Chapter 1

Introduction

1.1 Background

According to the World Health Organization (WHO), it is estimated that about 340 million new cases of sexually transmitted infections (STIs) occur every year world wide (1, 2, 3). Seventy five to eighty five percent of these infections occur in developing countries and they are mostly curable bacterial and protozoal infections, such as gonorrhea, chlamydial infections, syphilis and trichomoniasis (2). There is a noticeable geographical variation in prevalence and incidence of these infections: it is estimated that Sub-Saharan Africa (SSA) accounts for 20% of the global burden and accounts for the highest prevalence and incidence rates. Industrialized countries account for 77-91 per 1000 people (1) while Sub-Saharan Africa is estimated to have 69 million new cases per year in a population of 269 million adults of age 15 to 49 years and thus resulting in incidence of 256 per 1,000 (1).

The burden of morbidity and mortality is brought by their impact on reproductive and child health and through their role in facilitating the sexual transmission of HIV infection (1, 2).

1.2 Statement of the problem

Over 30 pathogens are known to cause STIs; including bacteria, fungal agents and ecto-parasites (1). The most common STIs are preventable by behaviour change including abstinence and use of barrier methods like condoms; and most of them, particularly the bacterial STIs, are treatable with known and effective therapy. Poor management of STIs leads to antibiotic resistance which poses a major problem to future treatment of STIs and prevention of HIV. There is a strong association between presence of STIs and transmission of HIV. If properly managed, the effective treatment of STIs has been reported to reduce the chances of HIV transmission (2, 4). Treatment of STI eradicates microorganisms responsible for ulceration or inflammation and during this, the natural healing process takes place leading to reduction in HIV transmission as the skin regains its barrier nature and acts as the first line of defense.

Prevention and control of STIs is a major challenge. It requires various strategies including the provision of good quality services for effective treatment of symptomatic STIs. Good quality services include adequate infrastructure, availability of appropriate and affordable antibiotics, condom availability, personnel trained in STI management (2, 5), provision of treatment guidelines, and mechanisms for partner tracing and management.

It has been shown that lack of resources in STI services is associated with provision of low quality management of STIs (2). Good quality services require functioning health systems (6). Because of inadequate resources and poorly developed health systems, many countries in much of the developing world struggle to provide good quality STI

prevention and treatment services, and this means the potential reduction in burden of STI and reduction in HIV transmission cannot be realized (6)

This proposed study hopes to assess the quality of STI services provided at primary health care level in one health district of Gauteng province; with a specific emphasis on assessing the availability of resources for STI service delivery, as well as a description of the setting in which STI service provision is taking place at selected clinics.

1.3 Justification for the study

Quality of services is not a static phenomenon - it depends on changes in resources available and capacity to provide services in a given institution. Therefore, it has to be assessed regularly to avoid complacency and ensure that standards are upheld.

The Gauteng Department of Health (GDOH) provides services for treatment of STIs through its network of primary health care facilities in all sub-districts of the province.

Delivering good quality services for management of STI could potentially reduce the prevalence of these infections and thus reduce the incidence of HIV. Evaluating the quality and functioning of STI services in Gauteng is an essential aspect of district and provincial programme monitoring and management. Thus the GDOH would like to evaluate the quality of STI services in the province. One of the factors that need to be assessed is the extent of resource availability for service delivery.

1.4 Literature review

1.4.1 Epidemiology of STI

Sexually transmitted infections (STI) are a major public health concern because of the following reasons: (i) STIs are frequent with high prevalence and incidence (ii); STIs can result in serious complications and sequelae; STIs have social and economic consequences and a number of STIs have been identified as facilitating the spread of HIV.

The health consequences of STIs include pelvic inflammatory disease (PID), infertility (in both women and men), ectopic pregnancy, and adverse pregnancy outcomes such as miscarriage, stillbirth, preterm birth, and congenital infections (1, 2, 7, 8, 9). Poor outcomes are more common and severe in women than men. PID occurs in women when an infection of the lower genital tract (cervix or vagina) or outside organisms reach the upper genital tract (uterus, fallopian tubes, ovaries and surrounding structures). The infection may become generalized and life threatening, and the resulting tissue damage and scarring may cause infertility, chronic pelvic pain and increased risk of ectopic pregnancy (1, 2, 7, 8). Infertility often occurs when PID is untreated in women and when there is scarring of epididymitis and urethra in men. Ruptured ectopic pregnancy, complications of abortion and postpartum infection is a common preventable cause of maternal death in places with high prevalence of STIs (1, 2, 7). These are preventable by effectively treating STIs.

STIs increase the risk of HIV transmission. There are potential biologic mechanisms by which STIs can facilitate sexual transmission of HIV infection by increasing infectiousness or susceptibility. Studies indicate that HIV is detected in the exudates of genital ulcers from HIV infected men and women (1, 2, 10). The mechanism by which infection occurs is that ulcers bleed easily and can come in contact with vaginal, cervical, oral, urethral, and rectal mucosa during sex. The inflammatory STIs such as gonococcal and chlamydial infections appear to increase both the prevalence of HIV shedding and viral load in genital secretions of men and women. It is reported that there is also a ten fold increase of HIV RNA shedding in semen of HIV positive men who have gonococcal infection (2). Moreover the ulcerative STIs such as herpes, syphilis and chancroid together with non ulcerative STIs (gonorrhea, Chlamydia) appear to attract $CD4^+$ lymphocytes to either the ulcer surface or the endocervix which disrupts epithelial and mucosal barriers to infections and establishes a potential mechanism to increase an individual's susceptibility to HIV infection (1, 2, 10, 11). For this reason STI prevalence and incidence are used as proxy measure for the effectiveness of HIV prevention programs because STIs, like HIV are markers of unprotected sex (1, 12).

It is reported that the increase in STIs in many developing countries is mainly due to lack of access to effective and affordable STI services, compounded by the collapse of health systems in countries that are undergoing economic and health reforms (2). Thus, despite decades of control efforts, STIs are still a major problem today. There exist a number of factors underlying the high prevalence of STIs in developing countries, including (2):

- Demographic factors such as a large proportion of young population which is sexually active.
- Social factors such as: urban migration due to socio-cultural changes; migrant labour systems; and migration and displacement due to wars and natural catastrophes.
- Behavioral factors, most with underlying social determinants: multiple and concurrent sexual partnerships; and increase in levels of prostitution due to economic hardships.
- Health system factors: lack of access to effective and affordable STI services for prevention and treatment.

1.4.2 STI situation in South Africa

STI's are a major public health concern in South Africa, accounting for about 11 million cases annually (5). It is estimated that approximately 5.3 million South Africans were infected with HIV at the end of 2002 (13). Controlling transmission of STI could contribute to lowering of the incidence of HIV. In a study carried out in Mwaza, Tanzania it has been demonstrated that management of STIs resulted in 40% reduction of HIV incidence in intervention villages (where syndromic management of STIs was available) as compared to control villages (11).

The high rates of HIV/AIDS led the South African National Department of Health (NDOH) to develop HIV/AIDS/STD strategic plan for South Africa 2000-2005, which gives priority to effective management of patients with STIs as one strategy of reducing

HIV infections (3).The cornerstone of the national strategy in relation to the control and management of STIs is the syndromic management of STI at primary health care facility level. The syndromic management approach is recommended by the World Health Organization because (1) it is inexpensive in terms of infrastructure, no laboratory facilities required, (2) it is simple, it use flow charts which are easy to follow (3) therapy is given at once to cover majority of pathogens responsible for the infection and clients do not have to return to the facility to get laboratory results which will inform clinicians about therapy to be administered, this reduces additional costs which clients may experience if they have to return for treatment. (1, 2, 4, 5, 7).

1.4.3 STI diagnosis and treatment

It is very essential that STIs are diagnosed and effectively treated early. Traditionally the method of diagnosis has been through laboratory diagnosis of an aetiological agent. This is still the method of choice in many industrialized countries. The method is expensive in terms of diagnosis, infrastructure and maintenance. Additionally it often results in delays in diagnosis and treatment. Even in settings where simple laboratory tests are available, 20-40% of infections fail to be diagnosed by the classic laboratory tests when compared to the newer gold standard and much more expensive polymerase chain based reaction (PCR) based tests (5).

Most primary health care clinics in developing countries do not have access of reliable laboratory facilities as a result clinicians either needs to refer their patients to specialist centres or they attempt to make a presumptive clinical diagnosis through the

identification of particular clinical features related to various agents. This method has often been reported to be inaccurate and incomplete (1, 4, 11).

In an attempt to address limitations of aetiological and clinical diagnosis in the management of STIs, WHO has developed and advocated the syndromic management approach (1, 2, 4, 5, 7, 11). The syndromic approach to STI case management is based on the identification of symptoms and signs and knowledge of the most common causative organisms of these syndromes and their antimicrobial susceptibility. Algorithms (flow charts) have been developed to standardise case management, thus providing health care workers with guidance on how to allocate appropriate antibiotic treatment (3, 4, 5, 10). The antibiotics given typically cover the major causative organisms of a particular syndrome e.g. vaginal discharge (VD) and genital ulcer disease (GUD). The syndromic approach is a decision making tool for the management of symptomatic STI patients; the entry point for each algorithm is a clinical sign or symptom such as urethral discharge, genital ulcers and vaginal discharge (4, 5).

The syndromic approach is widely used both in the developing and industrialized countries for the management of patients with symptomatic STIs (1, 3). The approach of syndromic management performs well in the management of men with symptomatic urethral discharge (UD) and in the management of men and women with genital ulcer disease (GUD). The cure rates are high for these two conditions, as a result there is a guaranteed client satisfaction. Van dam et al. (4) points out that the syndromic approach probably performs well in the management of women with vaginitis, although further validation of the current vaginal discharge algorithm is required. They found out that

algorithms available for the management of cervical infections were far from ideal. In the initial application of syndromic management it was thought that finding of vaginal discharge would indicate both vaginal and cervical infections, however it became clear that while vaginal discharge was indicative of the presence of vaginitis, it poorly predicted presence of cervicitis owing to the latter's frequently asymptomatic nature (4). This implied that earlier vaginal discharge algorithms had a low sensitivity and specificity for the management of cervicitis, while there was probably well performance in the management of women with vaginitis.

1.4.4 Quality in STI services

Delivery of good quality STI services is essential to ensure prompt diagnosis and treatment of symptomatic STIs. The literature describes quality of care in terms of three main elements (14, 15), viz. i) structure; ii) process; and iii) outcome.

Structure describes the quality of health care through the study of settings in which care takes place. This includes adequacy of facilities and equipment, administration process, and qualifications of the staff. It assumes that given proper settings and organizational structures, good medical care will follow (14, 15). Process denotes what is actually done in giving and receiving care, including adherence to good standards of medical care: clinical history, physical examination, diagnostic tests, justification of diagnosis and therapy, technical competence, evidence of preventive management, coordination and continuity of care, acceptability of care to recipient. This assumes that given the proper procedures, good health outcomes will follow (14, 15). Outcome considers whether a change in person's current and future health status can be attributed to health care

received. It examines recovery, restoration of function and survival. There are frequently multiple factors that affect health outcomes in addition to the treatment protocol; therefore it is not easy to attribute good health solely or even partly on good procedures (14).

Other authors describe quality STI services as encompassing: availability of resource for prevention and treatment; trained human resources to manage STI patients; provider attitude towards STI clients; availability of partner notification and provision or referral for voluntary counseling and testing for HIV (12); improved working conditions in order to improve staff morale; reducing patients waiting times; and ensuring a steady supply of drugs for syndromic management.

Health systems are labour intensive and require experienced staff to function well. There must be a balance between health workers and physical resources because without functioning facilities, diagnostic equipment and medicines, the delivery of services will still be poor even if workers are equipped with knowledge and skills. Usually lack of complementary inputs will have a negative impact on staff motivation (16). The World Health Report indicates that health care workers are often unqualified for the tasks they perform because of shortages of training opportunities in many African countries and there is a mismatch between available skill and the needs and priorities of the health care system. Furthermore health facilities are unable to function well because of poor maintenance and shortage of essential drugs and supplies (16).

A major challenge for NDOH in South Africa is to make sure that good quality services for syndromic management of STI are available and sustainable. There are challenges to the effective implementation and control of STI treatment and care programmes because STIs are not just biologic and medical problems, but also behavioral, social, political and economic problems. A major challenge is increase in urban migration due to migrant labour systems, migration and displacement because of war and economic hardships in neighboring countries. There is influx of people entering South Africa and this puts further pressure on already overstretched services.

Several methods are available to evaluate the quality of STI service delivery. These methods are both direct and indirect (6, 12, 15, 17). The direct methods denote evaluation techniques that utilize an element of process in the quality of case assessment. They assess the actual processes used in quality of care including adherence to good standards of medical care: clinical history, physical examination, diagnostic tests, justification of diagnosis and therapy, technical competence, evidence of preventative management, coordination and continuity of care, acceptability of care to recipient. The indirect methods utilise the structure component of quality of care. The structure evaluates quality of care by studying of the settings in which care takes place. It includes survey of facilities and equipment, administrative processes and qualifications of staff and it assumes that, given a proper settings and organizational structures, good medical care will follow. The direct methods apply strategies such as key informant interviews, STI client exit interviews, simulated clients surveys and actual observation of personnel delivering service. Although direct methods are good in monitoring quality of service

delivered they are expensive in terms of financial costs and human resources to be carried out (15, 17).

The indirect methods apply strategies such as key informant interviews, and in-depth survey of facilities. The indirect methods used in South Africa include the application of monitoring tools such as the District Health Information System (DHIS) and the District STI quality of care assessment tool (DISCA) (5, 6, 15, 18, 19, 20). The key STI indicators captured by the DHIS include:

a) Male urethral discharge rate
b) STI incidence ratio
c) Contact tracing rate
d) Condom distribution rates

This information collected by DHIS has been found to be quite limited in providing an indication on how well the STI control programme is doing because it focuses largely on outputs (5). To complement the DHIS other surveillance systems such as DISCA are required to monitor quality of service delivery. The DISCA tool, which was developed after extensive consultation with nurses, public health professionals and health service managers measures key input, processes and output indicators related to management of STI (5, 17, 18).

The tool uses a combination of methods including review of routine clinic data and interviewing health care providers at STI clinics. The tool defines quality in terms of compliance with technical standards for provision of care (15, 17). It is based on the assumption that the availability of resources will result in provision of good quality care.

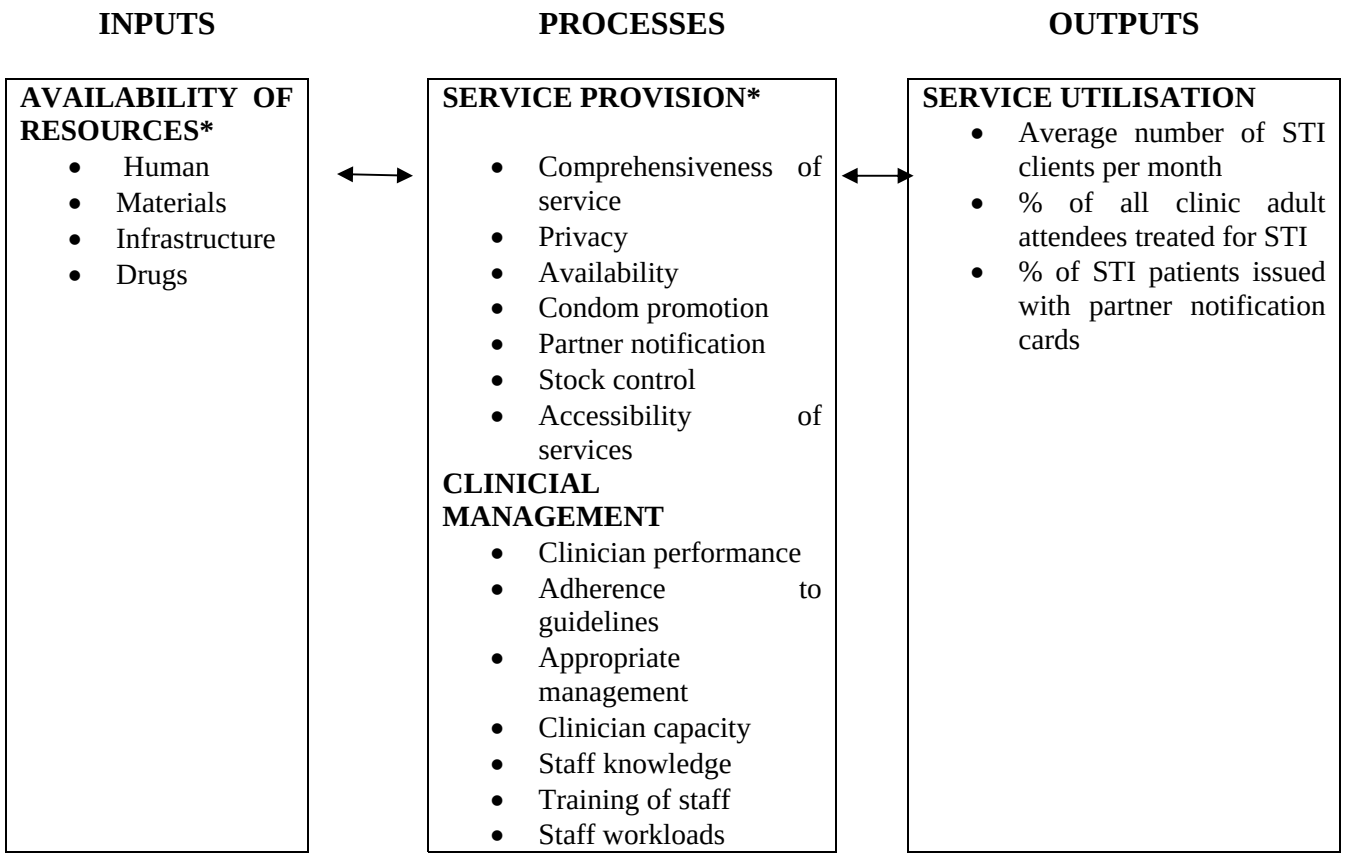
The DISCA has been used in various parts of South Africa. It has been used in the Western Cape, as well as in the Free State, Kwazulu Natal, the Eastern Cape and Mpumalanga (18, 19) provinces. In these settings, the DISCA tool has been shown to be useful in informing managers about the performance of their STI clinics (18, 19, 20).

The DISCA instrument collects information on;

a) Accessibility of STI services
b) Infrastructure
c) Routine data
d) Staffing and training
e) Management of STI syndromes

Having noticed the usefulness of the DISCA, this research will use the tool to perform a baseline assessment of the quality of STI services provided in primary care clinics in the Johannesburg Metro District of Gauteng province. This study is part of a broader study that is assessing the quality of care of STI services in the Johannesburg Metro District. The broader study utilised DISCA to assess STI services using the systems approach evaluation framework (15). The primary focus of this proposed study is on input (resource availability) and process (setting in which care takes place) indicators of quality; and a secondary objective is the measurement of output indicators; while another MPH student is assessing clinical management indicators of quality, in terms of process and output indicators. For both studies, the DISCA tool will be used to collect data on inputs, processes and outputs in terms of the systems approach evaluation framework, as depicted below.

This study hopes to provide information to contribute to service planning in the Johannesburg District. The Gauteng provincial and Local Governments require this information for planning and monitoring services. The long-term vision is for the regional and provincial health authorities to use the tool to continuously monitor quality of service provision in their facilities.



Elements of quality that will be the primary interests in this study

1.5 Aim

The aim of this study was to assess quality of STI services delivered by primary health care clinics in Johannesburg Metro.

1.6 Objectives

The objectives of this study were:

1. To measure the availability of resources needed for provision of quality STI care
2. To describe the process of service delivery

A secondary objective was:

3. To determine the utilisation of services:
    i. Percentage of all adult clinic attendees treated for STIs
    ii. Average monthly adult clinic attendance
    iii. Average number of STI clients per month
    iv. Partner cards issued as percentage of STI clients

Chapter 2

Methods

This chapter describes methodologies used to carry out this research project. It opens by giving details of the study design, sampling method, and framework for measuring indicators of quality, data processing and analysis methods and the limitations of the study as well as ethical consideration are also described.

2.1 Study design

The study was a cross sectional descriptive survey of fixed primary health care clinics offering STI services in three sub-districts of the Johannesburg Metro. The study was carried out from May to June 2006.

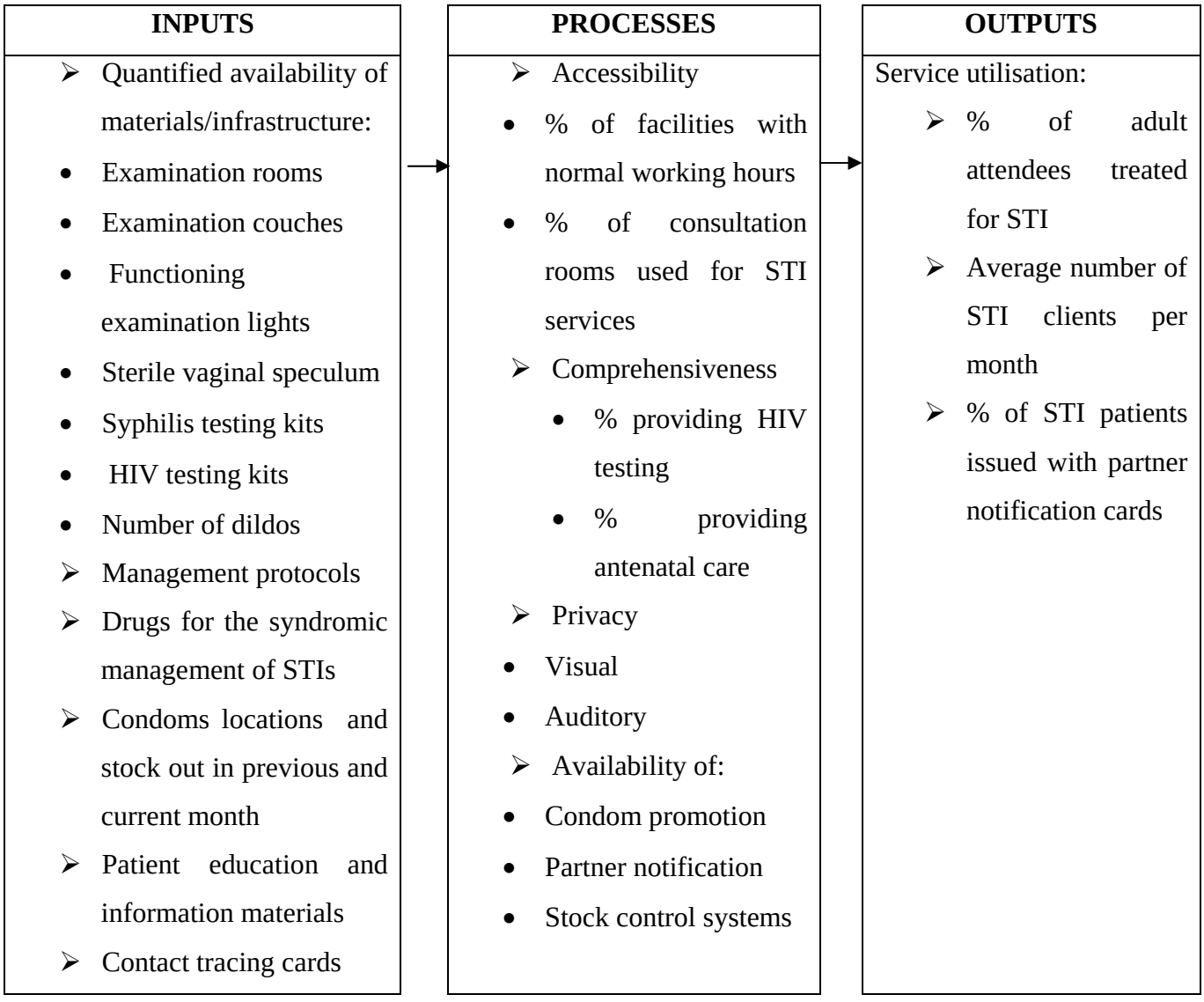
2.2 Sampling

A convenient sample of 22 fixed clinics was surveyed. The 11 Johannesburg Metro sub-districts were stratified according to suburban, township and inner-city. Three sub-districts were selected to represent the 3 geographical and economic contexts; and all primary care facilities in each sub-district were included in the study. From the selected 3 sub-districts all primary care facilities that met the following, inclusion criteria were selected for the study: (a) fixed facility (b) opens 5 days per week, (c) not open 24 hrs per day and d) provided primary health care services. Thus, mobile and community health centres (CHC) were not included. These criteria were used to try and achieve some measure of homogeneity in the sample because the scope and types of services provided

at a CHC, a fixed clinic, and a mobile clinic are not comparable. The study included provincial and local authority clinics. The total number of fixed clinics that met the criteria was 27, but only 22 were surveyed because it was only discovered during the study that some facilities were either closed permanently or being renovated.

2.3 Measurement

The following evaluation framework (15) describes the input, process and output components of STI service delivery that were assessed in this study. Below are the variables that were measured in the study



2.4 Measurement tools

An existing measurement tool, the DISCA (see Appendix A) was used in this study. The relevant sections of the tool were applied to satisfy the objectives of this study. The sections of the DISCA that were applied in this study were the sections on accessibility, resources for safe examination, provision of safe treatment, antenatal screening and STI treatment and STI drugs and treatment.

Administration of the DISCA tool requires a combination of data collection methods, including: questionnaire interview with the facility manager; review of clinic records (statistics); observations; and a facility checklist to document availability of equipment and resources.

Availability of resources (objective 1) was measured by a facility checklist that is within the DISCA tool; this involved going to specific areas and actually documenting the presence of functioning equipment, supplies and drugs for STI management. This was done by observing and recording information on the facility checklist. This determined whether the resources (inputs) listed in the framework above were available and if available, they were then quantified.

Interviews (using the standardized DISCA tool) with facility managers were done to assess processes of STI service provision at each facility (objective 2). The facility managers were asked to describe the service in terms of the process measures indicated in the above framework. Observations were done concurrently.

Accessibility was assessed by interviewing facility managers about the number of hours and days during which the facility offers STI services. Accessibility describes the number of hours per day and days in a week of service availability at the facility, it means the time when a client could come during normal working hours for a consultation and would not be told to return another day, but rather would receive services offered at the facility. Comprehensiveness was assessed by interviewing facility managers if the facility was providing HIV testing and counseling and if antenatal care was available in the facility. The responses were recorded in the measurement tool for analysis of percentages of facilities providing these services.

Privacy describes whether history taking, examination, education and counseling could be done with a client without other service providers or clients seeing or hearing what is being discussed during a consultation. Visual privacy was assessed by looking at the structure of rooms (e.g. whether there was a physical division between consultation rooms or not). That is if patients could be seen by other clients or service providers during consultation. Auditory privacy was assessed by listening if other clients or service providers could overhear the conversation from their respective consultation rooms.

The review of clinic statistics was undertaken to determine the output indicators (objective 3). The following data was collected for the period during 1st May to 30th June 2006 to determine the following output indicators:

a. Number of all adult clinic attendees

b. Number of adult clinic attendees treated for STIs

c. Number of partner notification cards issued

2.5 Limitations of the study

- Limited time lines forced changes to the study population and sample size. According to the research protocol, a sample of 31 PHC facilities were originally to be covered, selected from all 11 sub-districts of Johannesburg metro. However, due to time and logistic constraints, the study focused on a convenient sample of 3 sub-districts, including 22 clinics.
- Availability of resources does not guarantee quality delivery of services
- For the sake of standardisation, an existing tool was used and could not collect other data beyond it such as the length of time in which drugs were out of stock
- In some cases statistics could not be verified because of poor recording systems.
- The tool may be prone to subjectivity during measurement; for example for assessing privacy there is no measuring scale to decide whether there is privacy or not, and the degree of privacy.

2.7 Data processing methods and data analysis

Data was coded, captured onto access spreadsheets, and cleaned by the researcher. Epi-info (version 3.3.2 February 9, 2005) was used for analysis. The health facility was the unit of analysis. Descriptive statistics were used to analyse the data. These were proportions (percentages) to summarise categorical data for the input, process and output indicators; and means were used to summarise numerical variables. Data was analysed immediately after collection, capture and cleaning; and results were presented as aggregated per sub-district. The following indicators were analysed from the raw data:

INPUT indicators	**Definition**
% of clinics with lights in working order	Numerator: Number of PHC clinics with lights in working order Denominator: Total number of PHC clinics
% with exam couch in every consultation room used for STI	Numerator: Number of clinics with an examination couch in every consultation room used for STI Denominator: Total number of PHC clinics
No. of vaginal speculum per consultation room used for STI	Total number of vaginal speculum per consultation room used for STI
% of facilities that report to perform speculum examination	Numerator: Number of PHC facilities that perform speculum examination for STI consultations Denominator: Total number of PHC facilities performing STI consultations
% of facilities with IEC	Numerator: Number of PHC facilities with IEC materials in local language

materials in local language	Denominator: Total number of PHC facilities
% having management protocols	Numerator: Number of PHC facilities having management protocols
	Denominator: Total number of PHC facilities
% with condom stock outs	Numerator: Number of PHC facilities with condom stock out in the last month
	Denominator: Total number of PHC facilities
% with drug stock outs	Numerator: Number of PHC facilities with drug stock out in the last month
	Denominator: Total number of PHC facilities
% with contact tracing cards in local language	Numerator: Number of PHC facilities with contact tracing cards in local language
	Denominator: Total number of PHC facilities issuing contact tracing cards
PROCESSES indicators	**Definition**
<u>Accessibility</u>	
% of facilities providing STI services for 8 hours a day, 5 days a week	Numerator: Number of PHC facilities providing STI services for 8hours, 5days a week
	Denominator: Total number of PHC facilities providing STI services
% of consultation rooms used for STI services	Numerator: Number of consultation rooms used for STI services
	Denominator: Total number of consultation rooms
<u>Comprehensiveness</u>	
% of facilities providing HIV testing on-site	Numerator: Number of PHC facilities providing HIV testing on site
	Denominator: Total number of PHC facilities
% of facilities offering STI care for antenatal women	Numerator: Number of PHC facilities offering antenatal care
	Denominator: Total number of PHC facilities

Privacy	
% of facilities with visual privacy	Numerator: Number of PHC facilities with visual privacy
	Denominator: Total number of PHC facilities
% of facilities with auditory privacy	Numerator: Number of PHC facilities with auditory privacy
	Denominator: Total number of PHC facilities
OUTPUT indicators	**Definition**
% of all adult clinic attendees that were for STI treatment	Numerator: Number of adult clinic attendees that were for STI treatment
	Denominator: Total number of adult clinic attendees
Average number of STI clients / month	Numerator: total number of STI clients
	Denominator: number of days the clinic was opened for the month in question
% of STI patients issued with partner notification cards	Numerator: Number of STI clients issued with notification cards
	Denominator: Number of STI clients seen

2.8 Ethical considerations

This research protocol was approved by University of the Witwatersrand Committee for Research on Human Subjects (Medical), certificate protocol number M050932 (Appendix C). The study commenced after this approval and official authorization from the Gauteng Health Department.

An invitation to participate in the research was made to clinic supervisors (Appendix B). Their informed consent to participate in the study was obtained, and they were also informed that their participation was voluntary and confidential. There were no identifiers on the research tool.

Chapter 3

Results

This chapter describes the findings obtained from the survey of 22 clinics that offer STI services in 3 sub-districts (health regions) of Johannesburg Metro district; namely region 3, region 8 and region 10. The total number of clinics per region was as follows:

- Region 3: n = 3
- Region 8: n = 10
- Region 10: n = 9

Region 10 consisted of both local authority and provincial clinics while the other 2 regions consisted of only local authority clinics. The 3 sub-districts were stratified according to their location to represent 3 geographical and economic contexts as follows:

- Region 3 = suburban
- Region 8 = inner-city
- Region 10 = township

All PHC facilities provided a service for all different ages and the provincial clinics were offering more curative care while local authority offered more preventative primary health care.

The results are presented in relation to the objectives. Aggregated data per region is presented here.

3.1 Availability of physical resources for STI service delivery

3.1.1 Equipment

All PHC facilities were equipped with examination couches, specula, gloves and dildos, with the exception of one clinic in region 10 that had ran out of examination gloves, and one clinic in region 8 that had no dildo. The clinics reported that they were demonstrating condom use without use of a dildo. Table 3.1 shows the availability of these resources in the three regions.

Table 3.1: Equipment and resources available for STI services per region (n=22)

District	No of rooms used for STI consultation	No. exam couches	No. of exam lights	% of Lights in working order	No. vaginal specula
Region 3	14	14	10	90	110
Region 8	15	15	15	100	498
Region 10	48	48	48	100	620

Generally all clinics reported to be performing speculum examination on all or most women presenting with STI (Table 3.2).

Table 3.2: Facilities that perform speculum examination on women presenting with STIs (n = 22)

District	Total no of facilities	Performed on all women		Performed on most women	
		n	%	n	%
Region 3	3	2	66.7	1	33.3
Region 8	10	8	80.0	2	20.0
Region 10	9	7	77.8	2	22.2
Total	**22**	17	**77.3**	**5**	**22.7**

3.1.2 Clinical management guidelines

All facilities in regions 3 and 8 had patient management guidelines, while only 8 of 9 facilities in region 10 had these. All facilities in regions 3 and 8 had these guidelines in every consulting room; while only 7 (77.8%) of the facilities in region 10 had management guidelines in every consultation room.

3.1.3 Patient education materials

The majority of clinics had information, patient education and communication (IEC) materials about STIs, but over 60% of clinics reported absence of these materials written in local languages. Table 3.3 below shows the availability of IEC materials per region.

Table 3.3: Facilities with IEC materials in stock (n=22)

District	Facilities with IEC materials		Facilities with IEC materials in local language	
	n	%	n	%
Region 3 (n=3)	3	100	2	66.7
Region 8 (n= 10)	10	100	4	40
Region 10 (n= 9)	9	66.7	2	22.2

3.1.3 Condom availability

All the facilities in region 3 and three in region 10 had condoms located in: (1) consultation rooms, (2) waiting area, (3) exit/entrance and patient's toilets, while six facilities in region 10 had condoms located in consultation rooms and waiting area. Five of the ten facilities in region 8 had condoms located at consultation rooms and waiting area while three had condoms in these locations as well as patient toilets and the remaining two had condoms located in (1) consultation rooms, waiting area, exit/entrance, patient's toilets and (2) consultation rooms waiting area and exit/entrance respectively.

A small number of the PHC facilities (one clinic in regions 3 and 10, and two clinics in region 8) reported having had condom stock outs in May/June 2006 (Figure 3.1).

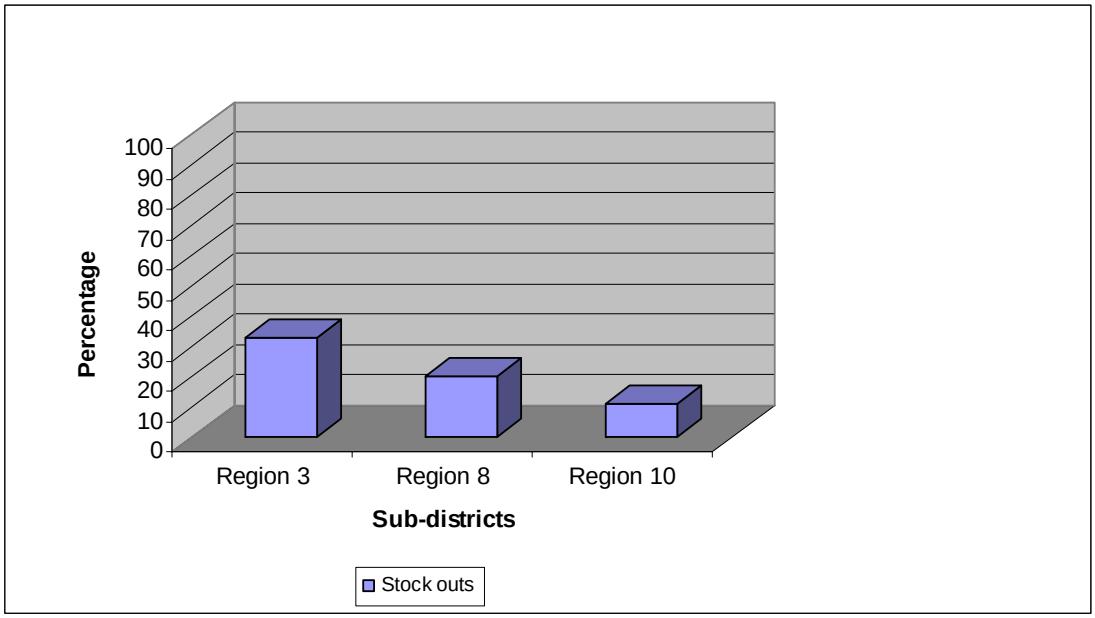


Figure 3.1: PHC facilities with condom stock-out in May/June 2006 (n=22)

3.1.4 Drug availability

Prior to assessment, 2 (22%) facilities in region 10 had run out of ciprofloxacin, and one (11%) had run out of erythromycin, doxycycline and benzathine penicillin. Generally the other two regions did not report drug stock outs during the period in question. However, during the assessment in June 2006, one (10%) of the facilities in region 8 ran out of ciprofloxacin and one (33%) in region 3 had ran out of doxycycline.

3.2 Service delivery

3.2.1 Hours of service

All PHC facilities in the three sub districts opened between 7/8 am and 4pm. None of them offered after hours services to the community. STI services were available on all days of the week during all hours of operation. The Facility managers reported that they encourage clients to come especially in the early morning hours for services, although a few clients were seen to be coming in the afternoon citing long waiting hours as their reason for coming late. Generally most facilities had very few or no clients in the afternoons.

3.2.2 Consultation rooms used for STI

Seventy eight percent of consultation rooms in region 3, 44% in region 8 and 62% in region 10 were used for STI services.

Only 3 clinics used all their consulting rooms for STI care, one in region 10 and 2 in region 8. The number of consultation rooms available for STI services is presented in table 3.4 below.

Table 3.4: Consultation rooms used for STI services

Sub-district	No of facilities	No of consultation rooms	No of consultation rooms used for STI	% used for STI
Region 3	3	18	14	78
Region 8	10	47	15	32
Region 10	9	77	48	62
Total	22	147	77	52

3.3 Comprehensiveness

3.3.1 Availability of HIV testing and counseling

All facilities in region 3, eight in region 8 (89%) and 9 in region 10 (90%) were offering counselling and HIV testing as part of the services offered to STI patients.

3.3.2 Antenatal care

Only 3 clinics in region 10 and all facilities in region 8 were providing services for antenatal care with STI care included. None of the facilities in region 3 provided this service.

3.4: Privacy

One clinic in region 10 had problems with both visual and auditory privacy. The clinic had rooms constructed such that two patients could be seen simultaneously in one room with a curtain dividing the two. Moreover, all consultation rooms were divided by dwarf

walls resulting in problematic auditory privacy, as conversation from either side could be overheard. Figure 3.2 below shows the percentage of facilities with auditory and visual privacy.

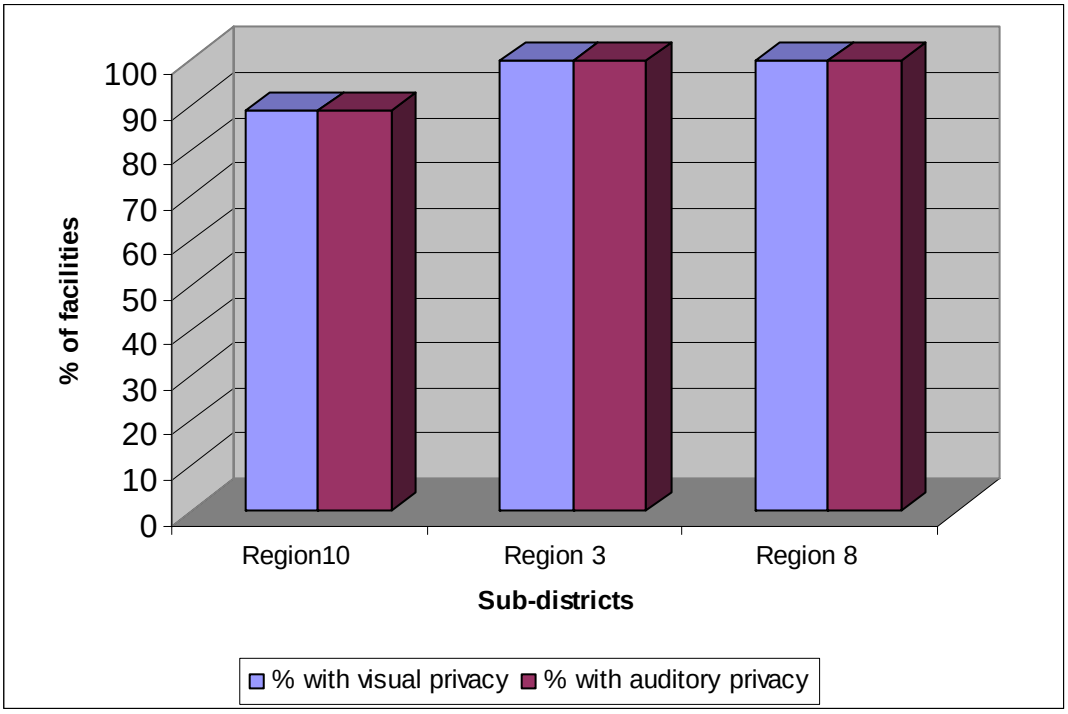


Figure 3.2: Privacy during consultations in the PHC facilities (n=22)

3.5 Utilisation of services

3.5.1 Client attendance for STI services

During the 2 month period May to June 2006, the 22 PHC facilities in regions 3, 8 and 10 were collectively utilised by a total of 71,821 adults. Region 10 had more clients attending during these months than other regions (Table 3.4).

Table 3.5: Client attendance of STI services in May to June 2006

District	Total No of attendees	Total No of adult attendees	Mean per month	adult attendees for STI	
				n	%
Region 3	6,055	4,818	4,403	293	6
Region 8	31,985	25,017	3,199	1,818	7.3
Region 10	50,597	41,986	5,621	2,761	6.6
Total	**88,637**	**71,821**	**13,223**	**4872**	**6.8**

3.5.2 Partner notification

The partner notification rate was lower for region 10 than the other two (table 3.5). This is because one clinic at this region had recorded a very high number of STI clients and had not recorded notification cards issued. Clients are given slips to notify their partners and this explains that the client has got an STI and the partner is advised to seek medical attention since she/he may be in danger of having the disease and may further re-infect their partner if they are not treated. Again partner notification slips were not in local language.

Table 3.6 STI client notification cards issued during May/June 2006

Sub-district	No of STI clients seen	No of clients issued with notification cards	% of clients issued with notification cards
Region 3	293	223	76.1
Region 8	1,818	1,601	88.1
Region 10	2,761	510	18.5
Total	4,872	2,334	47.9

Chapter 4

Discussion

This chapter gives a discussion of the findings of chapter 3; it discusses (1) availability of resources in terms of equipment, management protocols, condom locations and stock outs and drug stock outs. (2) Service delivery in terms of hours of service, consultation rooms used for STI, HIV testing and counseling, antenatal care, and privacy. (3) Utilizations of services in terms of client proportions and partner notification

This study set out to describe the quality of STI services in the district, by assessing the availability of resources for STI service delivery. The results indicate that overall, the primary care facilities in Johannesburg Metro district have adequate availability of resources for provision of STI management and care, which suggests possibility of providing good quality of STI services from the perspective of three main elements, namely structure, process and outcome (14,15). There are however variations between regions, as the data suggests regions 3 and 8 are better resourced that region 10. There are areas for improvement in all regions.

4.1 Availability of physical resources for STI service delivery

All PHC facilities had adequate equipment. They had enough examination couches, specula, gloves and dildos, with the exception of one clinic in region 10 that had ran out of examination gloves, and one clinic in region 8 that had no dildo. The clinic that had no dildo reported that condom demonstration was done without use of a dildo. Unavailability of a dildo may make it difficult to demonstrate how the condom is used properly and shortage of gloves is very critical as the provider would be unable to do proper assessment of the client and thus a golden opportunity would be missed in proper diagnosis.

In total 77.3% (n=17) of facilities in all regions reported that they performed speculum examination on all women while 22.7% (n=5) of facilities reported that they performed speculum examination on most women. The percentage of facilities performing speculum examination is high enough to conclude that there is a good coverage of diagnosing STI in women since most women are asymptomatic. It was encouraging to find that no facility reported a shortage of vaginal specula as this would enable health providers to perform speculum examinations. Boonstra et.al (21) reported that vaginal speculum examinations were carried out in 23% of the women attending primary health care facilities which included clinics and health posts in Botswana. This was a low coverage of speculum examination when one considers that a lot of STI's could be missed if proper examination by use of speculum is not carried out. Speculum examination is an important part of the assessment of STIs in women presenting with the syndromes of vaginal discharge or lower abdominal pain, and is very important in screening for asymptomatic

infections. When a vaginal speculum is available providers are encouraged to use “a no missed opportunities approach” (7) meaning that health care providers look for evidence of STIs every time they perform examination for other reasons in women. A World Health organization report indicates that 80% of silent infections can be detected by syphilis tests, gonorrhoea culture and pap smears, however in the settings where these are not readily available it is better to detect 40-60% of women with cervical infections using speculum examination than none at all (7). This implies that specula examination is a vital tool for STI management which must be widely used.

All facilities in regions 3 and 8 had patient management guidelines, while only 8 of 9 facilities in region 10 had these. All facilities in regions 3 and 8 had these guidelines in every consulting room; while only 7 (77.8%) of the facilities in region 10 had management guidelines in every consultation room. Similarly, Ramkissoon et.al (3) reported 77% availability of guidelines on STI syndromic case management in their study on national baseline assessment of sexually transmitted infections and HIV services in South African public sector health facilities. It is very important that providers have the clinical guidelines in place and use them as a reference point during STI consultations if the need arises as this will guide them in diagnosis and treatment of various STIs which they may not be familiar with. A major challenge would be making sure that providers always use them, as there may be a tendency of not continuously using the guidelines.

All the PHC facilities in region 3 and 8 had patient education materials except for one clinic in region 10 which had no IEC materials. In a study carried out in Kwazulu-Natal it

was found out that the IEC materials were available in only 25% of primary health care clinics (22). Availability of IEC materials is very important as the patients can take this home and read the materials to enforce their knowledge on STIs. Twenty two percent (n=2) of facilities in region 10, 40% (n=4) in region 8 and 66.7% (n=2) in region 3 had IEC materials in a local language. The education materials were mostly written in English language

Region 10 had the most number of clients but it is the region which had the least percentage of IEC materials in local language. It is of vital importance that IEC materials are in the language that people understand most, if not it denies the population of this region of the vital knowledge provided by the IEC materials, the message of which could influence partner notification as partners could learn together and share information.

Clinics are an important source of information, however there are other sources such as radio, television, billboards banners etc. Goldstein S. et.al (23) reported a significant impact on behavioral change and increased knowledge on HIV/AIDS because of health education and behaviour change messages delivered through the television and radio docudrama Soul City.

It must be emphasized that in majority of the facilities the individual materials observed were mostly about HIV/AIDS and not other STIs. Other studies in South Africa and Kenya reported a similar finding (3, 24). In majority of PHC facilities a health educator gave a talk of basic health information including STI care. Some clinics were observed to be re-enforcing the dissemination of health information by use of videos. This type of messages played on video in clinics settings can improve partner notification and reinforce knowledge on STI/HIV/AIDS issues. Mathews C. et.al (25) reported that video

based health promotional materials developed by Soul City improved index patients confidence in notifying their partners indicating that different methods of information dissemination can be used. All PHC facilities reported that health education continued during consultation and examination, among others this included correct use of condoms by demonstrating with a dildo.

The availability of condoms was good in all the health facilities, and condoms were located in areas where clients could easily access them. According to the facility managers, condom stocks were not a major problem in all facilities as only a small number (4 of 22 clinics) reported condom stock outs in the preceding two months. Ramkissoon et al (3) reported, on a national level, condom stock-outs of fewer than 4%. This indicated that there were still gaps concerning condom availability in the facilities although may not be significant as the percentage of these were low. The issue of condom availability is essential; condoms remain the only method that is able to protect against STIs and at the same time prevent pregnancy (dual protection) (7). More emphasis should be put on use of condoms as a method of choice for STI prevention during counseling, especially because other methods such as abstaining from sex often fail. The wide availability of condoms in the facilities in this study is encouraging. However, more importantly, health services need to ensure that patients use them correctly and consistently. The DISCA tool however does not measure this aspect of STI services, and this is a limitation of this study. In a study carried out in Khutsong Carletonville South Africa Ndlovu et al. (26) reported a significant increase of condom use among mine workers (19-24%) and men in the community (28-37%), even though this was a

significant increase in condom use, one would expect even a higher percentage of condom use since condoms were widely available and free of charge in this communities. This indicate that even if condoms are widely available people tend not use them as may be expected

Condoms should be located in areas which are accessible to all clients including adolescents who may fear being seen accessing condoms in public because of fear of stigmatization and cultural beliefs that adolescents are not supposed to be involved in sexual activities. In this study, all regions had condoms strategically located and clients freely accessed condoms without any interference. Consultation rooms and patients toilets are strategic places for condom locations as these can be accessed without fear of stigmatization; therefore PHC facilities should make a provision in these locations for easy access. Condom stock outs are a widely experienced problem in South Africa although these are freely supplied by the NDOH (3, 17).

Overall, drug stock-outs were not a major problem for the majority of PHC facilities in this study. However, a small number of facilities in region 10, particularly the PHC facilities under the provincial health authority experienced drug stock-outs in the two months preceding the study. The drugs used for the syndromic management of STIs: metronidazole, ciprofloxacin, erythromycin, doxycycline, and benzathine penicillin, are recommended by WHO (7) and the South African Department of Health adopted this approach. Without the availability of these drugs it would be impossible to manage STIs.

In all PHC facilities which reported stock-outs, the most commonly out of stock drugs were ciprofloxacin and doxycycline. Ramkisson et al. also reported ciprofloxacin as the

most commonly unavailable drug in their study (3). Another study (19) in South Africa performed on three health districts found that a large proportion of clinics were experiencing shortages of STI drugs, in particular erythromycin was widely out of stock. These drugs are very effective against various microorganisms and are used for various disease conditions and their stocks should be well maintained in order to avoid their frequent stock outs in the STI management.

4.2 STI Service delivery

The STI services offered in the PHC facilities surveyed in the Johannesburg Metro district were found to be accessible in terms of hours of operation: in all facilities STI services were available on five days of the week between 7 or 8 am and 4pm. Though these are considered to be convenient working hours for PHC services, these facilities do not open on weekends and this might be a limiting factor to the working population who might need to access STI services while they are off duty on weekends, or after 4 pm. An assessment of STI and HIV services in public sector facilities indicates that 95% of PHC facilities in South Africa were providing STI services and 46% were observed to be open after 4.30pm, thus increasing accessibility (3). The study by Chabikuli et al. (5) indicates that more than 50% of all STI patients in South Africa prefer to be seen by private General Practitioners (GP) because of the physical accessibility of GP practices, with convenient operating hours although at times they receive sub-standard treatment, with inappropriate/ineffective antibiotics, minimal counselling and health education, minimal promotion of VCT and no partner notification. Improving accessibility in the public

sector could attract more patients and therefore improve the quality of STI management in the country. The implications of increasing hours of operation for STI services would result in staff burnout as they would be requested to work overtime, or alternatively more staff would be needed. Employing more staff in PHC facilities will be a problem as health services are already overstretched because health workers have migrated overseas and in the private sector in search of better pay resulting in maldistribution of health workers between private and public sector and urban and rural areas (27).

In this study, many PHC facilities used almost all their available consulting rooms for providing STI services. Overall, 52% of all consulting rooms in the three Regions were used for STI consultation and this varied by sub-district: Region 3 (78%), Region 8 (32%), and Region 10 (62%). It was beyond the scope of this study to determine why facilities did not optimally use all their consulting rooms for STI services. But in fact in all facilities there were no designated STI rooms because services were fully integrated, they were used for all different types of conditions. In a few facilities that have a small number of consultation rooms (1- 4 rooms), these were all used for STI services, and this is a way of increasing STI service availability and access.

Most of the PHC facilities had VCT on HIV/AIDS in place; this is witnessed by the fact all PHC facilities in region 3, eight (89%) of PHC facilities in region 10, and nine (90%) in region 8 were offering VCT on HIV/AIDS. Ramkissoon et al. (3) estimated that 69% of PHC facilities in their study were offering HIV testing without counselling. In this study more than 90% were offering both and thus providing good quality care in-terms of process, as mentioned earlier in the literature that quality comprise structure, process

and outcome. The DOH strategic plan 2000-2005 recommends that promotion of HIV counseling and testing should form integral part of STI management (3, 5).

Counseling is very important as it involves in depth discussion of health education and requires substantial amount of time. Counseling is more than giving out leaflets of information, it requires that providers should be equipped with skills in interactive process involving STI/HIV/AIDS discussions, providers should be non judgmental and must be conscious about cultural sensitivity. The mainstay of counseling is privacy and confidentiality. Patients should be assured that privacy and confidentiality are of the highest level such that they can disclose their concerns to the providers. This study only assessed the issue of privacy.

Visual and auditory privacy were well upheld in this study. Only one facility in region 10 was observed to be having problems with visual and auditory privacy. The clinic had the highest number of consultation rooms, however the rooms were divided by short walls and this compromised privacy. Moreover each room could be used for two clients with a curtain separating them and again compromising both visual and auditory privacy as patients could oversee and hear each other during consultation. Fortunately that was not an immediate problem because of a high number of consultation rooms only one client was seen per room and not two as has originally been designed for. The study carried out by Ramkissoon et al indicate that visual privacy was breached in 20% of facilities in South Africa, while consultation could be overheard in 11% of facilities (3). Our study

recorded only one facility with problems of both visual and auditory privacy, this could probably be attributed to a small sample size of our study.

Because of stigma and the sensitive nature of STIs, it is of vital importance that PHC facilities have adequate privacy and confidentiality during consultations. This is especially true to certain groups such as adolescents, sex workers, refugees and others who live or work in the city illegally (7). It is reported that adolescents who are unmarried often do not utilize services because they may feel that providers would be judgmental and might disclose the information to parents or elders (7). Ensuring privacy and confidentiality may be one way of increasing confidence in the STI services and increase its utilization, especially by young people.

4.3 Utilisation of service

During May to June 2006, the 22 PHC facilities were collectively utilised by a total of 88,637 numbers of attendees and 81% were adults. Region 10 had more clients attending during these months than the other regions; this is a big region comprising Soweto township. There are limitations on the client numbers as two clinics in region 10 were poorly recording client numbers. The issue of data recording needs has to be looked into urgently as precise data is needed for better planning purposes. Ramkissoon et al. (3) also report poor / incomplete recording of patient statistics. Their study found that 34% of South African public sector facilities gave unacceptable discrepancies in statistics on condom distribution and STI client numbers. It would have been useful to determine the

patient work loads per clinic, using client: provider ratio, however this was not possible because this research does not deal with clinical management of patients by providers.

Most provincial PHC facilities in region 10 were big structures and had more consultation rooms while region 3 and 8 had smaller structures with fewer consultation rooms ranging from 3 – 12 per facility. Region 8 had the least (31.9) in the percentage of consultation rooms used for STI services; however it comes second (after region 10) in the number of total adult attendees who accounts for 7.3% of STI in the region. This could affect the utilisation of services as there are not enough consultation rooms to see STI patient

4.4. Partner notification

Partner notification appeared to be a major problem in all PHC facilities; however region 10 was experiencing the greatest problems, as only 18.5% of all STI clients in this region were given partner notification cards; compared to 76.1% and 88.1% in regions 3 and 8, respectively. The reason for lower notification rate could be attributed to the fact that one clinic in region 10 had recorded a very high number of STI clients and had not recorded notification cards issued. In a study conducted in Botswana's primary health care facilities, Boonstra et.al (21) observed that partner notification slips were provided to 66% and 86% of the women and men respectively. This indicates that issuing of contact slips is also a problem even in this neighbouring country. It is of prime importance that all clients are provided with contact slips so that their partners could come for treatment because treating patients and their partners is a cornerstone for successful control of STI infections, because if left untreated partners of STI clients will re-infect their treated partner, and this will compromise STI and HIV control in the community.

Several methods of partner notification are recommended. These include: (1) infected "index" patient or patient led; it is a simple notification strategy which encourages patients who are cooperative and comfortable about informing their partners to do so. In this strategy a reminder note can be included on the patient file for follow up to establish whether partners have been notified, moreover a contact letter explaining the disease to the partner(s) and information to the partner(s) doctor can be used to assist this process; (2) health provider led; this is a strategy whereby patients who are cooperative but uncomfortable about informing partners give contact details of the partner (s) to the health provider and the health provider confidentially inform the partner (s) themselves; and (3) a combination of approaches where by conditional referral – index patients are encouraged to ensure that partners attend by an agreed date, after which the provider will notify the partner (s) (7, 28). The most cost effective one, which is also recommended by the WHO (7), is infected "index" patient led where by patients are given referral slips for their partner (s) that explain how to arrange a clinic visit. All the regions in this study used this method of notification. WHO assessment on sexually transmitted and reproductive tract infections found that this was the most common method used in partner notification. It is also equally important that the slips are in the local language such that the partner would have no difficulty in reading it; this was not the case in this study as all the facilities did not have referral slips in the local language.

Based on the findings of this study there were adequate resources in the PHC facilities studied. It would be very important if more PHC facilities in all 11 sub-districts were

included in this study however because of limitation of the timelines and logistics constraints, it was not possible to cover all the regions of the Johannesburg metro.

Chapter 5

Conclusion & Recommendations

Conclusion

Overall the PHC facilities surveyed have adequate resources and availability of these resources could contribute to the capacity of these facilities to deliver quality STI services. However there are variations between facilities and regions in availability of resources and adequacy of the STI service delivery, and the reasons are beyond the scope of this study, and need to be looked into. A few gaps have been identified in the quality of STI services, and these could be rectified. Some recommendations are provided below.

Recommendations

Attention must be paid to expanding service availability and access, for example by extending working hours to accommodate the population that may be in need of services on a weekend. This can be done by opening clinics for half a day at least on one day of the weekend. The resource implications of this would need to be carefully considered.

Privacy is of a vital concern, particularly in one provincial clinic which had dwarf walls dividing the consultation rooms. This can be rectified by extending the walls to the roof and by so doing the auditory privacy concerns would be corrected.

The absence of IEC materials in local languages and the limited availability of materials giving information on STIs other than HIV/AIDS are an outstanding problem that has to be given the priority attention it deserves. It is recommended that the health authorities develop IEC materials in local languages and maintain their availability at all times in all PHC facilities; and develop IEC materials about all other STIs including HIV/AIDS. Authorities should also introduce audio-visual programmes on STI/HIV/AIDS in waiting rooms in all PHC facilities.

More emphasis must be put on partner notification and different methods of partner notification must be explored, with the aim of designing partner notification strategies that will improve partner STI treatment.

Generally a few of PHC facilities especially the provincial ones, reported drug stock-outs and for these few PHC facilities the stock-outs could be attributed to poor stock control measures. Moreover there were condom stock-outs in some facilities which again were due to inadequate stock control measures.

Although the purpose of this study was not to look at the user friendliness of the DISCA tool, there is a need to address some of the limitations of the tool so that informed decisions could be made, for an example

- The tool could not collect other data beyond it such as the length of time in which drugs were out of stock
- The tool may be prone to subjectivity during measurement; for example for assessing privacy there is no measuring scale to decide whether there is privacy or not, and the degree of privacy.

References

1. Mayaud P, McCormic D. Intervention against sexually transmitted infections (STI) to prevent HIV infections. British Medical Bulletin; 58: 129-153 <http://bmb.oxfordjournals.org/cgi/reprint/58/1/129> [Accessed 02.08.2005]

2. Mayaud P, Mabey D. Approaches to the control of sexually transmitted infections in developing countries: Old problems and modern challenges. Sexually Transmitted Infections 2004; 80: 174-182. <http://sti.bmjjournals.com/cgi/reprint/80/3/174> [Accessed 22.6.2005]

3. Ramkisson A, Kleinschmidt I, Beksinka M, Smit J, Hlazo J, Mabude Z. National Baseline Assessment of Sexually Transmitted infections and HIV services in South African Public Sector Health Facilities 2002/2003. Reproductive Health Research Unit, University of The Witwatersrand, South Africa. Summary Report 2004.

4. Van Dam C J, Becker K M, Ndowa F, Islam Monir Q. Syndromic approach to STD case management: Where do we go from here? Sexually Transmitted Infections 1998 June; 74(1 suppl): 175S-178S <http://gateway1.uk.ovid.com/ovidweb.cgi> [Accessed 15.04.2005]

5. Sonko R, McCoy D, Gosa E, Hamelmann C, Chabikuli N et al. Sexually Transmitted Infections. An overview of issues on STI management and control in South Africa. Health Systems Trust, Durban, 2003. <http://www.hst.org.za/uploads/files/sti.pdf> [Accessed 22.6.2005

6. Magwaza S et al. Improving care for patients with sexually transmitted infections in South Africa. Nursing Standard 2002 September; 17(8): 33-38 <http://www.nursing-standard.co.uk/archives/ns/vol17-08/pdfs/v17n8p3338.pdf> [Accessed 22.6.2005]

7. WHO. Sexually transmitted and other reproductive infections, Geneva, World Health Organization, 2005.
<http://www.who.int/reproductive-health/publications/rtis_gep/> [Accessed 20.04.2006]

8. Aral S.O, Over M, Manhart L, and Holmes K.K. Sexually Transmitted Infections, Chapter 17 [n.d]
http:files.dcp2.org/pdf/DCP/DCP17.pdf> [Accessed 24. 08.2006]

9. Pepin J, Deslandes S, Khonde N, Kintin D. F, Diakite et.al. Low prevalence of cervical infections in women with vaginal discharge in West Africa: implications for syndromic management. Sexually Transmitted Infections 2004; 80; 230 – 235.
<http://sti.bmjjournals.com/cgi/content/abstract/80/3/230 [Accessed 21.8.2006]

10. Center for disease control. HIV prevention through early detection and treatment of other sexually transmitted diseases. United States recommendations of the Advisory Committee for HIV and STD prevention. CDC 1998 Jul. Report 47(RR12); 1-24
<http://www.cdc.gov/mmwr/preview/mmwrhtml/00054174.htm> [Accessed 02.08.2005]

11. Mayaud P, Mosha F, Todd J. Improved treatment services significantly reduce the prevalence of sexually transmitted diseases in rural Tanzania: Results of a randomized control trial. AIDS 1997, 11:1873-1880
<http://meta.wkhealth.com/pt/pt-core/template-journal/lwwgateway/media/landingpage.htm?issn=0269-9370&volume=11&issue=15&spage=1873> [Accessed 01.08.2005]

12. Dallabetta G, Steen R, Saidel T, Mheus A. Operational Approaches for evaluating intervention strategies. In: Rehle T, Saidel T, Mills S and Magnani R, editors. Evaluating programs for HIV/AIDS prevention and care in developing countries. Family Health International, 2005.
<http://www.fhi.org/en/HIVAIDS/pub/Archive/evalchap/index.htm> [Accessed 20.6.2005]

13. Garbus Lisa. HIV/AIDS in South Africa. University of California 2003
<http://hivinsite.ucsf.edu/pdf/countries/ari-sf.pdf [28.01.2007]

14. Schopper D. Quality of care in resource constraint settings. Swiss centre for International Health, 2000.
<http://www.sdc-health.ch/priorities_in_health/pro_poor_health_service/quality_of_health_services/quality_of_care_in_resource-constrained_settings

15. Katzenellenbogen J M, Joubert G, Abdool Karim S S, editors. Epidemiology- A Manual for South Africa. Cape Town: OXFORD, 1997.

16. WHO. Health systems: Improving performance. Geneva, The world health report 2000.
<http://www.who.int/whr/2000/en/whr00_en.pdf>[Accessed 21.11.2006]

17. Moys A and Khumalo F. Guidelines for improving quality of STI management in a Health District; lessons learnt from the National STI Initiative. Reproductive Health and HIV Research Unit, University of the Witwatersrand and Health Systems Trust, South Africa. [n.d.]
<http://www.hst.org.za/uploads/files/Guidelines_STI_mx.pdf>[Accessed 22.6.2005]

18. Mullick S, McCoy D, Beksinska M, Moys A. Evaluating the quality of care for Sexually Transmitted Infections Using DISCA (District STI clinic assessment). Reproductive Health Research Unit. South Africa, [n.d.] <http://www.hst.org.za/uploads/files/disca.pdf> [Accessed 22.6.2005]

19. RHRU&HST. Evaluating quality of STI management at a Regional level using the District STI quality of care assessment tool DISCA; Reproductive Health Research Unit & Health Systems Trust, South Africa , 2002. <http://www.hst.org.za/uploads/files/disca_eval.pdf> [Accessed 22.6.2005]

20. Coetzee N, Magwaza S. District STD Quality of care assessment DISCA; Guidelines for district clinic supervisor in using the DISCA evaluation instrument. Health System Trust Durban, 1998. <http://www.kznhealth.gov.za/DISCA4.pdf > [Accessed 22.6.2005]

21. Boonstra E, Lindbaek M, Klouman E, Ngome E et.al. Syndromic management of sexually transmitted diseases in Botswana's primary health care: quality of care aspects. Tropical Medicine and International Health 2003; July: Vol 8 NO 7: 604 – 614. <http://www.blackwell-synergy.com/doi/pdf/10.1046/j.1365-3156.2003.01076.x?cookieset=1[Accessed 22.08.2006]

22. Ndhlovu L, Searle C, Miller R et al. Reproductive health services in Kwazulu Natal, South Africa: A situation analysis study focusing on HIV/AIDS services. Sexually Transmitted infections services Chapter 6. Horizons October 2003. <http://www.popcouncil.org/pdfs/horizons/kznsitanls.pdf

23. Goldstein S. Usdin S, Scheepers E et.al. Communicating HIV and AIDS, What Works? A report on the Impact Evaluation of Soul City's Fourth Series. Journal of Health Communication, 10: 465 – 483, 2005 <https://soulcity.org.za/publications/papers-1 > [Accessed 19. 09. 2007]

24. Kariba JW, Kariuki B K. Intergration of STI and HIV/AIDS with MCH-FP Services: A case study of the Nakuru Municipal Council's Project on Strengthening STD/AIDS Control. The Population Council April 1997.
<https://www.popcouncil.org/pdfs/frontiers/fphivintergrat.pdf > [Accessed 22.11.2006]

25. Matthews C, Guttmacher SJ, Coetzee N et.al. Evaluation of video based health education strategy to improve sexually transmitted disease partner notification in South Africa. Sexually Transmitted Infections 2002; 78; 53 – 57.
<https://soulcity.org.za/publications/papers-1 > [Accessed 19. 09. 2007]

26. Ndhlovu L, Searle C, Van Dam J et al. Reducing the Transmission of HIV and Sexually transmitted infections in a Mining Community. Findings from the Carletonville Mothusimpilo Intervention Project: 1998 to 2001. Population Council September 2005.
<https://www.popcouncil.org/pdfs/horizons/crltnvII.pdf>[Accessed 19.09.2007]

27. Ntuli A, Ijumba P, McCoy D et al. HIV/AIDS and Health Sector responses in South Africa. Treatment Access and Equity: Balancing the Act. Health Systems Trust, September 2003.
<https://ftp.hst.org.za/pubs/equinet7.pdf>[Accessed 19. 09. 2007]

28. Hawkes S, Mabey D and Mayaud P. Partner notification for the control of sexually transmitted infection. BMJ 2003; 327; 633-634
<https://www.bmj.com/cgi/reprint/327/7416/633 > [Accessed 19. 09. 2007]