MANAGEMENT OF SEXUALLY TRANSMITTED INFECTIONS IN PRIVATE PHARMACIES IN LIMPOPO PROVINCE: PRACTICE AND KNOWLEDGE OF PHARMACISTS

By

FATIMA SIDAHMED

STUDENT NUMBER: █████████

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Supervisor: Prof N.Z Nyazema

CO-Supervisor: Mr M.G.Mohlala

Declaration

I declare that Management of Sexually Transmitted Infections (STIs) In Private Pharmacies In Limpopo Province: Practice and knowledge of Pharmacists 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 for any other degree at any institution.

Full names   **Date**

Fatima Sid Ahmed

Student number

████████

Abbreviations

The following terms has been used in this study

Sexually Transmitted Infections	STIs
Human Immune Deficiency Virus	HIV
Acquired Immune Deficiency Syndrome	AIDS
World Health Organisation	WHO
Human Simplex Virus	HSV-1
Human Simplex Virus	HSV-2
Human Papilloma Virus	HPV
Male Urethritis Syndrome	MUS
Genital Ulcer Syndrome	GUS
Standard Treatment Guidelines and Essential Medicine List	Standard Treatment Guidelines

Acknowledgements

Dedication

I wish to dedicate this work to my late father, Elhussein Sid Ahmed, who passed on before I could start this study, may his soul rest in peace. Special thanks to those who have contributed to the progress in any form.

Keywords:

Management

Private

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 Public

 Intervention

 Strategies

 Department of Health

South Africa

Abstract

Management of Sexually Transmitted Infections (STIs) in Private Pharmacies in Limpopo Province: Practice and Knowledge of Pharmacists

Background: In 2001, the South African Pharmacy Council (SAPC) developed a strategic plan, which recognised the crucial role that pharmacists could play in controlling sexually transmitted infections (STIs) and the spread of HIV infection. In South Africa, patients seek and receive treatment for STIs from pharmacies despite a legal restriction (Ward, Pharm, Butler, Mugao, Klausner, Mcfarland, Chen & Schwarcz, 2003). Current legislation bars people to seek treatment from the pharmacists for certain acute illnesses, thus significantly influencing the spread of some infections with the view that the longer infections remain untreated, the more opportunities for transmissions to occur. The perceived lack of treatment options in private pharmacies may even prevent patients from accessing advice or preventative measures at the pharmacy level (Gupta, Sane, Gurbani, Bollinger, Mehendale & Godbole, 2010). It is against this background that the study was carried out with the aim of assessing the knowledge and practice of private pharmacists in management of sexually transmitted infections (STIs) in the Limpopo Province and ultimately assist in the reduction of the spread of HIV infections.

Objectives: The objectives of the study were; to identify areas of weakness in services provided by pharmacists in management of STIs in private pharmacies; to identify possible pharmaceutical care of HIV; to determine the level of use of Department of Health Standard Treatment Guidelines of sexually transmitted infections by private pharmacy; to determine the availability of sexually transmitted infection drugs for treatment of STIs; and to identify the type of information given to clients with STI.

Method: A cross-sectional design was used in this study. The study was carried out in the Limpopo Province, South Africa. Out of the population of 130 pharmacies registered with the SAPC in Limpopo, a sample of 23 was selected. The pharmacies were stratified according to where they were located. This study used a questionnaire designed as an instrument of data collection. The data was collected through a face-to-face interview with the responsible pharmacist in each pharmacy outlet. This study used Simulated Client Method to evaluate the practice. In this method, simulated male and female clients visited randomly selected Pharmacies. Two scenarios were developed for a male patient with urethral discharge and a

female patient with vaginal discharge. The simulated clients on a standardised reporting form, outside the pharmacy, carefully recorded all observations made during the simulated scenario.

Data analysis: The data were analysed using cross-tabulation techniques and chi-square test was used to check existence of association. Compliance with Standard Treatment Guidelines in terms of treating STI syndrome was used as dependent variable. Location (Rural and urban) of private pharmacies, the gender of the client in the simulated client method, treating genital ulcer syndrome (GUS), treating male urethritis syndrome (MUS) and treating female vaginal discharge syndrome were used as independent variables. The existence of association between the dependent and variable was tested using the Chi-square test of independence.

Result: The results showed that 27% of private pharmacies in Limpopo treated and managed STIs clients in accordance with Standard Treatment Guidelines. The structured interviews results showed that 78% of private pharmacists in Limpopo knew the linkage between HIV and STIs. Only 39% of the private pharmacists knew about the existence of Standard Treatment Guidelines and used them in daily client consultations. Cross tabulation of data on compliance with Standard Treatment Guidelines in terms of treating STI syndrome (the dependent variable) and the location of private pharmacies (the independent variable) produced a Chi-square value of 1.31. This showed that the dependent variable had no association with location of independent private pharmacies. The study found that the treatment and management of GUS, MUS and female discharge varied according to location of the private pharmacies. The medicines stocked were in line with the Standard Treatment Guidelines in both rural and urban pharmacies in the Limpopo Province. There was very high demand for STI medication without a prescription averaging of 150 clients per week. Private pharmacies in both areas gave the necessary information to their clients focused on use condom with 54%, partner notification with 38% and only 27% of pharmacists advised client to consult the physician. The simulated client visits showed the discrepancy between knowledge and actual practice of the private pharmacists.

Conclusion: The majority of private pharmacies operating in the Limpopo Province do not comply with the Standard Treatment Guidelines for treatment and management of STIs due to inadequate knowledge. While there is a need to train some pharmacists in the provision of primary health care for syndromic STI treatment in order to reduce STIs and HIV transmission, the lifting of current legal restriction in South Africa that prevents pharmacists

from prescribing STI medication may be necessary. The knowledge and practice of incidence of specific infections in communities served by the specific pharmacy should be part of the pharmaceutical care provision.

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Chapter 1

Introduction

1.1 Background of the study

The role of the private sector in health care in most countries across world has increased dramatically (Elogie, Rowson, Mmugisha & Mcpake, 2010). This has contributed to the economic liberation and political changes. Many low-income countries around the world have encouraged a greater degree of private sector participation for achieving the core of health system objectives (Bhat, 2003). However, there is concern about the accessibility of private sector services, in particular pharmaceutical services and the quality of care provided (Nyazema, Viberg, Khoza, Vyas, Kumaranayake, Tomson & Lundborg, 2007). The World Health Organization (WHO) framework defines access to pharmaceuticals in four dimensions, i.e. physical availability (on the shelf), affordability (to the client or to the client caregiver), geographical accessibility and cultural accessibility of safe, efficacious quality and cost effective medicine (Sliney & Briggs, 2004).

In order to monitor the health status of the population and to evaluate the use and effectiveness of the control measures in the sector, up-to-date information is required (Bennett, Boerma, & Brugha, 2006). Sub-Saharan Africa region has 11% of the world population, yet it has 3% of the world's health care workers (Carapinha, 2008). Therefore, alternative delivery models are required to strengthen the available pool of health care workers. In addition, these are needed to encourage the optimal use of these available health care workers, such as pharmacists in the treatment and management of infections like sexually transmitted infections. While it is not within the pharmacist`s scope of practice to examine patients with such infection or initiate all type of therapies, pharmacists can however, provide valuable information and counselling to patients on prevention and therapy (Altini& Coetzee, 2005). Pharmacists have become an integral component service that is involved in promoting optimal and cost effective drug therapy and improving compliance (Carapinha, 2008).

In South Africa, there are 2718 private community pharmacies compared to 552 in the public sector. The private sector comprises 4483 community pharmacists in comparison to the 1561 pharmacists employed in public sector (Serfontein, Lubbe, Basson, John & Adsetts, 2006). According to South African Pharmacy Council, 12,813 pharmacists are currently registered

with the (SAPC). The majority (63%) recorded as practising in private sector, compared with 29% in the public sector. Thus, the private sector is better resourced than the public sector (South African Pharmacy Council, 2011). Integrating private pharmacies into government health services networks would boost the supply of pharmaceutical services. This will improve adherence, which is critical in optimising outcomes. Numerous factors influence the level of patient adherence, including medicine costs, dose frequency, food restriction, adverse events, drug supply and medical insurance. Pharmacists are uniquely positioned to manage these factors and play a leading role in improving adherence (Carapinha, 2008). However, to evaluate effectively the role of the pharmacist and information regarding pharmacist consumer relationship is required (Bennett, et al., 2006). Globally, many studies have been carried out to evaluate the role of the private health sector in service delivery, especially the role of private pharmacies and the effectiveness of the regulation in different countries around the world (Soderlund, et al., 2003; Fuentes & Zapate, 2008). In many countries, the pharmaceutical private sector makes up to half or more of health care sector (Stenson , Syhakhang, lundborg, Erikkson &Tomson, 2001) Moreover, pharmacies often function as out-patient clinics (Nyazema, et al., 2007). According to Altini & Coetzee, (2005) the private health sector, in many countries is often more accessible and convenient and the services are more confidential, less judgmental, and less stigmatizing for patients.

Common diseases such as STIs influence public demand for medication or treatment in many countries. The Human Immune Deficiency Virus (HIV) is transmitted from an infected person through unprotected sexual intercourse. The majority of HIV infections in Sub-Saharan Africa are transmitted through the same behaviour that transmits other STIs. Therefore, whenever there is risk of an STI, there is risk of HIV infection as well (WHO, 2006). Both discharge and ulcer of the genital tract result in increased susceptibility to HIV infection in the HIV- negative partner. In addition, the HIV infected partner is more infectious in the presence of these sexually transmitted infections as there is increased HIV viral shedding when a HIV- positive partner has an STI (Altini & Coetzee, 2005).

STIs are responsible for considerable ill health throughout the world (Tapsall, 2006). Moreover, STIs may cause morbidity and mortality directly through the impact on reproductive and child health. However, it is the indirect role of STIs in facilitating the sexual transmission of Human Immune Deficiency Virus (HIV) that has brought the importance of treating classic STI to the fore (Altini & Coetzee, 2005).

The World Health Organization (WHO) estimated that 75-85% of the approximately 448 million new cases of the four main curable STIs (*gonorrhoea, chlamydia* infection and *syphilis*)occur every year in developing countries (Khan, Wolter & Mori, 2006).

Each year, there is an estimated 340 million new cases of curable STIs, as well as millions of incurable viral STIs (Tapsall, 2006). In the 1980s, the prevention and the treatment of STIs were identified as one approach to controlling HIV epidemic. More recently, it has been suggested that improved management of STIs could be an important weapon in the fight against HIV/AIDS (Banerjee, Halder & Halder, 2011).

According to the Department of Health South Africa`s National Strategic Plan of 2012-2016, more than 1.5 million patients with symptomatic STIs were reported to have been treated at public health facilities in 2009. Other health services providers, mainly in the private sector are estimated to have treated another 1.5 million patients with symptomatic STIs (Department of Health South Africa National Strategic Plan, 2011).

The WHO introduced Syndromic Management Guidelines for treatment of STIs and other reproductive tract infections in the early 1990s (WHO, 1991). The aim was to treat all STI patients according to the symptoms with which they present, rather than deferring treatment until the results of laboratory tests are available. South Africa provides routine STIs screening and quality syndromic management of STIs according to Standard Guidelines in all health facilities including private sector. The National Strategic Plan, (2000-2005) of Department of Health should be included Syndromic Management of STIs in the curriculum required for undergraduate of nurses, doctors and pharmacists (Department of Health National Strategic Plan, 2000-2005).

The South Africa Syndromic Management was developed in 1994 and has been adopted in the Standard Treatment Guidelines and Essential Medicine List (Department of Health Standard Treatment Guidelines and Essential Medicine List, 2008). Syndromic Management allows for the treatment of one or more conditions that often occur at the same time and has been accepted as the management of choice by Department of Health, According to Standard Treatment Guidelines the following are general measures, which should be taken in the treatment and management of STIs:

- Educate, ensure adherence, and counselling.
- Promote abstinence from penetrative sex during the course of treatment.

- Promote and demonstrate condom use, and provide condoms.
- Stress the importance of partner treatment. Follow up partner treatment during review visits.
- Promote HIV counselling and testing.

Figure 1.1: Vaginal discharge syndrome

Patient complains of abnormal vaginal discharge/ dysuria or vulva itching/ burning

Take history and examine emphasis HIV test

Sexually active within the last months? → **NO** →

Consider vaginal candidiasis and/or bacterial vaginosis

Treatment: -Metronidazole, oral, 2 g as a single dose

Clotrimazole vaginal pessary 500 mg inserted immediately as a single dose

Clotrimazole vaginal cream, inserted with applicator 12 hourly for 7 days

Yes

Abnormal discharge/vulva itching confirmed?

Treatment: Cefixime, oral, 400 mg as single dose

And Doxycycline, oral, 100 mg 12 hourly for 7 days

And Metronidazole oral, 2 g immediately as a single dose

In pregnancy /during breast-feeding:

Cefixime, oral, 400 mg as a single dose

And Amoxicillin, oral, 500 mg 8 hourly for 7 day

And Metronidazole oral, 2 g immediately as a single dose

If vulva oedema/cured liked discharge: Clotrimazole 500 mg perssary inserted immediately as a single dose /and if vulva irritation is severe: Clotrimazole vaginal cream applied 12 hours for 3 days

Yes

Lower abdominal pain or pain on moving the cervix ? → **No** →

Source: Department of Health South Africa Standard Treatment Guidelines and Essential Medicines List, 2008-Sexually Transmitted Infection: Chapter- 12.

Figure 1.2: **Male urethritis syndrome (MUS)**
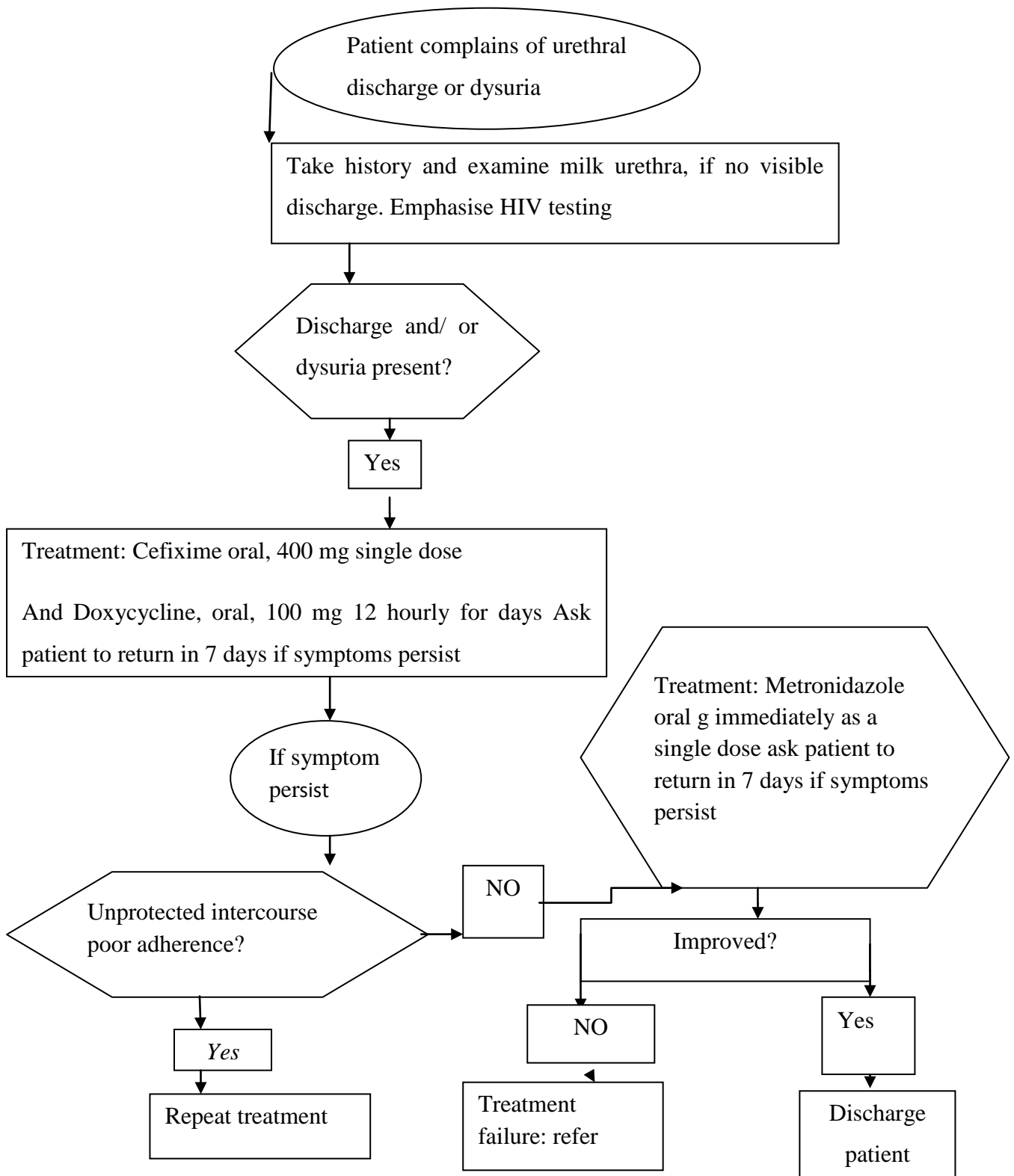
Source: Department of Health South Africa Standard Treatment Guidelines and Essential Medicines List, 2008-Sexually Transmitted Infection: Chapter- 12.

The role of the pharmacist has been changing over the past two decades with self-treatment increasing worldwide. The pharmacist should be a communicator, supervisor and health promoter with responsibilities to recommended safe and efficacious medicine and sound advice are essential (Chalker, Chuc, Falkenberg, Do &Tomson, 2000).

The South African Pharmacy Council (SAPC) developed a strategic plan on the role of pharmacists in the management of sexually transmitted infections and HIV/ AIDS, (SAPC, 2001). The strategic plan focused on the following areas; prevention, treatment, human legal rights, and research of HIV/AIDS and STI. The SAPC decided that criteria would be developed for services to be offered on HIV/AIDS resource centres in pharmacies. The criteria permit the provision of preventive, treatment, care, and supportive services. Prevention includes management and control of STIs in accordance with the guidelines of Department of Health (SAPC, 2004). They also stated that pharmacists should ensure minimum standards in providing services by being adequately trained and with sufficient experience (SAPC, 2004).

1.2 Problem Statement

A key principle of STI management is the open access nature of services, which allows people to use the service they choose regardless of its location. STIs remain stigmatised and in order to encourage people to access care, this open access needs to be encouraged. In South Africa, patients seek and receive treatment for STI from pharmacists despite a legal restriction. A study carried out demonstrates that pharmacists had limited knowledge of correct treatment recommendations (Ward, Butler, Mugabo, Klausner, Mcfarland, Chen & Schwarcz, 2003). Another study showed that less than 1 in 10 patients received adequate doses of antibiotic and 75% of the cases, an incorrect drug were prescribed (Altini & Coetzee, 2005). This inappropriate management of STIs facilitates the spread of infection including HIV. A study by (Layisani, Nombuyisle, Etinstwalo, Nyazema & Robert, 2012) in South Africa reported that professional practice in private pharmacies was influenced by many factors, regulations and economic incentives. With growing competition, economic incentives become important and a consumer demands increasing influence on practice which could result in a lot of irrational use of prescription only drugs.

1.3 Aim

The aim of this study was to assess the knowledge and practice of private pharmacists in the management of sexually transmitted infections (STIs) in the Limpopo Province and ultimately assist in the reduction of the spread of HIV infections.

1.4 This study was to answer the following questions:

- What services do private pharmacists provide with regards to STIs?

- Do pharmacists follow Department of Health STIs Standard Treatment Guideline and Essential Medicine List?

- What guides pharmacists to dispense STI drugs?

- What kind of advice do pharmacists give to clients with STIs?

1.5 Assumption

Good Pharmacy Practice and more knowledge about STIs in private pharmacists contribute to the treatment, management of STI and reduction of the spread of HIV.

1.6 This study had the following objectives:

- To identify areas of weakness in services provided by pharmacists in the management of sexually transmitted infection in private pharmacies.
- To identify possible pharmaceutical care of HIV.
- To determine the level of use of Department of Health Standard Treatment Guidelines of sexually transmitted infections by private pharmacy.
- To determine the availability of sexually transmitted infection drugs for treatment of STIs.
- To identify the type of information given to the clients with STI.

1.7 Significance of the study

This study aimed to contributes towards the provision of Good Pharmacy Practice in South Africa and improve pharmacists` knowledge and practice through quality patient care provision in private sectors. This study would also help to identify areas of intervention and how pharmacists can prevent HIV transmission through adequate and proper STI

management. In addition, this study aimed to contribute toward the body of knowledge on the management of STIs in private pharmacies.

Chapter 2

Literature review

2.1 Introduction

Literature reviewed on STIs shows that these diseases are highly communicable and they are a major public health problem in South Africa. This chapter consists of an exposition of information gathered from published literature. The review accessed reviewed published books, journal articles and research reports.

An attempt was made to consult both recent and not very recent documents and publications, local, regional and national literature particular the World Health Organisation (WHO) and the Department of National Health. Keywords that were used to guide reading were STIs and HIV/AIDS, management of sexually transmitted infection by Private Pharmacists, public and private health care of sexually transmitted infection, and intervention and Strategies of Department of Health. This chapter is organised around the following subtopics: background, prevalence of sexually transmitted infections, types of sexually transmitted infection and their consequence, linking sexually transmitted infection and HIV/AIDS, pharmacist practice towards sexually transmitted infection, syndromic management of sexually transmitted infections, type of information given to client with transmitted sexually infections and current sexually transmitted infections strategies in South Africa and conclusion.

2.2 Back ground

Most literature on pharmacists' roles and their prescribed practices are western focused. In the majority of developed countries, pharmacists are not allowed to prescribe antibiotics. They dispense drugs to client who have prescriptions from a medical practitioner, and are encouraged and sometimes required to offer advice on how to take medication and possible adverse effects and drug interactions (Mayhew, Nzambi, Pepin & Adjei, 2001). Therefore, they play an important role in ensuring the reduction of drug related morbidity, appropriateness, and effectiveness of drug medication (Nzapfurundi, Schneider, Blaauw, Bzwi, & Brughap, 2002). It might be a small step in moving from acknowledged responsibility of pharmacists for assessing the appropriateness of medication prescribed by a medical practitioner to allow pharmacists to prescribe drugs. Pharmacists in STI management

play important role and there are calls to expand their role (Turner, Ellertson, Thomas & Garicia, 2003).

In the USA for example, only a minority of states allow pharmacists to initiate or modify drug therapy, although state legislation has broadened over the last decade to incorporate drug selection and, in some cases even prescribing (Turner, et al., 2003). It is acknowledged that pharmacists are widely used as a source of drugs by communities in low-income countries where access to public sector health facilities is low (Mayhew et al., 2001). It is suggested that the current trend of international of health policies to promote management and regulation of health services, rather than their financing and provision, is likely to increase the role of the private sector in STI treatment (Turner, et al., 2003). Where literature exists, it highlights key issues generic to the debate on the extent to which pharmacists' prescribing powers should be increased and how quality treatment can be ensured. Most importantly, it underlines the dearth of documented research on pharmacist 'practices in low-income countries, where the literature on STI control has focused on the public sector despite recognition of urgent need to provide medical care in addition to public sector services (Smith, 2009).

2.2.1 Prevalence of sexually transmitted infections

Literature indicates that the prevalence of STIs has risen rapidly despite the progress made in their diagnosis and treatment. It is estimated that one million people every day acquire STIs including HIV (WHO, 2012).

According to a report by the Department of Health in 2011, South Africa has approximately 5.3 million adults HIV positive people. There is an exceptionally severe HIV/AIDS epidemic among those between 15-49 years (Department of Health National Strategic plan, 2011). In addition, most STI surveillance data are obtained from surveys of women attending antenatal clinic and family planning clinics. The average prevalence observed in women at family planning and antenatal services is 5% for *gonorrhoea*, 7% for *syphilis* and 11% for *Chlamydia* (Altini & Coetzee, 2005). Similar finding were found in the study conducted by Samantha, Wand & Ramjee (2013) in South Africa. A total of 2236 women that had enrolled in the vaginal microbial trial were tested for the presence of *Chlamydia trachomatis* (CT), *Neisseria gonorrhea* (NG), *Treponema pallidum*, and *Trichomonas vaginali*s (TV). They reported that sexually transmitted infections (STIs) continue to be a significant public health problem especially among women of reproductive age in Africa. Risk factors that were

significantly associated with STI acquisition were women of 23 years of age or younger and a low education level. They concluded that young women with lower education and a history of STIs are at high risk of multiple STIs. Prevention programs should consider target approach to STI prevention among young women (Samantha, Wand &Ramjee, 2013).

Gassell, Mercer, Sutcliffe Petersen, Islam, Brook, Ross, Kinghorn, Simus, Hughes, Majeed, Stephenson, Johnson & Hayward, (2006) also conducted a study in which they estimated the incidence of diagnosed sexually transmitted infections between 1990-2000. They used a retrospective cohort of patients registered in the United Kingdom research database. They reported that substantial and increasing number of sexually transmitted infections are diagnosed and treated.

2.2.2 Types of sexually transmitted infections and their consequences

In South Africa, regulations under the Health Act No. 63 of 1977 and WHO (1990) classify *gonorrhoea, syphilis, non-gonococcal*urethritis, *trichomoniasis, chancroid*, genital herpes, genital *candidiasis* and bacterial vaginitis as sexually transmitted infections. STIs affect both women and men, some of STIs such as HIV, can be transmitted by infected blood and from mother to child during pregnancy, delivery and breastfeeding (WHO, 2011). STIs are very common and have the potential of causing serious health complications. The social and economic impact of STIs is also great. STIs are classified, as follows *chancroid* is genital ulcer disease caused by *Haemophilusducreyi.* Its incidence has declined greatly in both developed and developing countries. Like other genital diseases, *chancroid*is associated with increased acquisition and transmission of HIV (Steen, 2001). *Syphilis* is a genital ulcer disease caused by *Treponema palladium.* In 2001, the World Organisation Health (WHO) estimated the global prevalence of syphilis at 12 million. If untreated, syphilis during pregnancy may lead to still birth and congenital *syphilis* (Donovan, 2004). *Gonorrhoea* is a discharge disease caused by *Neisseria gonorrhoea*. In WHO (2012) estimated its global prevalence at 62.4 million both of *syphilis* and *gonorrhoea* prevalence is high in South Asia and Sub-Saharan Africa. In WHO, (WHO, 2012) estimated the global prevalence of *chlamydial* infection to be 92 million, untreated *chlamydial* infection like untreated *gonococcal*infection can cause pelvic inflammatory disease, ectopic pregnancy and infertility in women. *Trichomoniasis* vaginitis can cause vaginitis with vaginal discharge in women and urethritis in men. *Trichomoniasis*vaginitis has been associated with preterm birth and may promote the sexual transmission of HIV. Bacterial vaginitisand vulvovaginal*candidiasis*,

cause vanginal symptoms in women are extremely prevalent in devolving countries. It has been associated with HIV acquisition or HIV genital shedding (Donovan, 2004).

Although often referred to as reproductive tract infection rather than STIs, they are managed in conjunction with STIs, and bacterial vaginitis is associated with some of the same risk factors as other STIs. Both Human simplex virus HSV-1 and HSV-2 infect the genital and anal areas. HSV-2 causes the most clinical recurrences in the genital tract. HSV-2 includes severe primary disease, meningitis, hepatitis, erythema, multiform, and neonatal herpes, estimated indicate that 10 to 30 percent of adult worldwide are infected with HSV-2 (Corey, 2000). Human T cell lymph tropic virus type-1, like Hepatitis B virus, transmitted parentally and sexually .This causes a serious form of spastic paralysis (Manhart, & Holmes, 2005). Human papilloma virusHPV types are grouped into low –risk (non-oncogenic) and high -risk (oncogenic). Low -risk types, including types 6 and 11, cause anogenital warts, whereas high risk types including HPV 16,18,31 and 45 lead to genital and anal cell cancer (Stone, Kareem, Sternberg, Poon, Quillan &Unger, 2002).

2.2.3 Linking sexually transmitted infections and   HIV/AIDS:

The critical issue relate to HIV/AIDS is to control the spread of the infection and provision of support services to those already infected. Although sexually transmitted infections (STIs) have been causing significant morbidity and mortality for years, it is only with the advent of HIV, that STI control is now receiving higher priority in both developed and developing countries (Mayhew, et al., 2001). One of the Key areas of control of HIV transmission is the effective management of sexually transmitted infections, which could reduce the HIV incidence (WHO, 2006). It is evident that HIV infection is sexually transmitted through the same behaviour that transmits other STIs. Therefore, whenever there is risk of an STI, there is risk of HIV infection as well (Grosskurth, Gray & Hayes, 2000). The relationship between STIs and HIV is the presence of STI, which makes it easier for pass from one person to another. Numerous epidemiological and biological studies now support the fact that STIs, both ulcerative diseases and non-ulcerative enhance the risk of HIV transmission (Grosskurth, et al., 2000). Acquisitions of HIV per sexual contact act most dramatically because genital ulcer and lesions allow easier entry of infectious particles through openings in mucous membranes. Ulcerative STIs likes genital herpes increase the risk of HIV transmission 10 to 300 times per exposure. Inflammation caused by other STIs may increase

the viral load in genital secretion of those living with HIV infection making transmission more likely (Steen, 2001).

It is common that genital inflammation may cause microscopic cuts that can allow HIV to enter the body more easily. Non- ulcerative STIs like *gonorrhoea*, *chlamydia*, and *trichomoniasis* also increase the risk of HIV transmission 3 to 10 times per exposure (Beltzer & Gremy, 2004). These STIs enhance HIV transmission by increasing the number of white blood cells, which are both targets source for reproduction of HIV in the genital tract, and speeds up the migration of certain HIV-sensitive and receptive cells (lymphocytes such as CD4) cells to site where the HIV virus can attach itself and be carried further into the body. Sexually transmitted infections (STIs) facilitate the sexual transmission of HIV (Donovan, 2004). Genital discharge and secretions are common symptoms of STIs and often the site of high concentrations of the HIV virus. The high incidence and prevalence of sexually transmitted infections (STIs) in Southern Africa poses a serious threat to public health for two main reasons. First, the impact of these infections is major cause of a healthy life loss, particularly for women and children, and secondly, because STIs are important co- factors in driving the HIV epidemic (Mayaud & Mabey, 2004).

2.3 Pharmacist practice toward sexually transmitted infections

Chalker, et al., (2000) carried out a study to find out how patients with STIs were treated at private pharmacies in Hanoi, and what pharmacists know about STIs management. The study found that even through 75% pharmacists knew that they should not treat STI patients while 84% actually did. However, both quality of drug treatment and advice were poor. They reported that treatment by the pharmacists is cheaper than by doctors and service is more accessible and less controlled. The comment point between the current study and this study remain in the methodology as both studies used the same methodology. It was noticeable from their results that the actual practice found to be worse than that claimed by the pharmacists during interview. In addition, the compliance with ministry of health guidelines was poor. They concluded that education or peer awareness interventions are urgently needed among private pharmacists in Vietnam.

Sarkodie, Stenier, & Attafuah (2000) conducted a study in which the training of the syndromic management of STIs in Ghana was evaluated. They selected pharmacy outlets that had received the training (intervention) and outlets that had not received the training (no intervention). Simulated clients described the symptoms of urethral discharge to the first

pharmacy staff encountered and completed a standardized questionnaire after each encounter. They reported that correct drug provision for urethral discharge improved with educational intervention but despite the training less than half of the simulate clients received appropriate treatment remained relatively low (no intervention 18%; intervention 39%). Most of the counselling and history taking measure also appeared to improve as result of training. A notable exception was a poor promotion of condoms in both groups of outlets despite condoms being readily available in most pharmacies. The major problem encounter in this study was lack of information on whether the pharmacy staff encountered by the same simulated clients had attended the training. According to their study, the training was limited to pharmacists. However, it was clear from their findings that store clerks saw half of simulated.

Mayhew, et al., (2001) conducted a study to investigate the current role played by pharmacists in Greater Accra Region (Ghana), in the management of STIs. The main objective of the study was to conduct a situational analysis information to facilitate the planning and implementation of STI training activities for pharmacists in Greater Accra. This was a multi- purpose study consisting of a situational analysis, development and implementation of an intervention, and subsequent discussion of policy implications. The findings of their study indicated that pharmacists offer an accessible mean of care for the public, being open considerably longer than health centres and clinics. More than 60% of client in their client survey come to pharmacies without prescription indicating that they do not first attended a medical establishment. The training interventions apparently resulted in some improvement in case management, notably for urethral discharge. The weak part of their study was that nature of pseudo-patient methodology did not allow for distinction between respondents who were qualified pharmacist and their less qualified staff. It should also be remembered that where pharmacists and staff opposed to the clients and pseudo-patient, were interview about STI management. This means that the data reflected the respondents claimed actions rather than their actual practice and activities. They concluded that pharmacists represent a valuable point of contact for STI patients. If the pharmacists do not improve their knowledge about STIs infections, STI patient who do not attend medical establishment would not be confident about the quality of treatment. Training intervention for pharmacists should include appropriate diagnosis and treatment of STI, with an initial focus on urethral discharge and possible treatment of vaginitis among women presenting with a discharge, encouraging referral for genital ulcers and unimproved vaginal discharge.

Preventive activities including information to clients and the public on STI /HIV prevention and treatment, and promotion of the condoms, were opportunities currently under –exploited by pharmacist' for limiting the spread of STI and HIV (Mayhew, et al., 2001).

Watson, Walker & Bond (2000) conducted a study in United Kingdom to investigate the views and beliefs of community pharmacists about the benefits and disadvantages of treating women with symptoms suggestive of vaginal thrush. They used semi-structured interviews. Factors such as pharmacist gender, pharmacy location and size were believed to have the potential to influence pharmacist`s experience, and current views and beliefs. They reported that the pharmacists were generally positive toward the treatment of women with vaginal symptoms. Immediate access to treatment and rapid symptoms relief were perceived to be the greatest advantage to the customer. It was clear from Watson, Walker & Bond (2000) that the main problem was the customer embarrassment perceived to be the influence a lack of privacy and the gender of the member of staff involved in the consultation. Although the most frequently cited benefits to pharmacist providing this type of care were enhanced client loyalty and job satisfaction. This supports the major role of pharmacies in the provision of primary health care for STIs. They recommended that there is a need to make pharmacists aware of the current evidence regarding the treatment of vaginal thrush and particularly the sexual partner.

Anderson &Thornley (2010) conducted a study in United Kingdom. In which they analysed data from the first two years of the service to describe the positivity rate by age and gender. They descripted the profiles of users and to determine if the programs succeeded in reaching those who have been missed in other clinic settings. The programs of the national *chlamydia* screening for free testing for 16-24 years old across the United Kingdom has been implemented by the Department of Health. Choosing health through pharmacy stated that there was evidence that community pharmacies could provide sexual health services and indicated that the government would like pharmacies to do more (Anderson &Thornley, 2010). They reported those 14,378 private *chlamydia* screening tests were performed in pharmacies during the two years period the positive rate were higher in males than females. The positivity rate was significantly higher in the 16-24 aged groups than in the 25 and over group. The interesting part of their study was that a large number of people who could have accessed free chlamydia screening services at the pharmacies. They were still choosing to pay for their treatment at same pharmacy. This might be because of convenience and the unobtrusive nature of pharmacy. They confirmed that making treatment available in the

pharmacy provides a different and accessible environment for people who want to be screened for chlamydia. They emphasised that their data added to the existing evidence in supporting the feasibility and acceptability of pharmacy testing and treatment.

Leiva, Shaw, Katie, Paine, Manneh, Adam &Mayaund (2001) conducted a survey study aimed to describe the quality and costs of sexually transmitted infections (STIs) case management in urban pharmacies in Gambia. Their second aim was to explore pharmacy workers' willingness to improve the STI care they provide. Pharmacy workers' from registered pharmacies were interviewed in order to collect information on their knowledge and practice regarding management of STIs. The same pharmacies were visited by a male simulated client to a certain how urethral discharge syndrome case were managed in practice. The study indicate that pharmacies play an important role in the management of STIs as they provide a quick, more accessible and confidential service with reasonable availability of drugs for treatment , despite relatively high cost. According to the result of the study, STI case management provided by pharmacy sector in Gambia is often inadequate at present. However, most pharmacists seem to be willing to receive regular training in the syndromic management of STI and to educate the public about the importance of correct treatment taking and partner referral as a way of upgrading their skills and improving the quality of care they provide.

Zachariah, Harries, Nkhoma, Arendt, Chingula,Chanulo, Chimulo & Kirpach(2002) conducted study in a rural district of Malawi among men presenting with urethra discharge, in order to describe their health-seeking and sexual behaviour and verify the antibiotic susceptibility of *Neisseria gonorrhoea* and *Chlamydia trachomatis.* It is estates that 61% of the patient entered into the study reported having taken some form of medication before coming to the sexually transmitted infections clinic. The most frequent alternative source of care was pharmacist. In their study, they emphasized the need to integrate alternative care providers and to encourage their role in promoting safer sexual behaviour. Antimicrobial susceptibility surveillance of *Neisseria gonorrhoea* was essential in order to prevent treatment failures and control the spread of resistant strains.

Turner, et al., (2003) conducted a study in Mexico City to assess the quality of advice provided in Mexico City pharmacies. They designed the survey to simulate the experience of individuals with STI symptoms seeking assistance from pharmacies. They inquired about the trained age, and experience of attendant and about the typical number of clients coming for

suspected STIs. After considering three hypothetical case studies, attendant recommend diagnosis, treatment and sometimes physician follow up. They reported that Mexican pharmacies rarely enforce physician prescription before dispending STI drug. Their result showed that most Mexico City pharmacists are actually clerks, with trained pharmacist rarely available on the premises. The average pharmacy attendant was 32 years, with a median of 5 years' experience at the pharmacy, but very limited training. About 50% of the individual are seeking medical treatment for genital or vaginal infections from pharmacies without medical doctor's advice. This supported the major role of pharmacies in provision of primary health care for STI. Depending on the case study, attendants provided appropriate diagnoses in 0-12% of cases, recommended appropriated treatment in 12-16% of cases. The study revealed that since they interviewed the first available pharmacists so they cannot appraise the performance of certified pharmacists. Their study also did not address the role of the pharmacist as medical provider.

Ward, et al., (2003) conducted a study that aimed to assess the current and potential future role of community pharmacists in Western Cape, South Africa played in treatment of STIs. A face-to-face interview that ascertained experience with request from patients for STI treatment, current STI treatment practice, and willingness to provide syndrome STI treatment was administered to head pharmacists. Pharmacies were selected from urban area and rural area. This study revealed that 13% of urban and 17% of rural pharmacists identified the correct medication for male with urethral discharge. None of rural pharmacist identified the correct medication for genital ulcer. Fifty three percent of pharmacists in urban regions and 47% of pharmacists in rural area express willingness to provide STI syndrome treatment. They reported that their study confirm anecdotal reports that a high volume of possible STI was seen in community pharmacies with requests for medication without prescriptions. Many community pharmacists recognize the relationship between HIV infection and other STIs, regard their role in treating STI as underutilized and were willing to provide STI treatment. However, pharmacist cited current legal restrictions and lack of skills as significant barriers to providing such treatment.

In addition, the pharmacists surveyed demonstrated a poor understanding of correct syndromic STI treatment protocols. They mentioned that contrary to their expectations the pharmacists' perception of need for STI services to be provided in pharmacies was not

associated with their willingness to treat STIs, rather, the strongest predictor of their willingness to provide treatment was their knowledge of relation between STI and HIV infection. The limitation of their study is that they introduced the response bias as they mention given the context of some practice of pharmacist, they did not ascertain information that would allow them to assess an associate between the pharmacist willingness to provide treatment and various monetary benefits associated with syndromic treatment. They concluded that pharmacists were frequently called upon to provide STI treatment but had limited knowledge of corrected treatment recommendation. Training pharmacists to provide syndrome STI treatment may be one strategy to reduce STI morbidity and HIV transmission. Furthermore, lifting of the current legal restriction that prevent pharmacist from prescribing medication was necessary (Ward, et al., 2003).

A study carried by Garcia, Hughes, Carcamo & Holmes (2003) in Lima determined the effectiveness of intervention for pharmacy workers' in improving their recognition and management of sexually transmitted disease STIs syndromes. The STIs intervention includes interactive seminars on recognition and management of four STI Syndromes (urethral discharge, vaginal discharge, genital ulcer and pelvic inflammatory disease). Simulate patients visited pharmacies in intervention and control districts at one, three and six months after training to assess out comes. Simulated patients reported better significantly more frequent recommendation for use of condoms and treatment of partners at pharmacies in intervention districts than in control districts. In their study, they demonstrated that training was feasible and effectively improves pharmacy workers' practice in the six intervention districts than in the control districts. They mentioned that they did not do pre-intervention assessments because their previous study of random sample pharmacies throughout Lima found consistently low rates of recognition of STI syndromes and very infrequent recommendations for condom use or for treatment of partners. The strong point of their study includes high proportion of pharmacies that accepted and completed training made analyses possible. They concluded that empowering pharmacy workers in management of STI syndromes, for strengthening links between pharmacies and clinical specialists in STI, and for programme of training and support to influence practices of pharmacy workers.

According to Mayaud & Mabey (2004) conducted a study in Gambia of pharmacy workers which showed that only 11% of them correctly cited the appropriate management of urethral discharge according to national guidelines, and less than 5% provide adequate treatment to "mystery shoppers" despite stocking some of the required drugs. None of the pelvic

inflammatory disease or genital ulcer was adequately treated. Likewise a study of private doctors in South Africa showed that less than one in 10 patients received adequate doses of antibiotic and in 75% of cases, the corrected drug was prescribed. They recommend in their study that the private sector should be viewed as a complement to, and a replacement for, effective and accessible public service. The views of government health authorities and the medical community should be considered when attempting to stimulating effective collaboration between the two sectors (Mayaud & Mabey, 2004).

Khan, Wolter & Mori (2006) to assess pharmacists who were working at private pharmacies post training management quality of syndromic sexually transmitted infection in Nepal. Focusing in the area of privacy maintaining, encouraging history taking, counselling referral practice, partner notifications and drug prescribing and then compared the finding of two methods. They reported that the overall, interview method revealed satisfactory knowledge of pharmacists for management of sexually transmitted disease except drug prescription but their actual behaviours, revealed by simulated client indicate lower quality and differ significantly in the area of encouraging, history taking counselling, referral practice, and partner notification. They also mentioned that the findings support the experience of the other that provider of interview method strongly over estimates corrected performance was not a suitable method for studying the actual performance of health provider. The study concluded that retained knowledge of pharmacists for syndromic management of sexually transmitted infections was not applied to the simulated client in actual practice. Continuous monitoring and further motivation for them may improve syndromic management quality of sexually transmitted infection. They also recommended that depending on the purpose of their study, various methods should be applied simultaneously to reach a better conclusion.

Nyazema, et al., (2007) carried out a study in Zimbabwe to assess the quality of private pharmacy practice with a focus on to the extent of antibiotics are sales without prescription in private pharmacies in four Zimbabwean cities in relation to two tracer infection conditions sexually transmitted infections among females and males, and diarrhoea in a child. The interesting part in their study was that using different methods of data collection showing similar results as many studies have shown that the reported behaviour tends to be better than actual practice, which was not found in their study. They concluded that a low sale of antibiotic without prescription in spite of high patient demand. Few respondents however performed acceptable in relation to guidelines when considering information and advice for tracer condition. This implies the need for continuing professional development of

pharmacists and other pharmacy staff in order to improve the situation regarding provision of information and advice to the patients with common infection.

Smith (2009) conducted a study to review the evidence regarding the quality of professional services from private pharmacy in low and middle-income countries. Using a literature search (computer and hand) researching was taken to identify all studies, which included an assessment of the quality of aspects the of some private pharmacy services in low and middle-income countries. The results showed that 30 of studies were identified, which spanned all regions in developing world. These included nine, which examined the scope and quality of range of professional services, 14 that assessed the quality of advice provided in response to specific symptoms and seven, which investigate the supply of medicine without a prescription. A range of methods were employed, in particular questionnaire survey with staff and/or clients and assessment of practice using simulated client methodology which many authors identified potential for pharmacy to contribute more effectively to primary health care, virtually all studies identified deficiency in the quality of current professional practice. In particular, authors highlighted the lack of presence of pharmacist or other trained personnel. In addition to the provision of advice for common symptoms which was not in accordance with guidelines and inappropriate supply of medicine. They concluded that the evidence base regarding the quality of professional services from pharmacies in low and middle-income country was limited. Most studies consistently highlight shortcomings in professional practice in term of advice given and supply of medicines. If a pharmacist contributed more effectively to health care in low and middle-income countries, barriers to the provision of higher quality care and ways in which these might be overcome must be examined and addressed.

Gupta, Sane, Gurbani, Bollinger, Mehendale & Godbole (2010) carried out a study in an urban region of India. They used a random sampling survey of community pharmacies collected information regarding the characteristics of the pharmacy and pharmacist, as well as respondents` knowledge and perception regarding sexually transmitted infection, HIV and antiretroviral. In their finding, they identified that a lack of adequate knowledge regarding sexually transmitted infection, among pharmacists, including among those who stocked STI drugs. The limitation of their study that simulated clients were not used to evaluated the practice. This had impact responses related to pharmacy practices, such as the verification of prescriptions. They identified that there is significant knowledge gap and need for targeted training for pharmacists, particularly those dispending sexually transmitted infection and

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antiretroviral drugs in the community. They concluded that a pharmacist could be serving as an excellent check point for ensuring appropriate HIV/STI therapies but if there is appropriate training.

2.4 Syndromic management of sexually transmitted infections

Nzapfrundi, Schneider, Blaauw, Bzwi & Brugha (2002) conducted a study in Gauteng Province in 2002 to explore the quality and equity of private sector care for sexually transmitted infections in South Africa, using care for sexually transmitted infections (STI) as a case study. Each was presented with a set of STI syndromes and requested to describe how she or he would manage the patient, first if the patient was insured, then secondary if the patient was paying cash (uninsured). It was noticeable from their results that wide range of different antibiotics was prescribed peer syndrome. This was reflecting the lack of standardised approach of antibiotic therapy and showed that the concept of syndromic management it was not yet wide spread in private sector. They reported that knowledge of recent development in STI syndromic management and effectiveness of prescribed drugs was poor. Especially for genital ulcer and pelvic inflammatory disease, and less than half prescription were found to be effective. Although the effectiveness of the prescription for insured and uninsured patients were similar, for most syndromes uninsured patient were offered significantly cheaper and less convenient antibiotic regimens. They reported that the private sector plays a major role in the delivery of health care in South Africa, despite considerable efforts to improve access to public sector care. In South Africa, they are still important providers of such care, possibly treating more STI cases than the public access, privacy, confidentially and short queues are some of the features of private sector that generally attract patients with STI.

In 2005, a study was conducted by Schneider, Chabikuli, Blaauw, Funani & Brugha to evaluate an intervention to improve quality of STI care among private practitioners(GPs) working into urban district in Gauteng province in South Africa. The study aimed to identify and test local strategies to improve the quality of STI care by private GPs. They implemented a multifaceted intervention, the cores of which were four interactive continuing medical education seminars. Changes STI treatment practices were evaluated through record reviews before and after the continuing medical education intervention in random selected practices in the intervention districts and in randomly selected from a reference group. They reported that there were statistically significant improvements in the quality of drug treatment for urethral

discharge but not pelvic inflammatory disease between both intervention groups. It was clear from their study findings that adherence to Standard Treatment Guide lines in private sector was poor. Also poor quality STI care has been well documented in this setting and lack of access to update knowledge.

Lewis & Marumoin (2010) in South Africa revised the National Guidelines for management and control of sexually transmitted infection in order to improve management of several keys STI syndrome. They mentioned that since 2004, there had been a marked rise in resistance to ciprofloxacin among *Neisseria gonorrhoea* isolates in several South African cities, requiring a change from quinolones to cephalosporin to treat presumptive *gonorrhoea*. They reporting that in keeping with WHO recommendations, acyclovir had been added as part of first-line therapy for the management of genital ulceration. According to their study that is reflecting in the Department of Health's HIV & AIDS and STI Strategic Plan for South Africa 2007-2011, which high lights the importance of providing quality STI services.

Jonhnson, Dorrington, Bradshaw & Coetzee (2011) carried out a study in South Africa to determine the effect of syndromic management protocols on STI prevalence that has been introduced in South Africa since 1994. A mathematical model of sexual behaviour patterns was used to model the incidence of HIV, genital herpes, *Syphilis, chancroid, gonorrhoea, chlamydial* infection, *trichomoniasis*, bacterial vaginitis and vanginal *candidiasis*. They reported that between 1995 and 2005, there were significant reductions in the prevalence of s*yphilis, chancroid, gonorrhoea* and *chlamydial* infection in woman aged between 15 and 49. Syndromic management resulted in decline in *syphilis* prevalence reduction in *gonorrhoea*, *trichomoniasis, chlamydial* and reduction in the prevalence of bacterial vaginitis and decline in *chancroid.* The results of study showed that most of the decline observed in *syphilis* and *chancroid*canbe attributed to improvements in STI treatment and increase in condom usage. To the extent that there has been reduction in prevalence of the other STIs in their analysis they suggested that most of the reductions are due to behaviour change, and syndromic management has had relatively little effect on these other STIs. These results were consistent with the result of community randomized controlled trials of syndromic management interventions in East Africa in Mwanza trial it was found syndromic management significantly reduced the prevalence of active syphilis ,but did not reduce the prevalence gonorrhoea and trichomoniasis (Jonhnson, et al., 2011). They conclude that the introduction of syndromic management guidelines could be expected to reduce significantly the prevalence of STI that were frequently symptomatic.

A study carried out by Voeten, Otido, Hara, Kuperus & Borsboom (2001) in Nairobi, assessed the quality of STI case management in Nairobi healthcare facilities and the prevalence for sexually transmitted infections (STIs) among attendees at antenatal and family planning clinics is substantial. Providers were interviewed and had been observed during the interactions with patients who had STIs, and visited by a simulated patient. They reported that for observations of patients with STIs, correct history taking ranged from 60% to 92% among the various types of facilities, correct examination from 31% to 66%, and correct treatment from 30% to 75%. Public clinics equipped for STI care performed best in all aspects, whereas treatment was poor in pharmacies and private clinics. The providers trained in STI management performed better than those without training did. They concluded that quality of STI case management was unsatisfactory except in public STI equipped clinics. This indicates the need for improvement by interventions such as further training in syndromic management, improved supervision, and the introduction of pre-packaged syndromic management kits.

World organisation of Health (2006) outlines a global strategy for the prevention and control of sexually transmitted infections from 2006 to 2015. It also stipulates that current strategies to reduce the spread of STIs are not sufficient. These include the following: stigmatization, inappropriate treatment and little or no follow up of sexual partners. In poor settings, the services are often unable to provide screening for asymptomatic infection and a lack of trained personnel and adequate supplies of appropriate medicines to treat STIs. Where such services exist, care for STIs remains separated from primary health care, family planning and other health services and support for public sector services have declined in favour of adequately regulated expansion of the private sector. They recommended that vigorous advocacy campaigns would be needed to root out the stigma that surrounds STI and HIV because stigma all too often extends beyond the infection and the infected has serious detrimental effects on the clinical services and public health programmers that attempt to deal with them. Their strategy also identifies appropriate opportunities for interfacing and integrating with HIV/AIDS and sexually transmitted infections programs and for involvement of private sector in these shortcomings in such key areas as the syndromic approach for the management.

2.5 Information given to the clients with STIs

A study carried out by Steen, Vuylsteke & Decotito (2000) in South Africa assessed the target intervention on the concept of core groups-that is of individuals who have much higher rates of sexual partners' ship, and thus may be more likely to acquire and transmit STIs. The study was conducted in a mining community. They provided STI treatment including periodic presumptive treatment with Azithromycin, and preventive education to a group of female sex workers living around mine. The intervention significantly reduces the prevalence of *Neisseria gonorrhoea* and genital ulcer disease among the high-risk women in short term. Symptomatic STIs were also reducing among the miner in the intervention area compared to miners living further away.

Okonofua, Coplan, Collin, Oronsaye, Ogunsakin, Organor, Kaufman & Heggenhougen (2003) carried out study in Nigeria. Their objectives were to evaluate the impact of an intervention on STI treatment-seeking behaviour and STI prevalence among Nigerian youth. The intervention, based on formative research, consisted of community participation, peer education, public lectures, health clubs in the schools, and training of STI treatment providers, including those with no formal training. Youths in the intervention schools, compared to control schools, reported statistically significant improvements in knowledge of STIs, condom use and partner awareness. The results of the evaluation of this intervention indicated that treatment by private physicians increased and treatment by pharmacists decreased and did have substantial effects regarding the use of condom and partner notification.

2.6 Current sexually transmitted infection strategies in South Africa

It is evident that STIs are the major determinant of HIV transmission in South Africa. STIs patients treated annually are about one million managed by the private general practitioner (Department of Health National Strategic Plan on HIV/STI/TB 2012-2016, 2011). Clearly, even without the HIV pandemic STIs as health issue pose an important public health problem. These figures represent only those seeking treatment options. Thus, in the countries strategic plan, addressed the issue of management and control of STI`s as an intervention (Department of Health HIV/ AIDS/STI Strategic Plan for South Africa, 2000-2005). The Government`s plan in this area of prevention appears, at first glance, to be inclusive in that it places great emphasis on both private and public sector in terms of use the syndromic approach according to National Guidelines.

The Department of Health in its strategic plan for STI management (2000-2005) has access to large pool of health care workers within pharmacy that required minimal additional training to be part of this human resource requirement. It was likely that while the plan did not focus particularly on the strategic role of the pharmacist, the Role of Sector refers to each sector developing specific plans based on their 'role in the society, activities and their specific strengths". This document therefore, attempted to highlight the significant role of private pharmacy and the need to for the private pharmacy to mobilize its resource and document a possible Good Pharmacy Practice to demonstrate its vital role in addressing the problem of effectively STI and HIV management. Pharmacists in South Africa were not able to effective manage sexually transmitted infections (STI) as the law prevents the pharmacist from dispending the necessary drug without a prescription. There has been a belief in the industry that pharmacist could play crucial role in effective STI management if they were sanctioned to dispense the drugs used in Syndromic approach to STI management (ward et al., 2003).

2.7 Conclusion

The literature reviewed shows that private pharmacy is an ideal place to interact as first point of treatment if given the opportunity (Chalkers,et al., 2000; Zachanriah, et al., 2002; Khan, et al., 2006). The inability of the community to seek treatment from pharmacy with current legislation barriers, this would influence significantly on the spread of infection in the view of the fact that longer the infection remains untreated, the more opportunities the more transmission to occur. The perceived lack of treatment option at private pharmacy may even prevent patients from accessing advice or preventative measures at the pharmacy level (Gupta, et al., 2010). Pharmacists in most communities are perceived as trusted health care professionals with extensive knowledge on health care issues (Watson, et al., 2000). They are easily accessible and always available, with the stigma related to most sexually transmitted infections, the first point of contact must provide with minimum barriers (Mayhew, et al., 2001). If communities are made aware that they have to collected medication for these types of infection at their local pharmacy, the response time in seeking treatment post infection are dramatically reduced due to these minimizing barriers (Garcia, et al., 2003). The pharmacists can play a significant role in the control of STI transmission by providing clients with advice, information, education on STI and encouraging partner communication. This also is reinforced by patients` compliance for the treatment. The private pharmacist can refer clients to health clinic for diagnosis and treatment. Therefore, there will be decrease in the number

of new infection, due to both counselling intervention and detection (Gupta, et al., 2010; Anderson &Thornley, 2010).

The next chapter discusses the methods used in this study. It provides details on the study design population, and sample size, procedure for data collection, reliability, and validity of the instruments as well as ethical considerations.

CHAPTER 3

Methodology

3.1 Introduction

This chapter discusses the method and the procedures used in this study, including the study design and the instruments used for data collection. The population and sample, reliability, and validity of the instruments as well as the ethical considerations are also discussed.

3.2 Study design

This study utilized descriptive, cross-sectional study design aimed to investigating the degree of compliance with the Standard Treatment Guidelines by pharmacies operating in urban and rural Limpopo, in the Republic of South Africa. Cross-sectional study designs are observational in nature and are known as descriptive research. Information that is available in the target population is recorded via a random sample without manipulate variables of interest. This type of research is used to describe characteristics that exist in a population. These methods are often used to make inferences about possible relationships or to gather preliminary data to support further research. Moreover, the study utilizes different groups of people who differ in the variable of interest, but share other characteristics such as educational background, socioeconomic status, ethnicity and geographical locations for example (Hilla2006).

The cross-sectional study allows gathering cross-sectional data on the state of practice and knowledge of pharmacist engaged in treating STI. Moreover as noted in the data analysis section of this study practicing pharmacists in urban and rural pharmacies were interviewed on the use and compliance with Standard Treatment Guidelines. The study obtained supporting evidence by making use of Simulated Client Method. The study method guarantees reliable outcome and enables comparisons between the pharmacies in urban and rural Limpopo. In this study, face-to-face interviews were used to minimise non-response of focus interviews and to maximise the quality of the data collected (Hammersley & Gomm 2004).

3.3 Study setting

The study was conducted in Limpopo Province, which is South Africa's northern most provinces, lying within the great curve of the Limpopo River. It is the fifth largest of the

country's nine provinces. Limpopo Province takes up 10.2% of the country's land area with a population of 5.4 million (South Africa info, 2009).

3.4 Study population and sampling frame

In this study, the population was made of 130 the private pharmacies in the Limpopo Province. Using a list obtained from the South African Pharmacy Council (SAPC).

3.5 Sampling

The list of 130 registered private pharmacies located in rural and urban areas in Limpopo province obtained from the South African Pharmacy Council (SAPC) was used as the sampling frame to randomly select data for the analysis. The list was updated by contacting each pharmacy in order to verify whether the pharmacy was still in operation.

A randomly selected pharmacy could or could not be a pharmacy that complied with the Standard Treatment Guidelines formulated and distributed by the South African Department of Health. The malpractice (the unprofessional conduct) by pharmacies was not desirable. Factors contributing towards such practice were not easily detectable; however, at grass hood level of service delivery they were unfortunately encountered. The more the number of pharmacies the higher the like hood to have more pharmacies failing to satisfactorily meets the requirements laid in the Standard Treatment Guidelines. The proportion (percentage) of pharmacies complying with the Standard Treatment Guidelines was of interest. This was used as the basis of determining the sample size. It is reasonable therefore to anticipate different proportions in pharmacies located in urban and rural areas. Therefore, it was statistically sound to split the 130 registered private pharmacies into two major strata; urban registered private pharmacies and rural registered private pharmacies. A Geographical Positioning Specialist helped in mapping the distribution of the pharmacies within each stratum.

In Limpopo Province, there were 113 and 17 registered private pharmacies located in urban and rural Limpopo respectively. Thus, the sample size determination and the data analysis were based up on the principle stratified random sampling.

The sample size for each stratum was determined in two stages. Firstly, the minimum number of observations (sample size) required to estimate the value of the population proportion was estimated using the following formula (Richard, William & Lymanott, 2006). The following notation was used in the formula that follows. N_h is the size of stratum h, where h = 1

indicates urban pharmacies, and h = 2 indicates the rural pharmacies. So that the total population (number of pharmacies) $N = N_1 + N_2$

$$n = \frac{\sum_{h=1}^{L} N_h^2 P_h (1 - P_h) / a_h}{N^2 D + \sum N_h P_h (1 - P_h)}$$

Where $D = E / Z_{\alpha/2}$ was the maximum margin of error of estimation of the population parameter; $Z_{\alpha/2}$ was the value of the standard normal associated with the level of confidence. The level of confidence was 90% then $Z_{\alpha/2} = Z_{0.05} = 1.645$ a_h is the fraction of observations allocated to stratum h; in this study the sampling fractions of urban pharmacies and rural pharmacies were taken by design to correspond the sub-population fractions which were 0.87 and 0.13 respectively. The values of P_h for both strata are fixed at 0.5. The margin of error for this study was taken to be 0.02. There are $N_1 = 113$ urban pharmacies and $N_2 = 17$ rural pharmacies. Using these values in the formula gives n = 22.5039 which was 23.

The second phase of sample size determination involves the allocation of the 23 pharmacies using the principle of proportional allocation to determine the sample size to each of the two strata as follows.

$$n_h = \frac{N_h n}{N} \text{ , for both h = 1, 2}$$

Thus number of pharmacies in urban area $n_1 = 19.57839$ which was equivalent to 20 and that the rural areas $n_2 = 2.925507$ which was equivalent to 3.

3.6 Instruments for data collection

A questionnaire was designed to collect data on the pharmacy operations. The participating pharmacists completed a structured questionnaire that addressed the following key areas: the characteristic of pharmacies, knowledge of STI management, location, operation hours during the week and weekends, the number of pharmacists working in the same appendix or other pharmacy staff, counselling room. The study instrument were also used to identify the gender of the pharmacists; the average STI cases load of each pharmacy; and how many requested for STI drugs without prescription. The respondents were asked to indicate the type of STI medicines that they had in stock.

With regard to pharmacists and their practice, the questionnaire elicited data about the medication, which was given to clients with STI symptoms, how often they dispense medication for clients that do not present a prescription, and reason for dispensing without prescription. The Pharmacists were asked to state the kind of advice given to STI patients. They stated the questions that have been asked the last client who came to their pharmacy with the STI symptoms. They had to indicate steps they have to take to manage a client who came with STI symptoms complaints. They were asked to scale their agreement with the assertion that it was within their task to give treatment and advice to STI clients.

Data on pharmacist`s knowledge of STI treatment was obtained from their responses based on three hypothetical case studies: male patients with genital ulcer, male patient with urethral discharge and female patient with vaginal discharge. The questionnaire contained open-ended questions in order to enable the respondents to supply their own answer without being constrained by affixed set of possible responses. The respondents were assessed against Standard Treatment Guidelines and Essential Medicines List (2008). The pharmacists were found to completely comply if the selected combination (two or more) of therapies consisted of the Standard Treatment Guidelines. The pharmacists were defined as partially comply, if at least one medication was selected. Other responses were not considered, which did not comply (see Appendix 1 and 2).

3.7 Data collection procedure

The owner or manager of the selected pharmacies was contacted telephonically to inform them about some of the study objectives. The Simulated Client Method which has been used in most studies in pharmacy practice the pharmacist should not be aware of the client involve in the research (Madden, et al 1997; Watson, et al., 2006) (see –section 3.8 below). After obtaining their consent to participate in the study, an appointment was made to conduct a face-to-face interview. Each pharmacy was visited to conduct interviews. Only responsible pharmacists all of whom hold a bachelor of pharmacy degree or higher, were interviewed because discussions regarding the use of prescription medication occur between the clients and responsible pharmacists or, in rare situation a nurse based in the pharmacy. Only the staff manager was interviewed using structured facility interview guide for gathering background information on pharmacy. The same pharmacists were asked to participate in the structured staff interview, which was designed to capture information about the knowledge and practice of the pharmacists. All of 23 private pharmacies agreed to participate in this study. All the

collected data were confidential and anonymous means that the respondents were encouraged to answer question truthfully. This also will increase the validity of the questionnaires.

3.8 Simulated Client Method

According to Madden, Quick, Ross-Degnan & Kafle (1997) and Watson, Norris &Granas (2006) a simulated client or patient survey (SCM) has increasingly been used for training and clinical skills. The Simulated Client Method (SCM) is a covert method used to investigate dispending practice by research assistants or trained pharmacy students to enter facilities under the pretext of seeking care. The major advantage of this method is that its covert nature overcomes the problem of altered behaviour with direct observation. Two scenarios were developed for male patient with urethral discharge and a female patient with vaginal discharge. The ideal question, treatment, and advice were also characterized.

For the SCM scenario, male and female of the final year pharmacy student were chosen to present the two scenarios. The simulated client was trained to different scenarios using a predesigned guide. They asked specifically to see the pharmacist. Of 23 sampled private pharmacies, 13 were used in simulated client method given a total of 26 simulated client visits. They pretended to be STI patients and critically observe the actual treatment they were given, question asked, advice given, information on drug recommended by the pharmacist on duty. Immediately after treatment, they left the appendix and they filled in a standardized reporting form containing information including the questions asked, advice given, information on drug recommended, at least 15 minutes after the encounter and out of sight of the pharmacist. The purpose of chosen final year student was to ensure they could identify the medicine and checking the pharmaceutical form, strength, appropriate dose, presentation, methods of administration and duration of treatment. Thus, simulated clients were instructed not to buy any medicine.

3.8.1 The scenario used for the simulated clients for STIs

The simulated client was a male and female final year pharmacy student. This is an instruction to male and female simulated client.

The client is seeking care for feeling pain every time he urinates. He has pus coming from his urethral discharge / she has vaginal discharge and pretending to be a patient.

He /she asked for help for the pharmacist. If the pharmacist asks, you for prescription say that you do not have one. If the pharmacist asks you to get prescription first, reply that you do not

have money to go the doctor. Ask if he/she can give some drug for the problem.

What the simulated clients said to the pharmacist:

I have a pain when peeing and a urethral discharge/ vaginal discharge for the past 3–4 days. If asked, the following information was allowed:

You have not had any similar symptoms ever before. You have a burning pain when he urinates. During the first few days, the pus had a milky appearance but after approximately the third day, it has turned more yellow, and creamy (male simulated client).You have excessive discharge, creamy colour, foul smell and no pain on moving cervix (female simulate client).

You had had intercourse last week without protection. You have not seen a doctor about his problems. You are willing to accept any suggestion that the pharmacist or the person behind the encounter provides.

Instructions to the simulated client:

You will take note mentally of any question that the pharmacy staff asks before making a recommendation, any advice about the products recommended, and also any other advice on how to treat the condition. You are willing to accept any product or suggestion the pharmacy staffs provide.

Always leave the initiative to the pharmacy staff. All information must be recorded on the Standard reporting form by the simulate client at a maximum of 15 minutes after leaving the pharmacy (Standard reporting form and training scenario are attached by appendix-1 and appendix 2)

3.9 Validity and Reliability

There are several types of validity namely face predictive, content, construct and concurrent (Cohen, Manion& Morrison, 2007). This study focused on face and content validity to validate the research instrument. The questionnaire was made to be simple and as clear as possible. To ensure that all areas of study were covered, each question in the questionnaire was related to the objectives of the study. Content validity in this study was enhanced by examining all possible questions to ensure that all information needed to address objectives is covered. This avoided collection of unnecessary information. This was done during pre-data collection. To ensure the reliability of the information the questionnaire was re-tested with

last six participants after a period of three weeks to ensure that questions were not misinterpreted or scored differently each time they take such a test.

3.10 Pilot study

A pilot survey to test the validity and consistency of the questionnaire was conducted prior to the main data collection. A decision was taken to only use randomly selected urban pharmacies for the pilot as the target population dominantly contains urban pharmacies, which is 87%. This provided an accurate estimation for the time needed to complete the interviews.

3.11 Ethical considerations

Ethical clearance certificate was obtained from the University of Limpopo's Ethics Committee at the proposal stage before conducting this study.

Participants were informed about the purpose of the study. The participants were given consent form to sign before conducting face-to-face interview, estimation of duration of each interview and the nature of participation was stated. The participants were assured about the confidentiality of the information given in the letter of consent for them to participate freely. All information obtain in the course of this study was treated with outmost confidentiality and it was not used outside the scope of the study. Simulated Client Method which has been used in most study in pharmacy practice the pharmacist should not be aware of the client involve in the research (Madden, et al 1997; Watson, et al., 2006).

3.12 Data Analysis

The data obtained using the questionnaire were captured and cleaned using the Statistical Package for Social Sciences (SPSS). The principles of the analysis were applicable to stratified random sampling. Cross tabulations and Chi-square analysis were used to check for possible associations between the dependent variable, the number of pharmacies failing to comply with the guidelines.

3.13 Summary

This chapter described the methodology used to carry out this study. It described the method selected for this study, which was descriptive, cross-sectional study design and simulated client methods. In addition, described in detail the data collection procedure and the instruments used to collect the data. The next chapter presents the results of this study.

CHAPTER 4

Results

4.1 Introduction

The target population of this research consisted of 130 private pharmacies operating in rural and urban Limpopo Province. The sample size was determined in order to obtain 90% confidence and a maximum error of size 0.02 in estimating the proportion of pharmacies that comply with the Standard Treatment Guidelines and Essential Medicines List determined by the Department of Health of the Republic of South Africa (Department of Health, 2008). According to the data released by the South African Pharmacy Council (SAPC) during the research period, there were 130 pharmacies operating in rural and urban regions of Limpopo Province. Of these pharmacies, 86% are operating in urban Limpopo while the remaining 14% are serving the rural residents of Limpopo Province. A sample size of 23 private pharmacies was drawn from the target population to achieve the specification described. The sample covers 87% of pharmacies located in urban areas and 13% of pharmacies serving in rural Limpopo. The questionnaire prepared to gather data was distributed to sample members in two major areas, indicated. The rate of return was (100%), all pharmacists in the sample participated in the study.

4.2 characteristics of the pharmacy workers

The demographic data of study participants age as described in table 1. The descriptive analysis of the age of the pharmacists shows that the median age was 33 years. It is evident from the objective design of the study that the target population includes all pharmacists who hold a bachelor degree in pharmacy or higher were interviewed. The analysis revealed that qualified pharmacists are able to manage all private pharmacies operating in both rural and urban in Limpopo Province. Of the total privately owned pharmacies, located in rural and urban Limpopo, 52% are managed and run by male pharmacists while qualified female pharmacists manage the remaining 48%.

Table 1: Age distribution of pharmacists by gender

Age group	Item	Male	Female	Percent
Age group 1 (23 to 30 years)	Number of pharmacists	2	4	6
	% within Age group	33%	67%	100%
	% within gender	17%	36%	26%
	% of Total	9%	17%	26%
Age group 2 (31 to 38 years)	Number of pharmacists	5	5	10
	% within Age group	50%	50%	100%
	% within gender	42%	46%	43%
	% of Total	22%	22%	44%
Age group 3 (39 years and more)	Number of pharmacists	5	2	7
	% within Age group	71%	29%	100%
	% within gender	43%	18%	30%
	% of Total	22%	9%	30%
Overall	Number of pharmacists	12	11	23
	% within Age group	52%	48%	100%
	% within gender	100%	100%	100%
	% of Total	52%	48%	100%

4.3 Staff

The responsible pharmacists of the sampled private pharmacies were asked if there were any additional pharmacists working along with them. Their responses revealed that 39% and 26% of the private pharmacies had additional pharmacists working on full time and part-time basis respectively. Only 13% of the pharmacies did not have additional support staff. Fifty-two pharmacists, including the responsible pharmacists of the sampled private pharmacies, were engaged in dispensing pharmaceutical services. There were 32 full time pharmacists rendering pharmaceutical services in the sampled private pharmacies located in both rural and urban areas in the Limpopo Province. Of these full time pharmacists working in the private urban pharmacies, 28% were the additional staff in addition to the responsible pharmacists. The 32 pharmacists in urban locations constitute over 61% of the total workers practising pharmaceutical services in private pharmacies. As seen in each of the nine sampled private

pharmacies in urban areas of the Limpopo Province had one full time pharmacist in addition to the responsible pharmacist. Similarly, six private pharmacies located in urban area are had one pharmacist working on a part-time basis. The highest number of staff was four followed by three. One rural private pharmacy and two urban pharmacies had the minimum staff, where the owner was the sole personnel rendering the services. Two rural pharmacies worked with the responsible pharmacist and one pharmacy assistant each.

4.4 Service delivery (Working hours)

All private pharmacies in the rural and urban Limpopo render services from 8 to 12 hours during week days and 5 to 12 hours on Saturdays. On Sundays, as high as 56% of the private pharmacies in both regions provide pharmaceutical services for 2 to 11 hours. Table 2 displays the distribution of service delivery (working) hours of the rural and urban private pharmacies in Limpopo. The table clearly indicates that all private pharmacies are available from Monday to Saturday and 56% of the private pharmacies are open on Sundays. On average, each pharmacy renders services for nine and half hours during the week and seven hours over each weekend.

Table 2: Distribution of the working hours of private pharmacies in Limpopo

Hours worked	Weekdays		Saturdays		Sundays	
	Pharmacy	Percent	Pharmacy	Percent	Pharmacy	Percent
2.00	-	-	-	-	1	4
4.00	-	-	-	-	2	9
5.00	-	-	3	13	6	26
6.00	-	-	5	22	-	-
7.00	-	-	7	30	-	-
8.00	3	13	4	17	1	4
9.00	11	48	1	4	-	-
10.00	6	26			-	
11.00	-	-	1	4	3	13
12.00	3	13	2	9	-	-
Total	23	100	23	100	13	-

4.5 STI medicine utilization at interview

During the interview, private pharmacies in both rural and urban Limpopo were asked to indicate the type of STI medicines that they had in stock to treat male and female STI patients. Their responses are summarized in Table 3. The rank order column indicates the type of medicines available at each private pharmacy. For example, the most popular medicine made available by 70% of the private pharmacies was metronidazole followed by ciprofloxacin and clotrimazole, maintained by 65% and 43 % respectively. The medicines stocked were in line with the Standard Treatment Guidelines and Essential Medicines List.

Table 3: The percentage distribution of pharmacies by the type of STI medication declared to be available

S NO	STI MEDICINES AVAILABLE	RECOMMENDED	PERCENT	RANK ORDER
1	Clotrimazole	Yes	43	3
2	Miconazole	No	13	5
3	Econazole	No	9	6
4	Metronidazole	Yes	70	1
5	Potassium Citrate Mixture	No	17	4
6	Fluconazole	No	9	6
7	Doxycycline	Yes	30	3
8	Ciprofloxacin	Yes	65	2
9	Norfloxacin	No	13	5
10	Cefixime	Yes	13	5
11	Amoxicillin	Yes	9	6
12	Benzathine benzyl Penicillin	Yes	9	6
13	Ampicillin	No	17	4
14	Trimethoprsim+ Sulfamethoxzole	No	9	6
15	Paracetamole	No	13	5
16	Azrithromycin	No	13	5
17	Acyclovir	Yes	9	6

Table 4: Patients requesting for therapy without the doctor's prescription

Type of health problems		Minimum	Maximum	Mean
General health related disorders	Minimum	1.00	300.00	70
	Maximum	2.00	450.00	81
STI related vaginal discharge	Minimum	1.00	80.00	11
	Maximum	1.00	150.00	22
STI related male genital ulcer	Minimum	.00	70.00	10
	Maximum	.00	120.00	17
STI related male urethritis discharge	Minimum	.00	50.00	9
	Maximum	.00	110.00	19

Table shows that the demand for medicines without the doctor's prescriptions ranges from a minimum of one to a maximum of 450 per week in relation to general health related disorders. The analysis showed that on average 70 to 80 patients demanded medicines in relation to general health related disorders. Whereas the demand for medicines for STI related to vaginal discharge, genital discharge and ulcer risen up to 150 per week. This was equivalent to a minimum of 10 and a maximum of 20 per day on average.

The sampled private pharmacies were asked how frequently they dispensed STI medicines without prescriptions. Their responses are summarized in Table 5. The table shows that 65% of the private pharmacies both in rural and urban Limpopo dispense STI medicines without prescriptions. This practice was particularly high in urban Limpopo where from the results 87% of the private pharmacies. The STI medicines were declared as being in stock during the interviews were those recommended in the standard guidelines.

Table 5: The percentage of frequency distribution of dispensing medicine without prescription

	RURAL	URBAN	Total
Sometimes	2(9%)	13(57%)	15(65%)
Never	1(4%)	7(30%)	8(35%)
Always	3(13%)	20(87%)	23

Table 6: The percentage distribution of reasons as to why private pharmacies dispense medicine without prescription

Reasons for dispensing STI medicine without prescription	Rural	Urban	Total
I know for sure that it is STI	0(00%)	12(41%)	12(41%)
The customers demand it	1(3%)	1(3%)	2(28%)
The customer cannot afford to see doctors	0(00%)	8(28%)	8(28%)
It is my duty to help the customer	1(3%)	4(14%)	5(17%)
Never dispense without prescriptions	1(3%)	1(3%)	2(7%)
Total	3(10%)	26(90%)	29

Table 7: Availability of a counselling room in a pharmacy

Response	Frequency	Percent
Yes	19	83
No	4	17
Total	23	100

The availability of a favourable environment in terms of availability of counselling room or examination that ensures safety and privacy provided to male and female STI patients in

urban and rural private pharmacies in Limpopo was assessed. Table 7 indicates that 83% of rural and urban private pharmacies in Limpopo Province had counselling room.

4.6 Treatment and Management of STI

4.6.1 The ability of treating STI

Table 8: A summary of the results from the reports on what the pharmacist indicated would be the degree of agreement with the following statement ``It is within my professional prerogative to give treatment for STIs

Opinion	Frequency	Percent
Strongly agree	15	65
Neutral	1	4
Agree	6	26
Disagree	1	4
Total	23	100

Private pharmacies in Limpopo Province were confident that they could treat and manage sexually transmitted infections (STI). Their opinions about their ability to professionally treat STI patients were examined. The results obtained are summarized in Table 8. The table shows that 65% of private pharmacies in rural and urban Limpopo strongly agreed with the assertion that it is within their professional prerogative to give treatment advice to STI patients, while 26% of them just agree. There is a general consensus (Strongly agree plus agree) among just over 91% of the private pharmacies in both regions to be professional in giving the appropriate therapy to both male and female STI patients.

With regarding to the treatment and management of STI, the ways used to confirm this was to ask the pharmacists about the medicine they gave to the last person who came to the pharmacy with complaints of symptoms related to STI. Table 9 shows the type of medicine the private pharmacies dispensed to such patients. The seven medicines listed in this table were given as a single or as a combination. Observations indicate that the four medicines dispensed singly to treat STI are clotrimazole, potassium citrate mixture, ciprofloxacin and

hipiscussabdariff. In the table below, the combination of clotrimazole and metronidazole was dispensed by two private pharmacies.

When the respondents were asked which medicine did you give to the last person who came to the pharmacy with complaints of symptoms that you would relate to STI. The respondents came up with several answers as summarised in Table 9.

Table 9: A summary of STI medicine dispensed to last client when asked the respondents

Medicine	Recommended	Percentage
Clotrimazole	Yes	26 (17)
Potassium Citrate Mixture	No	22 (14)
Ciprofloxacin	Yes	30 (19)
Cranberry + Hipiscussabdariff	No	30 (19)
Phenazopyridine	No	17 (11)
Metronidazole	Yes	17 (11)
Doxcycline	Yes	13 (9)

Urban and rural private pharmacies in Limpopo dispensed different combinations of medicines to their STI patients; only two pharmacies used the combination clotrimazole and metronidazole. Once again, compliance in terms of dispensing STI medicines have been assessed using the results shown in table 9 which shows that about 56% (the sum of the figures in the parenthesis with Yes options) of the private pharmacies dispense according to the Standard Treatment Guidelines recommendation in the 2008 guidelines. The other 44% failed to comply with recommendation.

4.6.2 Questions private pharmacists asked STI clients

The Table below shows the answers given by respondents when asked to state the question you asked to the last person who came to the pharmacy with complaints of symptoms that you would relate to STI.

Table 10: Shows the issues addressed during the interaction between the pharmacist and the client

Questions asked by private pharmacist	Rural	Urban	Total	Percent
History	2	19	21	91
Partner notification	2	8	10	43
HIV Counselling	0	7	7	30
Visual examination	0	2	2	9

Table 10 lists the key aspects during consultation with patients that rural and urban private pharmacies ask STI patients prior to treating them. The table shows that key questions that patients were asked are relevant and are in line with the Standard Treatment Guidelines. As can clearly be seen from the Table above 91% of the pharmacists request their STI clients to state the history of their complaints as clearly as possible for the right professional action to be taken. Table 7 indicates that 83% of the rural and urban private pharmacies in Limpopo Province had a counselling room. Table 10 shows that only 9% of the pharmacists examined the patients.

4.6.3 Steps private pharmacy taken to manage STI clients

The table below shows the list of steps that the pharmacist would take when asked what steps you take to manage a client who came with STI complaints.

Table 11: Is a summary of the results list the steps that the pharmacist would take.

The steps taken to help STI patients	Rural	Urban	Total	Percent
Listen to history	3	20	23	100
Give medicine	1	12	13	57
Visual examination	0	6	6	26
HIV counselling and STI prevention	2	16	18	78
Refer to a doctor	2	1	3	13

Pharmacists were asked about the steps they usually take to manage STI clients and the questions they asked the last person who complained of STI. The table shows that they gave adequate attention to the history that the STI patients report. The private pharmacists know the linkage between STI and HIV/AIDS and gave appropriate counselling and STI prevention 78% of the time. Very few 13% of the private pharmacists appeared the need to refer the patient to physicians.

4.7 Knowledge of private pharmacist managing STI

4.7.1 Usage of the Standard Guidelines

Table 12: Usage of the Standard Treatment Guidelines and Essential Medicines List (2008)

Knowledge and usage	Frequency	Percent
Yes I know and I am using it	9	39
Yes I know it but I am not using it	8	35
I do not know about it	6	26
Total	23	100

There is a general guideline to regulate the standard of service delivery by all public and private pharmacies in the Republic of South Africa. This Standard Treatment Guidelines is drawn by the Department of Health. The current Standard Treatment Guidelines and Essential Medicines List were released in 2008. The private pharmacies were asked if they know the existence of such guidelines and if they use it. As indicated in Table 12, as far as knowledge of the existence of a Standard Guidelines is concerned 74% of the private pharmacies in both urban and rural Limpopo Province know that such a Standard Guidelines exists. However, only 39% of them used it in their daily endeavour to serve rural and urban communities where private pharmacies are located. About 35% of pharmacists knew its existence but did not use it, whereas 26% did not know about such Standard Treatment Guidelines.

4.7.2 Knowledge about STI treatment

4.7.2.1 Male genital ulcer syndrome (GUS) treatment

Tables 13 and 14 jointly help to assess the competence of the private pharmacies in treating male patients particularly with genital ulcer syndrome (GUS). Table 13 shows that 35% of the private pharmacies after consultation referred the patient to a doctor for better attention. On the other hand, over 26% of the private pharmacies dispensed ciprofloxacin, which is a partially complying medicine as their responses, were assessed against the Standard Guidelines for correct management of STI. A List of the nine medicines on this table was given as a single or as a combination, acyclovir used more frequently. None of the rural pharmacies were complied with Standard Guidelines in dispensing benzathine benzyl penicillin.

Table 13: Distribution and level of compliance of medication dispensed by private pharmacies in Limpopo to manage male genital ulcer (GUS)

	Medication dispensed	Frequency		Total	Percent		Degreeofcompliance
		Urban	Rural		Urban	Rural	
1	Clotrimazole	1	0	1	4%	0	Not comply
2	Doxycycline	1	0	1	4%	0	Partially comply
3	Ciprofloxacin	0	1	1	0.0%	4%	Partially comply
4	Acyclovir	4	2	6	17%	9%	Partially comply
5	Cranberry	1	0	1	4%	0	Not comply
6	Ciprofloxacin, Norfloxacin	1	0	1	4%	0	Partially comply
7	Acyclovir, Cranberry	2	0	2	9%	0	Partially comply
8	Metronidazole, Ciprofloxacin, Erythromycin	1	0	1	4%	0	Complete compliance
9	BenzathineBenzyl Penicillin, Erythromycin, acyclovir	1	0	1	4%	0	Complete compliance
10	Refer to doctor	8	0	8	35%	0	

Table 14: The Level of compliance of medication dispensed by private pharmacies in the Limpopo to manage male genital ulcer

NO	Degree of compliance	Frequency	Percent
1	Not comply	2	9
2	Partially comply	11	48
3	Complete comply	2	9
4	Refer to doctor	8	35

From Tables 13 and 14 the pharmacies in rural areas comply partially. They dispense a single medicine instead of a combination of antibiotic medicines. The main contributing factor is the location of the pharmacy.

4.7.2.2 Male urethritis syndrome treatment

Tables 15 and 16 jointly summarise the responses of the private pharmacies to questions designed to assess their capability to treat male urethritis syndrome. The private pharmacies comply with the Standard Treatment Guidelines about 22% of the time and partially comply with about the same percentage. From Table 16 we clearly see that 6% of the private pharmacies after consultation referred the patient to a doctor for better attention. Mainly urban pharmacist's dispensed drug is not recommended with Standard Treatment Guidelines, cranberry used in particular. Seven urban pharmacies cefixime, ciprofloxacin and doxycycline partially comply as a single combination.

Table 15: Distribution and level of compliance of medication dispensed by private pharmacies in Limpopo Province to manage male urethritis syndrome

No	Medication dispensed	Frequency		Percentage		Degree of compliance
		Urban	Rural	Urban	Rural	
1	Cefixime	1	0	4	0.0%	Partially comply
2	Ciprofloxacin	1	0	4	0.0%	Partially comply
3	Moxifloxacin	1	0	4	0.0%	Not comply
4	Cranberry	2	0	9	0.0%	Not comply
5	Refer to doctor	6	0	26	0.0%	
6	Metronidazole, Norfloxacin	1	0	4	0.0%	Partially comply
7	PotassiumCitrate Mixture ,MoxifloxacinClotrimazole,	0	1	0	4%	Not comply
8	refer to doctor	1	0	4%	0.0%	Not comply
9	Cefixime, Doxycycline, Ciprofloxacin	1	0	4%	0.0%	Complete comply
10	Metroindazole, Doxycycline, Ciprofloxacin	1	1	9%	0.0%	Complete comply
11	PotassiumCitrateMixture,Phenazopyridine	1	0	4%	0.0%	Complete comply
12	Metronidazole,PotassiumCitrateMixture,Paracetamole	0	1	4%	0.0%	Partially Comply
13	Phenazopyridine, cranberry	1	0	4%	0.0%	Not comply
14	Ibuprofen, refer to doctor	1	0	4%	0.0%	Not comply
15	Cefixime,Metronidazole, Potassium citrate mixture, Doxycycline	1	0	4%	0.0%	Complete comply
16	Benzathine benzyl penicillin, Doxycycline, Erythromycin	1	0	4%	0.0%	Partially comply

Table 16: The Level of compliance of medication dispensed by private pharmacies in the Limpopo Province to manage male urethritis syndrome

No	Degree of compliance	FREQUENCY		PERCENTAGE	
		URBAN	RURAL	URBAN	RURAL
1	Partially comply	4	1	17	4
2	Not comply	6	1	26	4
3	Complete comply	4	1	17	4
4	Refer to doctor	6	0	26	0

4.7.2.3 Female vaginal discharge syndrome treatment

Tables 17 and 18 summarise the responses to questions on the knowledge of private pharmacies. The treatment varies according to the location of the private pharmacy. Urban private pharmacies are better in complying with the Standard Treatment Guidelines than rural private pharmacies. For the most part, private pharmacies partially comply. Table 18 shows that 4% referred the patient to a doctor. Ciprofloxacin is only dispended by only one urban pharmacy none of the rural pharmacies was dispended. Clotrimazole is complying with Standard Guidelines particularly in urban areas.

Table 17: Distribution and level of compliance of medication dispensed by private pharmacies in Limpopo Province to manage female vaginal discharge

S No	Medication dispensed	Frequency		Percentage		Compliance
		URBAN	RURAL	URBAN	RURAL	
1	Clotrimazole	2	0	9%	0	not comply
2	Metronidazole	1	0	4%	0	Partially comply
3	Clotrimazole, Metronidazole	5	0	22%	0	Partially comply
4	Cranberry	1	0	4%	0	Not comply
5	Clotrimazole, Doxycycline	1	0	4%	0	Partially comply
6	Metronidazole, Doxycycline, Clotrimazole	1	0	4%	0	Complete comply
7	Clotrimazole, Metroindazole, Doxycycline	0	1	0	4%	Complete comply
8	Clotrimazole, Metronidazole, PotassiumCitrate mixture	1	0	4%	0	Partially comply
9	Metronidazole,	1	0	4%	0	Partially comply
10	Metronidazole, Cranberry	1	1	4%	4%	Partially comply
11	Metroindazole, Doxycycline, ciprofloxacin	1	0	4%	0	Complete comply
12	Metronidazole, PotassiumCitrate mixture, Paracetamol	0	1		4%	Partially comply
13	Clotrimazole , Metronidazole, cranberry	1	0	4%	0	Partially comply
14	Refer to doctor	1	0	4%	0	

Table 18: The Level of compliance of medication dispensed by private pharmacies in Limpopo Province to manage female vaginal discharge

S No	Degree of compliance	Frequency		PERCENT	
		URBAN	RURAL	URBAN	RURAL
1	Not comply	3	0	13	0
2	Partially comply	11	2	48	9
3	Completely comply	5	1	22	4
4	Refer to doctor	1	0	4	0

4.8 A Kind of advice given to STI clients

Table 19 and 20 displays the type of advice that private pharmacies given to STI clients. Table 19 shows that the pharmacists did not opt to neutral disagree or strongly disagree options. Clearly the private pharmacies were all in agreement about their ability, what differs is the degree of agreement. From the table 65% of the private pharmacies operating in Limpopo Province strongly agree to the statement that it is within their professional prerogative to give preventive advice about STIs. 35% just agreed with the statement.

Table 19: A summary of results from the reports on it is within my professional task to preventive advice on STI

Opinion	Frequency	Percent
Strongly agree	15	65
Agree	8	35
Total	23	100

Table 20: A Summary of kind of advice given to STI clients

S No	Advice given	Frequency	PERCENT
1	Adherence (ensure compliance)	21	29
2	Partner notification	22	30
3	Sexually practice	20	27
4	General health education	10	14
	TOTAL	73	100

4.9 Results from Simulated Client Method (SCM)

4.9.1 Management of simulated clients by private pharmacies

The pie chart presented below shows that during simulated clients 27% of the simulated clients were asked for the prescriptions of which only 12% were referred to a prescription. During 73% of visits, no prescription was requested for treatment of the STI clients.

Figure 4.1: Distribution of number of simulated clients according to prescription request
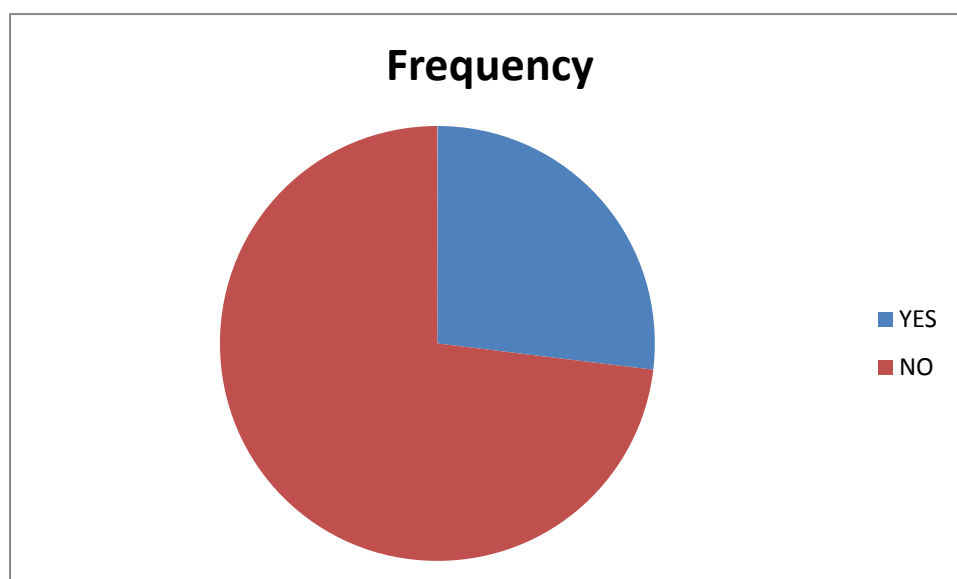
The simulated clients as STI patients were treated by private pharmacies. From Table 21 we observe that during 27% of the visited clients were treated by pharmacies. Of the pharmacies that completely comply with the guideline mentioned above 86% belong to urban pharmacies category.

Table 21: Cross tabulation of treatment recommended (in Standard) by location of sampled pharmacies

		RURAL	URBAN	
Partially comply	Count	3	11	14
	% within treatment recommended (in GL)	21%	79%	100%
	% of total	12%	42%	54%
Completely comply	Count	1	6	7
	% within treatment recommended (in GL)	14%	86%	100%
	% of total	4%	23%	27%
No medication given	Count	0	5	5
	% within treatment recommended (in GL)	0.0%	100%	100%
	% of total	0.0%	19%	19%
Total	Count	4	22	26
	% within treatment recommended (in GL)	15%	85%	100%
	% of total	15%	85%	100%

A Chi-Square test was conducted to check the existence of the association between compliance with the Standard Treatment guidelines and the location of pharmacies. The data produced a Pearson Chi-Square value of 1.31 with 2 degrees of freedom and a probability value (P-value) of 0.52. The large P-value suggests that the result is consistent with the null

hypothesis of independence. Hence, compliance with the Standard Treatment Guidelines and the location of the pharmacies are independent.

Table 22: Cross tabulation of treatment recommended (in Standard Treatment Guidelines) by the gender of the simulated clients

		MALE	FEMALE	
Partially comply	Count	5	9	14
	% within partially comply	36%	64%	100%
	% of total	19%	35	54%
Completely comply	Count	5	2	7
	% within completely comply	71%	29%	100%
	% of total	19%	8%	27%
No medication given	Count	3	2	5
	% within no medication given	60%	40%	100%
	% of total	12%	8%	19%
Total	Count	13	13	26
	% within treatment recommended (in GL)	50%	50%	100%
	% of total	50%	50%	100%

Table 22 shows that 27% of simulated clients were treated in accordance with the Standard Treatment Guidelines, while 19% were male STI patients. Of the 14 simulated clients who received treatment from private pharmacies that partially comply with the Standard treatment Guidelines, 64% were female STI patients. A chi-square test of independence between compliance with the general guideline and the gender of STI patients shows that there is no association between the two factors. The sample data gave the Pearson Chi-Squared value of 2.629 on 2 degrees of freedom with a P-value of 0.269. This is a large value compared to most commonly used values of the level of significance. Hence, the data were in agreement with the null hypothesis of independence.

4.9.2. Dose and duration of the recommended drug in the Standard Treatment Guidelines dispensed by pharmacies during the simulated client encounter

It general it was found 69% of the visit that dose and in 73%, duration of treatment of an STI is not according to Standard Treatment Guidelines.

Figure 4.2: Frequency of duration of the drug is according to Standard Treatment Guidelines
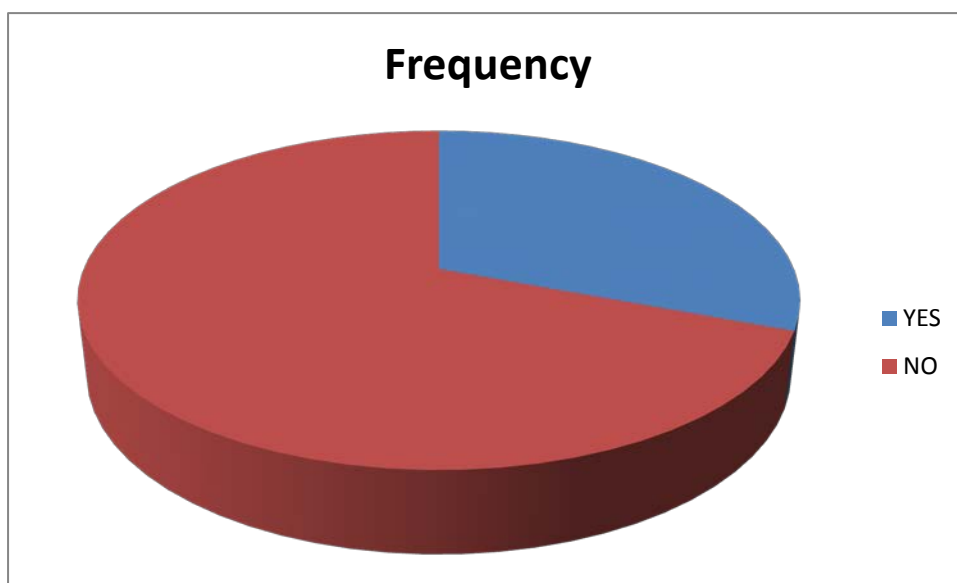
Table 23: Cross tabulation of treatment not recommended by Standard Treatment Guidelines and the location of the pharmacy

		RURAL	URBAN	
YES	Count	3	16	19
	% within dispensed drug not in Standard	16%	84%	100%
	% of total	12%	61%	73%
NO	Count	1	6	7
	% within dispensed drug not in Standard	14%	86%	100%
	% of total	4%	23%	27%
Total	Count	4	22	26
	% within dispensed drug not in Standard	15%	85%	100%
	% of total	15%	85%	100%

During the simulated client encounter, pharmacists declared that they also dispensed drugs that were not recommended in the Standard Treatment Guidelines. Table 23 shows that private pharmacies operating in the Limpopo Province dispensed drugs that are not recommended to treat STI, patients to 73% of simulated clients. Within those who received drugs that were not recommended to treat STI, 84% got it from pharmacies in urban areas.

Table 24: STI medicines dispensed to simulated clients

S NO	STI MEDICINES DISPENSED	MALE	FEMALE	Total	Schedule	Percent
1	Metronidazole	5	7	12	S 4	25
2	Doxycycline	3	3	6	S 4	13
3	Ciprofloxacin	3	3	6	S 4	13
4	Cefixime	3	0	3	S 4	6
5	Levofloxacin	1	0	1	S 4	2
6	Ibuprofen	3	1	4	S 2	8
7	Potassium Citrate Mixture	5	2	7	S 1	15
8	Ketoconazole	0	1	1	S 4	2
9	Clotrimazole	0	2	2	S 1	4
10	Cranberry	2	3	5	S 1	10
11	Selenium	1	0	1	S 1	2
	TOTAL	26	22	48		100

Table 24 shows that during simulated clients encounter the pharmacists dispensed 61% of the medication without prescription, which are Schedule 4 medicines. According to the South African Medicine Formulary, (2010) antibiotics for STI treatment are classified as Schedule 4, which required a written medical prescription.

Figure 4. 3: Drug information given to simulated clients
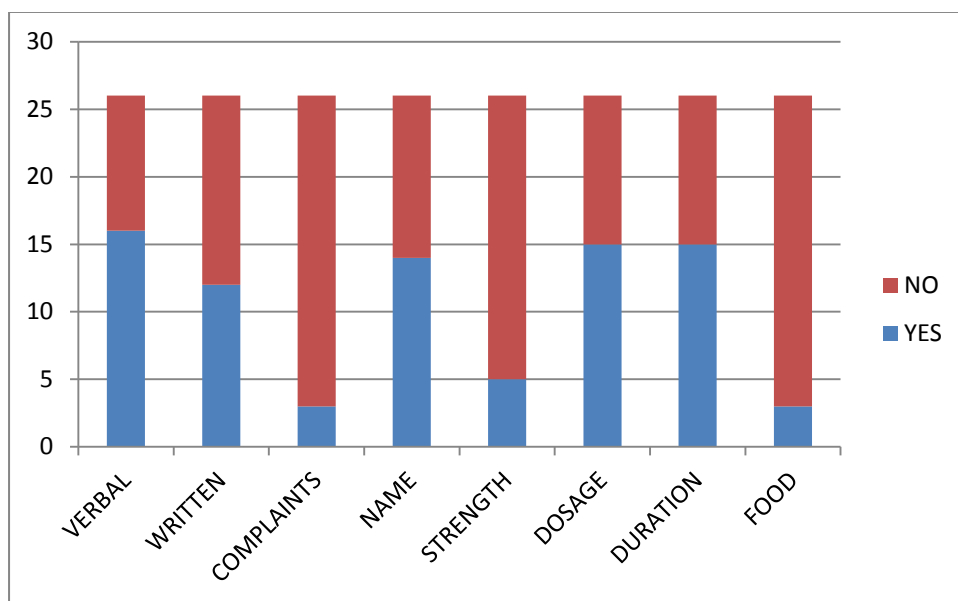
4.9.3 Questions asked by private pharmacists during simulated client

Table 25: Frequency distribution of questions asked simulated clients

S No	QUESTIONS ON	YES	NO	PERCENT
1	Symptoms	9	17	35
2	Duration of the symptom	8	18	31
3	Discharge	7	19	27
4	Colour of discharge	2	24	8
5	Quantity of discharge	2	24	8
6	Smell of discharge	5	21	19
7	Painful urination	9	17	35
8	Last sexual intercourse	2	24	8
9	Sexual partner treatment	3	23	12
10	Took medicine for the same condition before	2	24	8

Private pharmacies interact with simulated clients and asked them questions listed in Table 25. From the table we learn that their questions focus around the symptoms 35%, painful urination 35% and duration of the symptoms 31%. On average about 19% of the time, they try to get the history of the STI by asking various questions so that they can take informed action to help their clients.

4.9.4 Advice giving during simulated client encounter

Table 26: A summary of advice given to simulated client

ADVICE	YES	NO	PERCENT
Return if treatment fails	7	19	27
Use condom to prevent STI	14	12	54
Notify partner	10	16	38
See medical doctor	7	19	27
The risk of HIV	11	15	42

Private pharmacies gave some professional advice to simulated clients. Their advice to STI patients focused on the use of condoms to prevent STI and the risk of HIV. On average private pharmacies seem to advise STI patients 38 % of the time. As shown in table 26 question asked by pharmacist, it was found that an average of them were given advice focused mainly on the use of condoms with 54% and partner notification with 38% only 27% of the pharmacist advised the client to see a physician.

4.10 Summary

The set of data obtained was analysed using cross-tabulation techniques and a chi-square test was conducted to see the existence of associations. Compliance with Standard Treatment Guidelines in terms of treating STI syndrome was used as a dependent variable. Location (Rural and urban) of private pharmacies, the gender of the client in the simulated clients method, treating male genital ulcer syndrome, treating male urethritis syndrome, treating female vaginal discharge syndrome were used as independent variables, while cross tabulating and investigating associations using Chi-square tests.

The compliance with the Standard Treatment Guidelines and the location of the pharmacies are independent. There is no association between compliance with the Standard Treatment Guidelines and the gender of STI patients.

CHAPTER 5

Discussion

5.1 Introduction

The following discussion explores plausible underpinnings for the result obtained in the present study. Limpopo private pharmacies are inundated with requests from the public for advice and treatment on a wide range of medical conditions; including sexually transmitted infections (STIs).However legally imposed prescribing restrictions preclude pharmacists from providing the necessary clinical management. These finding are discussed in relation to pharmaceutical services delivery hours, medicines available in stock during interview and the ability of private pharmacists to diagnosis STI, patient history taken and their knowledge of the existence of the Standard Treatment Guidelines and whether they complied with it, The study also discussed actual practice of private pharmacists in the Limpopo Province in terms of managing STI and possible pharmaceutical care provided for HIV infection by comparing results obtained from interviews with results obtained from simulated client visits.

5.2 Pharmaceutical services delivery hours

Most studies that have been carried out to investigate pharmaceutical services all over the world have found that the most prominent reason why people patronize pharmacy outlets for many ailments was that private pharmacies are conveniently located in patrons` communities and are open for longer hours compared to the pharmacy in the National Health Services(Mayhew, et al., 2001)

In the present study, working hours of private pharmacists indicate that 56% of private pharmacies were available seven days a week. On average, each pharmacy rendered services for nine and a half hours during weekdays and for seven hours over each weekend. The study`s findings reveal that these private pharmacists offered accessible means of people`s sexual reproductive healthcare needs. The Private pharmacies are therefore there to provide medication and information for patients seeking treatment, for example STIs and are usually the first point of contact. This is what has also been reported in other countries like Ghana (Mayhew, et al., 2001), Nigeria (Onkonofua, et al., 2003) and the UK (Watson, et al., 2000) where patronage of pharmacists has been attributed also, to their ability to communicate with the public without appointment outside normal working hours. It was beyond the scope of the present study to investigate the STI case load at each pharmacy, however it would reasonable

to assume that, because of the long working hours, pharmacists were more likely to manage more STI cases than government health institutions in Limpopo. It is also possible that pharmacists during these long working hours see large number of patients with all sorts of problems before they ever make contact with clinical health care providers as was reported by Mayhew, et al., (2001) in their Ghana study.

These long working hours, even during weekend could therefore be useful if the pharmacists were empowered to manage STIs, there by strengthening the link between pharmacies and clinical specialists in STI, working in the government institutions. The current study results confirmed what the case was already internationally, that indeed, pharmacists play a major role which still needs to be improved and refined, in STI management. Perhaps longer working hours will allow the patient follow-up and partner tracing by pharmacist, contributing to the prevention services, which include the management and the control of STI and the provision of Antiretroviral (ARV). This would be in accordance with South Africa Pharmacy Council strategic plan on the role pharmacists in the management of HIV/AIDS, TB and STIs (South Africa Pharmacy Council, 2001). Most of the pharmacists who took part in the study, although they worked long hours, they did this with the help of other staff they recruited. These are indeed needed to encourage the optimal and rational use of medicines, in the treatment and management of infections like sexually transmitted infections.

5.3 Staffing in pharmacies

The present study results showed that 39% and 26% of the private pharmacies had additional pharmacists working on full time and part-time basis respectively. In addition to qualified responsible pharmacists, about 61% of these pharmacies had other pharmacy personnel, either pharmacist`s assistants (basic) or pharmacist assistant (post-basic). The major difference between the two types of assistants being that, the post- basic assistant may;

Order controlled medicines according to an instruction of a person authorised in terms of the Pharmacy Act,

Read and prepared prescription,

Select, manipulate or compound medicine, label and

Supply the medicine in an appropriate container following the interpretation and evaluation of the prescription by the pharmacist.

There is possibility of other pharmacy staff dispensing medicines without prescription. This means that instead of choosing the medicine best suited for particular user, they may be tempted to choose only from what they have in the stock or medication, which they may earn the most. Fortunately, only about 13% of these pharmacies did not have additional workers in the field of pharmacy. It then reasonable to be concluded that those pharmacists may be have not enough time to spend with the clients to promote more comprehensive information regarding STI information, referral note for HIV testing, condoms and partner notification. On the other hand this indicates that pharmacies in the Limpopo Province seem to be different in terms of size and number of clients.

The current study reveals that 52% of private pharmacies were managed and run by male pharmacists, while qualified female pharmacists manage the remaining 48%. However, South Africa`s Pharmacy Council reported that as far as human resource was concerned there was shift in gender distribution in favour of females which had increased significantly from 17 % in 1970 s to 59% in 2010 (SAPC, 2010). This shift is most welcome provided it is accompanied by continuing professional development of pharmacists and other pharmacy staff in order to improve the situation regarding provision of information and advice to the patients with common infection such as STIs, which sometimes can cause embarrassment on the part of both the pharmacist and patient. This would happen if the pharmacist and the patient are of opposite gender. A study in the UK suggested that embarrassment may be a significant barrier to the treatment of thrush by community pharmacists, males in particular, and may affect the manner in which they interact with women presenting with symptoms suggestive of this infection. The conclusion from the study was that it was not clear whether pharmacists felt that embarrassment affected their practice or whether they took measures to limit its effects – for example, by creating a private area within the pharmacy to discuss a health matter that may be of a sensitive nature (Watson, et al., 2000). The current study findings indicate that 83% (23) of rural and urban private pharmacies had counselling rooms particularly for clients requesting treatment of problems of a sensitive or intimate nature. The rooms were beyond the shelf displays away from public scrutiny. Even then from the results obtained none of the pharmacists indicated that they used the rooms for physical examinations, phlebotomy (to obtain blood for further investigations). Instead, it would appear pharmacists, whether male or female, relied on patients' clinical history with no visual inspection of the genital region. Having a consulting room was a requirement for licensure by the SAPC and therefore private pharmacies operating in both rural and urban Limpopo

partially met the standard specification for pharmacy outlet as stipulated in the Good Pharmacy Practice (GPP), 2004 in South Africa. The room described a consultation area for provision of screening and monitoring services within which the pharmacist can consult in private with patient and that the room should have a professional appearance and must be kept clean at least with sufficient equipment and examination couch. It was indeed obvious from the study that the use of these private consulting facilities needed to be encouraged to assist in customer care. This was also suggested by Watson, et al., (2000) in reference to what had been observed Bond, et al., (1992) who found that in about two-thirds of community pharmacies in Scotland had no private consultation facilities. Admittedly, this requires extra staff like a nurse to be part of the pharmacy which as a matter of fact is requirement by the SAPC but not enforced in any way. The presence of a nurse in a pharmacy would go a long way in managing STIs at that level.

The practice settings, in Limpopo were comparatively informal. In other words, from the results obtained, they did not require patient registration, medical insurance, pre-service tests, parental consent and so forth. Although these requirements are deemed necessary in formal hospital and clinical settings, they constitute the most critical service barriers that young people, in particular, may face in their daily attempts to access comprehensive sexual reproductive health services in government institutions. People seeking care for a suspected STI have the right to confidentiality in their consultation with a health professional and services should provide clear information regarding confidentiality. According to Nzapfurundi, et al. (2002) in South Africa, private sector, general practitioners in particular, are still important providers of such care, possibly treating more STI cases than the public service.

Retail pharmacies in many developing countries, are widely used source of advice about health concerns. There are many reasons for the ubiquitous role that pharmacists have in primary health care, including easy accessibility, short waiting time and convenient hours of operation (Turner, et al., 2003). However, the most important reason could easily the fact that medicines are cheaper, there is an option to buy in them in small amounts, and they are invariably in stock compared to government institution. The study investigated the stock levels of STI medicines in the pharmacies

5.4 STI Medicines in stock during interview

When stock level investigation was carried out during the interviews with the pharmacists, the private pharmacies stocked the essential antibiotics that were potentially effective against STI pathogens most commonly prevalent. Metronidazole was found to be in stock in 70% of the pharmacies. Metronidazole is a drug of choice for treatment of bacterial vaginitis, the common cause of vaginal discharge, including vaginitis caused by *Gardnerella vaginalis* and *Mycoplasma hominis*. Vaginal discharge is a common and complex problem. It is commonly a symptom of vaginal infection, but may be due to cervicitis, which may cause by *Neisseria gonorrhoea* or *Chlamydia trachomatis*. Clinical features of these infections may be indistinguishable and infections are often mixed, complicating identification of the causative organism. It would appear that metronidazole was the most used in the syndromic approach by pharmacists in the private sector. However, in the process of providing the treatment, it would appear from the results of the study that no speculum examination was performed at the pharmacy, to exclude cervical carcinoma, which often presents with vaginal discharge. Speculum examination is what the South African Medicines Formulary (2012) recommends for the private sector. Ciprofloxacin was available in 65% of the private pharmacies. According to the Standard Treatment Guidelines, it should be used for syndromic treatment of urethral and suspected vaginal discharge. It is a potentially effective antibiotic against individual STI pathogens such as *Neisseria gonorrhoea*. Doxycycline was stocked by 30% of the pharmacies for syndromic treatment and suspected *Chlamydia trachomatis*. Similar finding was seen in a Gambian study by Leiva, et al. (2001), where the availability of several antibiotics potentially effective against individual STI pathogens was generally good, however only 42% pharmacies stocked both quinolone(ciprofloxacin and oxfloxacin). Other studies that investigated STI treatment and management in pharmacies did not assess medicine availability (Chalker, et al., 2000; Mayhew, et al., 2001; Ward, et al, 2003). The assumption in these studies was perhaps that antibiotics for STI would always be available and the type did not matter. The availability of antibiotics in the pharmacies indicated that pharmacies played role in the management of STIs as they provided a quick, more accessible and where possible, a confidential service with reasonable availability of drugs. In South Africa, antibiotics are and should only be accessible by prescription.

Study carried by Ward, et al (2003) in the Western Cape confirmed anecdotal reports that had suggested a high volume of STI being seen in community pharmacies with request for medication without prescription. Findings from the current study seem to indicate that

leniency in prescription drug laws was common also in Limpopo Province. The private pharmacies who took part in the study indicated that they were confident that they could clearly identify an STI case from the history in 41% of the cases. They would then decide whatever medicine they thought was appropriate even without physical examination of the patient, which was not ideal in the case of vaginal discharge. Clinical features of vaginal discharge, for example, caused by many organisms in women commonly treated with metronidazole may be indistinguishable and the infections are often mixed. One wonders, there how pharmacists could be comfortable with saying could tell the STI just from history taking without the support of the laboratory to confirm the causative microorganism. The results indicate a possible high volume of STI being treated without a prescription as shown in Table 6 because of patient demand. The results would seem to support the argument for the lifting of the current restrictions that prevent pharmacists from prescribing as suggested by Ward (2003). As recent as 2012, in the UK, the Medicines and Health Regulatory Authority approved azithromycin for STI, *chlamydia* (Horner, 2012). This drug was found to be stocked, though in small volumes, by the pharmacists in Limpopo and was available without a prescription. In the UK azithromycin is now available to men and women aged between 16 and over. Their partners are going to able to have the drug as well. This was because *chlamydia* is the most STI in the UK and is known as 'the silent infection' as suffers often has no symptoms, but if left untreated it can cause infertility. The question is why can azithromycin not be available without prescription in South Africa.

The results of the study emphasizes the need for pharmacists and pharmacy staff, even though this entails thorny legal and logistical decisions, to be continuously trained in appropriate diagnosis and treatment STI if they are to play a significant role in the control of STI transmission. They are better positioned, particularly looking at the time they seem to be available, to provide clients with advice, information, and education on STI and encouraging partner communication. However, the private pharmacist can also always be encouraged to refer clients to health clinic for further diagnosis and or even treatment. The benefits will be seen in the possible decrease in the number of new infection, due to both counselling and detection at the pharmacy level in spite of the reported shortage of pharmacists. The SAPC reported that South Africa had shortage of pharmacist. It noted that there was one pharmacist per 3,849 populations, which was considerably below the World Health Organisation recommendation of one per 2,300 (SAPC, 2011). Long-working hours to an extent compensate for this. However, according to Ward et al. (2003), private pharmacists often

work under severe constraints and this often leads to, in many cases, very brief interaction with clients. Ward`s statement has been confirmed by the results from the current study. The pharmacist is the custodian of the essential drug list in both the private and the public sector. The list based on the Essential Drug Concept one of the concepts of the Primary Health Care ideal. Every health care professional in general and pharmacists in particular, in South Africa is expected to be familiar with the essential drugs that have been chosen for specific treatment.

5.5 Treatment and management of STIs

5.5.1Treatment Guidelines

In South Africa, there is a general guideline to regulate the standard of service delivery by all public and private pharmacies in South Africa. This was drawn by the Department of Health and Social Welfare in 2008. The general guideline, sometimes referred to as Standard Treatment Guidelines includes a list of essential drugs with therapeutic guidelines. In these guidelines is a list of medicines to be used in the treatment and management of STI. This has been prepared as a tool to assist and guide prescribers, pharmacists, and other healthcare providers in providing quality care to patients. It is important to note that treatment guidelines are not the same as treatment protocols. With treatment protocols, strict adherence is required and guidelines are just a guide.

The WHO in 1991 recommended to member countries to adopt in their STI treatment guidelines the syndromic approach as it was a realistic approach for managing symptomatic patients. However, syndromic management has been reported (O'Farrell, 2002) to tend to undermine STI surveillance efforts because as was seen from the study, cases were managed and treated in the absence of specific clinical or laboratory diagnosis. In addition, the other limitations of syndromic management include the unintended consequence of decreasing the skills level of the pharmacists and indeed other health care providers; inability to directly target the subclinical STI pool; the variability of STIs symptoms and signs; the potential for wasting antibiotics and the risk of promoting drug resistance. Be that as it may, according to Johnson, et al., (2011), syndromic management if implemented properly, could contribute to improvements in STI treatment in general, and increase in condom usage. Promotion of condom use was the major focus of advice in about 54% of the pharmacists in the current study unlike what was found in Hanoi by Chalker, et al., (2000). In their study condom, use

partner notification was only promoted in about only 1% of the time. In a community randomized controlled trial by Johnson, et al., (2011) of syndromic management interventions in East Africa in Mwanza trial they found that syndromic management significantly reduced the prevalence of STIs that were frequently symptomatic. This, the study also noted, was an opportunity for interfacing and integrating with HIV/AIDS and sexually transmitted infections programs and for involvement of private sector, which included pharmacists.

There has been a belief for a while now in the industry, that pharmacist can play a crucial role in effective STI management if they were sanctioned to dispense the drugs used in syndromic approach to STI management. Way back in 1998, the WHO recognized that, it was expected that pharmacists could play a role in ensuring responsible self-medication by the public and making hospital referrals (WHO, 1998). Since then the role of the pharmacists has been changing over the past two decades with self-treatment, in the community, increasing worldwide. Responsibilities to recommended safe and efficacious medicine with sound advice are essential. The pharmacist is now expected to be a communicator, supervisor and health promoter (WHO, 2006). Now the pharmacists could indeed be serving as an excellent check point for ensuring appropriate HIV/STI therapies if there is appropriate training in STI syndromic management, coupled with improved supervision,

During interviews, it was found that 65% of private pharmacies in rural and urban Limpopo strongly agree with the assertion that it was within their professional tasks to give treatment and advice to STI patients. In other words the majority of the private pharmacists agreed with the need for STI services to be provided in the pharmacy which is why to a certain extent Ward, et al., (2003) claimed that high volume of STI were dealt with by the community pharmacist. The private pharmacists during interviews of the present study claimed to be competent and confident in dealing professionally with STI treatment in their pharmacies using the syndromic approach. According to Schneider, et al., (2005) this was in contrast to medical doctors, who were generally found to be opposed to syndromic management as correct diagnosis tool. Their study found that pharmacists inherently used syndrome approach and were thought to be much more likely to recognize its use fullness in the interruption of STI transmission, prevention of the development of disease complications and reduction HIV transmission (Schneider, et al., 2005). Their study recommended that in South Africa more worked needed to be done to encourage the use of syndromic management guidelines. Being

confident and claiming to be competent in an interview is one thing and the doing the correct thing based on knowledge is another.

5.5.2 Standard Treatment Guidelines knowledge and practice

It was observed from the study that 74% of the private pharmacists in both urban and rural Limpopo Province knew about the existence of Standard Treatment Guidelines for STIs. Unfortunately, only 39% of them used it in their daily endeavour to serve the rural and urban communities where the private pharmacies were located. In other words, this meant that about 35% of the pharmacists interviewed knew its existence but did not use it. A quarter of the pharmacists did not know about the STI guidelines. In essence, what this meant was that almost the majority of the private pharmacists relied on other sources for the manner they treated and managed STI in the pharmacy during the long working hours. Unfortunately, the present study did not go into the identification of these other sources. It is however, reasonable to assume that one of the sources could be medicines suppliers who provided information on STI treatment and management during their promotion of their products. Given the long working hours and the shortage of staff it was unlikely that pharmacists had time to keep abreast with the latest developments in STI treatment and management. The other source of information could be the Internet. How else can one explain the common use of tablets made from *Vacciniumma crocarpon,* cranberry fruits that are claimed to have been used for hundred years to promote urinary tract health.

The study showed that during at least 73% of simulated client visits, particularly in the urban areas the pharmacists encouraged the use of these cranberry tablets. What was interesting was that a patient could buy these tablets without any prompting from the pharmacist because in most pharmacies they were on the shelf away from the pharmacist. Yet in the present study during client simulation visits, some pharmacists were found to have recommended the purchase of cranberry tablets. In general, pharmacists, particularly in the urban areas of Limpopo, did not see anything wrong with dispensing or promoting the use of this product that is also actively promoted even in the big chain pharmacy outlets. How effective cranberry is as an STI treatment is questionable but the Internet is awash with promotional material available to the patient and the pharmacist. Tuner et al. (2003) reports that one interpretation of this is that when participants, pharmacists in the case of their study, did not have full treatment recommendations or knowledge of treatment guidelines, they tended to suggest costly but ineffective medication for STI treatment. In order to make a sale, there was

a possibility that the pharmacist may simply list possible treatment because they did not know what else to recommend. In other words, they did not stock the correct medicines as per STI treatment guidelines. Unless the situation has drastically changed over the years since 2002, in South Africa STI treatment by private general practitioners (GPs) was found to depend on patients' willingness or ability to pay for medicines having a bearing on the quality of care (Nzapfurundi, et al., 2002). The conclusion from this study was that STI patients who presented to be often offered poor quality of care by general practitioners. Interestingly, in a study by Wilkinson (2000) only 9% of 33 prescriptions by private general practitioners, treating STI syndromes were found to be adequate. In other words, treatment of STIs by general practitioners was once again demonstrated to be poor. While a case is, being made pharmacists to be involved in STI treatment and management by such studies by Turner et al (2003) in Mexico and the recognition of the change in the pharmacist's role by WHO, there still needs a lot to be desired.

For example, the present study showed that during the interviews over 91% of the pharmacists indicated that they would request their STI clients to give them the history of their STI. On further analysis of the results of the interview, it was noticeable that only 41% of private pharmacies were actually confident in their identifying an STI case from the history reported by the patient. It would be reasonable to assume that in most cases the pharmacist decoded the information from the client and suggested what they thought would be the best antibiotic to buy whether it was in the Standard Treatment Guidelines or not. However, during encounter with simulated client only in an average of 19% of the encounters was the client asked any relevant question as expected and depicted in Figure 1-2 Department of Health South Africa Standard Treatment Guidelines and Essential Medicine List, (2008). Admittedly, some of the key questions asked and steps taken prior to treating the patient were relevant and were in accordance with the Standard Treatment Guidelines. What was important to note was the fact very few pharmacists in practice did not take proper history before they dispensed whatever medicine. This would mean there was very little advice given to clients, in general. The result clearly demonstrated a discrepancy between knowledge and actual practice of pharmacists regarding STI.

Yet another mismatch between knowledge and actual practice in the study was observed with female patients. The result of this study found that in only 27% of simulated client visits treatment was in accordance with Standard Guidelines of which 19% were male STI patient visits. Of the 14 simulated clients who received treatment from private pharmacies that

partially complied with the Standard Treatment Guidelines 64% were female STI patients. The main conclusion from this was that pharmacists in the private sector really did not have adequate knowledge to provide accurate STI diagnosis and treatment in spite of what they had said during the interviews. The results from the simulated client visits confirmed the discrepancy between knowledge and actual practice of the private sector pharmacist regarding STI care, which is major concern if indeed pharmacists are to be playing a role in STI treatment and management. The reliability and validity of the results obtained from the simulated client method are high because the method exposed the behaviour of the pharmacist first-hand. A chi-square test of independence between compliance with the general guideline and the gender of STI patients shows that there is no association between the two factors. The result gender should not really matter to the pharmacist. In other words pharmacists just like other healthcare providers should not be concerned about the gender of who they are providing STI pharmaceutical care to. However, the client, particularly female clients, may be embarrassed to talk about their problem to a male pharmacist. This happens everywhere. A study carried out in the United Kingdom showed that male pharmacists were generally positive toward the treatment of STI female with vaginal discharge. Their belief was that immediate access to treatment and rapid symptoms relief were perceived to be the greatest advantage to the female customer in spite of female customer embarrassment, which was perceived to be influenced by lack of privacy and the gender of the member of staff involved in the consultation (Watson, et al., 2000).

Treatment of vaginal discharge varied according to the location of the private pharmacies i.e. whether rural or urban, regarding female vaginal discharge syndrome. The results obtained indicated that 22% of urban private pharmacies were better at complying with the Standard Treatment Guidelines compared to 4% of rural private pharmacies in general. This would seem to suggest that only the urban pharmacies had been equipped with STI information and hence they seemed to manage more STI patients. Private pharmacists recommended clotrimazole, which is antifungal and significantly cheaper and it is recommended in the Standard Treatment Guidelines. Pharmacists could therefore reasonably be expected to offer such treatment for vaginal *candidiasis* and bacterial vaginitis. The question is, how they would know the best drug to use between, metronidazole, clotrimazole and doxycycline which they stocked if they did not have access to laboratory facilities. It is highly unlikely that most of these female clients came back once they got their medication especially without any prescription.

Compliance with the Standard Treatment Guidelines was found to be poor when it came to treating male patients with STI. The findings of this study further revealed that only 9% of the medication dispensed completely complied with medicines for male ulcer, (GUS). These results are similar to what was observed in a previous study in South Africa (Ward, et al., 2003). They found that 8 % of urban pharmacists identified the correct combination and none of rural pharmacists identified correct treatment for GUS. Private pharmacies in Limpopo, it was observed, often saw patients who demanded medicines without prescription for genital ulcer at a rate which rose had risen to 120 per week. It was important to highlight that genital ulcer is more difficult to diagnose using syndromic approach, since a genital ulcer may be confuse with an ordinary skin problem. Furthermore, the drug of choice for treating it is benzyl penicillin, which was an injectable drug which cannot be administered at pharmacy unless there is nurse to do so (Department of Health Standard Treatment Guideline and Essential Medicines List, 2008). Ciprofloxacin was often used for GUS. Its use for GUS was not in complete agreement with the Standard Treatment Guidelines, however.

What was interesting, though, was that there was a better tendency of private pharmacists towards treating male urethritis syndrome (MUS). The results of the study showed that 22% partially complied with the Standard Treatment Guidelines Private pharmacists dispensed ciprofloxacin, cefixime and doxycycline as a single not in combination as recommended in the Standard. This could explained by the fact that the pharmacists might not have liked to be involved in dispensing more than one antibiotic to same STI client without prescription to treat male urethral discharge. A study by Sarkodie, et al., (2000) in Ghana showed that between 75% of men with urethral discharge demanded self-medication before attending STI clinic from the pharmacists. It would be appear from the present study that, in most cases, patients suffering from STI when they know it, they simply went to the pharmacy and asked for antibiotics. The pharmacist decoded and suggested the best antibiotic to buy. As a result, the current study revealed that high volumes of STIs were possibly seen in private pharmacies with request for medication without prescriptions. The demand for medicines without a prescription was related to vaginal discharge, genital discharge and genital ulcer and equivalent to a minimum of 10 to a maximum of 20 requests per day. This was an indication to some extent how of much unprotected sex was going on which was managed away from societal and even parental scrutiny by patronizing pharmacy outlets. In a study in Nigeria, Okonofua, et al., (2003), found that frequent reasons given by people who chose private pharmacies were efficacy of treatment given, convenience, and availability of

unadulterated drugs all time. This was further corroborated by Okonkwo, et al., (2010) who carried out a study among young people who gave several reasons for their patronage of private pharmacies. The most prominent reasons were that private pharmacies were conveniently located in patrons' communities and were open for longer hours, including weekends when most of the action i.e. sexual activities, took place. However, in their study they deduce that pharmacists in Nigeria have ambivalent attitudes towards their young patrons' sexuality. They observably masked these sentiments in their practical dealings with their young patrons. This, they say was due to the urgent need of the pharmacists to run profitable businesses which recommended stocking, prominently displaying, promoting and selling preventive and restorative sexual reproductive health products such as condoms, contraceptives and pregnancy-testing kits. They were said to sell fast and profitable because their patrons demanded them. It would be reasonable, from the present study, to assume that it could have been the case with private pharmacies in urban Limpopo. Improvement in terms of reproductive health services provided in the private sector is difficult to assess because the range of service offered. A model adapted for STI control demonstrated how in most developing countries only a fraction of STI cases are successfully treated (Mayaud &Mabey, 2004).

In general, the present study showed that 65% of the private pharmacies both in rural and urban Limpopo dispensed STI medicines without prescriptions. It was particularly high in urban Limpopo where 87% the private pharmacies. In Uganda it was show that only 7% of men with urethral discharge were properly managed in private pharmacies (Mayaud & Maybey, 2004). In Hanoi, correct syndrome treatment for male urethritis showed that no one gave correct treatment by syndrome approach in both questionnaire and during simulated client encounters with private pharmacies (Chalker, et al., 2000). It would appear that, therefore there was generally poor management of male STI patient's world over. This inappropriate management of STIs facilitates the spread of infection which includes HIV. The spread of HIV infection was generally monitored and therefore treated mainly in the public sector. Voeten, et al., (2001) argue that although it is essential to improve the quality of STI care in the public sector to attract and properly manage STI patients, focusing on this sector alone will have a limited impact on reducing STI and HIV transmission. As seen in many studies, including the present study, there is now evidence that the pharmacists represent a valuable point of contact for STI patients if only the patient could be discouraged from demanding medication without proper diagnosis.

Still, the present study would seem to suggest that, even though there are National Treatment Guidelines for STIs, pharmacists in private practice do not seem to comply with them. The study observed that the dose and duration of the recommended drug in the Standard Treatment Guidelines dispensed by pharmacists during the simulated client encounters were correct in only 30% of the cases confirming what Altini and Coetzee (2005) had previously reported that less than 1 in 10 patients received adequate doses of antibiotic and 75% of the cases, an incorrect drug were prescribed. Indeed the results from the simulated client method would seem to indicate that case management provided by the pharmacist in the private sector appeared to be poor. This was also found in other studies that looked at the possible role of pharmacists in the management of STI (Leiva, et al., 2001; Turner, et al., 2003).

The pharmacists who took part in the study were well qualified all such that there was no question about their knowledge of the antibiotics they dispensed without a prescription in most the cases. According to the South African Medicine Formulary, (2010) antibiotics for STI treatment are classified as Schedule 4, which required a written medical prescription. Only in 27% of the simulated client, visits were antibiotics dispensed with a prescription. This was after at least in about 12% of these visits had the clients been referred to their physician. One could say whether this was done because of their empathy towards their clients or shear disregard of the regulations and the consequences of irrational use of antibiotics. Regarding HIV/ STI counselling, advice on safer sex and partner notification it was clearly demonstrated that once again what was practiced was totally different from the results of the interviews. The conclusion from the results was that on average 38% of time the pharmacists whether urban or rural gave the necessary information concerning their return if treatment fails, use condom 54% to prevent STI, notify partner 38%, see medical doctor 27% and risk of HIV to their clients. This was in spite of the fact that during the interviews, 65% of the pharmacists had strongly agreed that it was indeed within their professional prerogative. Indeed, Garcia, et al., (2003) reported that pharmacists could play an important role in condom promotion and displaying their premises to inform customers about HIV/ STI counselling and partner notification. Gupta, et al., (2010) in their study also concluded that pharmacists could also be serving as an excellent checkpoint for ensuring appropriate HIV and co-infection therapies as long as there is appropriate training and willingness to serve in this role. Smith, (2009) reported that the purpose of partner notification is to decrease the frequency of STI in society by breaking the chain of transmission and to prevent infections and complications in the patient and his or her sexual partner. Better partner notification and

proper treatment STI symptoms should increase the number of treated asymptomatic people and those with symptoms who do not seek care (Wilkinson, et al, 2000). In spite of the gap identified, the present study however provided some further support for what has been suggested by many other studies about the role of private pharmacies

Now that the SAPC has directed that all pharmacists should be involved in some form of continuous professional development from which they will earn some points if they are to remain registered, this creates an opportunity for the aggressive promotion of the guidelines. However, before all this done there urgent need to re-look at the policy and regulation framework that govern pharmacy practice in South Africa. In all the countries where the studies have been carried out policy and the regulatory framework have been and continue to be thorny issues.

5.6 Policy and regulatory framework

The result of this study demonstrated that there was an acceptable level of availability of STI drugs in private pharmacies both urban and rural. The drugs as far as the current regulations go; were all prescription drugs. In other words, pharmacists in the study were breaking the law in their effort to assists their STI patients. According to Ward, et al., (2003) pharmacists in South Africa cited the current legal registrations and lack of skill as significant barriers to their ability to provide STI treatment, which they felt they were competent to do. This assertion is not exactly supported by the results from the present study. However, that is not to say there should not be an effort to revisit the current legislation as has been done in the UK for *Chlamydia* or taking a leaf from Ghana. In Ghana the current legislation does affect the extent to which pharmacists can treat STI (Mayhew, et al., 2001).The Pharmacy Act of 1994 states that pharmacists can treat patient in cases of first aid and simple ailments of common occurrence. The Act goes further to state that where it is not reasonably practical for the patient to consult a medical practitioner STI should be considered as *a simple ailment*. As a result, pharmacists in Ghana are widely used as sources of drugs by communities where access to public sectors health facilities is low. In Uganda a pre-packaged syndromic management kit containing ciprofloxacin, doxycycline, condoms, partner referral cards and instruction leaflet for urethral discharge was introduced and socially marketed by pharmacists. These efforts in the different countries would seem to suggest that increasing pharmacist prescribing powers could improve the quality of treatment they offer but, as long as there is continued professional development and training. However, what this also means

is that there has to be an exercise of caution in the process of increasing the powers of the pharmacist to prescribe in South Africa.

5.7 Training

There is no doubt that their skills need to be upgraded if the quality of pharmaceutical care they provide is to improve. STI patients shall continue to have no access to a physician and community pharmacists shall therefore continue to represent patients' valuable point of contact with the health system. As has been indicated earlier because of the role of the pharmacist is increasingly changing, several studies have looked at the issue of the development of relevant training. For example, Garcia, et al., (2003) in their study concluded that pharmacists were frequently called upon to provide STI treatment but had limited knowledge of correct treatment recommendation. Therefore targeted training of pharmacists to provide syndrome STI treatment may be one of the strategies to reduce STI morbidity and HIV transmission. Turner, et al., (2003) in Mexico, studied the same issue of pharmacists` ability to manage STI. They suggested that training and STI and professional follow up, accompanied by regular monitoring and evaluation may motivate the pharmacists to close the gap that resulted in partial fulfilment of what is expected of them. This is possible if pharmacists are at the same time made to appreciate that STIs are not just biological and medical problems, but also behavioural, social, political and economic problems. Many of these facets of STIs, unfortunately, are not addressed during the training of the pharmacist. For example, the ability to take history and educate their clients should be inculcated into pharmacy trainee graduate's mind. The current study during the simulated client encounters demonstrated the need for this inculcation. Post-training programmes results have been shown to increase of pharmacists referring clients to medical practitioners indicating that there is a greater recognition by pharmacists of their limitation of accurately treating some conditions such as GUS in pharmacy (Mayhew, et al., 2001). In order to reduce the spread of STI infection, communication between various health professionals, in particular doctors and pharmacists when it comes to pharmaceutical care are important and should be actively encouraged.

The study has demonstrated that while a WHO consultative group back in 1998 recognized the change in the role of the pharmacist with self-treatment increasing it would appear as far STIs are concerned, in Limpopo Province at least, the pharmacist's role still needs a lot to be

desired. While the pharmacist might be responsible to recommend safe and efficacious STI medicines there are limitations of the syndromic management approach at the pharmacy.

Gupta, et al., (2010) report that pharmacists can be serving as an excellent check point for ensuring appropriate HIV and co-infection therapies, but if there is appropriate training, knowledge and willingness to serve in this role. The findings of this research indicate a sound base for supporting pharmacies to provide STI services. There are more reservations regarding pharmacists' competence as many pharmacists and pharmacy staff are often neither well trainer nor aware of the STIs treatment. Services should be able to provide assurance that, professionals delivering care for management of STIs can demonstrate they are competent and remain competent to do so, through continued be trained and improvement their knowledge in order to perform their work. In context of STI, such practice is particularly problematic and is likely to contribute to increased drug resistance and treatment failure in community. To interrupt the transmission of STIs and to prevent the development of disease complications to reduce transmission of HIV infection. This can be achieved by applied syndromic approach developed by WHO and adapted in Standard Guidelines. Simbayi, et al., (2004) study show that there was improvement for knowledge about STIs was found among STI patients who had just undergone treatment using the syndromic approach when compared with their non STI counterpart who not exposed to such intervention.

However, the rate at which private pharmacies complies with Standard Guidelines, which seems to be low, and can be improved through awareness creating educational forums. Schneider, et al., (2005) reported that in South Africa, more work needs to be done to encourage the use of syndromic management guidelines. There was also a need for greater staffing and infrastructure in public health sector, which would encourage prompter health seeking behavioural and the introduction of pre-packaged syndromic management kits, since STI is frequently a symptomatic. It is imperative that the training intervention for pharmacists should include appropriate diagnosis and treatment of STI where a patient has no access to a physician as the case in Ghana. Pharmacists are widely used as sources of all medication by communities where service by and access to public sector health facilities is poor. There is therefore need to increase the pharmacist prescribing powers if their quality of treatment and management of STI is to improve.

Chapter 6

Limitations, Conclusions and Recommendations

6.1 Introduction

This chapter points out limitations of the study, which should give an indication of what should be avoided in subsequent studies. The conclusion of the study, in terms of what relevant results were and how they related to the objectives of the study will be also included. Finally, recommendations for further research will be given.

6.2 Limitations of the study

The study had limitations. However, it has demonstrated the character of the competence of pharmacy practice based on only two STI case scenarios in the Limpopo Province of South Africa. The results obtained can be used to appraise the performance of the pharmacist in the private sector even though, since it was beyond the scope of the study, it did not address specifically the conflicting roles of pharmacy as merchant and medical provider. Neither did the study look at the effect of industry to try to understand why the use of certain products, like cranberry tablets, whose efficacy in STI treatment have not been scientifically proven were being encouraged. . Repeat the visits by simulated clients would be preferable; however, this will not be possible within the budgetary limitation of the study as its self-budget. .

6.3 Conclusions

The pharmacists in the private sector did not have adequate knowledge to provide accurate STI treatment and management. The simulated client visits confirmed the discrepancy between the knowledge and actual practice of the private sector pharmacists regarding STI care, which is the major concern if indeed pharmacists are to be playing a role in STI treatment and management. However, they knew the linkage between HIV and STIs and gave appropriate counselling and STI prevention. The study also conclude that it was an opportunity for interfacing and integrating with HIV/AIDS and sexually transmitted infections programs and for the involvement of private sector which included pharmacists.

A quarter of the pharmacists did not know about the STI guidelines almost the majority of the private pharmacists relied on other sources for the manner in which they treated and managed

STI in the pharmacy during their long working hours. The compliance with the Standard Treatment Guidelines and the location of the pharmacies are independent. There was no association between compliance with the Standard Treatment Guidelines and the gender of STI patients. Treatment of vaginal discharge varied according to the location of the private pharmacies whether rural or urban, regarding female vaginal discharge syndrome. The urban private pharmacies were better at complying with the Standard Treatment Guidelines compared to rural private pharmacies. There was a better tendency of treating male urethral discharge syndrome. The treatment of GUS varied according to the location of the private pharmacy.

There is adequate stock of essential antibiotics that were potentially effective against STI pathogens most commonly prevalent in rural and urban pharmacies in the Limpopo Province. There is a very high volume of demand for STI related vaginal discharge, male discharge and ulcer medicines without a proper prescription. The private pharmacies confident in that they can clearly identify an STI case from the history reported by the patient and conclude as such to dispense the right medicine for those who demand it without prescription despite the law restriction. This concluded that there is a need for pharmacists and pharmacy staff, even though this legal restriction, to be continuously trained in appropriate diagnosis and treatment of STI if they are to play a significant role in the control of STI transmission.

The majority of the private pharmacists in general agreed with the need for STI services to be provided in the pharmacy. The results of the study concluded that the pharmacy and the pharmacy staff could play a significant role in the control of STI transmission by providing clients with advice, information, education on STI and encouraging partner communication. This also insured selling to clients complete and appropriated treat regimen and emphasizing the importance of treatment compliance as the patient can discuss any concerns almost immediately with the pharmacist. Regarding HIV/STI counselling, advice on safer sex and partner notification it was clearly demonstrated that once again what was practiced was totally different from the results of the interviews.

The private pharmacies operating in rural and urban Limpopo have relatively adequate staff with the required minimum qualifications. They are open throughout the week for the service delivery purposes. The private pharmacies in Limpopo Province have counselling rooms. None of STI clients during simulate client encounters were visual examined.

6.4 Recommendations

There are a number of recommendations that come out from the study. These include; implementation of aggressive and sustainable training for pharmacy personnel, utilizing local-specific data in designing STI management strategies. There may be improvement in appropriate diagnosing and treatment following such training efforts as long as the improvements are maintained through sustained and continuous professional development. It is important, however, for the South African Pharmacy Council which is regulatory body for the pharmacy profession, as it was recommended that every pharmacist has to ensure that adequate training, knowledge and skill to perform HIV antibody tests and counsel patients being tested. To bear in mind that decision to intensify training of pharmacists to carry out such tasks is indeed thorny legally. For example, programmes that educate pharmacy personnel about appropriate syndromic STI management will have to carefully address the current prescribing regulations, since prescribing in the case of STI treatment and management by the pharmacist is technically illegal. There must not be any ambiguity as is the case in Ghana where the Pharmacy Act states that pharmacists can treat STI in cases of first aid and *simple ailments* of common occurrence where it is not reasonably practical for the patient to consult a medical practitioner'. The classification of STI as 'a simple ailment of common occurrence' is open to debate. The Essential Drug List for Ghana lists STI drugs as 'Programme Drugs' which are not subject to usual provider restrictions. This means, in Ghana, pharmacists can legally supply STI antibiotics, although STI could be interpreted as ailments for which it might be 'reasonably practical for the patient to consult a medical practitioner' (Mayhew, et al., 2001). The current study has shown that there was a de facto gap between the legal ambivalence regarding the prescribing of antibiotics and the reality of practice whereby pharmacists were prescribing antibiotics routinely. According to South African Medical Formulary, 2010 antibiotic for STI treatment are classified as Schedules 4 which required a written medical prescription. However, prescribing and the training of pharmacists to diagnose treat and manage STI is bound to meet resistance from some quarters of the South African medical profession. This is in spite of the fact that not every STI patient can afford to consult a general practitioner. Individuals who seek pharmacy treatment are, therefore, often those who cannot afford to consult physicians and therefore pharmacists derive a lot of business that they would not like to lose. Be that as it may, there is urgent need to study strategies and policies in this area

Collaboration between the South African medical and pharmacy profession is particularly important for maintaining standards for STI screening and treatment by pharmacists. Whatever tensions, regarding financial incentives that might be currently there, there is need for them to be overcome to ensure effective organization of training quality control. The sustained training effort that will be proposed must, obviously, balance the challenges that are currently there, while at the same time disseminating accurate STI information to the general South African public.

Accurate information will enable the public to avoid initial infection, as well as allow the patients and pharmacist to assess better the severity of the disease condition at the pharmacy, in privacy since they all have consulting rooms. After that the pharmacist can then take the possible pharmaceutical care course of action. Given the very huge demand for STI syndrome treatment, the availability of sufficient verities of medicines to manage STI and knowledge of private pharmacies, it is wise and appropriate to make use of such wealth to promote a high level of services to the needy communities. Adequate attention should be given to these pharmacies and improve the level of services they are trying to give currently by creating a close working relationships through training and regular consultative visits. It has been observed that private pharmacies in Limpopo Province clearly know the strong link between STI and HIV. Hence, it is recommended that these pharmacies be empowered to treat STI, which is believed to contribute positively in combating HIV/AIDS. More time and resources should be allocated for a wider scope of study similar to the present study on a regular basis to generate up to date information for improved action.

6.5 Suggestion for the further research

In view of various limitations mention in this study, it is proposed that future research should focus on replicating the study using a more representative sample. The focus should assess the ability of pharmacist to be involved into training programme to offer proper STI management to ensure that all the pharmacists received the training on National Guidelines for syndromic of STI. Factors such as the availability of local health services and the ability of pharmacists` to be trained could be used to target those pharmacists where training and provision of treatment would be most efficient. Individuals who seek pharmacy treatment are, often those who cannot afford to consult physicians. The irrational use of antibiotics and the price cost of drugs should be explored.

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