on other health care workers or data capturers to assist with completion of the register. Furthermore, participants indicated that the register takes time to complete. This indicates that they do not have adequate time due to high patient load. Therefore, it is recommended that DOH looks into addressing staff shortages and/or providing data capturers which could be trained to assist nurses to complete the necessary records.

5.5.2 Recommendation for policy

Various studies indicate that ongoing supportive supervision contribute to good recording practices, therefore District Managers, PHC supervisor and M&E officer must work together to establish a system of supportive supervision as well as a system for data quality assurance to improve recording practices. Furthermore, studies indicate that data is only useful if it is used. Therefore, managers should establish a quality improvement model that is data driven. This is in line with the WHO health system strengthening framework.

5.5.3 Recommendation for nursing education

Training was identifies as one of the factors that could improve the use of the register. Therefore training on indicators and data collection on should be considered for nurses who are still in higher institutions of learning and in-service training for those that are already providing services. Mlambo et al (2007) in their study on PMTCT data completeness and accuracy assessment recommended ongoing training on data recording procedures at all levels of health care to improve recording practices.

5.5.4 Recommendation for further research

The study was undertaken in Tshwane Metsweding health district primary health facilities which limits the generalisation of the study. It is therefore recommended that a national wide study be undertaken to get a more national representation on completion of the ANC register.

This study will be made available on the UNISA repository and will therefore be accessible to individuals interested in the completion or recording using longitudinal data collection tools and those who intend to research the topic further.

Future studies could also include recording in other longitudinal data collection tool such as the HIV ART register and the electronic HIV register.

5.6   CONTRIBUTIONS OF THE STUDY

The data collected provides a holistic understanding of record-keeping and completion of the ANC registers including factors that promote recording and those that impedes good record-keeping.

This study contributes to the body of knowledge on completion of and keeping records in the longitudinal ANC register or longitudinal data collection tools- including what promotes good recording and what impacts on record-keeping as well as identified what could be implemented to improve record-keeping in the ANC longitudinal register. As indicated in the literature review, there was general lack of studies on longitudinal data collection tools.

5.7   LIMITATIONS OF THE STUDY

Data collection, especially qualitative data collection took longer than anticipated. This was due to lack of clarity on additional permission to conduct the study in health facilities. Only two focus group discussions were conducted due to delays in getting permission to continue with focus groups.

The study was undertaken in Tshwane Metsweding districts primary health facilities, which limits the generalisation of the study. It is therefore recommended that a nationwide study be undertaken to get a more national representation on recording in the ANC register.

Only 5 entries in one of the registers were assessed due to poor up keeping of the register. Most of the pages of the register were torn hence the researcher could only assess limited entries in the register. The researcher assessed the 5 entries only. This had implications on the number of entries that can be assessed for the study. Resulting to less entries and therefore decreased the number of variables that were assessed.

5.8   CONCLUSION

The study highlighted some of the positive aspects and challenges that are associated with completion of longitudinal ANC register. The study also provided information that could be taken into account when looking at some of the longitudinal tools for example the HIV care register which is structured in a similar manner as the ANC register. Positive aspects such as comprehensiveness of the register, ease of use and the ability to understand what they are recording motivates midwives to complete the register. The study contributed to the body of knowledge on recording and completion of longitudinal registers of which literature remains very thin regarding longitudinal registers. However, it should be noted that completion of the ANC register is poor with most of the variables partially completed. Moreover, it is more difficult to complete the register over time as the study found that variables are not completed during follow up visits. Time, duplication of information, having to page back the register among others impacts on completion. Recommendation on how to improve completion of the ANC register were made.

LIST OF REFERENCES

Adams, A.A. & Callahan, T. 2014. *Research ethics.* University of Washington School of medicine. From: https://depts.washington.edu/bioethx/topics/resrch.html (accessed on 25 October 2016).

Babbie, E. 2010. *Practice of social research*. 12th edition. London: Belmonca.

Beauchamp, T. 2013. *The principle of beneficence applies in ethics.* Stanford University. From: https://plato.stanford.edu/entries/principle-beneficence/ (accessed on 13 May 2016).

Bhana, V.L. 2010. A review of health care indicators in the South Africa district health information system used for planning, monitoring and evaluation. University of Natal. South Africa.

Braun, V. & Clarke, V. 2014. What can thematic analysis offer health and wellbeing researchers? International *Journal of Qualitative Studies on Health and Well-being.* 9: 26152. From https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4201665/pdf/QHW-9-26152.pdf (accessed on 27 December 2016)

Braun, V. & Clarke, V. 2014. What can thematic analysis offer health and wellbeing researchers? *International Journal of Qualitative Studies on Health and Well-being* 9:1748-2623.

Bothma, Y., Wright, S.C.D., Mulaudzi, F.M. & Greeff, M. 2009. *Research in health sciences.* Cape Town: Pearson Education.

Burns, N. & Grove, S.K. 2009. *The practice of nursing research: Appraisal, synthesis and generation of evidence.* 6th edition. St Louis: Saunders Elsevier.

Cameron, R. 2009. A sequential mixed model design: design, analytical and display issues. *International Journal of Multiple Research Approaches* 3(2):140-152.

Cameron, R. 2011. Mixed methods research: The five PS frameworks. *Electronic Journal of Business Research Methods* 9(2):96-108.

CDC see Centre for Disease Control and Prevention.

Centre for Disease Control and Prevention. 2015. *Workplace health promotion*. Atlanta, USA: CDC.

Cheemvakaseemsook, A., Chapman, Y., Francis, K. & Davies, C. 2006. The study of nursing documentation complexities. *International Journal of Nursing Practice* 12(6):366-374.

Chen, S.Y., Yen, W.J., Lin, Y.J., Lee, C.H. & Lu, Y.C. 2012. Reliability and validity assessment. *International Journal of Nursing Practice* 1296:319-325.

Chen, S., Yen, W., Lin, Y., Lee, C., & Lu, Y. 2012. A Chinese version of the Caring Assessment Report Evaluation Q-sort scale for measuring patients' perception on nurses' caring behaviours: Reliability and validity assessment. International Journal of Nursing Practice 18(4):388-395.

Choudhry, M.T.M. 2005*. Maternal mortality and quality if maternity care implications for Pakistan.* Karolinka Institute. Department of Health Science.

Creswell, J.W. 2003. *Research design: Qualitative, quantitative and mixed method approaches.* 2nd edition. Thousand Oaks, CA: Sage.

Creswell, J.W. 2005. *Planning, conducting and evaluating quantitative and qualitative research.* New Jersey: Pearson Education.

Creswell, J.W. 2008. *Planning, conducting and evaluating quantitative and qualitative research.* 3rd edition. Boston: Pearson Education.

Creswell, J.W. 2009. *Research design: Qualitative, quantitative and mixed method approaches.* 3rd edition. Thousand oaks, CA: Sage.

Creswell, J.W. & Plano-Clark, V. 2007. *Designing and conducting mixed method research.* Thousand oaks, CA: Sage

Creswell, J.W. & Plano-Clark V.L. 2011. *Designing and conducting mixed methods research.* 2nd edition. Los Angeles: Sage.

Dang, V.M. & Sellier, E. 2014. Medical record-keeping and patient perception of hospital care quality. *International Journal of Quality Assurance* 27(6):531-354.

David, G. 2015. *Missing values analysis and data imputation.* Statistical Associates publishing. From: www.statisticalassociates.com (accessed on 12 February 2016).

De Marinis, M.G., Piredda, M., Pascarella, M.C., Vincenzi, B., Spiga, F., Tartaglini, D., Alvaro, R. & Matarese, M. 2010. If it is not recorded, it has not been done!'? Consistency between nursing records and observed nursing care in an Italian hospital. *Journal of Clinical Nursing* 19:11-12.

Dernberger, B. 2014. A fluid two-way street: South Africa HIV/AIDS NGOS and their environment. *SPNHA* 10(3):01-12.

Dures, E., Rumsey, N., Morris, M. & Gleeson, K. 2010. Mixed methods in psychology: Theoretical and practical considerations of the third paradigm. *Journal of Health Psychology* (16):332-341.

Fawcett, J. & Garity, J. 2009. *Evaluating research for evidence based nursing practice.* Philadelphia: FA Davids.

Forbes, E. 2012. Best Practice Guidance on Information and Records Management. University of Strathclyde Glasgow.
From
https://www.strath.ac.uk/media/ps/cs/foi/recordsmanagement/Managing_Information_and_Records_-_Guidance_for_Staff_v1.0.pdf (accessed on 03 January 2017).

Garrib, A., Stoops, N., McKenzie, A., Dlamini, L., Govender, T., Rohde, J. & Herbst, K. 2008. An evaluation of the District Health Information System in rural South Africa. *South Africa Medical Journal* 98(7):549-552.

Guba, E. & Lincoln, Y. 2004. Competing paradigms in qualitative research: Theories and issues, in: *Approaches to qualitative research: a reader on theory and practice*, edited by S. Nagy Hesse-Biber and P. Leavy: Oxford University Press:17-38.

Hahn, D., Wanjala, P. & Marx, M. 2013. Where is information quality lost at clinical level? A mixed-method study on information systems and data quality in three urban Kenyan ANC clinics. *Glob Health Action* 6:214-24.
From: http://dx.doi.org/10.3402/gha.v6i0.21424 (accessed on 28 December 2016)

Henning, E., Van Rensburg, W. & Smit, B. 2004. *Finding your way in qualitative research*. 1st edition. South Africa: Van Schaik.

Horton, N. & Kleinman, K. 2007. Much ado about nothing: A comparison of missing data methods and software to fit incomplete data regression models. *The American Statistician* 61(1):79-90

Horwood, C., Haskins, L., Vermaak, K., Phakathi, S., Subbaye, R. & Doherty, T. 2010. Prevention of mother to child transmission of HIV (PMTCT) programme in KwaZulu-Natal, South Africa: An evaluation of PMTCT implementation and integration into routine maternal, child and women's health services. *Tropical Med International Health* 15(9):992-999.

Ivankova, N.V., Creswell, J.W. & Sheldon, S.C. 2006. Using mixed research methods sequential explanatory design. *Journal of Field Methods* 18(1):03-20.

Jackson, S.L. 2008. *Research methods: A modular approach*. Belmont, USA: Thompson Wadsworth.

Kelly, K. 2010. *Sample size planning. Encyclopaedia of research design*. Thousand Oaks: Sage.

KwaZulu-Natal Department of Health. 2001. *Definitions of health facilities.* From: http://www.kznhealth.gov.za/definitions.htm (accessed on 03 December 2016).

Liamputton, P. 2011. *Quantitative research methods.* 3rd edition. Melbourne: Oxford University Press.

Mathibe-Neke, J.M, Lebeko, F.L. & Motupa, B. 2013. The partograph: A labour management tool or a midwifery record? *International Journal of Nursing and Midwifery* 5(8):145-153.

McGeehan, R. 2007. Best practice in record-keeping. *Nursing Standard* 21(17):51-55.

Michel, C.M. 2008. *Implementing a forensic educational package for registered nurses in two emergency departments in Western Australia.* University of Notre Dame Australia. From: http://researchonline.nd.edu.au/theses/28 (accessed on 04 July 2016).

Miller, C.D. & Salkind, J.N. 2002. *Handbook of research design and social measurement.* 6th edition. Thousand Oaks: Sage.

Mlambo, M. G., Pletzer, K. & Koivu, A. 2013. Prevetion of mother to child transmission of HIV data completemness and accuracy assessment in health facilities of Nkangala district. Health SA Gesonheid 19(1) number 774

Mouton, J. & Marais, H.C. 1996. *Basic concepts in the methodology of the social sciences.* 5th edition. Pretoria: Van Schaik.

Mphatswe, W., Mate, K.S., Bennett, B., Ngidi, H., Reddy, J., Barker, P.M. & Rollins, N. 2012. Improving public health information: a data quality intervention in KwaZulu-Natal, South Africa. *World Health Organization Bulletin* 90(3):176-182.

National Department of Health. 2008. *PMTCT guidelines.* Pretoria: Government Printers

National Department of Health. 2015. *Guidelines for maternity care in South Africa.* Pretoria: Government Printers.

NDOH see National Department of Health.

Ngxongo, T.S.P. & Sibiya, M.N. 2013. Factors influencing successful implementation of the basic antenatal care approach in primary health care facilities in eThekwini district, KwaZulu-Natal. *Curationis* 36(1):92-97.

Oxford Dictionary. 2016. Sv "longitudinal", sv "completion", sv "implement", sv "incomplete", sv "partially complete".
From: http://www.oxfordlearnersdictionaries.com/ (accessed on 03 February 2016).

Parahook, K. 2006. *Nursing research: principles, process and issues*. 2nd edition. New York: Palgrave Macmillan.

Pattinson, R.C. 2007. *Maternal and infant health care strategies research unit and obstetric department*. Pretoria: University of Pretoria.

Polit, D.F. & Beck, CT. 2008. Nursing research: generating and assessing evidence for nursing practice. 8th edition. China: Lippincott, Williams & Wilkins

Polit, D.F. & Beck, CT. 2012. *Nursing research: generating and assessing evidence for nursing practice*. 9th edition. Philadelphia: Lippincott, Williams & Wilkins.

Polit, D. & Hungler, B. 2004. *Nursing research, principles and methods*. Philadephia: Lippincott.

Prideaux, A. 2011. Issues in nursing documentation and record. *British Journal of Nursing* 20(22):1450-1454.

Rohde, J.E., Shaw, V., Hedberg, C., Stoops, N., Venter, K. & Matshisi, L. [s.a.]. *Information for primary healthcare*. Health Information Systems Programme:195-210.

Rubin, A. & Babie, E.R. 2012. *Research methods for social work*. 6th edition. Brooks: Core.

Sapsford, R & Jupp, V. 2006. *Data collection and analysis*. 2nd edition. London: Sage

Sellers, M.P. 2004. *Midwifery. A textbook and reference book for midwives in Southern Africa. Volume I. Normal birth.* Pretoria: Juta.

Shenton, A.K. 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Journal of Education for Information* 22:63-75.

Sibiya, N.M., Cele, R.J. & Ngxongo, T.S.P. 2014. Assessment of the use of the new maternity case record in improving the quality of antenatal care in eThekwini District, Kwa-Zulu Natal. *International Journal of Africa Nursing Sciences* 2:53-58.

Snyman, J.S. 2007. *Effectiveness of the basic antenatal care package in primary health care clinic.* Nelson Mandela Metropolitan University.

South Africa. 2005. *Nursing Act (Act no 50 of 1978).* Pretoria: Government Printer.

South Africa. 2000. *Promotion of Access to Information Act (Act no 2 of 2000).* Pretoria: Government Printer.

South Africa. 1996. *National Archives Act (Act no 43 of 1996).* Pretoria. Government Printer.

Stevens, S. & Pickering, D. 2010. Keeping good records: A guide. *Community Eye Journal* 23(74):44-45.

Strong, D., Lee, Y. W. & Wang, R. Y. 1997. 10 Potholes in the road to information quality. *IEEE Computer* 30(8):38-46.

Tashakorri, A. & Teddlie, C (eds). 2003. *Handbook of mixed method in social and behavioural research.* Thousand oaks, CA: Sage.

Taylor, H. 2003. An exploration if the factors that affect nurses record-keeping. *British Journal of Nursing* 12(12):751-758.

Taylor, B., Kermode, S. & Roberts, K. 2007. *Research in nursing and health care: evidence for practice.* 3rd edition. Sydney: Thompson.

Teddlie, C. & Tashakorri, A. 2009. *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioural sciences.* London: Sage.

Tidy, C. 2014. *Gravidity and parity definitions (and their implications in risk assessment).* From http://patient.info/doctor/gravidity-and-parity-definitions-and-their-implications-in-risk-assessment (accessed on 29 December 2016).

Uche-Obas, M. 2012. *Standardization of antenatal care: Providing a standard setting for safe delivery.* Houston: Strategic Book Publishing and Right.

UNHCR see United Nations High Commissioner of Refugees.

United Nations High Commissioner of Refugees (UNHCR).Health information system. From: http://www.unhcr.org/461e537b2.pdf (accessed on 21 March 2016).

UNICEF see United Nations Children's Fund.

United Nations Children's Fund. 2010. *Tool-kit on diversion and alternatives to detention.* From: https://www.unicef.org/tdad/index_55653.html (accessed on 2 March 2016).

US DHHS see US Department of Health and Human Sciences.

US Department of Health and Human Sciences. 2011. *Health resources and services administration. Quality improvement.*
From: http://www.hrsa.gov/quality/toolbox/508pdfs/qualityimprovement.pdf (accessed on 3 January 2016).

Van der Merwe, K., Chersich, M.F., Umurungi, Y., Conradie, F. & Coovadia, A. 2006. Integration of antire-troviral treatment within antenatal care in Gauteng province, South Africa. *Journal of Acquired Immune Syndrome* 43(5):577-581.

Vlok, E.M. 1996. *Manual of community nursing and communicable diseases.* 5th edition. Pretoria: Juta. US Department of Health and Human Sciences.

Waltz, C.F., Strickland, O.L. & Lenz, E, R. 2010. *Nursing and health research.* 4th edition. New York: Springer

WHO see World Health Organization.

World Health Organization. 2008. *Operations manual for delivery of HIV prevention, care and treatment at primary health centres in high prevalence, resource constrained settings.* Geneva: WHO.

World Health Organization. 2012. *A short guide on methods: measuring the impact of national PMTCT programmes: Towards the elimination of new HIV infections among children by 2015 and keeping their mothers alive.* Geneva: WHO.

ANNEXURES

ANNEXURE A

Ethical Clearance Certificate

UNISA | university of south africa

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

REC-012714-039

HSHDC/364/2014

Date:	10 December 2014	Student No:	3127-877-9

Project Title: Recordkeeping in the antenatal care register in Tshwane District, Gauteng Province : an explorative and descriptive study.

Researcher: Sharon Lebogang Schultz

Degree: MA in Nursing Science   Code: MPCHS94

Supervisor: Dr JM Mathibe-Neke
Qualification: PhD
Joint Supervisor: -

DECISION OF COMMITTEE

Approved   √   Conditionally Approved

Prof L Roets
for CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

L R .... (Prof)

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

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

ANNEXURE B

Letter requesting permission to conduct the study

<div align="right">

S. L. Schultz

Program Specialist : SRHR

95 Dobolwane Street

Moretele view

Mamelodi

Pretoria

0001

November 2014

</div>

The District Manager: Health

Tshwane District

Private Bag

Pretoria

Republic of South Africa

Dear Sir/Madam

<div align="center">

APPLICATION FOR THE PERMISSION TO CONDUCT A STUDY

</div>

I am currently studying towards a Master Degree in Nursing at the University of South Africa. In order to meet the requirements of this qualification, I am undertaking a research paper with the title: "Recording in the 2010 implemented ANC register- descriptive and exploratory study in Tshwane district, Gauteng Province". I would like to get your approval to conduct such a research at selected health facilities rendering ante natal care services. Data collection entails the review of the Antenatal Care Register and focus group discussions with midwives. Participation is voluntary. Ethical clearance has also been obtained from the Higher Degree Ethics Committee, University of South Africa. Anonymity and confidentiality will be maintained throughout.

Attached please find my Research Proposal for your perusal.

Yours Sincerely

S.L. Schultz

Researcher

ANNEXURE C

Tshwane Research Committee Clearance

Kuyasheshwa! Gauteng Working Better

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

243 Pretorius Street, Cnr. Thabo Sehume & Pretorius Street, Manaka Building, Pretoria 0001 South Africa.
Tel: +27 12 406 0237
Enquiries: Mr. Peter Silwimba.
e-mail: peter.silwimba@gauteng.gov.za

TSHWANE RESEARCH COMMITTEE

CLEARANCE CERTIFICATE

Meeting: N/A

PROJECT NUMBER: 04/201

Title: Record keeping in the ante natal care register in Tshwane District, Gauteng province: An explorative and descriptive study
Researcher: Lebogang Sharon Sshultz
Co-Researcher:
Supervisor: DR J Mathibe-Neke
Department: Nursing Science

DECISION OF THE COMMITTEE

Approved

NB: THIS OFFICE REQUESTED A FULL REPORT ON THE OUTCOME OF THE RESEARCH DONE

Date: 25/03/15

....
Mr. Peter Silwimba
Chairperson Tshwane Research Committee
Tshwane District

....
Mr. Pitsi Mothomone
Chief Director: Tshwane District Health
Tshwane District
2015-03.27

NOTE: Resubmission of the protocol by researcher(s) is required if there is departure from the protocol procedures as approved by the committee.

ANNEXURE D

Focus group discussion guide

Welcome and introduction

Welcome everyone to this focus group discussion. My name is Lebogang Schultz. I am a UNISA Masters degree student.

The aim of this focus group discussion is to understand your perceptions regarding recording in the ANC register introduced by the Department of Health in 2010. You were invited because you are the relevant people who can provide information on recording in the ANC register.

Feel free to share your experience, the discussion in this group will be confidential and only used for research purposes. The information will be used only for research purpose and no one will be identified by name. Label Participants as 1,2,3 …etc

Start by setting ground rules before starting with the discussion

Ground rules
- One person must talk at a time
- You are allowed to talk to each other
- We are allowed to share different viewpoints, no right or wrong answers
- Cell phones off

Opening and introductory question
1. I assume that you are using or have used the ANC register introduced in 2010. Can you kindly share your experience of using the register?

A transition question
2. How do you find the use of the register as a data collection tool?

Key questions
3. What motivated you to complete the ANC register and which variables are difficult to complete?

4. Did you at some point find yourself being able or not being able to record some of the data elements? What factors could have led to completing or not completing the register?

Ending question

5. Is there anything that you would like to improve about the register?

Thank you for your contribution!

ANNEXURE E

Quantitative data collection tool

| | REGISTER CODE: | | | | | | RATINGS: | | COMPLETE: | 0 | | PARTIALLY COMPLETE:0.5 | | NOT COMPLETE: 0 | | | | | | | | | | | | | | | | | | | |

	Gestational age at booking	Name and Surname	ID number	Address and contact details	Age at booking <18 years > 18 years	LNMP	EDD	RPR testing	Titre	Treatment	Grav	Para	RH	HB	Cervical cancer screening	ATT	Date counselled and tested	HIV test results	WHO staging for HIV infected women	CXT initiated	CD4 count result	Date CD4 result given to patient	Life- long ART	TB screening and treatment	Izonazid prophylaxis (IPT/INH/TB prophylaxis)	12 weeks ANC visit-AZT and HB	14 weeks ANC visit-AZT and HB	Subsequent ANC visits	Repeat HIV test	Infant feeding counseling X4	Multivitamin supplementation