

**RISK FACTORS ASSOCIATED WITH TERMINATION OF PREGNANCY AT
DISTRICT HOSPITAL, LIMPOPO PROVINCE, SOUTH AFRICA.**

by

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MINI - DISSERTATION

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DEDICATION

In loving memory of my late father Sevha Jackson Ngoveni and my mother Mphephu Joyce Ngoveni.

DECLARATION

I declare that RISK FACTORS ASSOCIATED WITH TERMINATION OF PREGNANCY AT NKHENSANI HOSPITAL, LIMPOPO PROVINCE, SOUTH AFRICA is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

NGOVENI XITSEMBISO AGREY

Date: 26 June 2021

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- The Limpopo Province: Department of Health, for granting me the permission to conduct the study.

ABSTRACT

Background:

Termination of pregnancy among young women is a public health issue, particularly in South Africa where high prevalence of pregnancy terminations has lately been reported. It is estimated that 260000 terminations of pregnancy take place in South Africa every year. Studies in South Africa have reported that risk factors associated with termination of pregnancy such as financial problems, being poorly educated, being young, unemployed, dependent on parents, widowed or single and other relationship problems were most common. Approximately 1200 pregnancies were terminated in the District Hospital of Limpopo Province between 2017 and 2018. There is also an increased rate of unintended pregnancy among HIV positive women which suggest that women with HIV may be more likely to terminate pregnancy but chooses not to terminate due to fear of being judged. Therefore, the primary objective of this study was to investigate the risk factors associated with termination of pregnancy at a District Hospital in Limpopo Province.

Methodology:

A cross-sectional descriptive retrospective review study in which convenience sampling of the records of women who terminated pregnancies was used in this study. A self-constructed data extraction tool was used to extract the data from patients records. The tool covered variables such as the age of the women, educational status, marital status, year and month of termination of pregnancy, gestational age, parity, and gravidity, HIV status and circumstances leading to termination of pregnancy. Data analysis was done using the STATA statistical software version 12 for Windows (STATA Corporation, College Station, Texas). The independent t-test was used for variables having two categories as it assesses whether the difference between means of two groups are statistically significant. This test was performed at the 95% confidence level. The p-value of less than 0.05 in the study results was used for statistical significant difference in means between the categories which were investigated.

Results:

The mean age was 27.9 years (standard error [Std. Err.] =0.37) and majority of women who terminated pregnancies were in the age group 20 – 24 years, single and had a secondary educational level. There was a statistical significance difference between age groups and the gestational age, parity and gravidity at $p=0.004$ and $p<0.001$ respectively. The proportion of women who were at gestational age of 1 to 8 weeks decreased with increasing maternal age from 22.4% in age ≤ 20 years to 13% in age group 30 – 34 years. There was again a statistical significance difference ($p<0.001$) in relation to number of pregnancies that have each resulted in the birth of an infant capable of survival (parity) and similarly to gravidity.

The prevalence of HIV amongst women who terminated pregnancy in the current study was found to be 21.3% and the risk of women who terminated pregnancies being HIV positive increased significantly with age as older women (age 20 years and above) were 6.5 times more likely to be HIV positive as compared to younger ones ($p<0.001$). Low educational level, gestational age of more than 13 weeks and parity of 1 – 2 were significantly associated with termination of pregnancy. The association of gravidity of women who terminated pregnancies and HIV revealed that women who were in their second or third pregnancies (gravidity) while HIV positive were 3.9 times more likely to terminate pregnancies as compared to those who were first pregnancy ($p<0.001$). Marital status was not significantly associated with termination of pregnancy.

Conclusion:

Termination of pregnancies among adolescents and youth is a major public health issue and the findings of this study highlight the need to address the structural socio-economic drivers of family planning which results in high number of termination of pregnancy amongst the youth. Structural interventions, such as increasing contraceptive use which may be useful for reducing the burden of unplanned pregnancies. These findings suggest the need for targeted interventions for women of child-bearing age to access reproductive health interventions to prevent unintended pregnancies and the associated risk of termination.

Key concepts

Choice on Termination of Pregnancy Act, Human immunodeficiency virus, Risk factors, Termination of pregnancy.

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DEFINITION OF TERMS

Termination of pregnancy

Termination of pregnancy means removal or expulsion of the developing foetus from the mother's womb before the foetus reaches the age of viability (World Health Organization, 2014). In the context of this study termination of pregnancy refers to removal of embryo or foetus from the mother's womb to end pregnancy.

Unsafe termination of pregnancy:

This is defined as a procedure for terminating an unwanted pregnancy either by persons lacking the necessary skills or in an environment lacking minimal medical standards or both (WHO, 2014). In the context of this study unsafe abortion refers to termination of pregnancy by unskilled persons or/and outside legal health institutions (Hospital, Clinics and legalized private institutions).

Unwanted Pregnancy:

A pregnancy that is mistimed, unplanned, or unwanted at the time of conception (Yazdkhasti, Pourreza, Pirak & Abdi, 2015). In the context of this study unwanted pregnancy refers to any pregnancy that came unplanned.

Risk factor

A risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury (Vina & Kwoh, 2018). In the context of this study, risk factor refers to any characteristic or factor that increases the likelihood of women seeking termination of pregnancy.

ABBREVIATIONS

HIV - Human immunodeficiency virus

SADC – South African Development Community

STI – Sexual Transmitted Infections

TOP – Termination of Pregnancy

WHO – World Health Organization

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1. INTRODUCTION

This chapter will present an overview of the study, it included background information of the topic, Research problem, an overview of the literature review, purpose of the study and the research question.

1.2. BACKGROUND OF THE TOPIC

Termination of Pregnancy (TOP) means removal or expulsion of the developing foetus from the mother's womb before the foetus reaches the age of viability (WHO, 2014; Mesiano, 2019). It is reported that 29% of pregnancies were terminated during the period 2015 – 2019 globally. This has brought the total number 73,3 million terminations of pregnancy annually during the same period (WHO, 2020). The rate of TOP during this period of 2015 – 2019 was 39 women in every 1000 women aged 15-45 years annually which is an increase from 35 women in every 1000 women of the same age group in the period 2010 - 2014 (WHO, 2020; Ganatra, Catlin, Clementine, Brooke & Ozge, 2017). Age group of 20-24 years had the highest abortion rate globally (Chae, Desai, Crowell, Sedgh, 2017). Postponement or spacing of childbearing and socioeconomic concerns are reported to be main reasons for termination of pregnancy amongst women globally (Chae et al., 2017).

An estimated proportion of 15% of total pregnancies annually in Africa were terminated during the period 2010-2014 (Agan, Monjok, Akpan, Omoronyia & Ekabua, 2018). The Southern African Development Community (SADC) had the highest proportion (24%) of terminated pregnancies in 2010-2014. TOP related deaths contribute 9% of the total maternal deaths in Africa due to restrictive TOP laws (Guttmacher Institute, 2018). Some studies in Africa agreed that contraceptive use, women occupation, marital status, age of women and husband's occupation are main risk factors to termination of pregnancy (Klutsey & Ankomah, 2014; Bago, Hibstu & Woldemariam, 2017).

The Choice on Termination of Pregnancy Act 1996 (Act No 92 of 1996) in South Africa became active in 1997 and was amended in 2004 (Hodes, 2016). The main aim of this act is to reduce or eliminate performance of unsafe termination of pregnancy and improve access to legal termination of pregnancy to all women of South Africa. This has decreased mortality and morbidity which arised from unsafe and illegal terminations of pregnancy (Hodes, 2016). Some women are still reluctant to seek TOP from legally recognized institutions due to religious and cultural stigmatization (HEARD, 2016).

Rate of termination of pregnancy is high in South Africa and it was reported to be 78 per 10000 pregnancies annually in 2010-2013. It was also estimated that 260000 terminations of pregnancy take place in South Africa every year (South African Government News Agency, 2018). It was indicated that the risk factors are being young, unemployed, being dependent on parents, being widowed or single, relationship problems and financial problems, urban residence and cohabitation, HIV status and having recently suffered any illness or injury (Ndwambi & Govender, 2015; Rambau, 2015).

The conduct of this study is motivated by the fact that recent studies done in South Africa did not concentrate on examining the association of reasons for termination of pregnancy with socio-demographics and identification of specific factors that may affect the likelihood of repeat of termination of pregnancy (Ndwambi & Govender, 2015; Rambau, 2015; Steyn, Govender & Ndimande, 2018). There is also no recent studies on risk factors associated with termination of pregnancy especially in Limpopo area.

1.3. RESEARCH PROBLEM

There are a variety of free contraceptives available in Nkhensani Hospital and surrounding government health facilities. People are also aware that unprotected sex without use of contraceptives of any form may lead to pregnancy and Sexually Transmitted Infections (STI's) that include Human Immunodeficiency Virus (HIV). Despite the knowledge that contraceptives can be used to avoid unwanted pregnancy,

there is a high number (approximately 20 women per month) of women seeking pregnancy at the reproductive clinic of Nkhensani Hospital (communication with head of reproductive clinic, 08/02/2019).

It was also estimated that 260000 terminations of pregnancy take place in South Africa every year (South African Government News Agency, 2018). The most common risk factors and reasons contributing to termination of pregnancy have not been investigated at Nkhensani hospital and therefore it is difficult to address the increase in termination of pregnancies without knowing the contributing factors. These has motivated for a study to determine risk factors associated with termination of pregnancy amongst women attending reproductive clinic at Nkhensani Hospital.

1.4. LITERATURE REVIEW

Literature review is a critical and analytical account of the existing research on a particular topic of study. In this literature review, the following themes were discussed: what is all about the termination of pregnancy, the laws regulating termination of pregnancy, the global burden of termination of pregnancy, African perspective, South African perspective, the risk factors associated with termination of pregnancy and lastly, the public Health interventions to reduce termination of pregnancy. Detailed literature review will be presented in Chapter 2.

1.5. PURPOSE OF THE STUDY

1.5.1. Aim of the study

The main aim of the current study was to investigate risk factors associated with termination of pregnancy at Nkhensani Hospital.

1.5.2. Objectives of the study was to:

- Describe demographic characteristics of women seeking termination of pregnancy
- Describe the circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act

- Determine the association of socio-demographics with circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act.

1.6. RESEARCH QUESTION

What are the risk factors associated with termination of pregnancy at Nkhensani Hospital in Limpopo Province of South Africa?

1.7. RESEARCH METHODOLOGY

The current study followed a cross-sectional retrospective descriptive study design to address the stated research question and to determine factors associated with termination of pregnancy including other variables of interest as they exist within a defined population at a given time (Detels, Gulliford, Karim & Tan, 2015). The detailed methodology will be presented in Chapter 3 which will include the sampling, data collection processes, description of how reliability and validity of the data was achieved including the data analysis and the measures to minimise bias and analysis

1.8. ETHICAL CONSIDERATIONS

Measures to ensure ethical considerations were taken into account in this study; ethical clearance and permission to conduct the study was sought from University of Limpopo's Turfloop Research Ethics Committee. and from the Limpopo Department of Health Provincial respectively. Detailed ethical considerations will be described in Chapter 3 below including measures to ensure confidentiality, privacy and anonymity. The study utilized secondary data, hence no potential risks associated with participating in this study.

1.9. SIGNIFICANCE OF PROPOSED RESEARCH

The study will form part of the existing literature regarding risk factors associated with termination of pregnancy. It will also establish common reasons and associated factors for women seeking termination of pregnancy in Giyani community. The findings

may also assist in planning for health promotion programs for reproductive health. The study findings may also assist to develop awareness programs to encourage women in Giyani and other communities to choose proper and effective contraceptive methods. In conclusion, the study findings might assist in the measures to prevent the increase in Maternal morbidity and mortality due to complications of termination of pregnancy which are of major public health concerns in many countries.

1.10. CONCLUSION

The information presented above provided an overview of this study. The next chapter, which is Chapter 2, describes the literature review which was done to highlight previous research studies conducted across the globe on this research topic. Chapter 3 will highlight the research methodology employed; Chapter 4 dealt with the presentation and representation of the study's research findings, while Chapter 5 presents a summary of the study and recommendations emanating from the results of this study.

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

This chapter is about literature review. Literature review focuses on termination of pregnancy, the laws governing termination of pregnancy, global burden of termination of pregnancy, African perspective of termination of pregnancy, termination of pregnancy in South Africa, risk factors associated with termination of pregnancy and public health intervention to reduce termination of pregnancy.

2.2. TERMINATION OF PREGNANCY

Termination of Pregnancy (TOP) means removal or expulsion of the developing foetus from the mother's womb before the foetus reaches the age of viability (WHO, 2014; Mesiano, 2019). It was estimated that nearly 30% of all pregnancies and 61% of all unintended pregnancies were terminated per year during the period of 2015 to 2019 (WHO, 2020). It was also estimated that approximately 45% of terminated pregnancies were unsafe (Ganatra et al., 2017). Termination of pregnancy is considered safe if performed according to the procedures recommended by the World Health Organization and being carried out by a person who has the necessary skills. Restrictive TOP laws, inaccessibility of safe TOP services and religious and cultural beliefs play a major role in the increase in use of the unsafe TOP services (WHO, 2020).

2.3. THE LAWS GOVERNING TERMINATION OF PREGNANCY

In South Africa, Termination of Pregnancy Act 1996 (Act No 92 of 1996) was passed in 2008 (Macleod, Seutlwadi & Steele, 2014; Favier, Greenberg & Stevens, 2018). This law permit termination of pregnancy on a request of a woman at 12th week of gestation. It further allows termination of pregnancy of a woman within 13th to 20th week for medical or other uncontrollable socio-economic reasons. At above 20th week it may only be done if the foetus or the pregnant women's life is in danger or there is possibility of severe birth defects (Favier et al., 2018).

2.4. GLOBAL BURDEN OF TERMINATION OF PREGNANCY

It is estimated that 73.3 million Terminations of Pregnancy per year occurred globally between 2015 - 2019 (WHO, 2020). Between 2010 - 2014 only 45% of the total 55,6 million terminations of pregnancy were done safely. Higher proportion of unsafe abortions in developing countries when compared to developed countries was also reported. Legal status of termination of pregnancy was also reported to be a factor in determining the proportion of unsafe against safe termination of pregnancy, in which country with restrictive abortion laws recorded a higher proportion of unsafe terminations of pregnancy (Ganatra et al., 2017).

The annual rate of TOP between developing and developed regions was significant (Sedgh, Bearak, Singh, Bankole, Popinchalk & Ganatra et al., 2016). Developing regions had 36 terminated pregnancies per 1000 women falling within the age range of 15-44 years annually since 2010-2014, whereas developed regions had 27 terminated pregnancies per 1000 women falling within the same age group. The rate of TOP reduced significantly during 2010-2014 in developed regions, whereas there is no significant change in developing regions (Singh, Remez, Sedgh, Kwork & Onda, 2017).

Age and use of contraceptives were also likely to be counted amongst factors that determine the rate of TOP worldwide (Sedgh, Finer, Bankole, Eilers & Singh, 2015). Regions with high use of effective contraceptives were reported to have had a significantly reduced TOP rates during 2010-2014 and the age group of 20- 24years had a highest rate of TOP (Singh et al, 2017). Report from studies done from 14 countries showed that postponement of childbearing and socioeconomic problems were most common reasons for women seeking termination of pregnancy. Socioeconomic concerns included conflict with a partner, financial preparedness and interference with future opportunities. Younger women were most likely to terminate pregnancy to postpone childbearing or for partner related issues whereas older women would terminate pregnancy for limitation of childbearing (Cleland, Harbison & Shah, 2014; Chae et al., 2017).

2.5. AFRICAN PERSPECTIVE ON TERMINATION OF PREGNANCY

Approximately 15% of the total pregnancies in Africa ended in termination annually during 2010-2014 (Agan et al., 2018). Southern region of Africa was reported to be having a highest proportion (24%) of pregnancies ending in termination, whereas western Africa was having the lowest proportion of 12%. The rate of TOP was reported to be 34 per 1000 women falling within the age group of 15 – 44 since 2010-2014 (Bearak, Popinchalk, Alkema & Sedgh, 2018). A significant difference in the rate of TOP was noticed between the married and unmarried women, with high rate (36 per 1000 women of 15 -44 years) amongst unmarried women as compared to a rate (26 per 1000 women of 15 -44 years) amongst married women (Singh et al., 2017).

It was estimated that a proportion of 9% of maternal mortality in Africa were due to complications of induced TOP. Restrictive TOP laws were attributed to the high rate of TOP related complications in Africa (Gutmacher Institute, 2018). Three countries of Africa that form part of countries with restrictive TOP laws namely Uganda, Kenya and Malawi were mentioned in the top 5 of countries with highest rate of treated TOP complications in 2012 (Singh & Maddow-Zimet, 2016).

A study done in Ethiopia indicated that contraceptive use, women occupation, marital status, age of women and husband's occupation were significant determinants of induced termination of pregnancy amongst women of reproductive age (15-49 years) (Bago et al., 2017). In support of the above findings Klutsey and Ankomah (2014) reported that lack of knowledge about contraceptives, being single or employed increased a woman's likelihood of terminating pregnancy. It was also mentioned that women with a higher number of pregnancies had a high likelihood of terminating pregnancy (Klutsey et al., 2014). Bago et al (2017) has also concluded that women with a higher number of children, using contraceptives or at the age of 35 years and above are more likely to terminate pregnancy than women with less children, do not use contraceptives or of under 21 years respectively. On the other hand, Klutsey et al (2014) did not determine an association of termination of pregnancy to maternal age, contraceptive use or education. It was also reported that in some African countries

married women terminated pregnancy to postpone or spacing childbearing (Chae et al., 2017).

A case control study done in Ethiopia revealed that poor knowledge about fertility cycle, having multiple sexual partners, having a previous abortion using medication, starting of first sexual intercourse under the age of 18 and finding TOP procedure not painful, increased the probability of repeating termination of pregnancy (Alemayehu, Yebyo, Medhanyie, Bayray & Fantahun, 2017). The study in Kenya concluded that being separated or widowed, having no education, having unwanted pregnancy, having 1-2 prior births and use of traditional method of contraception also increased the likelihood of repeat of pregnancy termination (Maina, Mutua & Sidze, 2015).

2.6. TERMINATION OF PREGNANCY IN SOUTH AFRICA

During the period 2010-2013, termination of pregnancy was significantly high with a rate of 78 per 10000 women of reproductive age annually in South Africa (Chola, McGee, Tugendhaft, Buchmann & Hofman, 2015.). It was also reported that age, unemployment, youth, urban residence and cohabitation, HIV status, having recently suffered any illness and injury are main associated factors of termination of pregnancy among South African women (Rambau, 2015).

Some study in South Africa reported that financial problems, being poorly educated and partner related problems were most common characteristics of women terminating pregnancy (Steyn, Govender & Ndimande, 2018). It has also been reported that being young, unemployed, dependent on parents, widowed or single, relationship problems and financial problems were associated with termination of pregnancy (Ndwambi & Govender, 2015).

2.7. RISK FACTORS ASSOCIATED WITH TERMINATION OF PREGNANCY

The global estimation of above 61% of unintended pregnancy being terminated yearly during the period from 2015 to 2019 implied that unintended pregnancy is highly associated with TOP (WHO, 2020). Apart from unintended pregnancy some study has reported Education, religion, age, knowledge about legal abortion and safe places to

undergo abortion as important risk factors associated with termination of pregnancy (Yogi & Neupane, 2018).

In Africa a study reported that being a single woman, being employed, lack of knowledge about contraception and high parity increases the risk of pregnancy termination (Klutsey & Ankomah, 2014). Other studies also agreed that younger, wealthy and single women have an increased likelihood of terminating pregnancy as compared to their counterparts (Ratovoson, Kunkel, Rakotovao, 2020; Adjei, Enuameh, Asante, 2015). Other risk factors have been reported in a study done in Madagascar which included higher level of education, being a Christian and transactional sex (Ratovoson, Kunkel and Rakotovao et al., 2020).

In South Africa a study reported younger age, unemployment, being single or cohabiting and staying in urban areas as important risk factors associated with termination of pregnancy (Rambau, 2015). The study further reported that HIV positive women has a lower risk of terminating pregnancy as compared to HIV negative women (Rambau, 2015). In contrast to this, another study reported increased rate of unintended pregnancy among HIV positive women which suggest that women with HIV may be more likely to terminate pregnancy but chooses not to terminate due to fear of being judged (Iyun, Brittain, Phillips et al., 2018).

2.8. PUBLIC HEALTH INTERVENTIONS TO REDUCE TERMINATION OF PREGNANCY

As a measure to combat high prevalence of Termination of Pregnancy WHO advocate for availability and accessibility of modern family planning method to all women of reproductive age (Wulifan, Brenner, Jahn & De Allegri, 2015). It has been reported that approximately 214 million women do not use contraceptives for various reasons which include cultural or religious issues, poor accessibility, limited choice of method and gender based barriers. In addition to prevention of unwanted pregnancies other form of contraceptives such as condom use also help in prevention of sexually transmitted infections (WHO, 2018).

In Africa the use of modern contraceptives is low (25%) as compared to the global prevalence of 70% of women of reproductive age (Anguzu, Tweheyo, Sekandi, Zalwango, Muhumuza & Tusiime et al., 2014). A study done in one of African countries reported that many women uses a traditional method of contraception which may be a reason for increased rate of termination of pregnancy in Africa (United Nations, 2017). National contraception and fertility planning policy and service delivery guidelines was created in 2001 and revised in 2012 by the national government of South Africa (Hoopes, Chandra-Mouli, Steyn, Shilubane & Pleaner, 2015). It was created in an attempt to improve accessibility, availability and variety of family planning method consequently reducing prevalence of unwanted pregnancies (South Africa, 2012). The South African Government has also committed to do school outreach program to make them aware of their reproductive health rights (Family planning, 2012; Eakle, Bourne, Mbogua, Mutanha & Rees, 2018).

2.9. CONCLUSION

This chapter described the literature review which was done to highlight previous research studies conducted across the globe on this research topic. Chapter 3 will highlight the research methodology employed; Chapter 4 dealt with the presentation and representation of the study's research findings, while Chapter 5 presents a summary of the study and recommendations emanating from the results of this study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The current chapter will describe the research methodology used to achieve the purpose of the study. This covered the research design, study site, study population including the processes of data collection and analysis.

3.2 RESEARCH DESIGN

The current study was quantitative and followed a descriptive cross-sectional design which was retrospective nature to investigate risk factors associated with termination of pregnancy. Descriptive research is a type of research that is used to describe the characteristics of a population. It collects data that are used to answer a wide range of what, when, and how questions pertaining to a particular population or group. Cross-sectional study design is a design which looks at a proportion of individuals in a population at one moment in time and descriptive study seek to describe responses to the independent, mediating, or dependent variables (Creswel, 2014). Retrospective study is a study that deals with the data that is collected from the past either through records created at that time or by asking participants to remember their exposure or outcomes (Mathew, 2014). This study design is observational in nature hence the researcher did not perform any action upon the participants but simply recorded the health status and risk factors associated with termination of pregnancy at a particular point of time and further describe and present the findings in a numeric form. Observational study are studies where the investigator is not acting upon study participants, but instead observing natural relationships between factors and outcomes (Mathew, 2014). The researchers aimed at obtaining a representative sample by taking a cross-section of the population.

3.3 STUDY SITE

The study was conducted at Nkhensani Hospital which is a district hospital situated at Giyani in Mopani District of Limpopo Province, South Africa. Giyani is a North-eastern town in Limpopo Province of South Africa. It is dominated by Tsonga- speaking people. It mostly serves people from rural areas with 91 villages, 18 clinics and 2 health centres

(Greater Giyani Municipality, 2016). Nkhensani Hospital refers patients to Letaba regional Hospital in Tzaneen within Mopani District.

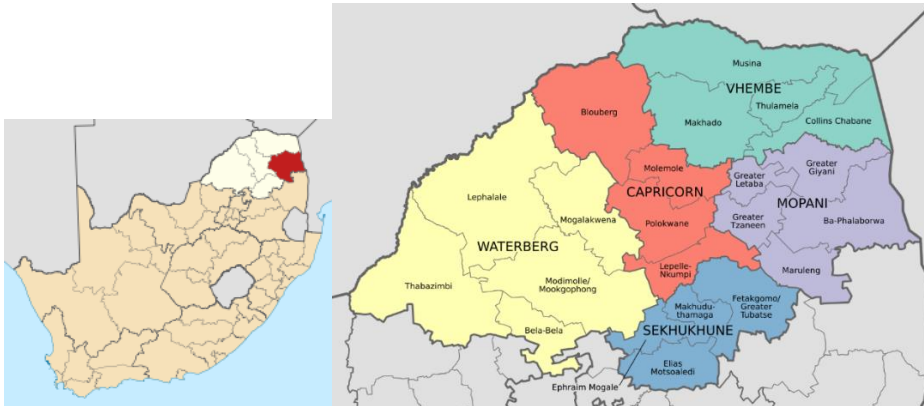


Figure 1.1. Map of South African and Limpopo Province showing Mopani District marked with red colour in South African map and purple in Limpopo map.

3.4 STUDY POPULATION

A target population for the study was all the records of women who terminated pregnancy at Nkhensani Hospital in 2017 – 2018.

3.5 SAMPLING

A target population for the study was all the records of women who terminated pregnancy at Nkhensani Hospital in 2017 – 2018. A target population was 1128 records; 400 and 728 for period of 2017 and 2018 respectively. Therefore, the sample size was calculated using the formula $n = \frac{N}{1+N(e)^2}$. Where N is population (484 for 2017 and 600 for 2018), n is a sample size and e is a sampling error = 0.05 (5%) (Martínez-Mesa, González-Chica, Duquia, Bonamigo & Bastos, 2016).

$$\text{For 2017: } n = 400 / (1 + 400(0.05 \times 0.05))$$

$$n = 400 / 2$$

$$n = 200$$

$$\text{For 2018 } n = 728 / (1 + 728(0.05 \times 0.05))$$

$$n = 728 / 2,5$$

$$n = 260$$

Therefore, the sample size for the period of 2017 and 2018 is 460 and increased by 10 percent to 506. Convenience sampling technique was employed in which files which were at the disposal and could easily be retrieved by the staff at the records were identified and collected; this available files were grouped according to the year in which termination of pregnancy occurred and the researcher randomly selected 240 and 266 files from 2017 and 2018 respectively.

3.5.1 Inclusion criteria.

All records of women who terminated pregnancy at a reproductive clinic of Nkhensani Hospital from 2017 to 2018 will be included.

3.5.2 Exclusion criteria

All records of women who terminated pregnancy at a reproductive clinic of Nkhensani Hospital from 2017 to 2018 but having incomplete information was excluded. A record was considered incomplete if it did not have “indication of termination of pregnancy as indicated in the Annexure A as gazetted by the Act. Those indications are as follows:

- Women’s physical or mental health
- Foetal physical or mental abnormality
- Rape or incest
- Social or economic circumstances

3.6 DATA COLLECTION

The study used secondary data collected by the researcher from the data register and patients files of reproductive clinic in Nkhensani Hospital. The data was collected using a data collection sheet which was self constructed. The tool covered variables such as the age of the women, educational status, marital status, year and month of termination of pregnancy, gestational age, parity, and gravidity, HIV status and circumstances leading to termination of pregnancy. The tool was formulated based on the existing literature concerning termination of pregnancy.

3.7 DATA ANALYSIS

Data from the database was cleaned and verified to minimize errors, outliers and missing values. The responses for the variables (the age of the women, educational status, marital status, year and month of termination of pregnancy, gestational age, parity, and gravidity, HIV status and circumstances leading to termination of pregnancy) of interest were coded and entered into an excel spread sheet. Descriptive statistical analysis was undertaken using the Stata version 16 [Stata Corp (2017) Stata Statistical Software] in order to determine frequencies and percentages of answers to the research questions. After consulting with the biostatistician from the University of Limpopo, analysis of the data was done to make comparisons between socio-demographic characteristics, termination of pregnancy and risk factors associated with the termination of pregnancy. The following statistical techniques was employed in the data analysis:

3.7.1 Frequency distributions

Frequency distribution is form of descriptive analysis where distribution of study participants in relation to a variable of interest is determined and displayed in a table form. Demographic distribution of women who terminated pregnancy were determined and displayed in table form. It is displayed in table 4.1 which is a representation of Demographic information of women who terminated pregnancy in chapter 4.

3.7.2 Odds ratios

The odds and relative odds (odds ratios) was calculated. This helped to determine the odds of the probability of risk factors against socio-demographic characteristics of the women.

3.7.3 T-test

The researcher employed the independent t-test for variables having two categories and it assessed whether the difference between means of two groups were statistically significant. This test was performed at the 95% confidence level. The p-value of less than 0.05 in the study results was used for statistical significant difference in means between the categories which was investigated.

3.7.4 Logistic regression

Regression analysis is a conceptually simple method for investigating functional relationships among variables and it has numerous areas of applications (Chatterjee & Hadi, 2015). This analysis was used to analyze the association of socio-demographic characteristics and the risk factors for termination of pregnancy as displayed in table 4.4 in chapter 4..

3.7.4.1 Independent variables

In this study, the independent variables were age of the women, gestational age, marital status and HIV status.

3.7.4.2 Dependent variables

The dependent variable was the frequency of termination of pregnancy.

3.8 Reliability and Validity

Reliability and validity are concepts which were evaluated to determine the quality of the study. The following measures was used to ensure reliability and validity of the study.

3.8.1 Reliability

Reliability refers to when the instrument consistently generates the same results after being applied repeatedly (Bastos, Duquia, Ganzalez-Chica, Mesa & Bonamigo, 2014). To ensure reliability, a pilot study was conducted at the Giyani Health Centre to pilot the data collection tool before it was used to extract the data from the database. A pilot study is a trial run of research conducted in preparation of a full scale of study to pre-test the research instrument (Dikko, 2016).

3.8.2 Validity

Validity is when the instrument is able to produce results that reflect what was initially aimed to measure (Bastos, Duquia, Ganzalez-Chica, Mesa & Bonamigo, 2014).

3.8.2.1 *Internal validity.*

Internal validity is the degree to which a study is free from bias or systematic errors (A dictionary of epidemiology, 2014). Adherence to the proposed methodology was ensured to establish internal validity of the study. Measures to avoid systemic errors was applied to ensure that the study is valid.

3.8.2.2 *External validity*

External validity is the extent to which the results can be generalised to other populations and settings (Cozby & Bates, 2015). The sample size was ensured to be large enough and representative of the of the target population to ensure external validity. Adherence to the use of the described target population to avoid inclusion of inappropriate records was ensured.

3.10 BIAS

Bias is described as any tendency which prevents fair consideration of a research question (Pannucci & Wilkins, 2010).

3.10.1 Selection bias

A Selection bias is any error that comes from selecting study participants and/or from factors affecting the study participation (Giovanni, Kitty, Friedo, etal., 2010). This was minimised by using random sampling of records to ensure that records which was selected for the study meet the inclusion criteria and are representative of the target population. Furthermore, the researcher practiced the skills of data collection during pilot study.

3.10.2 Information bias

An information bias is a distortion in the measure of association caused by a lack of accurate measurements of key study variables (Giovanni, Kitty, Friedo, etal., 2010). Information bias was minimised by discarding records with incomplete information. The unavoidable biases were addressed by following research methodology and also seeking the statistician's help to check the data analysis to comfirm that the data analysed matched the data acquired from hospital database of women terminating pregnancy.

3.11 ETHICAL CONSIDERATION

3.11.1 Ethical Clearance

This current study was conducted in accordance with the South African ethical standards and research governance regulatory frameworks where human subjects are involved. A proposal was presented at Department of Public Health Research Committee, then be handed to the School of Healthcare Sciences Research Committee and the Faculty Higher Degree Committee (FHDC) for review. The approved proposal from FHDC was submitted to Turfloop Research and Ethics Committee (TREC) at University of Limpopo to apply for ethical clearance to conduct the study. This was done in line with ethical conduct outlined in the code of conduct for research policy document from University of Limpopo.

3.11.2 Permission

Prior commencement with data collection, the researcher wrote letters (Annexure 1 & 2) to the Provincial Department of Health and Mopani District Department of Health to seek Permission to collect data. Permission was also requested from the CEO of Nkhensani Hospital and head of reproductive health clinic. The letter was accompanied with ethical clearance certificate together with the approved proposal.

3.11.3 Anonymity and confidentiality

Anonymity of the patients was maintained as their names were not extracted from the patient records and unique identifiers were allocated to each record. No patients' names will be used during publication to ensure confidentiality and privacy. Confidentiality was maintained because all collected data was kept in a computer whereby an access code was created for one to access the data. The researcher and the supervisor are the ones who can be able to access the data. The results of the study are not released with the names of the patients.

3.11.4 Respect for person

It is the recognition of a person as an autonomous, unique, and free individual, it also ensures valuing of person's dignity (Singh & Hylton, 2015). In this study respect for person was not violated as this study was dealing with records not participants.

3.12 CONCLUSION

This Chapter described the research methodology used to achieve the purpose of the study. The next chapter dealt with the presentation and representation of the study's research findings, while Chapter 5 presents a summary of the study and recommendations emanating from the results of this study.

CHAPTER 4: PRESENTATION AND DISCUSSIONS OF FINDINGS

4.1 INTRODUCTION

This chapter included presentation and discussions of findings. Data analysis and interpretation was done in relation to the question posed as well as the aim and the objectives of the study. The objectives of the study were to:

- Describe demographic characteristics of women seeking termination of pregnancy
- Describe the circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act
- Determine the association of socio-demographics with circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act.

The data was extracted from the reproductive clinic database and a total of 506 records were reviewed from the hospital registers for the period 2017 and 2018.

4.2 DATA MANAGEMENT AND ANALYSIS

The completed database was securely stored after the data collection process was completed. For confidentiality and privacy reasons, the information was captured on a Microsoft Excel spreadsheet and then stored on a compact disc. Descriptive statistical analysis was undertaken using the Stata version 16 [Stata Corp (2017) Stata Statistical Software] in order to identify frequencies and percentages of answers to the research questions. The statistical significance of the relationships between the selected variables was determined using the t-test. The level of significance was set at 0.05.

4.3 RESEARCH RESULTS

4.3.1 Socio-demographic characteristics of pregnant women with diabetes

Table 4.1 below presents the socio-demographics of the women who terminated pregnancy in the study area for the period 2017 and 2018. The mean age was 27.9 years (standard error [Std. Err.] =0.37). The majority of women who terminated pregnancies were in the age group 20 – 24 years at 20.8% followed by age group ≤20 years, 25 – 29

years, 35 – 39 years, ≥40 years and 30 – 34 years at 20%, 18.0%, 11.7%, 10.5 and 8.0% respectively. Majority of the women who terminated pregnancies were single 61.3% and majority had a secondary educational level at 80.8% followed by primary or no educational level and tertiary educational level at 16%% and 3.2% respectively.

		No	(%)
Age in years			
	≤ 20	101	20.0
	20 – 24	105	20.8
	25 – 29	93	11.7
	30 – 34	59	8
	35 – 39	95	18
	≥ 40	53	10.5
Marital status			
	Single	310	61.3
	Married	44	8.7
	Divorced	97	19.2
	Widowed	55	10.9
Educational level			
	Primary or No education	81	16.0
	Secondary	409	80.8
	Tertiary	16	3.2
Gestational age			
	1 – 8 weeks	322	63.6
	≥ 9 weeks	184	36.4
Parity			
	0	128	25.3
	1 – 2	248	49.0
	3 – 4	106	21.0
	≥ 5	24	4.7
Gravidity			
	1	117	23.1
	2	135	26.7
	3 – 4	168	33.2
	≥ 5	86	17.0
HIV status			
	Negative	398	78.7
	Positive	108	21.3

Table 4.1: Demographics information of women who terminated pregnancy

Majority of the women who terminated pregnancies were at gestational age of 1 – 8 weeks at 63.6% and majority had approximately 1 – 2 number of pregnancies that have each resulted in the birth of an infant capable of survival (parity) at 49% followed by parity of zero at 25.3% and 3 – 4 number of pregnancies at 21%. The least number of women who terminated pregnancies had greater or equal to 5 births at 4.7%. Majority of the women who terminated pregnancies were in their third pregnancies (gravida) at 33.2% followed by those who were in their second and first pregnancies at 26.7% and 23.1% respectively. The current study revealed that majority of the women who terminated pregnancies were HIV negative at 78.7% as illustrated in Table 4.1 above.

The current study findings show that there was a statistical significance difference between age groups and the gestational age, parity and gravidity at $p=0.004$ and $p<0.001$ respectively. The proportion of women who were at gestational age of 1 to 8 weeks decreased with increasing maternal age from 22.4% in age ≤ 20 years to 13% in age group 30 – 34 years. A different trend has been seen in women who were at gestational age 13 weeks and above wherein there was an increase which is significantly associated with increase in maternal age. The current study findings showed that there was a statistical significance difference ($p<0.001$) in relation to number of pregnancies that have each resulted in the birth of an infant capable of survival (parity) and similarly to gravida (Table 4.2 below).

Table 4.2: The gestational age, parity and gravida stratified by age group for women who terminated pregnancy

Variables	Age group in years						<i>P</i> value for trend
	≤20	20 – 24	25 – 29	30 – 34	35 – 39	≥ 40	
Gestational age							
1 – 8 weeks	72 (22.4)	70 (21.7)	46 (14.3)	42 (13.0)	53 (16.5)	39 (12.1)	0.004
≥9 weeks	29 (15.8)	35 (19.0)	47 (25.5)	17 (9.2)	42 (22.8)	14 (7.6)	
Parity							
0	82 (64.1)	36 (28.1)	7 (5.5)	0 (0.0)	0 (0.0)	3 (2.3)	<0.001
1 – 2	19 (7.8)	69 (27.8)	76 (30.7)	38 (15.3)	38 *15.3)	8 (3.2)	
3 – 4	0 (0.0)	0 (0.0)	10 (9.4)	16 *15.1)	50 (47.2)	30 (28.3)	
≥ 5	0 (0.0)	0 (0.0)	0 (0.0)	5 (20.8)	7 (29.2)	12 (50.0)	
Gravida							
1	80 (68.4)	32 (27.4)	4 (3.4)	0 (0.0)	0 (0.0)	1 (0.9)	<0.001
2	19 (14.1)	62 (45.9)	40 (29.6)	11 (8.2)	2 (1.5)	1 (0.7)	
3 – 4	2 (1.2)	10 (6.0)	43 (25.6)	41 (24.0)	54 (32.1)	18 (10.7)	
≥ 5	0 (0.0)	1 (1.2)	6 (7.0)	7 (8.1)	39 (45.4)	33 (38.4)	

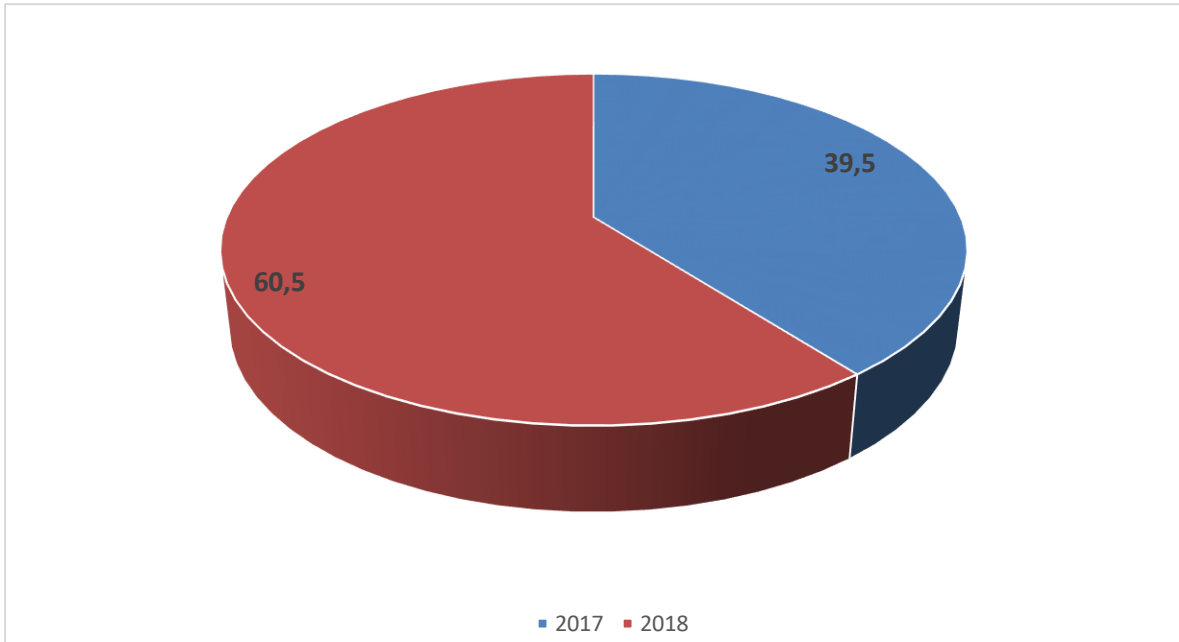


Figure 4.1: Proportion of women who terminated pregnancies per year, 2017 – 2018

Figure 4.1 above presents the proportion of women who terminated pregnancies for the study period of 2017 and 2018. This shows that majority of pregnancies were terminated in 2018 at 60.5%.

4.3.2 Prevalence of HIV amongst women terminating pregnancy

The prevalence of HIV amongst women who terminated pregnancy in the current study was found to be 21.3% at confidence interval (17.9 – 25.1). As illustrated in Figure 4.2 below, The prevalence of HIV among women who terminated pregnancies in 2017 increased with age, rising from 15.4% in the age group 20–24 years to 35.3% in the age group 30–34 years, then declining to 19.1% in the age group 35–39 years, and finally rising to 46.4% in the age group 40 years and older, the highest in 2017. Similarly, the prevalence of HIV among women who terminated pregnancies increased from 0.8 % in the age group 20 years and below to 41% in the age group 30 –34 years, then declined to 32% and 17.6% in the age groups 35 –39 years and 40 years and above, respectively, in 2018, as illustrated in Figure 4.2 below.

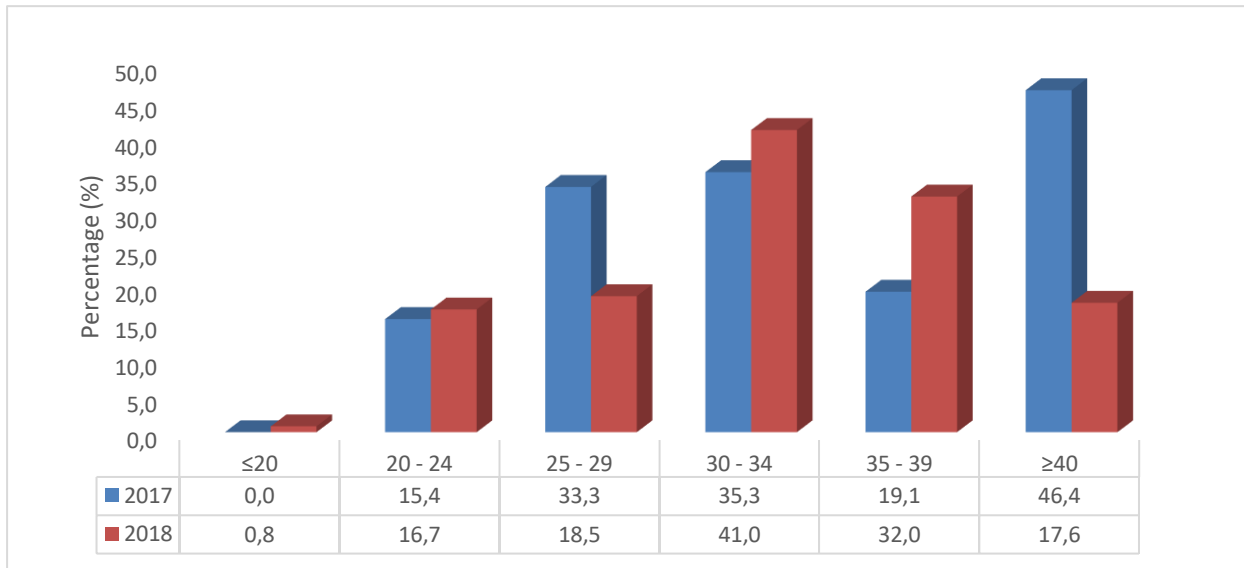


Figure 4.2: Prevalence of HIV amongst women who terminated pregnancy by year stratified by age group

The prevalence of HIV amongst women who terminated pregnancies was high amongst women who had primary or no educational level at 21.7% followed secondary and tertiary levels at 16% and 5.6% respectively as illustrated in in Figure 4.3 below.

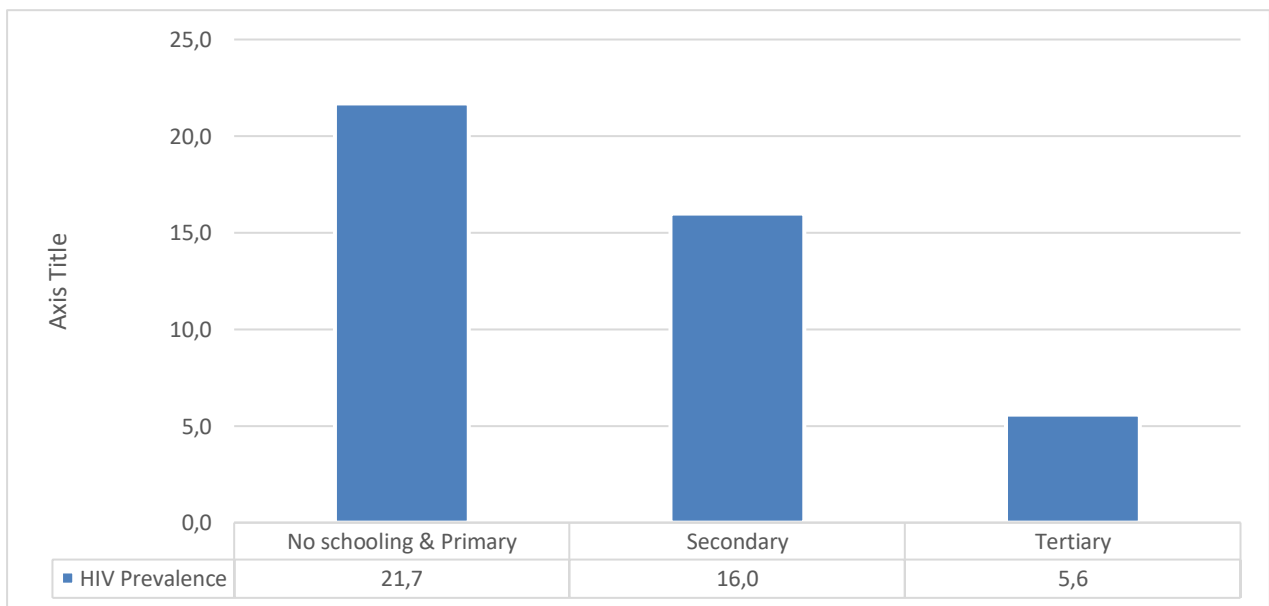


Figure 4.3: Prevalence of HIV amongst women who terminated pregnancy by level of education

4.3.3 The circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act

Approximately 97% of women who terminated pregnancies were due to social or economic circumstances which will affect the women and the unborn baby. Those women who terminated pregnancies due to circumstances related to the women's physical or mental health were at 3.1% while those who terminated due to foetal physical or mental abnormality and rape were at 0.2% and 0.1% respectively as presented in Figure 4.4 below.

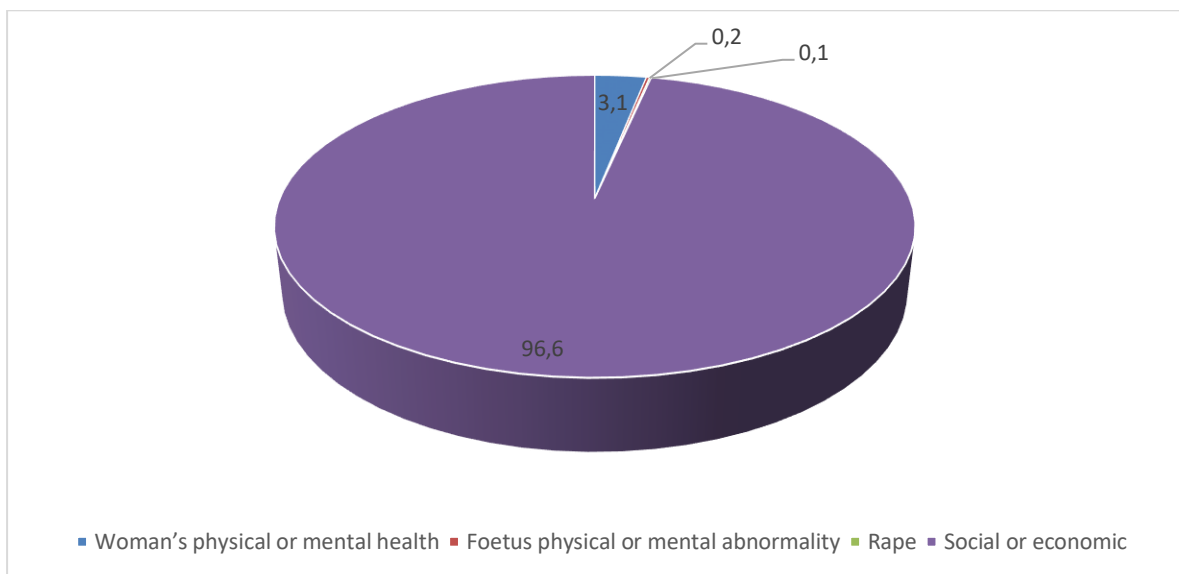


Figure 4.4: The circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act

The circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act stratified by age group has only shown statistical significance amongst women who terminated pregnancies due to circumstances related to women's physical or mental health at $p\text{-value}=0.003$ as illustrated in Table 4.3 below.

Table 4.3: The circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act stratified by age group

Age group in years	Woman's physical or mental health	Foetus physical or mental abnormality	Rape	Social or economic
≤20	3 (13.6)	0 (0.0)	1 (25.0)	97 (19.8)
20 – 24	0 (0.0)	0 (0.0)	3 (75.0)	102 (20.9)
25 – 29	11 (50.0)	2 (100)	0 (0.0)	87 (17.8)
30 – 34	2 (9.1)	0 (0.0)	0 (0.0)	57 (11.7)
35 – 39	4 (18.2)	0 (0.0)	0 (0.0)	94 (19.2)
≥40	2 (9.1)	0 (0.0)	0 (0.0)	52 (10.6)
<i>P-value</i>	0.003	0.087	0.148	0.435

4.3.4 Association of socio-demographics with circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act

In the univariate logistic regression, the risk of women who terminated pregnancies being HIV positive increased significantly with age as older women (age 20 years and above) were 6.5 times more likely to be HIV positive as compared to younger ones ($p < 0.001$). Women who were in the low educational level category were 1.6 times more likely to terminate pregnancies than women with higher educational level category ($p < 0.005$) citing that social or economic circumstances will affect them and or the unborn baby. However, women who were in the low educational level category were 0.6 times less likely to terminate pregnancies than women with higher educational level category ($p < 0.05$) while HIV positive as presented in Table 4.4 below.

Women who were in the gestational age 9 – 12 weeks were 1.1 times more likely to terminate pregnancies than women who were in gestational age 1 – 8 weeks ($p < 0.05$) while HIV positive. But women who were in the gestational age more than 13 weeks were 45.1 times more likely to terminate pregnancies than women who were in gestational age 1 – 8 weeks ($p < 0.05$) citing the reasons that the pregnancy is terminated due to circumstances related to women's physical or mental health. However, women who were in the gestational age more than 13 weeks were 2.1 times more likely to terminate pregnancies than women who were in gestational age 1 – 8 weeks ($p < 0.001$) citing the reasons that the pregnancy is terminated due to circumstances related to foetus physical or mental abnormality as presented in Table 4.4 below.

Table 4.4: Univariate logistic regression to determine predictors of circumstances leading to women terminating pregnancies in terms of the South African Choice on Termination of Pregnancy Act

Variables	Woman's physical or mental health	Foetus physical or mental abnormality	Rape	Social or economic	HIV Positive
Age					
≤20 years	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
≥35 years	0.3 (0.02 – 2.9) ^a	0.3 (0.2 – 0.6) ^a	1.6 (0.9 – 3.0) ^a	1.4 (0.2 – 9.7) ^a	6.5 (2.6 – 16.5) ^{***}
Educational status					
High	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Low	3.8 (0.6 – 23.8) ^a	0.7 (0.5 – 1.1) ^a	0.8 (0.6 – 1.1) ^a	1.6 (1.2 – 2.3) ^{**}	0.6 (0.4 – 0.9) [†]
Marital status					
Married	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
Single	0.2 (0.03 – 0.9) [†]	0.9 (0.4 – 1.9) ^a	0.8 (0.4 – 1.5) ^a	4.5 (2.1 – 13.7) [†]	1.4 (0.6 – 3.3) ^a
Divorced	0.1 (0.02 – 0.9) [*]	0.7 (0.2 – 3.1) ^a	1.5 (0.5 – 4.2) ^a	1.4 (0.08 – 23.7) ^a	1.1 (0.5 – 2.7) ^a
Widowed	0.8 (0.1 – 4.2) ^a	0.4 (0.1 – 1.6) ^a	1.8 (0.8 – 4.3) ^a	0.4 (0.03 – 5.2) ^a	1.0 (0.3 – 2.9) ^a
Gestational age					
1 – 8 weeks	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
9 – 12 weeks	1.6 (0.4 – 6.3) ^a	0,01 (-0.01 – 0.1) ^a	0.03 (-0.02 – 0.07) ^a	0.8 (0.2 – 3.6) ^a	1.1 (0.7 – 1.8) [*]
≥ 13 weeks	45.1 (14.8 – 137.9) [*]	2.1 (0.9 – 3.2) ^{***}	0.08 (-0.05 – 0.38) ^a	0.02 (0.01 – 0.09) ^a	0.9 (0.4 – 2.7) ^a
Parity					
0	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
1 – 2	0.01 (-0.09 – 0.12) ^a	0.8 (0.4 – 1.5) ^a	0.01 (-0.04 – 0.07) ^a	1.9 (0.2 – 2.4) ^a	1.9 (1.0 – 3.5) [†]
3 – 4	0.06 (-0.18 – 0.07) ^a	3.1 (0.9 – 10.4) ^a	0.02 (-0.05 – 0.08) ^a	9.8 (3.7 – 15.2) ^a	3.3 (1.7 – 6.4) ^{***}
≥ 5	1.8 (0.3 – 2.9) ^{**}	0.7 (0.5 – 1.0) ^a	0.01 (-0.06 – 0.09) ^a	2.3 (0.5 – 3.9) ^a	1.8 (0.6 – 5.6) ^a
Gravidity					
1	Reference (1)	Reference (1)	Reference (1)	Reference (1)	Reference (1)
2	6.7 (3.2 – 11.9) ^a	1.5 (0.8 – 3.1) ^a	0.02 (-0.08 – 0.35) ^a	1.5 (0.4 – 5.6) ^a	0.9 (0.4 – 1.9) ^a
3 – 4	2.2 (0.6 – 8.1) ^a	1.6 (0.9 – 3.0) ^a	0.7 (0.2 – 3.1) ^a	1.2 (0.4 – 4.0) ^a	3.9 (2.0 – 7.4) ^{***}
≥ 5	2.9 (0.7 – 11.7) ^a	0.3 (0.02 – 2.9) ^a	0.02 (-0.03 – 0.06) ^a	1.9 (0.4 – 9.9) ^a	2.5 (1.2 – 5.3) [†]

Values are reported as odds ratios (95%CI); *significant at $p < 0.05$; **significant at $p < 0.005$; ***significant at $p < 0.001$, ^aNot significant

The association of parity of women who terminated pregnancies and number of pregnancies that have each resulted in the birth of an infant capable of survival (parity) revealed that women who had 1 – 2 pregnancies that have each resulted in the birth of an infant capable of survival while HIV positive were 1.9 times more likely to terminate pregnancies as compared to those women who had zero pregnancies that have each resulted in the birth of an infant capable of survival ($p < 0.05$). However, women who had 3 – 4 pregnancies that have each resulted in the birth of an infant capable of survival while HIV positive were 3.3 times more likely to terminate pregnancies as compared to those women who had zero pregnancies that have each resulted in the birth of an infant capable of survival ($p < 0.001$). Women who had more than 5 pregnancies that have each resulted in the birth of an infant capable of survival were 1.8 times more likely to terminate pregnancies as compared to those women who had zero pregnancies that have each resulted in the birth of an infant capable of survival ($p < 0.005$) citing the reasons that the pregnancy is terminated due to circumstances related to women's physical or mental health as presented in Table 4.4 above.

The association of gravida of women who terminated pregnancies and HIV revealed that women who were in their second or third pregnancies (gravida) while HIV positive were 3.9 times more likely to terminate pregnancies as compared to those who were first pregnancy ($p < 0.001$). Marital status was not significantly associated with termination of pregnancy as presented in Table 4.4 above.

4.4 OVERVIEW OF RESEARCH FINDINGS

The majority of women who terminated pregnancies were in the age group 20 – 24 years and also majority of the women who terminated pregnancies were at gestational age of 1 – 8 weeks while the least number of women who terminated pregnancies had greater or equal to 5 births. A larger proportion terminations of pregnancy occurred in women who were HIV negative and there was a statistical significance difference between age groups and the gestational age, parity and gravidity. There was also a statistical significance difference in relation to number of pregnancies that have each resulted in the birth of an infant capable of survival (parity) and similarly to gravida.

The factors which were significantly associated with termination of pregnancy were HIV positive and older age; social or economic circumstances affecting the mother and or the unborn baby and low educational level; circumstances related to women's physical or mental health and gestational age.

4.5 CONCLUSION

The study's findings were presented and interpreted in this chapter. The following chapter discusses these findings and compares them to the relevant literature.

CHAPTER 5: SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

In the previous chapter, the findings of this study were presented and interpreted. In this chapter, the results of this study are discussed and compared to the relevant literature. The chapter is divided into the following sub-sections: (1) introduction (2) prevalence of HIV amongst women who terminated pregnancy and (3) the association between HIV and termination of pregnancy, (4) study limitations, (5) conclusion and (6) recommendation.

5.2 SOCIO-DEMOGRAPHICS OF WOMEN WHO TERMINATED PREGNANCIES

According to the findings of the current study, the mean age of women who terminated pregnancies was 27.9 years which is comparable to the findings of a study in Bangladesh (Rahman, 2015.) but differs with findings from a study conducted in in Nigeria (Yaya, Amouzou, Uthman, Ekholuenetale, Bishwajit & Udenigwe et al., 2018) and Greece (Dagklis, Papazisis, Tsakiridis, Chouliara, Mamopoulos & Rousso, 2016). Majority of women who terminated pregnancies in the current study were in the age group 20 – 24 years at 20.8% which differs from the findings of a study conducted in South India (Holla, Kanchan, Unnikrishnan, Kotian, Kumar & Thapar et al., 2014) as majority were in age group 26 – 30 years. In the current study, second highest age group to terminate pregnancies was age 20 years and below which implies that young girls are having unplanned pregnancies and this might be due to lack of knowledge of family planning issues. In a study conducted in South India, age group 20 years and below had the least number of pregnancies terminated (Holla et al., 2014) which is similar to findings from a study conducted in Nganglam, Sowth eastern Bhutan in Asia (Choden, Pem, & Pathak, 2015.). Older women (40 years and above) in the current study had lower percentage of pregnancies terminated which concurs with study findings from Nigeria (Yaya, Amouzou, Uthman, Ekholuenetale, Bishwajit & Udenigwe et al., 2018). Majority of the women who terminated pregnancies had a secondary educational level which concurs with study findings from Nigeria (Yaya et al., 2018)

Information on the method and gestational age of termination of pregnancy can provide insight on a country's abortion policy, as well as the options available to

women to terminate their pregnancies (Popinchalk & Sedgh, 2019). The Abortion and Sterilization Act of 1975 was replaced by the South African Choice on Termination of Pregnancy (CTOP) Act, which was passed in 1996. The CTOP Act allows for abortion on demand up to and including the 12th week of pregnancy. This Act promotes woman's reproductive right to have an early, safe and legal abortion (Harries, Gerdt, Momberg & Foster, 2015). Majority of the women who terminated pregnancies in the current study were at gestational age of 1 – 8 weeks at 63.6% which concurs with findings from a study conducted in United States (Ireland, Gatter & Chen, 2015). Abortions at less than 9 weeks of gestation ranged from 39% in Canada to 84 percent in Sweden. (Popinchalk & Sedgh, 2019). In the current study, only a quarter (25%) of abortions occurred among nulliparous women which is similar to study conducted in Congo Republic, Gabon, Ghana and Nigeria (Chae, Desai, Crowell, Sedgh & Singh, 2017).

5.3 PREVALENCE OF HIV AMONGST WOMEN WHO TERMINATED PREGNANCY

Since the inception of antiretroviral treatment (ART) and its accessibility, women's and men's decisions about conception and pregnancy continuation have substantially been influenced. (MacCarthy, Rasanathan, Crawford-Roberts, Dourado & Gruskin, 2014). Since the introduction of combination antiretroviral medication (cART), HIV-positive people's health and survival rates have improved significantly (Patterson, Cescon, Samji, Chan, Zhang & Raboud et al., 2015). The prevalence of HIV amongst women who terminated pregnancy in the current study was found to be 21.3% which is higher than the prevalence found in a study conducted in Brazil (Pilecco, Teixeira, Vigo, Dewey & Knauth, 2014). The findings of the current study suggest the need for comprehensive effort to address the high frequency of unplanned pregnancies and induced terminations of pregnancy among HIV-positive women in the Giyani area. All HIV-positive women of childbearing age may be counseled on reproductive health and PMTCT, and all HIV-infected pregnant women may be enrolled in a PMTCT program regardless of their decision to continue with their pregnancy. This may enable most HIV-infected pregnant women to receive counseling, as well as assist program managers in monitoring unwanted pregnancies and terminating pregnancy.

The key population at a high risk of acquiring HIV through sexual intercourse are young women of age group 15-24 years (Mabaso, Sokhela, Mohlabane, Chibi, Zuma & Simbayi, 2018). In Ethiopia, the prevalence of HIV amongst women who terminated pregnancies was very low at 2.5 % ((Mulu, Zenebe, Abera, Yimer & Hailu, 2016) and also in India (Darak, Hutter, Kulkarni, Kulkarni & Janssen, 2016) as compared to the high HIV prevalence in the current study. The focus of HIV prevention of mother to child transmission (PMTCT) programs worldwide remains on providing antiretroviral medicines (ARVs) to the mother–baby pair, despite the fact that preventing unwanted pregnancies among HIV-infected women has been suggested as an important strategy (Darak, Hutter, Kulkarni, Kulkarni & Janssen, 2016). According to research from Sub-Saharan Africa, Europe, and the United States, HIV-infected women have a higher rate of unwanted pregnancies and induced termination of pregnancies than HIV-uninfected women (Ammassari, Cicconi, Ladisa, Di Sora, Bini & Trotta et al., 2013.; Decker, Yam, Wirtz, Baral, Peryshkina & Mogilnyi et al., 2013; Darak et al., 2016)

5.4 FACTORS ASSOCIATION BETWEEN HIV AND TERMINATION OF PREGNANCY

In the current study, the risk of women who terminated pregnancies being HIV positive increased significantly with age as older women (age 20 years and above) were 6.5 times more likely to be HIV positive as compared to younger ones ($p < 0.001$). These findings are in contrary to the findings by study conducted in United States as HIV-positive women were significantly associated with reduced abortion rates (Haddad, Wall, Mehta, Golub, Rahangdale & Kempf et al., 2017). In the current study, terminanyion of pregnancy was associated with being single which concurs with a study conducted in Ukraine (Mogilevkina, Hellberg, Nordstrom & Odland, 2000). Women who were in the low educational level category were 1.6 times more likely to terminate pregnancies than women with higher educational level category ($p < 0.005$) citing that social or economic circumstances will affect them and or the unborn baby. These findings disagree with findings from a study by Mogilevkina et al., (2000) but concur with findings from a study conducted in Finland as low educational level was a risk factors associated with terminantion of teenage pregnancy (Leppälähti, Gissler, Mentula & Heikinheimo, 2012).

Parity of women who terminated pregnancies was found to be significantly associated with HIV positive status in the current study which is similar to a study by Jacobs et al., (2016) and Justad-Berg et al., (2015). The current study findings revealed that women who were multigravida were significantly associated with HIV positive status which is supported by findings from a study by Goossens et al., (2016). In a study conducted in Finland, parity was significantly associated with termination of pregnancy (Heikinheimo, Gissler & Suhonen, 2008) which concurs with the findings of the current study as women who had 1 – 2 pregnancies that have each resulted in the birth of an infant capable of survival while HIV positive were 1.9 times more likely to terminate pregnancies as compared to those women who had zero pregnancies that have each resulted in the birth of an infant capable of survival ($p < 0.05$). In Edinburgh, which is located in southeastern Scotland, parity was related to the outcome with parous women having significantly more incomplete/ongoing abortions compared to nulliparous women (Bartley, Tong, Everington & Baird, 2000). In the current study, gravida was significantly associated with termination of pregnancy which concurs with findings from a study conducted by Reardon and Thorp, (2017).

The risk of women who terminating pregnancies being HIV positive in the current study increased significantly with increasing age as older women were 1.9 times more likely to be HIV positive as compared to younger ones ($p = 0.004$) which differs from the findings by Jacobs et al., (2016) where older women were less likely to be HIV positive and terminate pregnancies (OR 0.35, 95% CI 0.28, 0.42) (Jacobs, Cooper, McGowan, Nelson & Pell, 2016). The association of marital status of women who terminated pregnancies was not significantly associated with HIV positive status and this differs with findings from a study by Goossens et al., (2016) which reported that single or having a non-cohabiting relationship was significantly associated with being HIV positive and terminating pregnancies.

5.5 LIMITATIONS OF THE STUDY

The main limitations might be that necessary information to determine the association of HIV positive status with termination of pregnancy was not available, as data collection is not done by the researcher, confounder information has been lacking and there might be missing information on data quality.

5.6 CONCLUSION

Termination of Pregnancy is a significant public health issue, particularly among adolescents and youth in developing countries, as evidenced by the current study. The current study's findings emphasize the importance of addressing the structural socioeconomic drivers of family planning which results in high number of termination of pregnancy amongst the youth. Structural interventions, such as increasing contraceptive use which may be useful for reducing the burden of unplanned pregnancies.

5.7 RECOMMENDATIONS

These findings suggest the need for targeted interventions for women of child-bearing age to access reproductive health interventions to prevent unintended pregnancies and the associated risk of termination. Women of child bearing age in the current study are still having unintended pregnancies at young age and considering the spread of HIV, there is a high demand for healthcare workers to work with the community and other stakeholders to develop a collaborative strategy to prevent unintended pregnancy and lower preconception-related risks for HIV-infected women who decide to conceive. Reducing the new tide of HIV infections in young populations is integral to the prevention response to achieve the global commitment to ending the AIDS epidemic by 2030.

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APPENDIX 1: Letter to Department of Health

Ngoveni X.A

PO.box 1840

Giyani

0826

22 October 2019

The head of department

Department of Health

Private bag x 9307

Polokwane

0700

REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN NKHENSANI HOSPITAL

Dear Sir/Madam

My name is Ngoveni XA and I am a masters of public health student at the University of Limpopo(Turfloop). The title of the research study I am proposing to conduct in partial fulfilment of this degree, is about risk factors associated with termination of pregnancy at Nkhensani Hospital of Mopani district. The main aim of the study is to investigate risk factors associated with termination of pregnancy amongst women of Giyani community.

I am hereby seeking your consent to use information in the reproductive clinic of Nkhensani Hospital for this research project. I have provided you with a copy of my proposal which includes copies of the data collection tool to be used in the research process, as well as a copy of the approval letter which I received from the Turfloop Research Ethics Committee. If you require any further information, please do not hesitate to contact me. Thank you for your time and consideration in this matter.

Yours sincerely

Ngoveni XA.

Email: xitshembisoagrey@gmail.com

Cell no: 0789871391

APPENDIX 2: Letter to the CEO of Nkhensani Hospital.

P.Box 1840

Giyani

0826

22 October 2019

The CEO, Nkhensani Hospital

Private bag 223

Giyani

0826

REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN NKHENSANI HOSPITAL

Dear Sir

My name is Ngoveni XA and I am a masters of public health student at the University of Limpopo(Turfloop). The title of the research study I am proposing to conduct in completion of my study is about risk factors associated with termination of pregnancy at Nkhensani Hospital of Mopani district. This project will be conducted under the supervision of Dr E. Maimela and Dr TS Ntuli.

The study will help to establish common risk factors associated with termination of pregnancy in Giyani community and planning of related health promotion programs.

I am hereby seeking your consent to use data in the reproductive clinic of Nkhensani Hospital for this research project. I have provided you with a copy of my proposal which includes copies of the data collection tool to be used in the research process, as well as a copy of the approval letter which I received from the Turfloop Research Ethics Committee and a letter of permission to conduct the study from Department of Health, Limpopo.

Upon completion of the study, I undertake to provide the hospital with a bound copy of the full research report. If you require any further information, please do not hesitate to contact me. Thank you for your time and consideration in this matter.

Yours sincerely

Ngoveni XA.

0789871391

Email: xitshembisoagrey@gmail.com

APPENDIX 3: Data collection tool

Rec No	Age	Marital status	Employment Status	Educational Status	Methods of contraceptive	Year	Month	Gestational age	Parity	Gravidity	Number of pregnancies terminated before	Women's physical or mental health (Yes/No)	Foetal physical or mental abnormality (Yes/No)	Rape or incest (Yes/No)	Social or economic circumstances (Yes/No)
1															
2															
3															
4															
5															
6															
7															

APPENDIX 4: Annexure which is used in the Public Health Facilities to terminate Pregnancy

ANNEXURE A

CHOICE ON TERMINATION OF PREGNANCY ACT, 1996 (ACT No. 92 OF 1996)

NOTIFICATION OF TERMINATION OF PREGNANCY IN TERMS OF SECTION 7 OF THE ACT

FORM TO BE COMPLETED BY A MEDICAL PRACTITIONER OR A REGISTERED MIDWIFE

(To be completed in duplicate)

1. Name of facility
 2. Age of woman requesting termination
 3. Where appropriate (encircle appropriate number):
 - 3.1 Termination in terms of section 2 (1) (a) or (b) of the Act.
 - 3.2 Severe mental disability [section 5 (4) (a) of the Act].
 - 3.3 Continuous unconsciousness [section 5 (4) (b) of the Act].
 4. Race (mark with a cross):

African	Coloured	Asian	White	Other
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If other, specify
 5. Marital status (mark with a cross):

Single	Living together	Married	Divorced	Widowed
--------	-----------------	---------	----------	---------
 6. Date of last menstrual period (LMP)
 7. How many weeks into pregnancy?
 8. Number of previous pregnancies:

No. of live births	No. of stillbirths	No. of terminations	No. of miscarriages
--------------------	--------------------	---------------------	---------------------
 9. Date of admission
 - Date of procedure
 - Date of discharge
 10. Termination of pregnancy (mark with a cross):

(a) first 12 weeks	(b) 13–20 weeks
--------------------	-----------------
 11. Indication for termination of pregnancy (applicable only to terminations performed from 13th up to and including 20th week of gestation period) (circle appropriate number):
 - 11.1 Woman's physical or mental health [section 2 (1) (b) (i) of the Act].
 - 11.2 Fcetal physical or mental abnormality [section 2 (1) (b) (ii) of the Act].
 - 11.3 Rape or incest [section 2 (1) (b) (iii) of the Act].
 - 11.4 Social or economic circumstances [section 2 (1) (b) (iv) of the Act].
- Name of medical practitioner or registered midwife
- Signed Date
- Qualifications Registration number

APPENDIX 5: Approval from Turfloop Research Ethics Committee (TREC)



University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: anastasia.ngobe@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE
ETHICS CLEARANCE CERTIFICATE

MEETING: 16 September 2020

PROJECT NUMBER: TREC/186/2020: PG

PROJECT:

Title: Risk Factors Associated with Termination of Pregnancy at Nkhensani Hospital, Limpopo Province, South Africa

Researcher: XA Ngoveni

Supervisor: Dr E Maimela

Co-Supervisor/s: Dr TS Ntuli

School: Health Care Sciences

Degree: Master of Public Health

PROF P MASOKO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0310111-031

Note:

- i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.
- ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.
- iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

APPENDIX 6: Approval from Limpopo Department of Health



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref : LP-2020-09-062
Enquires : Ms PF Mahlokwane
Tel : 015-293 6028
Email : Kurhula.Hlomane@dhsd.limpopo.gov.za

Xitshembiso Ngoveni

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

RISK FACTORS ASSOCIATED WITH TERMINATION OF PREGNANCY AT NKHENSANI HOSPITAL, LIMPOPO PROVINCE, SOUTH AFRICA.

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

Your cooperation will be highly appreciated


Head of Department


Date

Private Bag X9302 Polokwane
Fidel Castro Ruz House, 18 College Street, Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.
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APPENDIX 7: Approval from Nkhensani Hospital



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PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH
NKHENSANI DISTRICT HOSPITAL
Private Bag X9581
Giyani, 0826
Tel: (015) 811 7300
Fax: (015) 812 2461

Ref: S5/1/6/2
Enq: Mathebula K.D
Date: 04 November 2020

To: Xitshembiso Agrey Ngobeni

RE: REQUEST FOR PERMISSION TO CONDUCT THE RESEARCH ON RISK FACTORS ASSOCIATED WITH THE TERMINATION OF PREGNANCY AT NKHENSANI DISTRICT HOSPITAL

1. It is with pleasure to inform you that your request for the aforementioned study has been approved at Nkhensani District Hospital.
2. The approval of your research study is subject to the following conditions:
 - 2.1 During the course of your research study, hospital services should not be disrupted.
 - 2.2 Upon completion of your study you should be prepared to assist in the interpretation of the study findings/recommendations.
 - 2.3 After completion of the study, it is mandatory that the findings should be submitted to the Department of Health to serve as a resource.
3. If the proposal has been amended, a new approval should be sought from the Department of Health.
4. You should liaise with the Office of the Chief Executive Officer (CEO) as and when you intend to start research study.
5. Your cooperation is always appreciated

Jholog
CHIEF EXECUTIVE OFFICER

05/11/2020
DATE:

APPENDIX 8: Evidence of Language editing.

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Date: 26 June 2021

To Whom it May Concern

I hereby confirm that I have proof-read the document entitled: "Risk factors associated with termination of pregnancy at Nkhensani Hospital, Limpopo Province, South Africa." authored by Ngoveni XA with student number 200723044. The document has been edited and proofread for grammar, spelling, punctuation, overall style and logical flow. Considering the suggested changes that the author may or may not accept, at his/her discretion, each of us has our own unique voice as far as both spoken and written language is concerned. In my role as proof-reader, I try not to let my own "written voice" overshadow the voice of the author, while at the same time attempting to ensure a readable document.

Please refer any queries to me.

Rapetsoa DB