
Chapter 1

Introduction

1.1 Introduction

Sexually transmissible infections (STIs) are a serious public health problem. The global estimate of four STIs, namely, Chlamydia, gonorrhoea, syphilis and Trichomonas among 15-49 year old males and females was 340 million in 1999 and 498.9 million in 2008. Of these 498.9 million new STI cases, 78.5 million cases were in Southeast Asia (1). Without proper treatment, STIs can cause serious medical and psychological consequences and ultimately death (2). In addition, STIs can facilitate transmission of HIV. It has been found that untreated STIs can increase acquisition and transmission risk of HIV ten folds. Though there has been mixed results of clinical trials on STI management to control HIV infection, STI control is an important aspect and component of strategies for HIV prevention (3-14).

Vietnam is a developing country in Southeast Asia with a population of 85,789,573 (15). It covers an area of 331,051.4 sq. km (16). Vietnam ranks 14th in the world in terms of population size (17). The north of Vietnam is bordered with China, and the west is bordered with Laos and Cambodia. Vietnam has 3,444 kilometres of coastline to the south and east (18). About 80% of Vietnam is comprised of mountains, high plateaus, and jungles with low agricultural productivity. The main production activity in Vietnam is agriculture, with about 80% of the population living in rural areas and involved in agriculture. In 2009, the average GDP per capita in Vietnam was \$2,900 using the purchasing power parity method (18).

With the implementation of “Doi Moi” policy (controlled transition toward a market economy) started in 1986, Vietnam shifted toward more industrial production, foreign investment, rapid urbanization and the tourist industry. This process has produced a positive impact on the development of the country and led to increases in social and geographic mobility, and changes in social norms and lifestyles (19-23).

A significant change has been in people’s sexual behaviour. Changes in sexual behaviour and attitudes have significant implications for the prevention and management of STIs (including HIV/AIDS), unintended pregnancy and induced abortions. There is evidence that people are becoming more open and relaxed about sexual behaviour (24, 25). Among the people married in the 1990s, 40% of males and 70% of females strongly opposed the idea of having premarital sex with their future spouse. Among the 17-26 year old students, 38% male and 24% female considered it was wrong to have premarital sex (26, 27). Another study found that 31% of the people married in the 1992-2000 period had premarital sex, while the proportion was only 6% for those married in the 1977-1985 period (27).

Another impact of the socio-economic changes in Vietnam is the resurgence of sex work. Sex work and drug usage are illegal in Vietnam and called a ‘social evil’. The sex workers and drug users are subject to interventions such as being arrested and placed in rehabilitation centres (28). Although no official data are available, it was estimated that the number of sex workers in Vietnam may be on the increase. Sex work is largely considered ‘immoral’ and is stigmatized by the community. Consequently, it is more difficult to approach sex workers and drug users for safer sex and harm reduction efforts. This may also affect how health workers treat STI patients and patients who are sex workers or drug users, or men who have sex with men (MSM).

STIs in Vietnam have been increasing. There were 45,634 STI cases in 1996; 95,595 STI cases in 2000; 125,249 STI cases in 2005 and 348,134 STI cases in 2010 (29). It was estimated that there are one million new STI cases in Vietnam annually (30). Available data suggest there are issues in STI management in Vietnam. Clinicians and laboratory technicians in Vietnam have a tendency to over-diagnose reproductive tract infections (RTIs). The number of RTI cases diagnosed by clinicians could be double the number of RTI cases confirmed etiologically (31). A study in Quang Ninh reported 12.1% of GPs having incorrect knowledge about HIV transmission (32). As for the STI patients, it has been reported in some studies that patients were treated with respects by the providers and that the patients were not satisfied with services and providers (33, 34).

Effective STI control requires assessment of information from both clients and health care providers. In Vietnam, while the population at risk of STI infection has been well studied, there have been few studies on medical practitioners who provide STI services. The focus of the study is on various aspects of STI care in general practice and by specialist. The specific research questions are listed in the section below.

1.2 Aims of the study

Given the burden of STIs and the role of medical practitioners in STI care, this study aims to assess the knowledge and practice of the practitioners in STI care in Vietnam. It also investigates the STI care by Dermatology and Venereology (D&V) doctors. Specifically, the research aims to answer the following questions:

- What is the current knowledge and skill of medical practitioners in screening, diagnosis and treatment of STIs?

- How the prevention of STIs being is implemented in general practice?
- What are the characteristics of general practice that facilitate or inhibit STI care?
- What do the practitioners think about the need for STI training?

1.3 Overview of thesis

This thesis has seven chapters. Chapter 1 has discusses the context of the study. Chapter 2 reviews the literature on STI management with a focus on primary care settings. It includes an introduction to the common STIs; their magnitude and consequences, aspects and issues in STI management; introduction to the Vietnam health care system; and STI care in Vietnam.

Chapter 3 discusses methods used to conduct the study, which includes the design of the study, sample calculation and selection, development of study instruments, and recruitment of study participants. It also describes how the study was implemented for GPs and D&V doctors, and how the survey data were managed and analysed. Study limitations are also described. Chapter 3 also presents a profile of the study participants, including demographic and practice characteristics of GPs and D&V doctors. This chapter also discusses any differences with respect to background characteristics between the GPs who participated and those who did not participate.

Chapter 4 describes the level of knowledge of doctors about some selected topics concerning STIs. Specifically, data knowledge about the potential for some STIs to be commonly asymptomatic; notification requirements for common STIs in Vietnam, and STI testing is presented.

Chapter 5 describes issues in STI clinical practice including presumptive treatment, management of STI patients with distress, and history taking and contact tracing.

Chapter 6 explores organisational issues in STI care in general practice. It describes how doctors perceive the adequacy of STI training and educational resources for primary care providers, and whether additional training in STI improves their practice. This chapter also examines whether doctors encounter constraints in offering STI care and management in general practice.

Chapter 7 concludes the thesis, discussing key issues identified in STI management in Vietnam and limitations of the study. Implications of the research and directions for further research in the area of STI care are also presented.

Chapter 2

Literature review

2.1 Introduction

2.1.1 Introduction to STIs

There are over 30 bacterial, viral and parasitic STIs (35). Sexual intercourse is the most common route of STI transmissions. In addition, STIs can also be transmitted from mother to child during pregnancy and delivery, blood transfusion and through other non-sexual means. A review of the most common STIs is presented below.

Common bacterial STIs

The most common bacterial STI is Chlamydial infection (36-38). In 2008, total number of new Chlamydial infections globally was estimated to be 105.7 millions of which 7.2 million cases were in Southeast Asia (1). Chlamydia infection can occur silently with 70% of infected females and 50% of infected males being asymptomatic. If symptomatic, STIs symptoms often appear within one to three weeks after the exposure. In females, Chlamydia infections start at the cervix and urethra causing abnormal discharge or burning urination. Symptoms of symptomatic Chlamydia infection at Fallopian tubes may include nausea, fever, lower abdominal pain, low back pain, painful sexual intercourse, abnormal bleeding between menstrual period. Symptomatic males may have a urethral discharge or burning urination. Males or females who have anal intercourse may get rectal Chlamydial infection. Having oral sex with a person with Chlamydia infection can cause throat Chlamydia infection (39). Consequences of Chlamydia infection in females can include ectopic pregnancies, pelvic inflammatory disease (PID), and

infertility (40-42). Consequences of Chlamydia infection in males can include prostatitis and epididymitis (43, 44). Women with repeated Chlamydial infections have elevated risk of ectopic pregnancy and PID (45). In children, Chlamydia can cause pneumonia, eye infection and mental retardation (46, 47).

Gonorrhoea infection is caused by *Neisseria gonorrhoea*. In 2008, total number of new gonorrhoea cases globally was estimated to be 106.1 millions of which 25.4 million cases were in Southeast Asia. Similar to other STIs, up to 80% of females and 5% of males infected with *Neisseria gonorrhoea* are asymptomatic (1). If symptoms occur, they usually appear within a week after exposure, but they can take 30 days to appear. Symptoms of Gonorrhoea infection include burning urination, or a urethral discharge. Males with gonorrhoea may have painful or swollen testicles. Symptomatic females may also have increased vaginal discharge, or abnormal vaginal bleeding. However, female Gonorrhoea infection can be non-specific and taken as a vaginal infection. For both sexes, symptomatic gonorrhoea rectal infection includes anal discharge, itching, bowel bleeding and pain. People having oral sex with an infected partner may have infection in the throat (48). In females, gonorrhoea infection can cause PID leading infertility and ectopic pregnancy. In males, gonorrhoea can cause epididymitis and infertility. In both sexes, gonorrhoea can cause septicaemia, arthritis, endocarditis and meningitis. In new-born infants, gonorrhoea eye infection can lead to blindness (47, 49, 50).

Syphilis is caused by *Treponema pallidum*. In 2008, it was estimated that there were 10.6 million new syphilis cases globally and 3.2 million of these cases were in Southeast Asia (1). Syphilis infection occurs in three stages. The first stage usually occurs within 21 days of exposure and is characterised by the appearance of sores where syphilis enters the body. The sores are usually small, firm, round and painless. Stage two lesions include skin rash and

mucous membrane lesions. The rashes often appear in the palms as rough and red/reddish brown lesions, as soles in the feet. Symptoms of stage two may also include fatigue, fever, enlarged lymph glands, headache, sore throat, headaches, hair and weight loss, muscle pain. Stage three of syphilis infection starts as symptoms of stages one and two disappear. This stage can develop in 15% of people not receiving syphilis treatment and takes 10 to 20 years after infection to appear. In this stage, internal organs, bones and joints are damaged causing difficult muscle movements, numbness, blindness, paralysis and dementia (51-53). Such damages may eventually result in the death of the infected person (35). In pregnant females, syphilis may lead to stillbirth, congenital syphilis and infant mortality (54, 55).

Common viral STIs

Globally, HIV/AIDS is the sixth highest mortality cause (56). In 2010, it was estimated that there were 33.3 million people living with HIV/AIDS (PLHWA) globally, almost 5 millions higher than in 2001. There were 2.6 million new HIV infections, and 1.8 million AIDS-related deaths in 2009. In South and Southeast Asia, there were 4.1 PLHWA; 270,000 newly infected with HIV and 260,000 AIDS related deaths. It was estimated that HIV prevalence among adults was 0.8% globally and 0.3% in Southeast Asia (57, 58).

HIV infection can be divided into four clinical stages (59). Clinical stage I is asymptomatic, and an infected person has enlarged lymph nodes. Symptoms of clinical stage II include weight loss, herpes zoster, papular pruritic eruptions, angular cheilitis, recurring oral ulceration, fungal nail infections, seborrhoeic dermatitis, and recurring respiratory tract infections. In stage III, more serious symptoms begin to appear as the immune system has been weakened. Criteria for clinical stage III include chronic diarrhoea, severe weight loss, persistent oral candidiasis, persistent fever, oral hairy leukoplakia, severe bacterial infections, pulmonary tuberculosis,

acute necrotising ulcerative stomatitis, periodontitis, gingivitis, amenia, neutropenia, chronic thrombocytopenia (59).

Clinical stage IV (full blown AIDS) is characterised by more severe symptoms and more types of opportunistic infections. Symptoms of this stage include recurrent severe bacterial pneumonia, HIV wasting syndrome, pneumocystis pneumonia, chronic Herpes infection, extra-pulmonary tuberculosis, oesophageal candidiasis, cytomegalovirus infection, HIV encephalopathy, Kaposi sarcoma, central nervous system toxoplasmosis, extra-pulmonary cryptococcosis, chronic isosporiasis, disseminated mycosis, recurrent septicaemia, invasive cervical carcinoma, lymphoma, HIV-associated nephropathy, atypical disseminated leishmaniasis, HIV-associated cardiomyopathy (59).

Herpes simplex virus (HSV) type 2 is the leading cause of genital ulcers in the developing countries (60, 61). Globally, it has been estimated that there were 535,500 15 to 49-year-old people infected with HSV-2 (16.2% of this age group). Infection prevalence is higher among females than males and increases with age (61-63). It has been estimated that HSV-2 infection is associated with a three times fold HIV infection risk (64-66). HSV-2 facilitates HIV transmission by the enhanced susceptibility of HSV-2 seropositive to HIV infection and enhanced HIV infectivity in infected patients (67, 68). Symptoms of HSV infection are mild in most cases and often unrecognised and undiagnosed (69). Complications of HSV-2 are severe primary disease, hepatitis, meningitis, neonatal herpes, and erythema multiforme (64, 70).

Genital human papillomavirus (HPV) is most common viral pathogen of STIs (71, 72). It was estimated that at least 50% of males and females would acquire genital HPV infection during their lifetime (73, 74). Globally, HPV prevalence in females with normal cervical cytology was estimated to be 1.6% to 41.9% (75, 76). Due to its asymptomatic nature, HPV infection people

are usually unaware of their infection and unknowingly transmit the infection to other people (73, 77). HPV is grouped into low and high risk. Low-risk HPV causes benign anogenital warts and high-risk HPV can lead to genital and anal cancers (78, 79). Most low-risk HPV infections are asymptomatic and will clear in 1 to 2 years (80, 81). The risk for cervical cancer increases significantly for females who have persistent HPV infection (82).

HPV prevalence peaks among young females soon after sexual debut and decreases with age. The peak could be explained by higher levels of sexual activity and low viral immunity in young females, and the decrease could be explained by accrued immunity against HPV, hormonal change and a lower number of sexual partners in older females (83, 84). Among males, the main risk factor for HPV infection was the lifetime number of sex partners (81).

Hepatitis B virus (HBV) infection is a global health problem and is the tenth leading mortality cause. In 2009, it was estimated that there were approximately 2 billion people infected with HBV, of which more than 360 million people had chronic infection (85). It was estimated that HBV cause 30% of cirrhosis and 53% of liver cancer and that from 15 to 40% HBV infected people would develop cirrhosis, hepatocellular carcinoma, or liver failure (86, 87). It has been estimated that HBV infection accounts for over 600,000 deaths annually (88). However, it is necessary to note that not all cases of HBV are sexually transmitted. In developing countries, a large proportion of HBV are attributable to contaminated blood transfusion (89-91).

Common parasitic STIs

Trichomonas is the most common non-viral STI. In 2008, it was estimated that there were 276.4 million new cases of Trichomonas infection globally and 42.9 millions of these cases were in Southeast Asia (1). About 50% of Trichomonas infection cases are asymptomatic. Trichomonas can cause vaginitis in symptomatic females and urethritis in symptomatic males. Trichomonas

infection at middle period of pregnancy was found to be associated with preterm birth and low birth weight (92, 93). Trichomonas and HIV infection had bidirectional relationship, meaning that infection of one pathogen increase susceptibility to the other one (94). Available data suggest that Trichomonas infection was found to be associated with a 1.5 to 3 folds increase in HIV transmission (95, 96).

2.1.2 STIs in Vietnam

In Vietnam, there were 71,000 STI cases reported in 1997, and this number had increased to 348,134 in 2010 (29, 97). The prevalence rates of reproductive tract infections (RTIs) among females of reproductive age could be up to 39%, 6% of which could be STIs. Among those with STIs, 50% of the cases were asymptomatic (98). Self treatment was common among women with symptomatic STIs. Barriers for appropriate STI treatment include limited STI knowledge, costly STI treatment, providers' judgmental attitudes, and a lack of information on testing services (34).

The HIV epidemic in Vietnam is in a concentrated phase. An HIV epidemic is concentrated *“if HIV transmission is primarily attributable to HIV-vulnerable groups and if protecting HIV-vulnerable groups would protect the wider population”* (99, p.4). The highest infection rates were among injecting drug users (IDUs), female sex workers (FSWs) and males who have sex with males (MSM). In 2011, the HIV prevalence rate among IDUs in Vietnam was approximately 15% and among FSWs was 3%. The HIV prevalence among FSWs who had ever injected drug was 30%. HIV prevalence among MSM was 5.2% (100). National HIV prevalence was estimated at 0.53% (101). Quarterly reporting data from Vietnam shows that by March 31, 2012 there were 201,134 cases of HIV, 57,733 cases of AIDS and 61,579 cases of AIDS-related deaths (102).

It was estimated that by 2012 there would have been 280,000 PLWHA (103). In Vietnam, there are PLWHA in all provinces, in 96% of the districts and more than 66% of the communes (101).

2.2 Management of STIs

2.2.1. Approaches for STI management

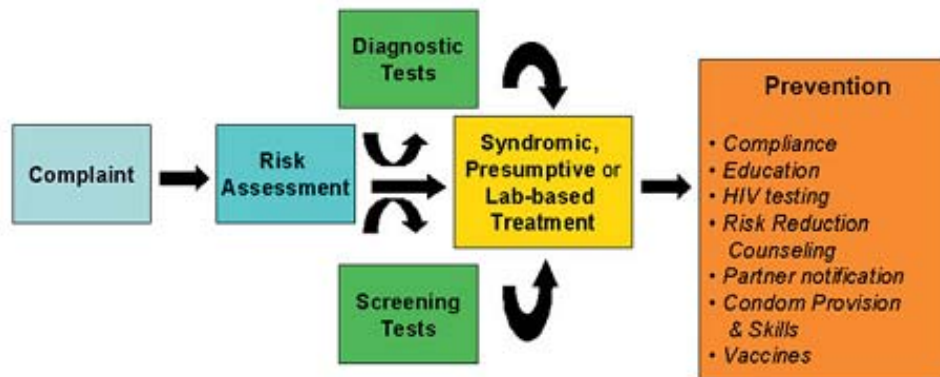
Approaches for STI management include the etiological and clinical approach. The etiological approach involves laboratory tests to identify the causal pathogen, and the clinical approach involves using clinical experience to identify the typical STI symptoms. The etiological approach is considered the gold standard, and clinical diagnosis should be used if laboratory services are not available. However, a number of problems with the etiological approach have been identified. For the etiological approach, skilled personnel, costly infrastructure, and consistent support and supplies for laboratory testing are required, and these are usually not available at primary health care facilities where most people seek STI services. In addition, time for laboratory test results may delay treatment while the infected individuals continue to transmit the infection to others, and may not return for results and treatment (104).

Syndromic case management is based on STI syndromes and treatment for common causes of the syndromes. Management is done by clinical flowcharts and standardised prescriptions. STI syndromic management is preferred for management of symptomatic patients in resource-poor settings. Syndromic management is considered simple and rapid with patients being treated at the first visit without waiting for laboratory test results, hence preventing the development of complications or further infection transmission while waiting for laboratory results. It has also been found to be cost effective and have a high recovery rate. In addition, this approach can be easily integrated into the primary health care system (105, 106).

However, syndromic case management has its own limitations. This approach is considered to have low sensitivity and specificity for cervical gonococcal and Chlamydial infections (107, 108). Surveillance of antibiotic susceptibility profiles is required to maintain efficacy of treatment. Potential over-treatment can be costly and lead to antibiotic resistance. As the syndromic approach is based on self-reported symptoms, asymptomatic infections can be missed, and this remains one of the difficult problems in STI control (109). In addition, the algorithm in syndromic management may need to be adapted for specific settings (106).

In the integrated approach, the physician first starts with a clinical assessment for specific STI signs and symptoms, then conducts a sexual risk assessment. Based on the clinical and risk assessments, the physician would offer confirmatory diagnostic tests for symptomatic patients, or screening tests for asymptomatic patients. Once a diagnosis of an STI is made, confirmed or presumptive, treatment should be administered without delay. Holmes et al. suggested that STI prevention should include '4 Cs': Contact tracing (partner notification and treatment), Condom promotion, Counselling and education about risk reduction, and assurance of Compliance with treatment. The steps are illustrated in Figure 2.1 (35, p.856).

Figure 2.1. Essentials steps in STI management



2.2.2 Doctor–patient relationship in STI care

Doctor–patient communication is an essential and integral part of clinical practice (110, 111). The most complaints from patients and the public are about communication, not about technical competency (112). The complaints could be about disrespect, different expectations of care, inadequate information, lack of trust, perceived unavailability, miscommunication, and misinformation (113, 114). Wessel et al. reported a more detailed category of patients' complaints including (1) rude, aggressive or arrogant behaviour; (2) being ignored; (3) being denied examinations or treatment; (4) lack of empathy among personnel; (5) lack of respect for personal integrity; (6) lack of time/waiting time; (7) personnel not separating private issues from their professional role; (8) injustice and discrimination; (9) sexual harassment; (10) coercion and violence and (11) unspecified bad treatment (115).

There are numerous benefits of good doctor–patient communication. Studies have found that doctors' communication skill is positively associated with patients' satisfaction (116, 117). Effective doctor–patient communication was also found to be associated with improved health outcomes and patients' medical adherence (116, 118, 119). The improvements could be in

symptoms, pain relief, and function and physiological measures (120). Doctors' communication that has been found to be positively associated with improved patients' outcomes were doctors' listening to patients, showing empathy and support, reassurance and explanations, patient-centred questioning, history taking, health education and information sharing, friendliness, courtesy, humour, clarification and summarisation (117, 120).

The provision of information and amount of information provided by doctors is positively related to patient satisfaction (121). The doctor's explanations, use of statements during examination and provision of information during the concluding section of the consultation is also positively associated with patient satisfaction (120). Information about patients' conditions and treatment effects, what patients need to do, and anticipated time for recovery were also mentioned as desirable information by patients during encounters with doctors (122-124). However, it has been shown that doctors and patients may have different expectation about a good and effective communication (125). These differences may affect the quality of doctor-patient interactions, patient education, health outcomes and compliance (126, 127).

Across various studies, it has been reported that a doctor's communication style may have evolved from his/her experiences with patients or philosophy of care (128) and training in communication (129, 130). Female doctors have been found to engage in more preventive service, spend more time with patients, and use more patient-centred approach (128, 131-135). Doctors' attitudes to the provider-patient relationship were also found to influence their communication and perceptions toward patients. Doctors were more patient-centred with patients who were better communicators and more likely to adhere. Doctors are generally

more responsive to the actively involved patient and regard more favourably patients who show a positive attitude, are more involved and less contentious (136, 137).

It was reported that patients' socioeconomic characteristics influence doctors' perceptions of patients. Doctors tended to perceive patients with low and middle socioeconomic status more negatively than they did patients with upper status (138). Doctors have been known to give patients with lower socioeconomic status fewer positive socio-emotional utterances, more directives and employ a less participatory consulting style. Doctors give patients with higher socioeconomic status more information as these patients can communicate more actively with their doctor (139).

It is common that STI patients reported negative experiences with health care services. They feel that they were judged negatively by health care workers, and did not receive enough information and support (140). Vietnam is no exception, and STI patients often feel being discriminated when visiting health facilities. They are shouted at and scolded by doctors for being promiscuous or not keeping clean, and they have to accept this due to the fear of being refused treatment. STI patients often delay medical treatment and/or seek self-medication first. They would go to a doctor if self-medication was unsuccessful. One of the main reasons for this is the fear of the attitude of health staff. Often, doctors were reported to look down on females believed to be doing sex work (141, 142). As a consequence of the poor relationship and the distrust, compliance with the treatment is low. Ngo et al reported that it was common for FSWs to stop the medication immediately after symptoms disappeared because *"doctors often prescribe a high dose of medicines for profits, so it is not necessary to take all the medicine"* (34, p. 884).

2.2.3 STI risk assessment

Sexual history taking can help save people's lives because risky sexual behaviours can, apart from leading to unwanted pregnancies, result in STI/HIV acquisitions (143). Sexual history is the key to effective STI management as it enable doctors to collect information about the patient's sexual risks and set the agenda for issues to be further explored. Initially, the patients need to be reassured about confidentiality and privacy, and encouraged to ask questions if needed. Sexual history can be highly effective in starting the information exchange, counselling, and supporting the patient during the consultation (144). As many STIs are asymptomatic, sexual history taking can be immensely useful for detecting risky behaviours that can lead to STI acquisition (145).

As sexual history taking involves personal and often embarrassing questions to determine the examination, laboratory investigations and diagnosis. Doctors can lessen a patient's discomfort by informing the patients of reason and contents of questions going to be asked. A sexual history should include questions to determine a person's sexual orientation, pregnancy prevention, STI prevention and sexual activities of the patients. It may be difficult to achieve thorough sexual history taking due to limitations in doctors' skill, time constraints, confidentiality, especially in the primary care setting (144, 146).

The Centres for Disease Control (CDC) suggests the "Five Ps" that should be mentioned during sexual history taking, which are: Partners, Prevention of pregnancy, Protection from STDs, Practices, and Past history of STDs. Below are typical questions for each P:

"1. Partners

- *"Do you have sex with men, women, or both?"*
- *"In the past 2 months, how many partners have you had sex with?"*
- *"In the past 12 months, how many partners have you had sex with?"*

- *“Is it possible that any of your sex partners in the past 12 months had sex with someone else while they were still in a sexual relationship with you?”*

2. Prevention of pregnancy

- *“What are you doing to prevent pregnancy?”*

3. Protection from STDs

- *“What do you do to protect yourself from STDs and HIV?”*

4. Practices

- *“To understand your risks for STDs, I need to understand the kind of sex you have had recently.”*

- *“Have you had vaginal sex, meaning ‘penis in vagina sex’?”*

If yes, “Do you use condoms: never, sometimes, or always?”

- *“Have you had anal sex, meaning ‘penis in rectum/anus sex’?” If yes, “Do you use condoms: never, sometimes, or always?”*

- *“Have you had oral sex, meaning ‘mouth on penis/vagina’?”*

For condom answers:

- *If “never:” “Why don’t you use condoms?”*

- *If “sometimes:” “In what situations (or with whom) do you not use condoms?”*

5. Past history of STDs

- *“Have you ever had an STD?”*

- *“Have any of your partners had an STD?”*

Additional questions to identify HIV and viral hepatitis risk include:

- *“Have you or any of your partners ever injected drugs?”*

- *“Have any of your partners exchanged money or drugs for sex?”*

- *“Is there anything else about your sexual practices that I need to know about?” (147, p.3).*

Below are the core sexual history questions developed using the Delphi technique and sexual health clinical practice in Australia and New Zealand:

“Core questions for men and women

1. *Their presenting complaint/reason for visit?*
2. *The history of the presenting complaint?*

3. *Their current sexual relationship status?*
4. *Their last sexual contact?*
5. *The sex (opposite, same) of any sexual partner(s) in the past three months?*
6. *The sex (opposite, same) of any sexual partner(s) in the past 12 months?*
7. *The number of sexual contacts in the past three months?*
8. *If they have used condoms, the pattern (always, sometimes) of condom use in the past three months?*
9. *Whether they have been previously tested for STIs, including HIV?*
10. *A history of STI(s)?*
11. *Which STI(s)?*
12. *If the client has been vaccinated against hepatitis B?*
13. *If they have ever injected drugs?*
14. *If they have ever injected drugs, when was the last time they used using drugs?*
15. *Has the client had sexual intercourse with a person from outside Australia and New Zealand?*

Specific questions for male clients:

16. *If they have had any vaginal sex with any female partner (s) in the past three months?*
17. *If they have had any oral sex with any male partner (s) in the past three months?*
18. *If they have had any anal sex with any male partner (s) in the past three months?*

Specific questions for female clients:

19. *Has the client had any vaginal sex with any male partner (s) in the past three months?*
20. *If the client is not pregnant or trying to become pregnant, about contraception?*
21. *The date of the client's last menstrual period?*
22. *The date of their last Pap smear?*
23. *The result of their last Pap smear?" (148, p.171).*

Lack of time is a common barrier for sexual history taking (149-151). Recently, there have been new approaches to help the doctors save time in risk assessment for patients. These include a paper based patient administered questionnaire and a computerised tool for sexual history taking. A risk assessment table has been used to rapidly differentiate patients with low and high risks. Patients were asked whether they had been involving in one of the high risk behaviours for HIV infection. If a patient had one or more “yes” in their response, he/she would be considered as having elevated HIV infection risk and be provided with counselling sessions before and after HIV testing. The patients whom all had “no” as their response were considered low-risk and would be tested without pre-test counselling, be given pamphlets containing information on HIV infection, transmission and testing. They could opt to come back to receive test result or have the result mailed. The use of the risk assessment table has been found to save health staff’s time (152).

Computer assisted self-interviews have been used for risk assessment and taking patient histories (153, 154). This approach is acceptable for young patients, those who have low income or poor computer literacy, or to be used in examination rooms or patients receiving HIV care (155, 156). It has been known that reporting of sensitive sexual risk behaviours is prone to social desirability bias and that the use of computer-assisted self-interviews can be more reliable than face to face interview (157). Advantages of computer-assisted self-interviews include ease of use, consistent questions, automated logic checks and skipping that ensures appropriate questions for each respondent, and less missing data (158, 159). Limitations of computer-assisted self-interviews include the possibility of computer problems and insufficient probes that some individuals may need to respond accurately or to reveal sensitive information (160, 161).

2.2.4 STI screening test

For non-pregnant females, the main factors to determine whether they are at an elevated risk of STIs include age and high risk sexual behaviours. The high risk behaviours are having multiple partners, having new partners, inconsistent condom use, sex after alcohol or drugs, having sex for drugs or money. According to U.S. Preventive Services Task Force (USPSTF), non-pregnant females having high risk sexual behaviours should be screened for Chlamydia, gonorrhoea, HIV, and syphilis (162-166). Regarding age, USPSTF recommends that all sexually active females under 25 years old should be screened for Chlamydia and gonorrhoea (163, 166). It is known that younger females are at increased risk for gonorrhoea and Chlamydia infection as they may have more new sex partners than older females and they have relatively immature immune systems (167).

There are some differences in the recommendations for STI screening for non-pregnant females between USPSTF and CDC (147). USPSTF recommends screening all sexually active females under 25 for gonorrhoea, while CDC only recommends screening those with increased risk. USPSTF recommends screening females at increased risk for syphilis, CDC only recommends screening those exposed to syphilis. Conversely, USPSTF only recommends screening females at increased risk for HIV, while CDC recommends screening all females. USPSTF recommends not screening the general population for HBV, while CDC recommends pre-vaccination screening for females at increased risk.

For pregnant females, the factors that determine whether they are at risk are the same as those for non-pregnant females. In addition, USPSTF recommends that all pregnant females be screened for HIV, HBV and syphilis for the treatment implications for the newborn (162, 164, 168). In addition, it recommends that pregnant females under 25 years old and females

engaging in high-risk sexual behaviours should also be screened for Chlamydia and gonorrhoea (166).

There are some differences in the recommendations for STI screening for pregnant females between USPSTF and CDC (147). USPSTF recommends screening sexually active females under 25 years old and females at increased risk for Chlamydia, while CDC recommends screening all females. Similarly, USPSTF recommends screening sexually active females under 25 years old and females at increased risk for gonorrhoea, while CDC only recommends screening females at increased risk.

For males, USPSTF recommends that those engaged in high-risk sexual behaviour be screened for HIV and syphilis (162, 164). CDC recommends that sexually active MSM should be screened for HIV, syphilis, Chlamydia, and gonorrhoea routinely, at least annually (147).

2.2.5 STI treatment

There are different strategies for STI treatment, depending on the characteristics of the clients, available resources and technical capacity of the health care providers. Etiologic treatment aims at specific pathogens identified by laboratory tests. This treatment strategy is effective, yet requires laboratory infrastructure, technicians and specialised doctors. Syndromic treatment, as discussed above, is a strategy to provide treatment based on common symptoms/syndromes. This strategy is considered appropriate for resource-scarce settings and does not require specialised health staff. Mass treatment, involving treatment to a group of people at high risk of infection, has also proved to be effective in lowering the infection rate in the target group (169).

In patient-delivered partner treatment (PDPT), the partners of index patients receive antibiotic treatment and instruction through the index patients. It has been reported that PDPT resulted

in more partners' treatment and less reinfection of index patients than partner referral (170). For females, PDPT is to eliminate the potential source of reinfection in order to prevent recurrent infection of the index females. For males, reduction of reinfection in males is a secondary goal, while the primary goal is to treat all of their female partners; (171). Determinants of PDPT uptake include beliefs that the approach easy the cure, reduces the disease spread and that the medicine is provided sealed together with a note from a healthcare provider (172).

2.2.6. The "4Cs" in STI management

Condoms

When being consistently and correctly used, male latex condoms are highly effective in preventing sexual transmission of HIV and STIs including Chlamydia, gonorrhoea, Trichomoniasis, and might reduce the risk of PID in females (173-175). Consistent condom use, defined as condom use in every act of vaginal intercourse, can result in 80% risk reduction compared with no condom use (176, 177). Sanchez et al. reported consistent condom use reduced the risk of gonorrhoea by 62% and of Chlamydia by 26% (178).

Male condoms can partially prevent HSV-2 infections. Wald et al. reported that a 92% reduction in HSV-2 infection risk among females was associated with condom use in more than 25% of sex acts, although, rarely, HSV-2 infection could still be acquired by people reporting 100% condom use (174, 179). Male condom use can reduce 70% the risk of HPV transmission (180, 181) and lessen the consequences of HPV infection (182).

For effective STI prevention, patients should be instructed to use condoms consistently and correctly to be. Below are recommendations for proper use of male condoms by CDC:

- “• Use a new condom with each sex act (i.e., oral, vaginal, and anal).*

- *Carefully handle the condom to avoid damaging it with fingernails, teeth, or other sharp objects.*
- *Put the condom on after the penis is erect and before any genital, oral, or anal contact with the partner.*
- *Use only water-based lubricants (e.g., K-Y Jelly, Astroglide, AquaLube, and glycerin) with latex condoms.*
Oil-based lubricants (e.g., petroleum jelly, shortening, mineral oil, massage oils, body lotions, and cooking oil) can weaken latex and should not be used.
- *Ensure adequate lubrication during vaginal and anal sex, which might require the use of exogenous water-based lubricants.*
- *To prevent the condom from slipping off, hold the condom firmly against the base of the penis during withdrawal, and withdraw while the penis is still erect” (147, p.5).*

The female condom is effective in preventing the transmission of viruses and semen (183, 184).

With consistent and correct use, the female condom can reduce the risk of STIs transmission.

A female condom should be used if a male condom is not being used. In addition, the female condom can also be used during anal intercourse (185).

Contact tracing

Contact tracing (also referred to as partner notification/management) is the process in which sexual partners of STI patients (index patients) are contacted about their STI exposure and that he/she need to see a STI care provider. The purpose is to prevent reinfected the index patient and decrease STI spreads and to detect asymptomatic STI cases, thereby reducing the STI burden and transmission in the population.

There are three approaches to contact tracing (186):

- Third parties (in most case is health staff) notify partners of index patients.
- Health care providers encourage the index patients to inform their partners.

- Health care providers ask index patients to inform their partners and that the providers would contact the partners if he/she does not visit health service.

To do contact tracing, physicians in Vietnam, encourage the index patients to inform their partners to have medical examinations. To succeed, health care providers need to collect details of all sex partners that the index patient may have acquired the infection from and the sex partners that the index patient might have infected. Partners of the index patients in the latent period of infection are usually the source of infection. Partners after the symptom onset are usually people who may have acquired the infection from the index patients (187).

Compliance

In the medical literature, the concept of compliance is used interchangeably with the term adherence (188). Compliance is defined as “the extent to which patients follow instructions” (189). Non-compliance remains a challenge in health care. Though there have been numerous interventions to improve patient compliance, more than half of the interventions do not succeed (190). Consequently, patients did not get the most out of their health care service, they have a reduced quality of care and health status and increased health care expenditures (191).

There are three types of non-compliance, namely, “non-fulfilment”; “non-persistence” and “non-conforming”. Non-fulfilment is when patients never take medicines and prescriptions prescribed by physicians. Non-persistence is when patients stop taking medicine without advice from a physician that they should stop. Non-conforming includes ways in which patients do not take medications as prescribed, such as skipping, taking medicines at incorrect times or in incorrect doses (191).

Factors related to health care providers that influence patient compliance include patient-provider trust and satisfaction, length of time spent on discussing options and medications, and other aspects of communication (190). Compared to patients who are not receiving advices from health care providers or non-compliant, patients receiving and complying health care providers' advises report improved health status (192).

Counselling

In order to effectively deliver prevention messages, health care providers need to communicate risk reduction messages that are relevant to patients and discuss specific actions that can reduce the risk of STI transmission such as condom use, modifying sexual behaviours, reducing the number of sex partners, et cetera (186, 193). Once diagnosed with an STI, the counselling for the patient should include the following:

“Abstinence, while infected: To reduce STI transmission risk, the patients must not have sex, while being treated. They also need to be informed about legal issues of knowingly putting another person at risk of HIV infection.

The advantages of a long-term, monogamous relationship: Patients should be encouraged to discuss their sexual behaviour with their partners and to communicate their sexual needs. It is necessary to emphasise the need for honesty in the relationship rather than assuming long-term faithfulness.

Use of condoms and water-soluble lubricant: Discuss with patients how to use condoms and where to get them, how to negotiate condom use with partner, encourage women to discuss condom usage with their partners.

Reducing the number of sexual partners: A lower number of partners will lower the risk. Also, it is necessary to mention that a series of monogamous relationships without condoms can be as risky as numerous casual partners.

STI check-ups: Encourage patients to have STI check-ups, especially before a new sexual relationship.

Other risk behaviours: Discuss STI-related risks with the patient and how to reduce the risks.

Notification requirements: Explain that some STIs must be reported to health authorities, pointing out the advantages to public health and emphasising that patient confidentiality will be respected" (194, p.40).

2.3 Physicians' characteristics that affect STI management

Cook et al. surveyed 1600 physicians in Pennsylvania on Chlamydia screening for sexually active asymptomatic teenage women. Results of multivariate analysis revealed that female physicians were more likely to screen their teenage clients for Chlamydia than male physicians (43% vs. 24%, $p<0.05$). Physicians working in clinics were much less likely to screen than those working on their own (60% vs. 18%, $p<0.05$). Physicians working in metropolitan locations were less likely to screen them than those working in non-metropolitan locations (26% vs. 46%, $p<0.05$). Knowledge on STI was also found to be associated with Chlamydia screening; physicians who knew that Chlamydia screening helps prevent pelvic inflammatory disease were more likely to screen than those who did not (37% vs. 13%, $p<0.05$). Physicians believing that Chlamydia prevalence was low were less likely to screen (10% vs. 41%, $p<0.05$) (195).

Hinchliff et al. conducted a qualitative study on GPs working in different practice types and locations in Sheffield, UK. The study reported GPs' belief that most patients choose a GP of the same sex as themselves and, consequently, the GPs felt that they become less skilful in talking with patients of the opposite sex about sexual issues (196).

Similarly, the qualitative study by Gott et al. using semi-structured interviews on GPs

and practice nurses working in Sheffield, UK reported both professionals and patients' preference for same sex consultations. It was also reported that the professionals' preference for same sex consultations originated from their being more comfortable about discussing sexual issues with same sex patients and that opposite sex patients could make the consultation more sexual than need be (146). The study by Wimberly et al. of 416 physicians in Atlanta revealed that the female physicians were more likely to ask their patients about sexual activity than the male physicians. The authors believed that this could be due to the female physicians being more skilful in talking about sexual issues or that the female patient load was higher (197).

Quach et al. conducted a study involving 151 physicians working at public health facilities in two towns in Vietnam. They found that the knowledge about HIV/AIDS of those physicians who had more than 20 HIV/AIDS patients was 2.7 times greater than those who had 20 or fewer HIV/AIDS patients. Physicians aged more than 41 years old had more a positive attitude toward HIV/AIDS patients than their younger colleagues. Working at provincial health facilities was positively associated with prescribing antiretroviral medications for their patients ($p < 0.01$) (32).

Mulvey et al. reported the results of a study of STI knowledge and practice of 520 GPs in Victoria, Australia. They found that younger doctors had a significantly higher score on asymptomatic STIs than older doctors, while doctors working in urban areas had a higher knowledge score for STI diagnostic testing than those who did not work in urban areas. The study found no association between providers' sex and the outcomes of interest (198). The cross-sectional study by Maheux et al. of family physicians in Quebec revealed that there was no difference in the frequency of sexual history taking between

male and female physicians. However, more male physicians were found to ask about the sex of a patient's partner than female physicians. In contrast, female physicians were found to more frequently counsel their patients about carrying condoms and negotiating condom use with their partners than male physicians. Male physicians believed that their sexual history taking practice was consistent regardless of the sex of the patient. However, female physicians reported more difficulties in taking a sexual history from their male patients. Similarly, female physicians reported more discomfort with homosexual patients and people of other ethnicities than male physicians. The authors proposed that this difference between female and male physicians could be due to the fact that homosexuality among males was more common than among females and, as a result, it was more common for male physicians to encounter male homosexuals than it was for female physicians to encounter lesbians (199).

Pham et al. reported on a study using scenarios of common STI syndromes to assess STI knowledge and practice among 465 healthcare providers in rural Vietnam. The scenarios used included vaginal discharge, genital ulcers, urethral discharge, and lower abdominal pain syndromes. Results of multivariate analysis showed a significantly higher mean knowledge score of medical personnel (doctors, assistant doctors) than that of pharmacists/drug sellers. The study also found that duration of medical practice, physicians' sex, workplace, and having STI patients were significantly associated with STI knowledge score and practice score. Physicians working at communal health facilities or in private practice were found to have significantly lower practice scores. Higher practice scores were reported among physicians who had attended STI training courses (200).

The study by Khan et al. of 409 GPs in NSW, Australia found that female GPs were more likely to always take a sexual history from young patients and heterosexual patients than male GPs' patients (adj OR=3.06, 95% CI=1.32–7.11 and adj OR=3.04, 95%CI=1.10–8.40, respectively). Compared to GPs working in rural areas, those working in metropolitan areas were more than twice as likely to always take a sexual history from homosexual patients (adj OR=2.49, 95% CI=1.25–4.93 and adj OR=2.33, 95% CI=1.16–4.66 for MSM and lesbian patients, respectively). Physicians who had STI postgraduate training were more likely to always take a sexual history from young patients (adj OR=4.04, 95% CI=1.34–12.15). Physicians under 40 years old mentioned more concern about patients being uncomfortable when taking a sexual history (60.4% v. 40.0%, $p=0.004$) (201).

Dreisbach et al. reported results of a standardized three-day interactive training course on STD/HIV prevention involving 110 physicians working in 10 states in the United States. Results of the study showed that the physicians had a significantly higher knowledge score after the training, both immediately after the training and at six months after the training. This applied to all skills covered in the training including risk assessment, clinical examination, diagnosis, and treatment (202).

2.3 Summary

Sexually transmitted infections are on the rise in Vietnam. The majority of STIs are asymptomatic, with the potential to spread further and cause complications if undetected and untreated. STI care requires a comprehensive approach, starting with risk assessment. Preferably, physicians should use risk assessment effectively to screen patients who either come with STI complaints or those who are at risk of having STIs. Risk assessment should cover the areas suggested in the core sexual history questions and/or the 5 Ps as discussed earlier. Patients diagnosed with an STI should be managed with the 4Cs approach in which condom use should be discussed, patient compliance with treatment ensured, contact tracing organised and comprehensive STI counselling provided. However, there is evidence suggesting that there are gaps in STI care in medical practice in Vietnam. Physicians do not have sound knowledge of the STI epidemic, signs and symptoms, and patients are not happy with the service provided. Hence, it is necessary to study how STIs are managed in medical practice in Vietnam, and factors affecting physicians in providing STI services. It is also necessary to study the differences in STI services provided by general physicians and specialised physicians. Findings of the study can be used to strengthen STI services in Vietnam.

Chapter 3

Research Design

This chapter presents information on the health care system in Vietnam regarding STI care; the overall and STI/HIV situation in the three provinces in the study; the study design, the study sample; the development of the study instrument; the implementation and analysis of survey data; and the profiles of the study participants.

This study used the survey method to collect data on knowledge and practice of STI care by medical professionals in three provinces in Vietnam. A self-administered questionnaire was developed to gather data from medical practitioners in Vietnam on their knowledge and skills in STI care. The focus of the study was on STI care in general practice. While a large proportion of STI care takes place in general practice, STI specialist doctors (dermatology and venereology doctors, D&V doctors) play an important role in providing specialised STI services (203, 204). There is evidence showing that there are differences between STI services provided in general and specialised practice (205, 206). Hence, the present study also explored the differences in knowledge and skills in STI care of D&V doctors and their colleagues in general practice in Vietnam. The target population of this study were therefore medical practitioners who provide STI services including D&V doctors, GPs and assistant doctors working at health facilities in the selected provinces.

3.1 Introduction to the study sites

The survey was conducted in three provinces, Quang Ninh in the north, and An Giang and Can Tho in the south. Nation-wide, the HIV prevalence rate among IDUs in Quang Ninh was the second highest (58.7%), in Can Tho it was the third highest (36.6%) and in An Giang the sixth highest (13.3%). The HIV prevalence rate among street-based FSW was the highest in Can Tho (29%), and third highest in Quang Ninh (12.4%) (207). The three provinces are briefly described below.

Quang Ninh

Quang Ninh is bordered with China. The total area is 5,899.6 sq. km and total population in 2011 was 1,163,700. There are 10 rural districts, 4 urban districts and 184 communes in Quang Ninh (208). The STI epidemic in Quang Ninh is related to a combination of sex work, including the cross border movements of Vietnamese sex workers; drug usage; and migration for the coal mining and border trade.



Figure 3.1. Map of Vietnam's land showing the three provinces surveyed

Source: www.chinhphu.vn

The provincial health care system includes 13 hospitals with 960 beds; 8 polyclinics with 83 beds; and 184 communal health stations with 566 beds. There are 677 doctors in Quang Ninh (76 at communal level; 244 at district level; 357 at provincial level). There are 550 assistant doctors in Quang Ninh (368 at communal level; 117 at district level and 65 at provincial level) (209).

An Giang

An Giang is bordered by Cambodia. An Giang's total area is 3,406.2 sq. km and the total population in 2011 was 2,151,000. There are 9 rural districts; 2 urban districts and 150 communes in An Giang (208). The STI epidemic in An Giang is related to sex work, including the cross border movements of Vietnamese sex workers, and drug usage. The government health system in An Giang consists of 9 hospitals with 840 beds; 13 polyclinics with 290 beds and 150 communal health stations with 1390 beds. There are 777 doctors in An Giang (150 at communal level; 284 at district level and 343 at provincial level). There are 1169 assistant doctors (346 at communal level; 501 at district and 322 at provincial level) (209).

Can Tho

Can Tho's total area is 1,389.6 sq. km. Total population in 2011 was 1,200,000. There are 4 rural districts; 4 urban districts and 150 communes (208). The STI epidemic in Can Tho is also related to sex work and drug usage. The health care system has 3 hospitals with 490 beds; 13 polyclinics with 144 beds; and 61 communal health stations with 194 beds. There are 610 doctors in Can Tho (51 at communal level; 193 at district level and 366 at provincial level). There are 599 assistant doctors (216 at communal level; 229 at district and 154 at provincial level) (209).

3.2 Health care system and STI services in Vietnam

3.2.1 Structure of health care system in Vietnam regarding STI services

Central level

The Ministry of Health (MOH) is a government agency in charge of nation-wide management in health care. At the central level, there are national hospitals acting as referral sites for provincial hospitals. For STI patients, there is a national hospital for venereology and dermatology. The Vietnam Administration of HIV/AIDS Control (VAAC) is a general department within MOH in charge of HIV/AIDS prevention and control nationally.

Provincial level

Provincial Health Services (PHSs) are government agency in charge of health at the provincial level. PHSs are under management of provincial people's committees in term of their organisation, staff and activities. Technically, PHSs are under MOH's guidance, instructions, supervision and inspection. At the provincial level, there are provincial hospitals and special centres/hospitals such as Ophthalmology Centres, and D&V centres/hospitals. The provincial Administration of AIDS Control is responsible for HIV/AIDS patients. At the provincial level, clients seeking STI services can go to a provincial D&V hospital/centre or a D&V ward of a provincial general hospital, or to private clinics. Clients can also buy STI medications over the counter at any pharmacy as, in Vietnam, they do not require a doctor's prescription. It is regulated that the etiological approach to STI management be used at the provincial level and higher (30).

District level

District Health Centres (DHCs) are government agency in charge of health at the district level. Similar to PHSs, DHCs are under management of district people's committees in term of their organisation, staff and activities. Technically, DHCs are under PHSs. At the district level, clients seeking STI services can go to a D&V ward of a district general hospital or to private clinics. It is regulated that the syndromic approach to STI management be used at the district level and lower (30).

Communal level

Communal health stations (CHSs) are the primary health units located in the communes. CHSs is responsible for primary health care services, treating common diseases, early detection of epidemic outbreaks, and assisting normal deliveries. Other tasks of CHSs include mobilisation of community for family planning, hygiene and prophylactics, and health promotion. At the communal level, clients seeking STI services can go to a communal health station or to private clinics. A typical communal health station is staffed with one doctor/assistant doctor, a nurse or midwife and a primary pharmacist. Regarding payment, there is mandatory health insurance for salaried people, and optional health insurance for non-salaried people. People who do not have health insurance have to pay for their medical services.

3.2.2 STI notification in Vietnam

In Vietnam, it is stipulated by HIV Prevention Law that HIV is notifiable. People testing positive to HIV, their spouses, guardians of minors or disabled persons has to be informed of the HIV status. Other people to be informed of the HIV infection status include those who provide care and treatment for HIV-infected patients at medical establishments (210).

For STIs other than HIV, the national guidelines for STI diagnosis recommend that gonorrhoea and Chlamydia treatment be provided for partners of patients diagnosed with urethral discharge, cervicitis or pelvic inflammatory diseases, that syphilis and Chancroid treatment be provided for partners of patients diagnosed with genital ulcers, and that Trichomonas treatment be provided for partners of patients diagnosed with recurrent vaginitis (211).

3.2.3 Referral structure in Vietnam health care system

In Vietnam, people seeking medical services can go to any health facility of their choice if they pay for the services themselves. Depending on their preference, patients can choose to first visit a primary health facility (communal health station) or go directly to a higher level facility. However, if people need to use their health insurance, they will first need to go to the facility that they have registered as their primary health facility. They can then be treated at this facility or referred to a higher and/or specialised facility. The cost for medical services increases as the level of health facility increases, that is, the cost is lowest at the communal health stations and increases at district facilities and higher facilities.

3.2.4 Training of physicians in Vietnam

In Vietnam, high school graduates who want to study medicine to become doctors need to pass an entrance examination and complete six years of medical education at one of the eight public medical universities. High school graduates aspiring to become assistant doctors also need to pass an entrance examination and complete a two-year medical education at a provincial secondary medical school. Assistant doctors are trained to provide basic medical examination and treatment services and are destined for communal and district health

facilities, while doctors can work at any level in the health care system. However, some assistant doctors can also be found working at provincial health facilities.

Doctors and assistant doctors who would like to become D&V specialists need to study D&V specialist courses. This training could range from six months to one year for non-degree training or two years for a degree in D&V. Physicians who take the six-month training need to apply for and complete the six-month training and be awarded with a certificate once they have completed the course. The physicians are then certified as having completed D&V orientation training. Physicians wishing to study for a degree in D&V need to pass an entry examination and complete two years of study and pass the final examination before being awarded a degree in D&V. Physicians completing one two-year course in D&V are awarded the D&V level 1 specialist degree. Those who continue for another two years are awarded the D&V level 2 specialist degree. Similar to the D&V specialist first degree, the level 2 specialist degree also involves an entry examination and final examination. Both doctors and assistant doctors can study the D&V orientation course. However, only doctors are eligible to sit the entrance examination for the specialist degree course in D&V. Regarding place of work, most physicians having a D&V specialist degree work at provincial and national D&V facilities (D&V centres, D&V wards and D&V hospitals), while physicians who have completed orientation training in D&V often work in D&V wards.

3.2.5 Quality assurance in health care in Vietnam

The official quality assurance practice used in the health sector in Vietnam is traditional supervision which is non-participatory, mostly top-down supervision, normally referred to as “checking”. The supervision can be conducted by people working at higher levels such as the Ministry of Health, provincial departments of health or district health bureaux, or at lower

levels. The supervision can also be conducted by people working at the same level, level, for example, someone from one province may conduct supervision in another province. However, top-down supervision is more common and considered a tool for governmental management in the health sector.

In addition to the traditional supervision, integrated supervision for quality of care (IS/QoC) has been introduced as a tool for monitoring and improving quality of care in the health sector in Vietnam. IS/QoC involves five components, namely, facility review, service data review, self-assessment case review, service observation, and collection of patients' feedback. It has been recommended that IS/QoC be conducted quarterly (212). Although IS/QoC has not been officially mandated by the Ministry of Health of Vietnam, this approach has been introduced by the Ministry. The Ministry has co-authored an IS/QoC training manual and distributed it nationally. IS/QoC is currently being implemented in many provinces in Vietnam including the three provinces under the survey. The interval for conducting IS/QoC varied from quarterly to half yearly, or annually.

3.3 Study design

A cross-sectional self-administered survey of medical practitioners (doctors/assistant doctors) was used to collect information about their knowledge and skills in management of STIs. The focus of the study was on management of STI in general practice. In addition, doctors specialised in dermatology and venereology (D&V) were also included in the study to assess their specialist knowledge and management practices in relation to STIs to assess whether STI care in general practice differed from that in specialised settings.

3.4 Study sample

3.4.1 Sample size calculation

Sample size calculation for this cross-sectional survey used the formula to estimate population proportion as described in the book *Sample size determination in health studies: a practical manual* (213). The reference proportion was taken from a survey of physicians on HIV knowledge, where 96% of the physicians mentioned that using a condom when having sex can prevent HIV transmission (32).

General practitioners:

The formula used to estimate sample size was $n = z^2_{1-\alpha/2} P(1-P)/d^2$ (213).

Where:

$$p = 0.96$$

$$\text{Confidence level: } z^2_{1-\alpha/2} = 97\%$$

$$\text{Absolute precision: } d = 2\%$$

Sample size for general practitioner was calculated to be 451.

D&V doctors:

The number of D&V doctors in each province is very small. There are only 10–20 doctors in each province. Therefore all the D&V doctors working in the selected provinces were included in the study.

3.4.2 Sampling procedure

There were 29 districts and 484 communes in the three selected provinces. The numbers of medical practitioners in Quang Ninh, An Giang and Can Tho were 1209, 1946 and 1227, respectively. Among the 29 districts, 10 districts were selected using simple random sampling. In each district, the complete lists of doctors, assistant doctors and D&V doctors was acquired

from the District Health Bureau. There were about 1200 non D&V physicians (doctors and assistant doctors) in the 10 selected districts. The list of selected non D&V physicians was calculated using Proportionate Probability to Size (214). In this second stage, systematic random sampling was used instead of simple random sampling due to the more simple administration of systematic random sampling compared to simple random sampling (215-217).

Sampling Interval (SI) = Cumulative population/Number of practitioners

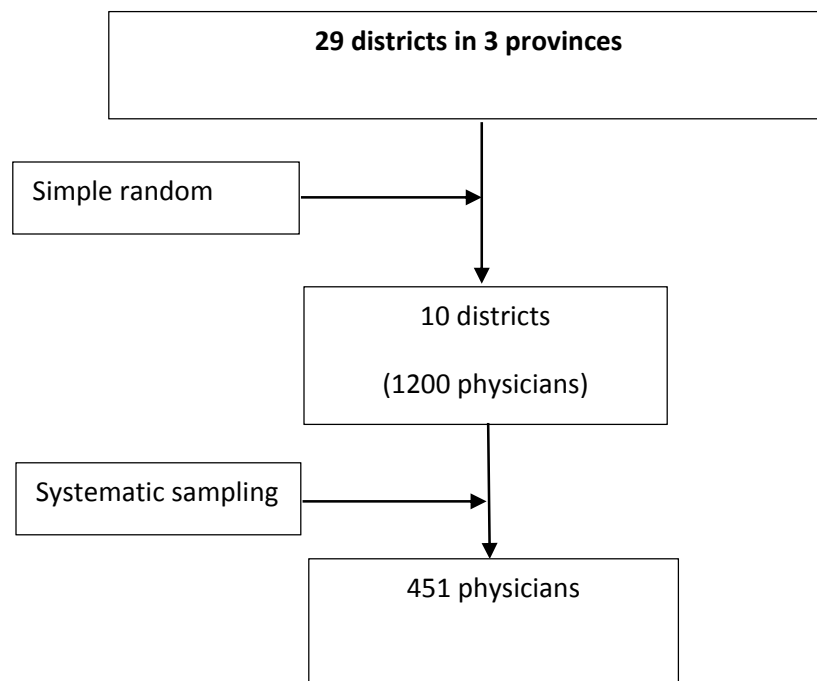
$$= 1200/451$$

$$= 3$$

Random Start (RS) = 1

The first on the lists of doctors working in the ten districts were selected to be the first participants. The second person to be selected was the fourth person on the complete list. During field work, if the selected person was not available at the time of the data collection, the next person on the list was selected to replace the person who was not available.

Figure 3.2 Sampling process for non D&V physicians



Eligibility criteria

For both doctor/assistant doctors and D&V samples, practitioners were considered ineligible if they were no longer in clinical practice.

3.5 Study tool

Based on a number of previous surveys, a draft version of a detailed questionnaire was developed to collect data on knowledge and skills of medical practitioners for STI management (195, 198, 199, 218, 219). In addition, the questionnaire incorporated questions about difficult doctor–patient relationships (220) and a provider–patient orientation scale (128).

This questionnaire included questions on:

- Demographic and practice characteristics (e.g. age, sex, place of graduation, postgraduate training, duration of practice, nature of practice, area of practice, weekly client volume, number of hours worked per week);
- Awareness of STIs (knowledge, common signs and symptoms of selected STIs, specimen and site for sample collection for investigations, notification of STIs);
- Clinical care of STIs such as diagnosis and treatment of STIs, presumptive treatment, referral for STIs, dealing with STI patients with psychological distress, and contact tracing, sexual history taking and STI counselling;
- Organisational issues in STI care (e.g. adequacy of STI care training and professional literature on STIs, need for additional training in STI care, STI material for patients and their adequacy and appropriateness, and barriers to quality STI care).

The draft questionnaire was developed in English and then translated into Vietnamese (see Appendix). The Vietnamese questionnaire was reviewed by an STI doctor in Vietnam for clarity of language, technical content and relevance within the Vietnamese context. The revised questionnaire was pilot tested before the main survey. In the pilot survey, a total of 50 doctors and assistant doctors (10% of study sample size) were surveyed using the revised questionnaire. The doctors were randomly selected from two districts in An Giang province. Data collected from the pilot study were analysed to determine whether the questionnaire could collect reliable data to address the research questions in the study. After the pilot study, a multiple choice question on the content of counselling provided to STI patients was changed to an open-ended question to allow more diversified responses and avoid the participants ticking all the boxes. All questions regarding different groups of clients were moved toward the end of the questionnaire to make it easier for the participants to complete the questionnaire.

3.6 Ethical considerations

Prior to field testing of the questionnaire and the main data collection, the survey received ethical clearance from the Human Research Ethics Committee, University of New England, Australia (HREC approval number HE10/148). During data collection, the participants received an information sheet which contained a declaration of aims, objectives and possible uses of the survey data, and a statement stressing the voluntary nature of participation and that participants' information would remain strictly confidential. The information sheet was sent along with the questionnaire.

The questionnaire collected contact information of the respondents for follow up and verification purpose. Each completed questionnaire is assigned with a unique identification

number. The completed questionnaires are accessible only to the researcher and supervisors of the project, and kept in a locked filing cabinet at the University of New England. The data file only contained identification number of the respondents without actual contact information. Access to these files is password protected and limited to the researcher and the principal supervisors.

3.7 Survey implementation and strategies to improve the response rate

During development of the research proposal, the student researcher made contacts with local health authorities in the three provinces to discuss the tentative survey instrument and schedule. The survey, as it was designed, was fully supported by the local health authorities. In each of the three provinces, a competent staff member was assigned to assist with the survey including liaising with health facilities involved in the survey, scheduling, fieldwork and follow up with participants who delayed returning their survey questionnaire.

Field data collection was conducted between 05/09/2010-15/11/2010. During this period, the student researcher made moved between the ten selected districts in the three provinces to meet with the participants at their place of work to give a brief introduction to the survey and its purpose, their right to decide whether or not they participated, how data would be used, how identifiable information would be handled, and so on. When possible, the student researcher met with more than one participant at a time to save time for both the researcher and the participants. In each of the three provinces, one staff member from the health department assisted the student researcher with corresponding with leaders of health facilities and following up with participants.

The participants could either complete the questionnaire in the presence of the student researcher or take the questionnaire with them and complete it at their convenience and return it later to the local staff member mentioned above. Proportion of participants taking the questionnaire with them and return later was not collected. During fieldwork, the local coordinators also assisted with introducing the student researcher to the management of the health facilities and the participants. Phone numbers of participants were collected as they received the questionnaire so that questionnaire submissions and missing/unclear responses could be followed up with the participants.

Participants who had not responded after 4 weeks received a reminder by phone call or text message. In addition, the student researcher and staff of the health departments made subsequent visits to health facilities to collect questionnaires or respond to any questions that the participants had about the questionnaire. To compensate for the time spent answering the questionnaire, the participants received \$5 after their completed questionnaire had been received by the student researcher. Budget for data collection was covered by a postgraduate research grant from the University of New England.

3.8 Data management

Where the participants chose to complete the questionnaire and return it to the student researcher on the spot, the completed questionnaires were immediately checked so that any problems such as unclear or incomplete answers could be resolved without delay. The questionnaires submitted later were also checked for completeness and consistency. Before marking an item as missing, efforts were made to contact the respondent to collect the missing information.

Epi Info 6 was used to develop data entry and check programme. The purpose of the check programme was to conduct logic checks such as possible age range, skip pattern in questionnaire, incomplete responses for fields where an answer was required, and so on. Data were manually entered into a computer twice and the two versions were compared for possible data entry errors. Any issues detected were resolved by referring back to the completed paper questionnaires and the participants if needed.

Data transformations (e.g. recoding, computing) were implemented on selected variables to enable further analysis. Variables transformed from continuous variables to discrete variables included age, years in medical practice, average weekly client volume, and number of STI cases diagnosed in the month prior to the survey. Data processing and analysis were conducted using SPSS version 19.0 (221).

3.9 Data analysis

The focal topics of data analysis are outlined below:

- To describe socio-demographic characteristics of respondents, including age, sex, medical degree, place of main practice, having postgraduate STI training, having postgraduate patient communication training.
- To describe practice characteristics of respondents, including number of years of medical practice, STI case load, client volume.
- To describe respondents' STI knowledge such as asymptomatic STI, STI notification requirements, STI diagnostic tests and characteristics of respondents that may influence STI knowledge.
- To describe STI management provided by the respondents including STI presumptive treatment, treatment for STI patients with psychological distress, sexual history taking, implementation of contact tracing, STI counselling.

- To describe organisational issues that may influence STI care such as STI reference for doctors, quality assurance for STI service, available facilities for STI service, STI materials for patients, need for STI training.

3.9.1 Descriptive analysis

Univariate analyses were used to describe the distribution of the respondents by their socio-demographic, practice characteristics and other characteristics that may influence STI service provision. Socio-demographic characteristics include age group, sex, medical degree, place of main practice, having trained in STI and/or patient communication. Medical practice characteristics include number of years of medical practice, patient load and STI case load.

Characteristics that may influence STI service provision include respondents' awareness of STI being asymptomatic; awareness of STI notification requirements; resources for STI reference; perceived barriers in providing quality STI management; quality assurance for STI service; available facilities for STI service; availability of STI materials for patients; need for STI training.

3.9.2 Bivariate analysis

Bivariate analyses of the relationships between independent and dependant variables were conducted using Pearson χ^2 test (222). Independent variables were socio-demographic, medical practice and other characteristics that may influence the respondents' STI knowledge and management. Dependant variables were knowledge of asymptomatic STI, knowledge of STI testing, ever prescribing STI presumptive treatment, treatment for STI patients with psychological distress, and frequency and content of sexual history taking.

3.9.3 Multivariate analysis

Logistic regression was used to examine binary or categorical outcome variables and to identify their associations. The outcome variables include knowledge of asymptomatic STI, knowledge of STI testing, ever prescribing STI presumptive treatment, treatment for STI patients with psychological distress, and frequency and contents of sexual history taking.

Assumptions for logistic regression include sample size, absence of multicollinearity and outliers (223). Regarding sample size, it is a requirement that $N \geq 104 + m$ (where m is number of independent variables) (222). In the case of this analysis, there are nine independent variables (namely, sex, age group, medical degree, postgraduate STI training, postgraduate patient communication training, duration of medical practice, average weekly client volume, STI case diagnoses in the month prior to the survey, place of work) and $N=451$, which is clearly larger than $104+10$. As the goal of multivariate analysis in this study was prediction, according to Tabachnick and Fidell, multicollinearity can be ignored (222).

Regarding outliers among dichotomous independent variables, it has been suggested that variables with 90-100 splits between categories be deleted. As for continuous independent variables, cases with a standardised z score larger than 3.29 ($p < 0.01$, two tail test) were considered potential outliers (222). As shown in Table 3.1, medical degree was the categorical variable with almost 90 splits between categories. Consequently, medical degree was not included in logistic regression.

The models were examined for goodness of fit and contribution/importance of each of the independent variables. Goodness of fit was evaluated using Hosmer-Lemeshow Goodness of Fit Test. Poor fit is indicated by a p value less than 0.05. The Wald test was used to evaluate contribution/importance of each of the predictor variables. An independent variable was

considered significantly associated with the outcome variable if the Wald test resulted in a p value less than 0.05 (223, 224). The results of logistic regression, Odds Ratio (OR) was used to compare the odds of having certain characteristics between respondents with different characteristics. For example, OR was used to compare the odds of respondents being able to name asymptomatic gonorrhoea between respondents who have had STI training and those who have not had STI training.

3.10 Characteristics of the study participants

3.10.1 General characteristics

Overall, 404 non D&V general physicians and 47 D&V doctors responded. Response rate among general physicians was 90.2% (404/451). As mentioned in 3.4.1, sample size for D&V doctors was not calculated due to the very small number of D&V doctors per province, and all available D&V doctors were included in the survey. Among the D&V doctors, response rate was 94% (47/50). Reasons for selected non-response participants included being away on training; meetings or fieldwork; lack of time, etc. However, exact data on non-responses were not collected.

Data on general characteristics of the study participants are presented in Table 3.1. About two-thirds (68.7%) of the participants were females. More than half (56.8%) of the participants were between 40 and 50 years old, about a third (29.7%) were under 40 years old and the remaining 13.5% were between 51 and 60 years old. The majority (89.6%) of the study participants were non D&V doctors and included general practitioners (n=110), assistant doctors (n=261) and obstetric/gynaecological doctors (n=33). D&V doctors accounted for 10.4% of the study sample (n=47). Almost two-thirds (65.2%) of all the participants had training

in STI after graduating from medical school. This training, hereby referred to as “postgraduate STI training”, could be degree or non-degree training. The duration of degree training could be between six months to two years. If the training was under two years, the participants were awarded with an “orientation” or “primary” D&V degree. If the training was two years, the participants were awarded with a “D&V specialist degree 1” degree which is equivalent to a master’s degree. The non-degree training could be any length from one day to two weeks. Among the participants who had postgraduate STI training, more than two-thirds (69%) had non-degree STI training of 1 to 3 days, 15% of the participants had non-degree STI training of 4 days or more, the remaining 16% of the participants had STI degree training to become D&V specialist doctors. More than half (54.8%) of the study participants had training in communication with patients, hereafter referred to as “postgraduate training in patient communication”. This could be either a short course or part of the D&V specialist training. The short course could comprise patient counselling, integrated counselling (also called comprehensive sexual reproductive health counselling) or voluntary testing counselling which specifically aims at HIV risk and testing. Of those who had training in patient communication, about half (51.7%) of them had training in one day, a third (28.8%) had training of two days and the remaining 19.5% of participants had training of three days or more (Table 3.1).

D&V doctor participants

Among D&V doctor participants, males accounted for 61.7% and females for 38.3%. More than half (55.3%) of the participants were 40 to 50 years old (n=26), one-quarter (25.5%) of the participants were between 51 and 60 years old (n=12) and the remaining 19.1% were under 40 years old (n=9). All D&V doctor participants had postgraduate STI degree training. However, less than two-thirds (59.6%) of the participants had postgraduate patient communication

training. Among the participants who had training in patient communication, more than half (52.2%) had training of one day, one-quarter (21.7%) had training of two days and the remaining 26.1% of the participants had it for three days or more.

Non D&V doctor participants

The non D&V participants included general practitioners, assistant doctors and obstetric/gynaecological doctors. Among this group, females counted for almost three-quarters (72.3%). Participants aged 40 to 50 years old accounted for 56.9%, participants under 40 years old for 30.9%, and the remaining participants were 51 to 60 years old (12.1%). Participants who had training in STI after graduating from medical school accounted for 61.1% of this group. Among those who had postgraduate STI training, most of them (82.2%) had STI training of 1 to 3 days and the remaining 17.8% participants had non-degree training of more than 4 days. More than half (54.2%) of the study participants had postgraduate training in patient communication. Among those who had postgraduate training in patient communication, half (51.6%) had training of one day, almost a third (29.7%) had training of two days and the remaining 18.7% of participants had training of three days or more.

Table 3.1 General characteristics of the study participants

Participants' general characteristics	D&V N (%)	Non D&V N (%)	Total N (%)
Sex			
Females	18 (38.3)	292 (72.3)	310 (68.7)
Males	29 (61.7)	112 (27.7)	141 (31.3)
Age group (in years)			
<40	9 (19.1)	125 (30.9)	134 (29.7)
40-50	26 (55.3)	230 (56.9)	256 (56.8)
51-60	12 (25.5)	49 (12.1)	61 (13.5)
Medical degree			
D&V doctor	0 (0.0)	404 (100.0)	47 (10.4)
Non D&V doctors	47 (100.0)	0 (0.0)	404 (89.6)
Postgraduate training in STIs			
No	0 (0.0)	157 (38.9)	157 (34.8)
Yes	47 (100.0)	247 (61.1)	294 (65.2)
Postgraduate patient communication training			
No	19 (40.4)	185 (45.8)	204 (45.2)
Yes	28 (59.6)	219 (54.2)	247 (54.8)

3.10.2 Practice characteristics

Data on practice characteristics of the study participants are presented in Table 3.2. At the time of the data collection of this study, more than one-third (34.4%) of the participants had been in medical practice for between 11 and 20 years; a higher proportion (39.2%) of them had been in medical practice for more than 20 years. The remaining participants had been in medical practice for ten years or less (26.4%). On average, almost half (46.6%) of the participants saw 15 or fewer patients a week. Participants who saw 16 to 30 patients weekly accounted for 24.8% and the remaining 28.6% of participants saw more than 30 patients a week. More than

two-thirds of the study participants had diagnosed STI patients in the month prior to the data collection. Among those who diagnosed STI cases, more than half (52.9%) diagnosed more than 5 STI cases, 22.9% of them diagnosed between 3 and 5 STI cases and 24.2% of them diagnosed 1 or 2 STI cases.

About a half (46.8%) of the participants worked at communal health stations (CHSs), which is the lowest level facility in the government health care system in Vietnam. Regarding the place of main practice of the study participants (the place where they work during office hours), about 20% worked at district and provincial health facilities (20.2% and 20.4%, respectively). The remaining 12.6% of the participants worked at D&V hospitals/centres (Table 3.2).

D&V doctor participants

At the time of the data collection for this study, 42.6% of the participants had been in medical practice for 11 to 20 years; 29.8% had been in medical practice for more than 20 years, and the remaining 27.7% had been in medical practice for ten or fewer years. About a third (27.7%) of the participants saw 15 or fewer patients a week. Participants seeing 16 to 30 patients weekly accounted for 36.2% and another 36.2% of the participants saw more than 30 patients a week. Almost all participants (93.6%) had diagnosed STI patients in the month prior to the data collection. Among those who diagnosed STI cases, most of them (81.8%) diagnosed more than 5 STI cases, 2.3% of them diagnosed 3 to 5 STI cases and 15.9% of them diagnosed 1 or 2 STI cases. The majority (83%) of the participants worked at D&V hospitals/centres. There were 6 participants (12.8%) working at district hospital/centres and 2 participants (4.3%) working at provincial hospitals/health centres (Table 3.2).

Non D&V doctor participants

Among the sampled population, about one-third (33.4%) of the participants had been in medical practice between 11 and 20 years, and 40.3% participants had been in medical practice for more than 20 years. The smallest number of participants had been in medical practice for ten years or fewer (26.2%). About half (48.8%) of the participants saw 15 patients or fewer a week. Participants who saw 16 to 30 patients weekly counted for 23.5%, and 27.7% of the participants saw more than 30 patients a week.

About two-thirds (66.8%) of the participants had diagnosed STI patients in the month prior to the data collection. Among those who had diagnosed STI, half (48.1%) of them had more than 5 STI cases, 26.3% of them had 3 to 5 STI cases and 25.6% of them had 1 or 2 STI cases. More than half (52.2%) of the participants worked at communal health stations. Approximately 20% of the participants worked at provincial and district health centres/hospitals (22.3% and 21%, respectively). A small proportion of these participants, though not being D&V doctors, worked at D&V hospitals/centres (4.5%) (Table 3.2).

Table 3.2. Practice characteristics of the study participants

Practice characteristics	D&V participants N (%)	Non-D&V participants N (%)	Total N (%)
Duration of medical practice (in years)			
≤10	13 (27.7)	106 (26.2)	119 (26.4)
11-20	20 (42.6)	135 (33.4)	155 (34.4)
>20	14 (29.8)	163 (40.3)	177 (39.2)
Average weekly client volume			
≤15	13 (27.7)	197 (48.8)	210 (46.6)
16-30	17 (36.2)	95 (23.5)	112 (24.8)
> 30	17 (36.2)	112 (27.7)	129 (28.6)
STI diagnoses in the month prior to the survey			
No	3 (6.4)	134 (33.2)	137 (30.4)
Yes	44 (93.6)	270 (66.8)	314 (69.6)
Number of STI cases diagnosed in the month prior to the survey			
1-2 cases	7 (15.9)	69 (25.6)	76 (24.2)
3-5 cases	1 (2.3)	71 (26.3)	72 (22.9)
>5 cases	36 (81.8)	130 (48.1)	166 (52.9)
Place of main practice			
D&V centre/hospital	39 (83)	18 (4.5)	57 (12.6)
Provincial hospital/RH/health centre	2 (4.3)	90 (22.3)	92 (20.4)
District hospital/health centre	6 (12.8)	85 (21.0)	91 (20.2)
Communal health station	0 (0)	211 (52.2)	211 (46.8)

3.11 Summary

The present study was designed as a cross-sectional survey of STI management in clinical practice in Vietnam. The majority of the participants were general physicians (89.6%) females (68.7%). More than half of the participants were between 40 and 50 years old (56.8%). All D&V

doctor participants (100%) had postgraduate STI training, while only 61.1% of the non D&V participants had postgraduate STI training. It should be noted that most (two-thirds, data not shown) postgraduate STI training was 1 to 3 days. Roughly over a half (54.8%) of all participants had postgraduate patient communication training. Between the D&V doctors and non-D&V doctor participants, the difference in the proportion having postgraduate patient communication training was not large (59.6% vs. 54.2%). As for the length of patient communication training, half of this training was for one day, a third of the training was for two days.

About half of all the participants reported seeing ≤ 15 patients a week (46.6%). D&V doctors had a higher client load than non D&V doctor participants, with about a third of them reporting seeing >30 patients a week, while the proportion for non D&V doctor participants was only 27.7%. Almost all D&V doctors had STI case diagnoses in the month prior to the survey compared to two-thirds of the non D&V doctor participants who reported having STI case diagnoses (93.6% vs. 66.8%). About half of all participants worked at communal health stations (CHSs) (46.8%). The next result chapters present findings on STI knowledge and practices among general physicians and D&V doctors in Vietnam.

Chapter 4

STI Knowledge

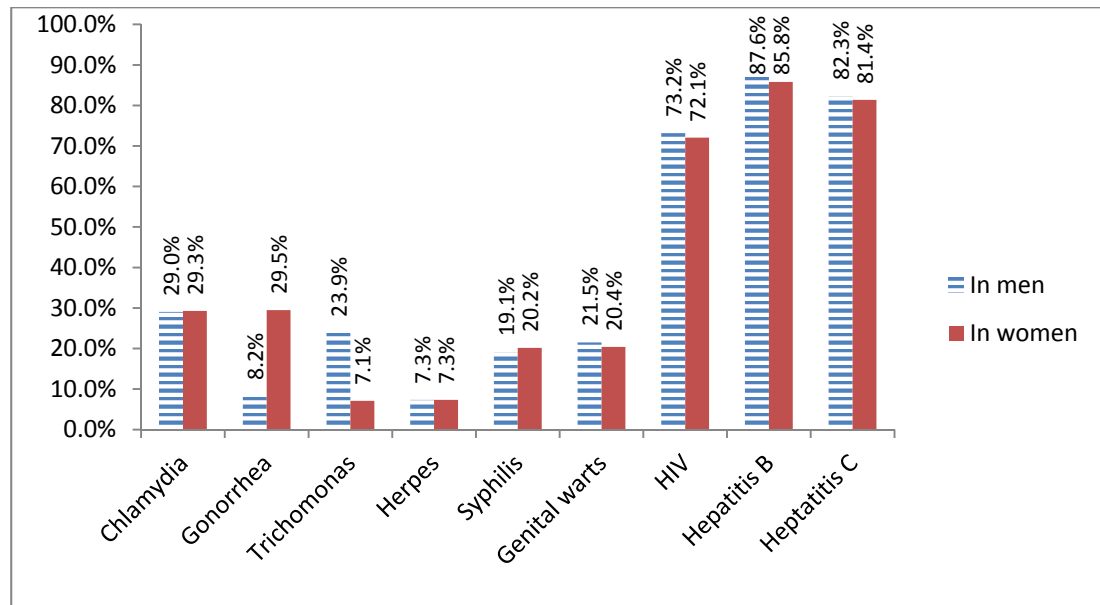
As discussed in Chapter 2, a large proportion of STI cases can be asymptomatic. It is important that health care providers are aware of the asymptomatic nature of STIs so that they can assess whether a patient could be at risk of having an STI. Knowledge of STI diagnostic tests and samples for STI testing are also important as these will influence the ability of STI tests to detect STIs. In clinical practice, the practitioners need to make decisions on which STI test to prescribe for patients, make interpretations of test results and use these, together with clinical signs and symptoms, to diagnose an STI case. However, it has been reported that there were deficiencies in STI knowledge of health care providers. As mentioned in Chapter 2, there are gaps in STI knowledge such as limited awareness of the asymptomatic nature of STIs, knowledge of appropriate STI diagnostic tests, sites for collecting specimens, and selecting appropriate tests for urethritis and vaginitis. Insufficient STI knowledge can lead to inappropriate testing, and incorrect diagnosis and treatment. This chapter presents results of the survey on the knowledge of the study participants on STIs. Associations between STI knowledge and the background and practice characteristics of the study participants were also examined.

4.1 Knowledge of the asymptomatic nature of STIs

The participants were asked to identify which STIs were commonly asymptomatic. As certain STI can be commonly asymptomatic in both sexes while some STIs are only commonly asymptomatic in one sex, the participants were asked to identify asymptomatic STIs by sex of the patients. Data on participants' knowledge of the asymptomatic nature of STIs are

presented in Figure 4.1. Almost all participants (98%) named at least one STI as potentially asymptomatic. The three STIs named by most participants were HIV, Hepatitis B and Hepatitis C. The percentage of participants naming HIV was 73.2% for males and 72.1% for females. Over 80% of the participants named Hepatitis C (82.3% and 81.4% for males and females, respectively). Almost 90% of the participants named Hepatitis B (87.6% and 85.8% for males and females, respectively). Most participants had heard about the “window period” of HIV infection and they referred to Hepatitis infection as having non-STI-specific symptoms. The percentage of participants mentioning other STIs as commonly asymptomatic was low, with 29% participants mentioning Chlamydia, 29.5% participants naming female gonorrhoea, 20.2% naming female syphilis, 19.1% naming male syphilis and about 20% naming genital warts (21.5% male genital warts and 20.4% female genital warts).

Figure 4.1. Participants’ knowledge of the potential of STIs to be asymptomatic



Associations between knowledge of asymptomatic STIs and participants' characteristics

4.1.1 Male and female Chlamydia

4.1.1.1 Male Chlamydia

Bivariate analysis showed that participants' knowledge of asymptomatic male Chlamydia was associated with medical degree; postgraduate STI training; and place of main practice (Table 4.1). In multivariate analysis, only two of the independent variables made a unique statistically significant contribution to the model. Participants who had postgraduate STI training knowing had twice the odds, participants working at district facilities had half the odds and participants working at CHSs had one-fifth the odds of their references.

4.1.1.2 Female Chlamydia

In bivariate analysis, three independent variables were significantly associated with knowledge of asymptomatic female Chlamydia (medical degree; STI diagnoses in the month prior to the survey; and place of main practice) (Table 4.1). In multivariate analysis, only STI diagnoses in the month prior to the survey; and place of main practice were significant:

- Participants who had STI diagnoses in the month prior to the survey had 1.8 the odds of participants who did not have STI diagnoses (Adj OR=1.8; 95% CI=1.1-3.0).
- Participants working at district facilities and CHSs had less than half the odds of those working at D&V facilities (Adj OR=0.4; 95% CI=0.17-0.71 and Adj OR = 0.41; 95% CI= 0.22-0.77 respectively).

Table 4.1. Factors associated with knowledge of asymptomatic male and female Chlamydia

Participants' characteristics	Male Chlamydia				Female Chlamydia			
	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree								
Non D&V doctor	310	25.5	1	NA	310	26.5	1	NA
D&V doctors	141	59.6	4.31 (2.31-8.04)		141	53.2	3.15 (1.71-5.83)	
Postgraduate training in STI								
No	157	20.4	1		157	25.5	1	NS
Yes	294	33.7	1.98 (1.26-3.13)	1.73 (1.1-2.8)	294	31.3	1.33 (0.86-2.06)	
STI diagnoses in the month prior to the survey								
No	137	27.0	1	NS	137	19.7	1	
Yes	314	29.9	1.15 (0.74-1.81)		314	33.4	2.05 (1.26-3.31)	1.84 (1.12-3.03)
Place of main practice								
D&V Centre/hosp.	55	50.9	1		55	45.5	1	
Prov. hosp./RH/health centre	92	41.3	0.68 (0.35-1.33)	NS	92	35.9	0.67 (0.34- 1.33)	
District hosp./health centre	91	30.8	0.43 (0.21-0.86)	0.45 (0.23-0.91)	91	23.1	0.33 (0.16-0.68)	0.35 (0.17-0.71)
CHSs	213	17.4	0.20 (0.11-0.38)	0.22 (0.12-0.42)	55	24.9	0.35 (0.19-0.65)	0.41 (0.22-0.77)

NS = Not significant

NA = Not applicable

Unadj = Unadjusted

Adj = Adjusted

Asympt. = asymptomatic

Hosp. = hospital

CHSs = Communal health stations

*The column reflects the percentage of participants who mentioned asymptomatic Chlamydia

**p (Hosmer and Lemeshow Test) > 0.05

4.1.2 Female gonorrhoea

At bivariate level, knowledge of asymptomatic female gonorrhoea was associated with medical degree; postgraduate STI training; duration of medical practice; having STI diagnoses in the month prior to the survey; and place of main practice (Table 4.2). In multivariate analysis, only three of the independent variables were found to be significant:

- Participants who had postgraduate STI training had 1.65 times the odds of participants who did not have STI training (Adj OR=1.65; 95% CI= 1.03-2.65).
- Participants who had STI diagnoses in the month prior to the survey had almost twice the odds of participants who did not have an STI diagnosis (Adj OR=1.89; 95% CI=1.14-3.15).
- Participants working at district facilities and CHSs had much lower odds than those working at D&V facilities (Adj OR=0.27; 95% CI=0.13-0.56 and Adj OR = 0.28; 95% CI=0.15-0.53 for district and CHSs, respectively).

Table 4.2. Factors associated with knowledge of asymptomatic female gonorrhoea

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	404	24.5	1	NA
D&V doctors	47	72.3	8.06 (4.09- 5.88)	
Postgraduate training in STI				
No	157	21.7	1	NS
Yes	294	33.7	1.84 (1.17-2.88)	1.65 (1.03-2.65)
Duration of medical practice (in years)				
=<10	119	32.8	1	NS
11-20	155	37.4	1.23 (0.74-2.03)	
>20	177	20.3	0.52 (0.31-0.89)	
STI diagnoses in the month prior to the survey				
No	32	19.0	1	NS
Yes	137	34.1	2.21 (1.36-3.59)	1.89 (1.14-3.15)
Place of main practice				
D&V Centre/hosp.	314	54.5	1	NS
Prov. hosp./RH/health centre	55	37.0	0.46 (0.23-0.90)	
District hosp./health centre	92	24.2	0.25 (0.12-0.51)	0.27 (0.13-0.56)
CHSs	91	22.1	0.21 (0.11-0.39)	0.28 (0.15-0.53)

* The column reflects the percentage of participants who mentioned asymptomatic female gonorrhoea

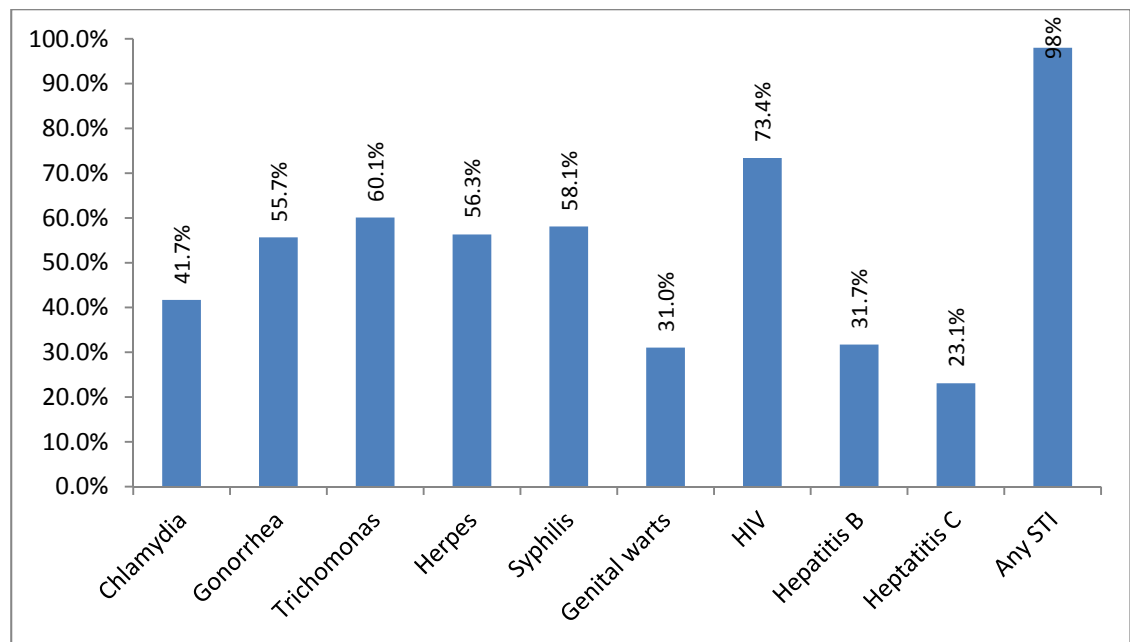
**p (Hosmer and Lemeshow Test) > 0.05

4.2 Knowledge of notifiable STIs in Vietnam

Participants were asked to identify which STIs were notifiable in Vietnam. Data on participants' knowledge of STI notification requirements are presented in Figure 4.2. Almost all participants (98%) mentioned at least one STI as notifiable in Vietnam with HIV being mentioned by most participants (73.4%). More than half of the participants named Trichomonas, syphilis, Herpes, and gonorrhoea (60.1%; 58.1%; 56.3% and 55.7%, respectively). The remaining STIs were

mentioned by far fewer participants (41.7% mentioned Chlamydia, 31.7% and 23.1% mentioned Hepatitis B and C, respectively; 31% mentioned genital warts).

Figure 4.2. Participant's knowledge of STI notification requirements



Associations between knowledge of notifiable STIs and participants' general characteristics

Correlates of participants' knowledge of notifiable STIs in Vietnam by their general characteristics including sex, age group, medical degree and whether they had postgraduate STI training are now presented. More female than male participants (33.2% vs. 26.2%) knew that genital warts was a notifiable STI. However, males had a better awareness than females of whether the STIs were notifiable for Chlamydia (44.7% vs. 40.3%), gonorrhoea (57.4% vs. 54.8%), Trichomonas (63.1% vs. 58.7%), Herpes (66% vs. 51.9%), syphilis (58.2% vs. 58.1%), HIV (76.6% vs. 71.9%), Hepatitis B (40.4% vs. 27.7%), Hepatitis C (29.8% vs. 20%). The differences

in knowledge between male and female participants were statistically significant with $p < 0.05$ for Herpes, Hepatitis B and Hepatitis C.

The under-40-year-old participants comprised the group with the highest proportion of participants identifying Chlamydia (46.3%) and genital warts (33.6%) as notifiable. They were the group with the second highest proportion of participants identifying Herpes, HIV and Hepatitis B (57.5%; 74.6% and 31.3%, respectively) as notifiable. The group of 40 to 50-year-old participants had the highest number of people who were aware that HIV, Hepatitis B and Hepatitis C are notifiable (75%; 32.4% and 25% respectively). This group had the second highest proportion of participants identifying gonorrhoea, Trichomonas, syphilis and genital warts as notifiable (56.6%; 62.1%; 62.5% and 31.3%, respectively). The 51 to 60-year-old participants had the highest proportion of participants identifying gonorrhoea, Trichomonas, Herpes and syphilis as notifiable (65.6%; 62.3%; 62.3% and 65.6%, respectively).

D&V doctor participants had better knowledge of notifiable STIs than non D&V doctors regarding Chlamydia (63.8% vs. 39.1%), gonorrhoea (70.2% vs. 54%), Trichomonas (74.5% vs. 58.4%), Herpes (80.9% vs. 53.5%), syphilis (72.3% vs. 56.4%), genital warts (42.6% vs. 29.7%) and HIV (93.6% vs. 71%). Non D&V doctors were more aware that Hepatitis B and Hepatitis C were notifiable than D&V doctors. The differences were statistically significant with $p < 0.05$ for Chlamydia, gonorrhoea, Trichomonas, Herpes, syphilis and HIV.

Participants who had postgraduate training in STIs had better knowledge regarding which STIs were notifiable than those who did not have training. This was the case for most STIs, including gonorrhoea (57.5% vs. 52.2%), Trichomonas (65.6% vs. 49.7%), Herpes (60.2% vs. 49%), syphilis (60.5% vs. 53.5%), genital warts (31.6% vs. 29.9%) and Hepatitis C (24.1% vs. 21%). Participants who had postgraduate training in STIs had better awareness that HIV (33.1% vs. 31%) and

Chlamydia (42.7% vs. 41.2%) were notifiable diseases. The differences were statistically significant for Trichomonas and Herpes at $p < 0.05$.

Table 4.3. Knowledge of notifiable STIs by general characteristics

Participants' characteristics	CT	GC	TRICH	Herpes	SYP	GW	HIV	HB	HC
Gender									
Females	40.3	54.8	58.7	51.9	58.1	33.2	71.9	27.7	20.0
Males	44.7	57.4	63.1	66.0*	58.2	26.2	76.6	40.4*	29.8*
Age (years)									
<40	46.3	49.3	55.2	57.5	46.3*	33.6	74.6	31.3	20.1
40-50	39.5	56.6	62.1	54.3	62.5	31.3	75.0	32.4	25.0
51-60	41.0	65.6	62.3	62.3	65.6	24.6	63.9	29.5	21.3
Medical degree									
D&V doctor	63.8*	70.2*	74.5*	80.9*	72.3*	42.6	93.6*	23.4	17.0
Non D&V doctors	39.1	54.0	58.4	53.5	56.4	29.7	71.0	32.7	23.8
Postgraduate training in STI									
No	42.7	52.2	49.7*	49.0*	53.5	29.9	75.2	33.1	21.0
Yes	41.2	57.5	65.6	60.2	60.5	31.6	72.4	31.0	24.1

* $p < 0.05$ Pearson Chi-square

C = gonorrhoea; CT = Chlamydia; SYP = syphilis; TRICH = Trichomonas;
 GW = genital wart; HB = Hepatitis B; HC = Hepatitis C

Associations between knowledge of notifiable STI and participants' practice

background

Associations between participants' knowledge and their practice characteristics, including duration of medical practice; average weekly client volume; having STI diagnoses in the month prior to the survey; and place of main practice, are presented below.

The participants who had been practising medicine ≤ 10 years comprised the group with the highest proportion of participants who identified Chlamydia, genital warts and HIV, as

notifiable diseases. They were the group with the second highest proportion of participants identifying gonorrhoea as notifiable. Participants who had been practising medicine for between 11 and 20 years comprised the group with the highest proportion of participants who identified Trichomonas and Herpes as being notifiable, and they were second in identifying Chlamydia, syphilis, genital warts and HIV as being notifiable.

Participants seeing 16 to 30 patients weekly had the highest knowledge of gonorrhoea, Herpes, HIV and Hepatitis C being as notifiable. Patients seeing ≤ 15 patients weekly had the highest knowledge of Chlamydia, syphilis and genital warts being notifiable. Participants who STI diagnoses in the month prior to the survey had high knowledge of nearly all STIs that were notifiable, except for genital warts and HIV, about which participants who did not have STI diagnoses in the month prior to the survey had a better knowledge.

As with their knowledge of asymptomatic STIs, participants working at higher level facilities tended to have better knowledge of which STIs were notifiable. Participants working at D&V hospitals/centres had the greatest awareness that Chlamydia, gonorrhoea, Trichomonas, Herpes, syphilis and HIV being notifiable. Participants working at provincial facilities had the greatest awareness that genital warts was notifiable; second greatest for Trichomonas and syphilis; and third greatest awareness for gonorrhoea, Herpes, Hepatitis B and Hepatitis C.

Table 4.4. Knowledge of notifiable STIs by practice background

Participants' characteristics	CT	GC	TRICH	Herpes	SYP	GW	HIV	HB	HC
Duration of medical practice (in years)									
≤10	48.7	53.8	56.3	55.5	51.3*	34.5	76.5	31.1	20.2
11-20	39.4	53.5	62.6	58.7	52.9	30.3	73.5	31.0	21.9
>20	39.0	58.8	60.5	54.8	67.2	29.4	71.2	32.8	26.0
Average weekly client volume									
≤15	48.6	54.8	57.6	56.7	61.4	35.2	73.3	32.4	19.5
16-30	35.7	57.1	61.6	58.0	55.4	27.7	80.4	29.5	27.7
> 30	35.7	55.8	62.8	54.3	55.0	27.1	67.4	32.6	24.8
Diagnosis STI in the month prior to the survey									
No	40.9	54.7	55.5	54.7	54.0	35.0	74.5	25.5	21.2
Yes	42.0	56.1	62.1	57.0	59.9	29.3	72.9	34.4	23.9
Place of main practice									
D&V Centre/hosp.	60.0*	63.6*	72.7	72.7*	69.1*	32.7	80.0	18.2	14.5
Prov. hosp./RH/health centre	37.0	54.3	60.9	57.6	65.2	34.8	68.5	31.5	19.6
District hosp./health centre	41.8	56.0	54.9	62.6	59.3	31.9	71.4	37.4	26.4
CHSs	39.0	54.0	58.7	48.8	51.6	28.6	74.6	32.9	25.4

*p<0.05 Pearson Chi-square

4.3 Knowledge of STI diagnostic testing

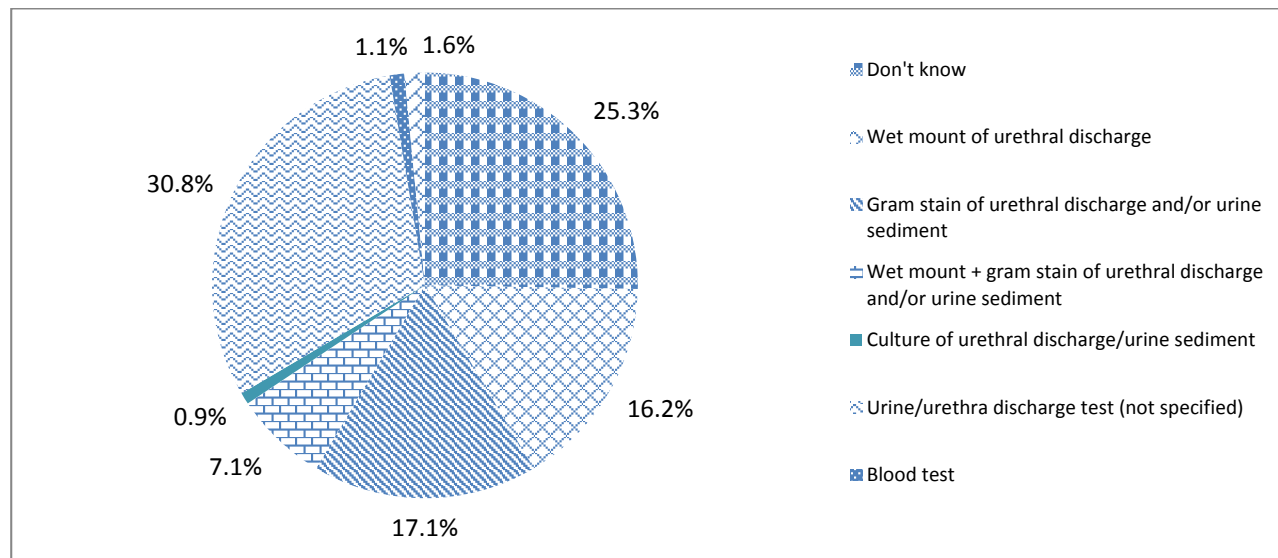
The participants were assessed in knowledge of testing for urethritis, vaginitis and location/sample for Chlamydia testing. The participants were asked to list the tests they would recommend to patients with the three conditions mentioned above. The open-ended responses were then recoded into categorical data for processing and analysis.

4.3.1 Knowledge of tests for urethritis, vaginitis and site for Chlamydia sample

4.3.1.1 Urethritis

More than half of the participants could not specify the appropriate test for urethritis (30.8% did not know and 25.3% mentioned a urine test but did not specify). The appropriate tests for urethritis mentioned by the participants were a Gram stain of urethral discharge and/or urine (17.1%) and a wet mount of urethral discharge (16.2%). A small number of the participants (7.1%) mentioned both a Gram stain and wet mount. Some participants also mentioned a blood test (1.1%) and a culture of urethral discharge/urine (0.9%).

Figure 4.3. Participants' recommended test for patients suspected of urethritis



Associations between knowledge of urethritis testing and participants' characteristics

Gram stain

At bivariate level, a Gram stain for urethritis were associated with age; medical degree; having STI postgraduate training; having STI diagnoses in the month prior to the survey; client volume; and place of main practice. In multivariate analysis showed, only age and place of main practice

made a unique statistically significant contribution to the model. Participants aged 51 to 60 had 4.18 times the odds of those aged ≤ 40 years old (Adj OR=4.18; 95% CI=2.05-8.52). Participants not working at D&V facilities had lower odds than those working at D&V facilities (Adj OR=0.46; 95% CI=0.22-0.96, Adj OR=0.39; 95% CI=0.19-0.81 and Adj OR=0.16; 95% CI=0.08-0.33 for province, district and CHSs, respectively).

Table 4.5. Factors associated with recommending a Gram stain for urethritis testing

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	134	19.4	1	
40-50	256	19.5	1.01 (0.59-1.71)	NS
51-60	61	52.5	4.58 (2.37-8.87)	4.18 (2.05-8.52)
Medical degree				
Non D&V doctor	404	21.8	1	NA
D&V doctors	47	42.6	2.66 (1.42-4.97)	
Postgraduate training in STI				
No	157	17.2	1	NS
Yes	294	27.6	1.83 (1.12-2.98)	
Average weekly client volume				
= < 15	210	19.5	1	NS
16-30	112	24.1	1.31 (0.75-2.27)	
> 30	129	31.0	1.85 (1.12-3.07)	
STI diagnoses in the month prior to the survey				
No	137	16.8	1	NS
Yes	314	27.1	1.84 (1.10-3.07)	
Place of main practice				
D&V Centre/hosp.	55	52.7	1	
Prov. hosp./RH/health centre	92	30.4	0.39 (0.20-0.78)	0.46 (0.22-0.96)
District hosp./health centre	91	28.6	0.36 (0.18-0.72)	0.39 (0.19-0.81)
CHSs	213	11.7	0.12 (0.06-0.23)	0.16 (0.08-0.33)

* The column reflects the percentage of participants who mentioned a Gram stain for urethritis testing

**p (Hosmer and Lemeshow Test) > 0.05

Wet mount

At the bivariate level, recommending a wet mount for urethritis testing were associated with age; medical degree; postgraduate STI training; and place of main practice (Table 4.6). At multivariate level, participants aged 40 to 50 had twice the odds of participants aged ≤40 years old to recommend a wet mount for urethritis testing (Adj OR=2.03; 95% CI=1.16-3.55).

Table 4.6. Factors associated with recommending a wet mount for urethritis testing

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	134	14.9	1	
40-50	256	27.0	2.10 (1.21-3.64)	2.03 (1.16-3.55)
51-60	61	26.2	2.03 (0.96-4.26)	
Medical degree				
Non D&V doctor	404	21.8	1	NA
D&V doctors	47	36.2	2.03 (1.07-3.86)	
Postgraduate training in STI				
No	157	17.8	1	NS
Yes	294	26.2	1.63 (1.01-2.65)	
Place of main practice				
D&V Centre/hosp.	55	32.7	1	
Prov. hosp./RH/health centre	92	17.4	0.43 (0.20-0.94)	0.26 (0.10-0.69)
District hosp./health centre	91	25.3	0.70 (0.33-1.45)	
CHSs	213	22.5	0.60 (0.31-1.14)	

* The column reflects the percentage of participants who mentioned a wet mount for urethritis testing

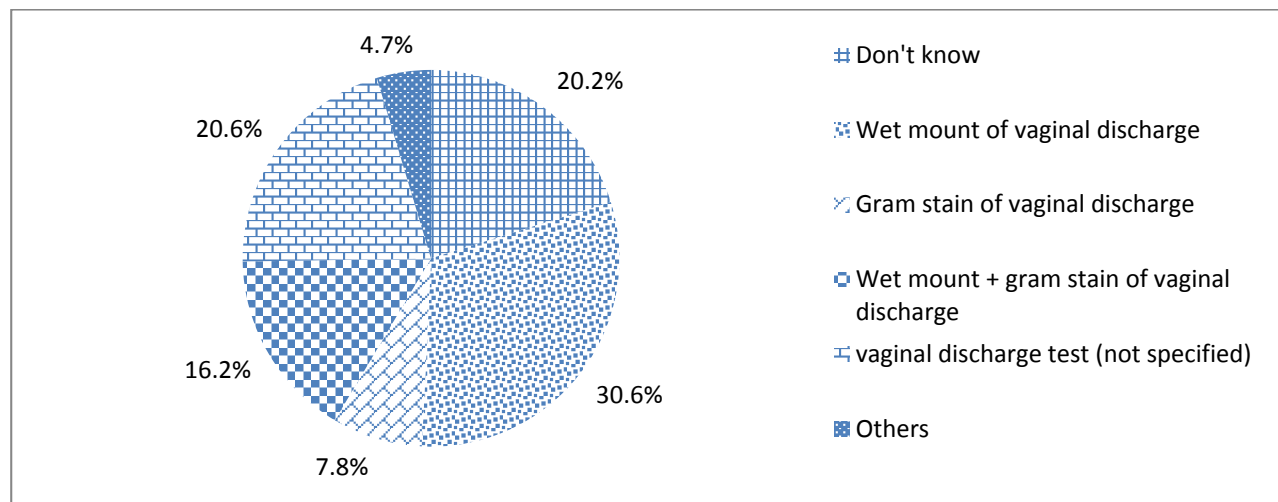
**p (Hosmer and Lemeshow Test) > 0.05

4.3.1.2 Vaginitis

Nearly one-third of the participants mentioned a wet mount of vaginal discharge (30.6%) as their recommended test for vaginitis. Less than a half of the participants could not name the appropriate test for vaginitis (20.2% did not know and 20.6% mentioned testing vaginal

discharge, but could not specify). A small number of participants mentioned a wet mount of vaginal discharge (7.8%). Some participants mentioned both a wet mount and a Gram stain (16.2%) as their recommended test for patients with suspected vaginitis.

Figure 4.4. Participants' recommended test for patients suspected of vaginitis



Associations between knowledge of vaginitis testing and participants' characteristics

Gram stain

Bivariate analysis showed that participants' recommending a Gram stain for vaginitis testing were associated with gender; age; postgraduate STI training; and place of main practice (Table 4.7). In multivariate analysis, only gender and place of main practice were significant:

- Male participants had about one-third the odds of females (Adj OR=0.3; 95% CI=0.16-0.56).
- Participants not working at D&V facilities had lower odds than those working at D&V facilities (Adj OR=0.37; 95% CI=0.14-0.98 and Adj OR=0.18; 95% CI=0.07-0.45 for province and CHSs, respectively).

Table 4.7. Factors associated with recommending a Gram stain for vaginitis testing

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	141	29.0	1	
Males	319	12.8	0.36 (0.21-0.62)	0.30 (0.16-0.56)
Age (years)				
<40	134	20.1	1	NS
40-50	256	23.0	1.19 (0.71-1.98)	
51-60	61	36.1	2.24 (1.14-4.38)	
Postgraduate training in STI				
No	157	17.2	1	NS
Yes	294	27.6	1.83 (1.12-2.98)	
Place of main practice				
D&V Centre/hosp.	55	40.0	1	
Prov. hosp./RH/health centre	92	28.3	0.59 (0.29-1.20)	0.37 (0.14-0.98)
District hosp./health centre	91	30.8	0.67 (0.33-1.34)	NS
CHSs	213	15.0	0.27 (0.14-0.51)	0.18 (0.07-0.45)

* The column reflects the percentage of participants who mentioned a Gram stain for vaginitis testing

**p (Hosmer and Lemeshow Test) > 0.05

Wet mount

Recommending wet mount for vaginitis testing was more common among physicians who were males, having post-graduate STI training and not working at D&V facilities (Table 4.8).

Results of multivariate analysis shows that:

- Male participants had 0.63 times the odds of females (Adj OR=0.63; 95% CI=0.41-0.97).
- Participants who had postgraduate STI training had 1.7 times the odds of those who did not have training (Adj OR=1.7; 95% CI=1.13-2.55).

- Participants working at provincial facilities had almost triple the odds of those working in D&V facilities (Adj OR=2.95; 95% CI=1.45-6.04).

Table 4.8. Factors associated with recommending a wet mount for vaginitis testing

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	141	51.3	1	
Males	310	36.9	0.55 (0.37-0.83)	0.63 (0.41-0.97)
Postgraduate training in STI				
No	157	38.9	1	
Yes	294	51.0	1.64 (1.11-2.43)	1.70 (1.13-2.55)
Place of main practice				
D&V Centre/hosp.	55	34.5	1	
Prov. hosp./RH/health centre	92	59.8	2.82 (1.41-5.64)	2.95 (1.45-6.04)
District hosp./health centre	91	49.5	1.85 (0.93-3.70)	NS
CHSs	213	43.2	1.44 (0.78-2.67)	NS

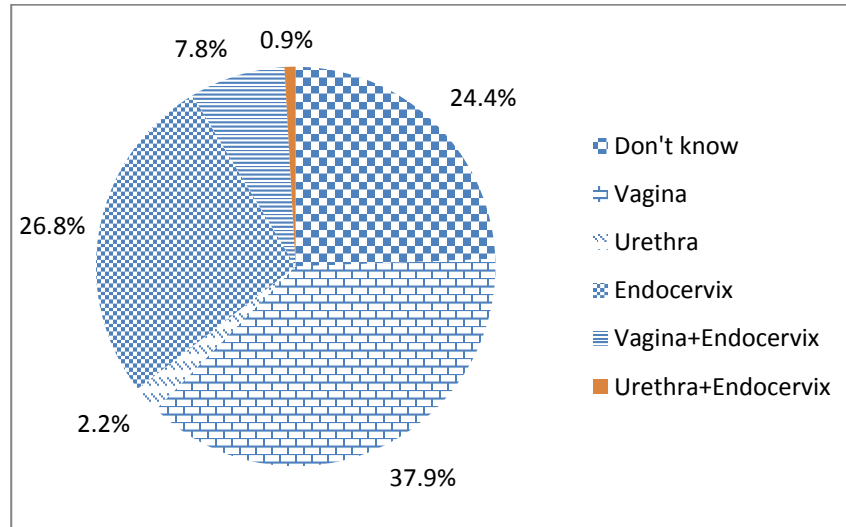
* The column reflects the percentage of participants who mentioned a wet mount for vaginitis testing

**p (Hosmer and Lemeshow Test) > 0.05

4.3.1.3 Site for taking sample for Chlamydia test

The participants were asked to list sites (on the body of the patient) for taking a sample for a Chlamydia test. The most commonly mentioned site was the vagina (37.9%), followed by the endocervix (26.8%). About a quarter of the participants (24.4%) did not know the site. Some participants mentioned both the vagina and endocervix (7.8%) and a small minority of participants mentioned both the urethra and endocervix (0.9%).

Figure 4.5. Site for taking sample for Chlamydia test



Associations between knowledge of Chlamydia testing and participants' characteristics

Endocervix as site for taking sample for Chlamydia testing

Bivariate analysis showed that the naming of endocervix as the site for taking a sample for Chlamydia testing were associated with gender; age; postgraduate STI training; and client volume (Table 4.9). Results of multivariate analysis showed that only two of the independent variables were significant:

- Male participants had about one-third the odds of females (Adj OR=0.34; 95% CI=0.21-0.55).
- Participants seeing more than 30 patients a week had 2.14 times the odds of those seeing ≤15 patients a week (Adj OR=2.14; 95% CI=1.15-3.96).

Table 4.9. Factors associated with citing endocervix as the site for taking Chlamydia test sample

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	310	42.6	1	
Males	141	19.9	0.33 (0.21-0.54)	0.34 (0.21-0.55)
Age (years)				
<40	134	43.3	1	
40-50	256	32.8	0.64 (0.42-0.98)	
51-60	61	29.5	0.55 (0.29-1.05)	
Postgraduate training in STI				
No	157	28.0	1	
Yes	294	39.5	1.67 (1.10-2.55)	
Average weekly client volume				
= < 15	210	31.9	1	
16-30	112	33.0	1.05 (0.65-1.72)	
> 30	129	43.4	1.64 (1.04-2.58)	2.14 (1.15-3.96)

*The column reflects the percentage of participants who named the endocervix as the site for taking a sample for Chlamydia testing

**p (Hosmer and Lemeshow Test) > 0.05

4.4 Summary

Generally, the study participants had a high awareness of asymptomatic STIs, with most participants able to name at least one potentially asymptomatic STI. However, there was a large difference between awareness of asymptomatic HIV, Hepatitis B and Hepatitis C, which about two-thirds of the participants could name as potentially asymptomatic, and awareness of the other potentially asymptomatic STIs. The proportion of participants who could name asymptomatic STIs other than Hepatitis and HIV was very low. For most of the STIs included in the study, knowledge of asymptomatic STIs was associated with being male; being a D&V doctor; having postgraduate STI training; having been in medical practice for more than 20

years; and having STI case diagnoses in the month prior to the survey. Not working at D&V hospitals/centres was negatively associated with knowledge of asymptomatic STIs.

Participants had a good knowledge of STI notification requirements. However, some STIs were better known to be notifiable than others. HIV was mentioned as being notifiable by the highest proportion of participants. Under one-third of the participants mentioned Hepatitis B, Hepatitis C and genital warts as being notifiable. Characteristics of participants associated with knowledge of notifiable STI were being male; being under 40 years old; being a D&V doctor; having postgraduate STI training; and working at a D&V facility.

The participants did not have a good knowledge of appropriate STI diagnostic testing. One-quarter of all the participants did not know the test to recommend for suspected urethritis (25.3%) and almost one-third of all participants could name the urine/urethra discharge test as the appropriate test, but could not specify what the test involved (30.8%). As for suspected vaginitis, one-fifth of all participants did not know the appropriate test and another one-fifth could name the vaginal discharge test, but did not know what the test involved (20.2% and 20.6%, respectively). Knowledge on appropriate diagnostic tests for urethritis and vaginitis were associated with being female; older than 40 years old; being a D&V doctor; having postgraduate STI training; and having a higher client load. Not working at D&V hospitals/centres was negatively associated with knowledge of appropriate STI diagnostic testing. Knowledge of the appropriate site for taking a sample for Chlamydia testing was not high, with only 26.8% of participants able to name the endocervix as the appropriate site, and one-quarter (24.4%) of all participants unable to name the site for taking a sample for Chlamydia testing. Factors associated with knowledge of the appropriate site for taking a sample for Chlamydia testing were being male, and seeing more than 30 patients a week.

Chapter 5

Clinical Practices for STI Management

Health care providers need to have sufficient STI knowledge and they need to apply the knowledge in their medical practice. As discussed in a previous chapter, as a large proportion of STIs can be asymptomatic, risk assessment during sexual history taking is critical to identifying patients at risk of STI infection. Contact tracing needs to be organised for patients diagnosed with STIs to provide prompt STI examinations and treatment for their partners. Diagnosis of STIs can be dramatic and cause psychological distress for patients, and health care providers need to be aware of and able to handle patients' psychological distress.

The literature highlights that there are gaps in STI service provision of sexual risk assessment, prevention counselling, patient education, and partner notification. There is evidence of providers not conducting or only partially conducting sexual history taking, or screening fewer eligible clients than recommended by clinical practice guidelines (151, 225). The application of STI presumptive treatment, though recommended for developing countries, can lead to missed STI case diagnosis and/or limited treatment results (109, 226). This chapter presents results on clinical management of STIs. Topics covered include history taking, presumptive treatment, management of patients with psychological distress, and contact tracing. Associations between clinical management practices and participants' characteristics are also presented.

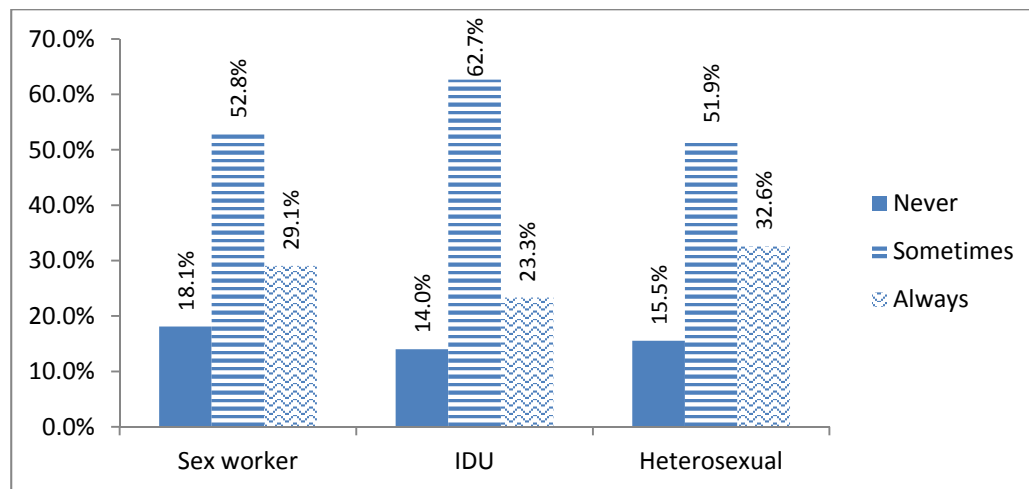
5.1 Sexual history taking

Data on sexual history taking for different groups of patients, namely, sex workers, IDUs, MSM, lesbian and heterosexual clients were collected. Due to the limited number of physicians who

have ever had MSM and lesbian clients, analysis was only conducted on sex workers, IDUs and heterosexual clients. There were only 37 participants who reported that they had ever had MSM clients and 16 participants reported ever having lesbian clients.

The study participants were asked how often they took the sexual histories of clients from the aforementioned groups, who did not come with an STI as their primary complaint. The possible answers were “never”, “sometimes” and “always”. For all the three groups of clients, “sometimes” was the most common response (52.8% for sex worker, 62.7% for IDUs and 51.9% for heterosexual clients). About one-third of the participants answered “always” (29.1% for sex worker, 23.3% for IDUs and 32.6% for heterosexual clients). Under 20% of the participants answered that they “never” took a sexual history (18.1% for sex worker, 14% for IDUs and 15.5% for heterosexual clients) (Figure 5.1).

Figure 5.1. Taking sexual history from clients not coming with STIs as primary complaints



Associations between participants always taking a sexual history of patients not coming with STIs as primary complaints

Factors associated with always taking a sexual history from SW clients

Always taking a sexual history from SW clients was associated with age; medical degree; postgraduate STI training; STIs diagnoses in the month prior to the survey; place of main practice (Table 5.1). At multivariate level analysis, only age, STI training, STI diagnoses and place of main practice were significant:

- Participants aged 40 to 50 years old had 2.18 the odds of participants aged <40 years old (Adj OR=2.18, 95% CI=1.08-4.38).
- Participants had STI training had 2.5 the odds of those who did not have training (Adj OR=2.50, 95% CI=1.22-5.11).
- Participants who had STI diagnoses in the month prior to the survey had 2.31 times the odds of participants who did not have STI diagnoses (Adj OR=2.31, 95% CI=1.10-4.87).
- Participants working at district facilities and CHSs had much lower odds than participants working at D&V hospitals (Adj OR=0.22, 95% CI=0.10-0.51, OR=0.11, 95% CI=0.05-0.25 for district and CHSs respectively).

Table 5.1. Factors associated with always taking a sexual history from sex worker clients

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	71	26.8	1	
40-50	152	41.4	1.94 (1.05-3.59)	2.18 (1.08-4.38)
51-60	42	40.5	1.86 (0.83-4.18)	
Medical degree				
Non D&V doctor	221	28.5	1	NA
D&V doctors	44	81.8	11.29 (4.97-25.6)	
Postgraduate training in STI				
No	65	23.1	1	
Yes	200	42.0	2.41 (1.27-4.59)	2.50 (1.22-5.11)
STI diagnoses in the month prior to the survey				
No	67	19.4	1	
Yes	198	43.4	3.19 (1.64-6.22)	2.31 (1.10-4.87)
Place of main practice				
D&V Centre/hosp.	55	67.3	1	
Prov. hosp./RH/health centre	50	52.0	NS	
District hosp./health centre	57	31.6	0.22 (0.10-0.50)	0.22 (0.10-0.51)
CHSs	103	17.5	0.10 (0.05-0.22)	0.11 (0.05-0.25)

* The column reflects the percentage of participants who reported always taking a sexual history from sex workers

**p (Hosmer and Lemeshow Test) > 0.05

Factors associated with always taking a sexual history from IDU clients

Bivariate analysis showed that participants always taking a sexual history from IDUs clients was associated with postgraduate STI training; duration of medical practice; diagnoses of STI in the month prior to the survey; and place of main practice (Table 5.2). Results of multivariate analysis showed that:

- Participants who had STI training had 6.54 the odds of those who did not have STI training (Adj OR=6.54, 95% CI=2.06-20.8).

- Participants who had been in medical practice for more than 10 years had lower odds than those who had been in practice for 10 years or less (Adj OR=0.26, 95% CI=0.08-0.83 and Adj OR= 0.14, 95% CI=0.04-0.45 for participants who had been in medical practice 11-20 years and more than 20 years, respectively).
- Participants who had STI diagnoses in the month prior to the survey had 12.19 times the odds of those who did not have STI diagnoses (Adj OR=12.19, 95% CI=3.41-43.59).
- Participants working at CHSs had 0.13 times the odds of participants working at D&V facilities (OR=0.13, 95% CI=0.04-0.42).

Table 5.2. Factors associated with always taking a sexual history from IDU clients

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate training in STI				
No	41	24.4	1	
Yes	109	42.2	2.26 (1.01-5.08)	6.54 (2.06-20.8)
Duration of medical practice (in years)				
≤10	41	56.1	1	
11-20	49	36.7	0.45 (0.19-1.06)	0.26 (0.08-0.83)
>20	60	25.0	0.26 (0.11-0.61)	0.14 (0.04-0.45)
STI diagnoses in the month prior to the survey				
No	44	9.1	1	
Yes	106	49.1	9.63 (3.22-28.82)	12.19 (3.41-43.59)
Place of main practice				
D&V Centre/hosp.	43	62.8	1	
Prov. hosp./RH/health centre	19	36.8	0.52 (0.21-1.32)	
District hosp./health centre	32	46.9	0.08 (0.03-0.23)	
CHSs	56	12.5	0.08 (0.03-0.23)	0.13 (0.04-0.42)

* The column reflects the percentage of participants who reported always taking a sexual history from IDUs

**p (Hosmer and Lemeshow Test) > 0.05

Factors associated with always taking a sexual history from heterosexual clients

Results of bivariate analysis showed that always taking a sexual history from heterosexual clients was associated with postgraduate STI training; postgraduate patient communication training; average weekly client volume; diagnoses of STI in the month prior to the survey; and place of main practice (Table 5.3). In multivariate analysis, only three of the independent variables were significant:

- Participants who had patient communication training had 1.72 times the odds of those who did not have training (Adj OR=1.72, 95% CI=1.09-2.73).
- Participants who had STI diagnoses in the month prior to the survey had 2.2 times the odds of those who did not have diagnoses (Adj OR=2.20, 95% CI=1.33-3.64).
- Participants working at district facilities and CHSs had much lower odds than those working at D&V facilities (Adj OR=0.46, 95% CI=0.22-0.93, Adj OR=0.51, 95% CI=0.27-0.97 for district and CHSs, respectively).

Table 5.3. Factors associated with always taking a sexual history from heterosexual clients

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate training in STI				
No	157	25.5	1	NS
Yes	294	36.4	1.67 (1.09-2.57)	
Postgraduate patient communication training				
No	204	23.5	1	
Yes	247	40.1	3.19 (1.64-6.22)	1.72 (1.09-2.73)
Average weekly client volume				
= < 15	210	25.2	1	NS
16-30	112	38.4	1.85 (1.13-3.02)	
> 30	129	39.5	1.94 (1.21-3.10)	
STI diagnoses in the month prior to the survey				
No	137	19.7	1	
Yes	314	38.2	2.52 (1.56-4.07)	2.20 (1.33-3.64)
Place of main practice				
D&V Centre/hosp.	57	47.4	1	
Prov. hosp./RH/health centre	92	43.5	0.85 (0.44-1.66)	
District hosp./health centre	91	28.6	0.44 (0.22-0.89)	0.46 (0.22-0.93)
CHSs	211	25.6	0.38 (0.21-0.70)	0.51 (0.27-0.97)

* The column reflects the percentage of participants who reported always taking a sexual history from heterosexual clients

**p (Hosmer and Lemeshow Test) > 0.05

Reasons for participants not always taking a sexual history

The study participants were asked to provide reasons for not always taking a sexual history on clients who did have an STI as their primary complaint (Please note that a physician can choose as many reasons as apply to them; total percentage can exceed 100%).

Among reasons for not always taking a sexual history for SW clients:

- The most common reason was “patient feels uncomfortable” (60.1%), followed by “doctor feels uncomfortable” (48.2%), “lack of time” (44.7%).

- “Doctor not well trained”, “presence of another person” and “not regular practice” was reported by one-third of the participants (31.9%, 33.5%, 30.3%, respectively).

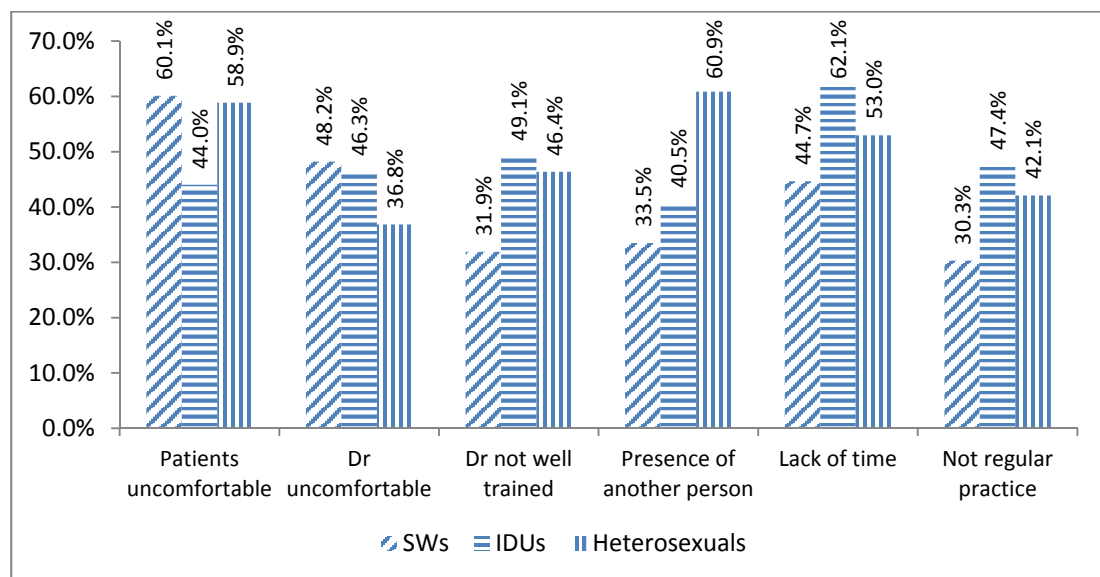
Among reasons for not always taking a sexual history for IDU clients:

- The most common reason was “doctor lack of time” (62.1%).
- Other common reasons were “doctor not well trained” (49.1%), “not regular practice” (47.4%), “doctor feels uncomfortable” (46.3%).
- “Patients feel uncomfortable” was reported by (44%) and “presence of another person” was reported by 40.5% participants.

Regarding reasons for not always taking a sexual history for heterosexual clients:

- The most common reason was “presence of another person” (60.9%).
- The next most common reason was “patient feels uncomfortable” (58.9%)
- The other reasons were “doctor lack of time” (53%), “doctor not well trained” (46.4%), and “not regular practice” (42.1%).

Figure 5.2. Reasons for not always taking a sexual history



Contents of sexual history taking

It is important to know whether the doctors take a sexual history from patients, but it is equally important to assess the types of question asked during history taking. The participants were asked to briefly describe the main components of their sexual history taking. The open-ended responses were then coded into main categories as described in Chapter 2. Results on components of sexual history taking are presented below.

The top five topics for sexual history taking as reported by the participants were:

- “Number of sex contacts” (41.5%);
- “Condom usage” (40.4%);
- “Presenting complaint/reason for coming” (37.5%);
- “sexual relationship status” (35.7%) and
- “History of complaints” (25.9%).

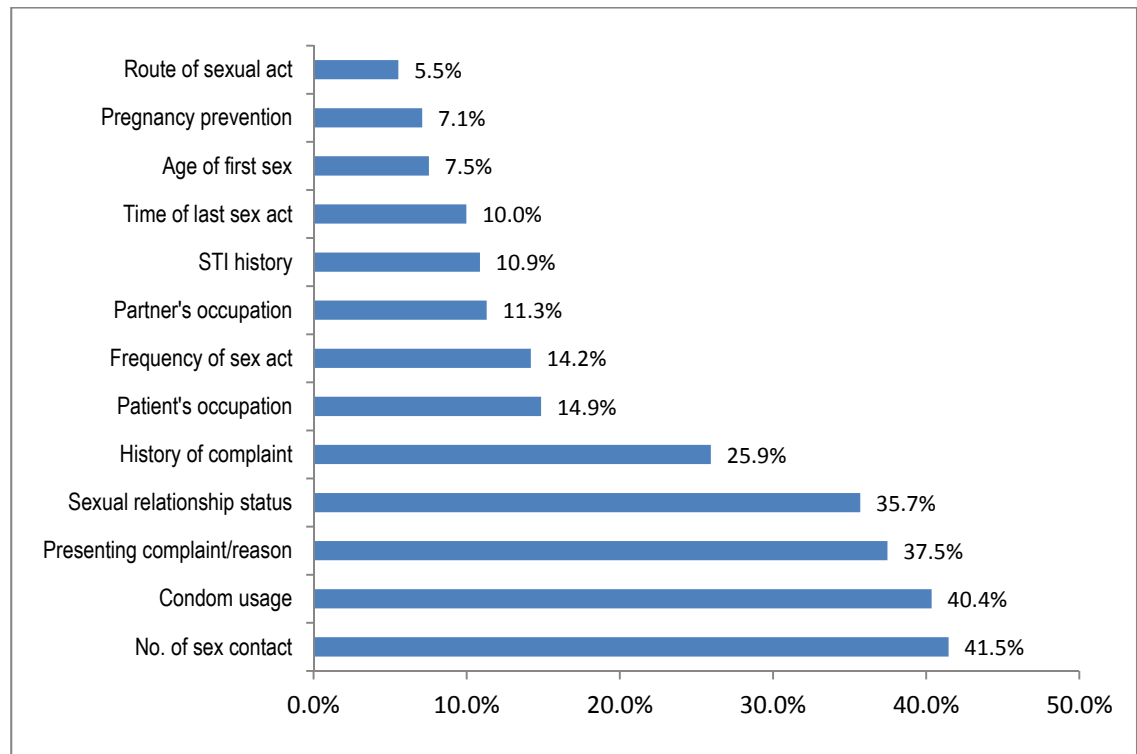
These were followed by the following topics:

- “Patient’s occupation” (14.9%);
- “Frequency of sex act” (14.2%);
- “Partner’s occupation” (11.3%);
- “STI history” (10.9%);
- “Time of last sex act” (10%).

Between 5-10% participants mentioned “age at first sex” (7.5%), “pregnancy prevention” (7.1%), and “route of sex act” (5.5%). Other components mentioned by 1-5% of participants were “casual sexual partner”, “STI prevention”, “partner has mobile job”, “sex of sexual partner”, “partner's STI history”, “being satisfied with sex life”, “partner's sexual relationship”

and “past STI exam”. Components mentioned by under 1% of participants were “pregnancy history”, “partner using drug”, “patient using drug”, “patient being sexually abused”, and “patient has mobile job”.

Figure 5.3. Contents of sexual history taking

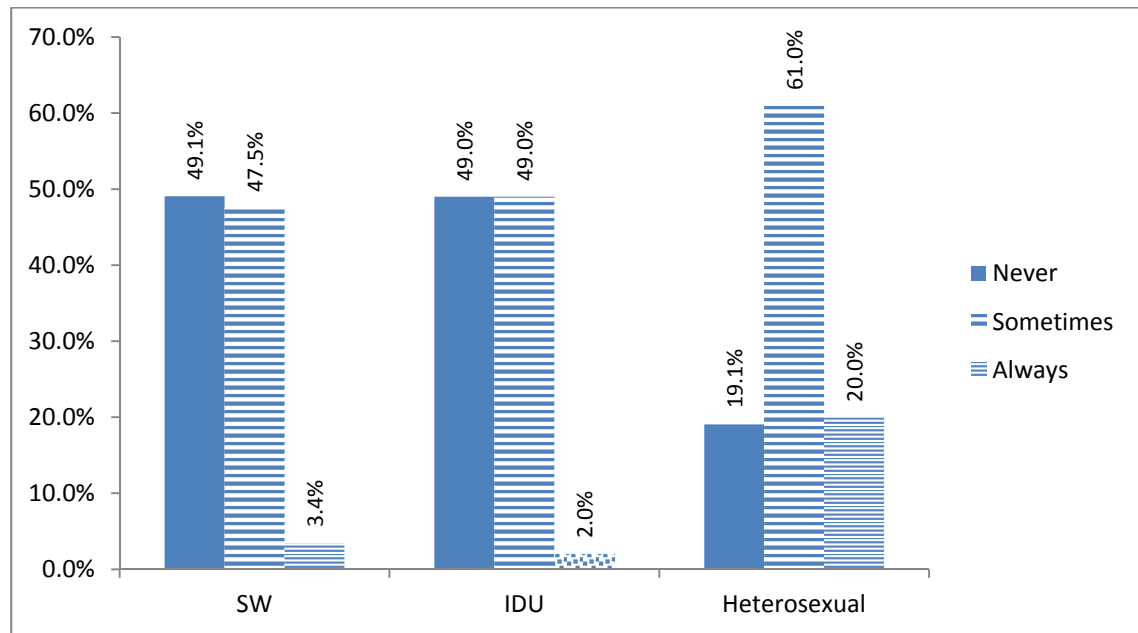


5.2 Contact tracing

The participants were asked how often they would conduct contact tracing for patients with a confirmed STI. About one-fifth (19.1%) of the participants always conducted contact tracing for heterosexual patients. The percentage of participants reporting that they always conduct contact tracing for SW and IDUs patients was much lower (3.4% and 2%, respectively). About half of the participants mentioned that they “sometimes” conduct contact tracing for SW and IDU patients (47.5% and 49%, respectively). More than half (61%) of the participants said

“sometimes” for heterosexual patients. The proportion of participants who never conducted contact tracing was high (49.1% for SW, 49% for IDUs patients and 19.1% for heterosexual clients).

Figure 5.4. Frequency of contact tracing for STI patients



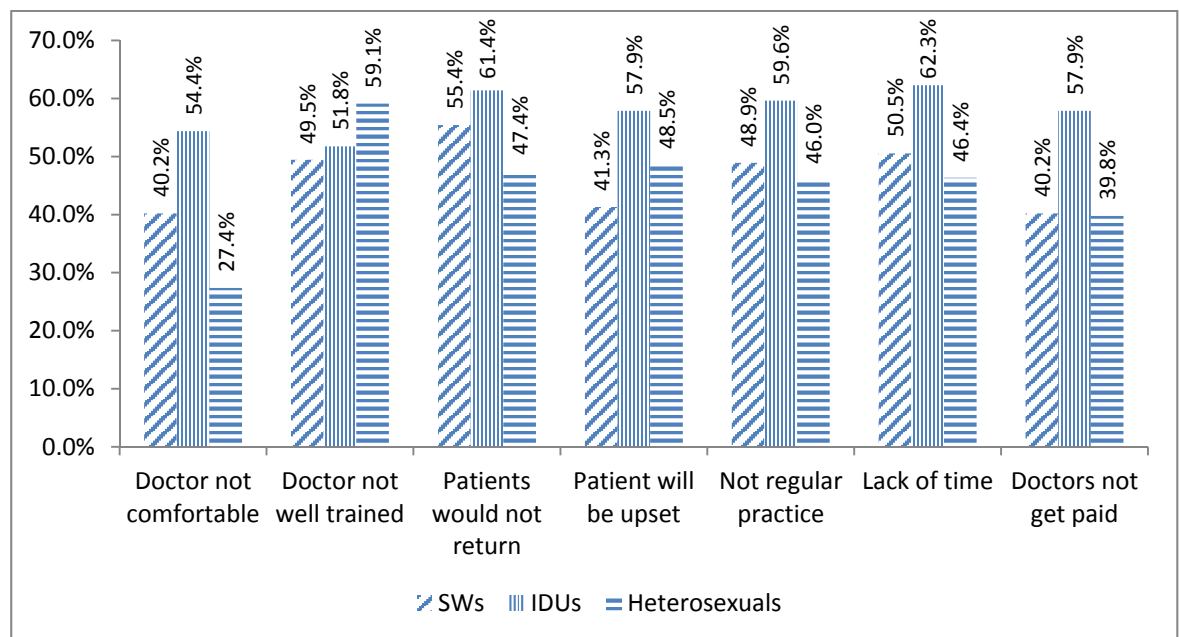
The reported reasons for not always organizing contact tracing for SW patients varied, including both doctors' reasons and patients' reasons. About half of the participants mentioned “patients would not return” (55.4%); “lack of time” (50.5%); “doctor not well trained” (49.5%) and “not regular practice” (48.9%). Approximately 40% of participants mentioned “cause patient to be upset”; “doctor not comfortable” and “doctor does not being paid” (41.3%; 40.2% and 40.2%, respectively) (Figure 5.5).

Regarding reasons for not always organizing contact tracing for IDU patients, about 60% of the participants mentioned “lack of time” (62.3%); “patients would not return” (61.4%); “not regular practice” (59.6%); “cause patient to be upset” (57.9%); “doctor not comfortable”

(54.4%); “doctor does not being paid” (57.9%) and “doctor not well trained” (51.8%) (Figure 5.5).

Regarding reasons for not always organizing contact tracing for heterosexual patients, the most commonly mentioned reason was “doctor not well trained” (59.1%). About half of the participants mentioned “lack of time” (46.4%); “patients would not return” (47.4%); “not regular practice” (46%); and “get patient upset” (48.5%). Fewer participants mentioned “doctor does not being paid” (39.8%) and “doctor not comfortable” (27.4%) (Figure 5.5).

Figure 5.5. Reasons for not organising contact tracing for SW, IDU and heterosexual clients

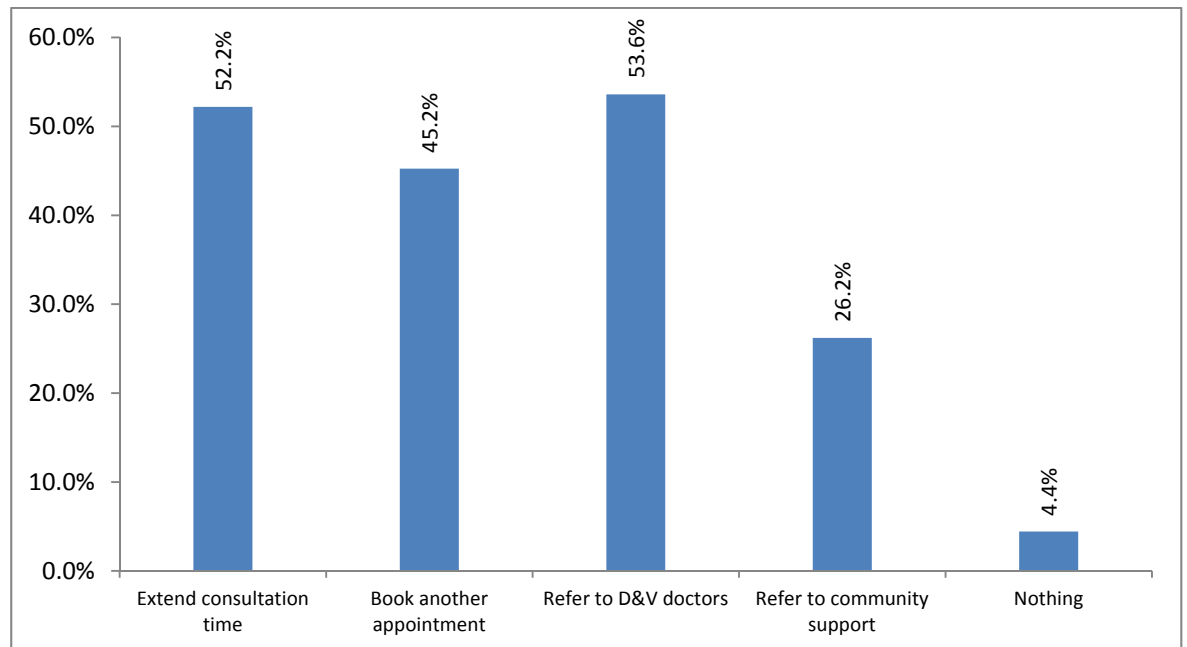


5.3 Management of STI patients with psychological distress

The participants were asked how they manage patients’ psychological distress when the patients were diagnosed as having STIs (A physician can choose as many responses as apply to them; total proportion will not be 100%). The managements ranged from doing nothing to

“refer to community support”, “refer to D&V doctors”, and “book another appointment and extend consultation time”. The two most common management strategies for psychological distress were to refer patients to D&V doctors (53.6%) and to extend consultation time (52.2%). Booking another appointment was the approach of less than half of the participants (45.2%) and referral to community support accounted for 26.2%. A small percentage of participants (4.4%) admitted that they did not employ any management strategy for STI patients with psychological distress (Figure 5.6).

Figure 5.6. Management strategies for patients with psychological distress



Associations between management of psychological distress and participants' characteristics

Extending consultation time as management for psychological distress

Bivariate analysis showed that extending consultation time was associated with average weekly client volume; diagnoses of STI in the month prior to the survey; and place of main practice (Table 5.4). In multivariate analysis, only place of main practice made a unique statistically significant contribution to the model. Participants working at non D&V facilities all had less than half the odds of those working at D&V facilities (Adj OR=0.45, 95% CI=0.22-0.92, Adj OR=0.46, 95% CI=0.23-0.95 and Adj OR=0.40, 95% CI=0.21-0.78 for province, district and CHSs, respectively).

Table 5.4. Factors associated with extending consultation time

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Average weekly client volume				
= < 15	196	46.4	1	NS
16-30	109	56.0	1.47 (0.92-2.35)	
> 30	126	57.9	1.59 (1.01-2.50)	
STI diagnoses in the month prior to the survey				
No	124	44.4	1	NS
Yes	307	55.4	1.56 (1.02-2.37)	
Place of main practice				
D&V Centre/hosp.	57	71.9	1	0.45 (0.22-0.92) 0.46 (0.23-0.95) 0.40 (0.21-0.78)
Prov. hosp./RH/health centre	92	52.2	0.43 (0.21-0.86)	
District hosp./health centre	91	51.6	0.42 (0.21-0.85)	
CHSs	191	46.6	0.34 (0.18-0.65)	

* The column reflects the percentage of participants who reported extending consultation time

**p (Hosmer and Lemeshow Test) > 0.05

Booking another appointment as management for psychological distress

Bivariate analysis showed that participants' booking another appointment was associated with age, medical degree and average weekly client volume (Table 5.5). In multivariate analysis, only weekly client volume made a unique statistically significant contribution to the model. Participants seeing more than 30 patients a week had over double the odds of those seeing ≤15 patients a week (Adj OR=2.14, 95% CI= 1.35-3.40).

Table 5.5. Factors associated with booking another appointment

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	130	49.2	1	NS
40-50	242	46.7	0.90 (0.59-1.38)	
51-60	59	30.5	0.45 (0.24-0.87)	
Medical degree				
Non D&V doctor	384	43.2	1	NA
D&V doctors	47	61.7	2.12 (1.14-3.94)	
Average weekly client volume				
= < 15	196	39.3	1	2.14 (1.35-3.40)
16-30	109	41.3	1.09 (0.67-1.75)	
> 30	126	57.9	2.13 (1.35-3.36)	

* The column reflects the percentage of participants who reported booking another appointment

**p (Hosmer and Lemeshow Test) > 0.05

Referring patients to D&V doctor as management for psychological distress

Bivariate analysis showed that participants' choosing to refer a patient to a D&V doctor was associated with gender; diagnoses of STI in the month prior to the survey; and place of main practice (Table 5.6). In multivariate analysis, only place of main practice made a unique statistically significant contribution to the model. Participants working at non D&V facilities all had much higher odds than those working at D&V facilities (Adj OR=4.40, 95% CI=1.96-9.85, Adj OR=4.68, 95% CI=2.08-10.5 and Adj OR=8.05, 95% CI=3.77-17.2 for province, district, CHSs,

respectively). It should be noted that there were non-D&V doctors working at D&V facilities (Table 5.6).

Table 5.6. Factors associated with referring to D&V doctors

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	293	57.0	1	NS
Males	138	46.4	0.65 (0.43-0.98)	
Diagnosis STI in the month prior to the survey				
No	124	62.1	1	NS
Yes	307	50.2	0.61 (0.40-0.94)	
Place of main practice				
D&V Centre/hosp.	57	17.5	1	
Prov. hosp./RH/health centre	92	51.1	4.91 (2.22-10.88)	4.40 (1.96-9.85)
District hosp./health centre	91	52.7	5.25 (2.36-11.64)	4.68 (2.08-10.5)
CHSs	191	66.0	9.11 (4.32-19.20)	8.05 (3.77-17.2)

* The column reflects the percentage of participants who reported referring to D&V doctors

**p (Hosmer and Lemeshow Test) > 0.05

Referring to community support as management for psychological distress

Bivariate analysis showed that participants' selection of "refer to community support" management strategy was associated with gender; age; medical degree; duration of medical practice; and place of main practice (Table 5.7). In multivariate analysis, only two of the independent variables made a unique statistically significant contribution to the model:

- Participants who had been in medical practice for more than 10 years had lower odds than those who had been in practice for 10 years or less (Adj OR=0.36, 95% CI= 0.17-0.77 and Adj OR=0.36, 95% CI=0.15-0.85 for participants who had been in practice 11-20 years, and for more than 20 years, respectively).

- Participants working at CHSs had about one-third of the odds of those working at D&V facilities (Adj OR=0.34, 95% CI=0.18-0.68).

Table 5.7. Factors associated with referring to community support

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	293	23.2	1	
Males	138	32.6	1.60 (1.02-2.50)	NS
Age (years)				
<40	130	33.8	1	
40-50	242	24.0	0.62 (0.39-0.98)	NS
51-60	59	18.6	0.45 (0.21-0.95)	NS
Medical degree				
Non D&V doctor	384	24.0	1	
D&V doctors	47	44.7	2.56 (1.38-4.77)	NA
Duration of medical practice (in years)				
=<10	114	41.2	1	
11-20	150	21.3	0.39 (0.23-0.66)	0.36 (0.17-0.77)
>20	167	20.4	0.36 (0.21-0.62)	0.36 (0.15-0.85)
Place of main practice				
D&V Centre/hosp.	57	43.9	1	
Prov. hosp./RH/health centre	92	30.4	0.56 (0.28-1.11)	NS
District hosp./health centre	91	25.3	0.43 (0.21-0.88)	NS
CHSs	191	19.4	0.31 (0.16-0.58)	0.34 (0.18-0.68)

* The column reflects the percentage of participants who reported referring to community support

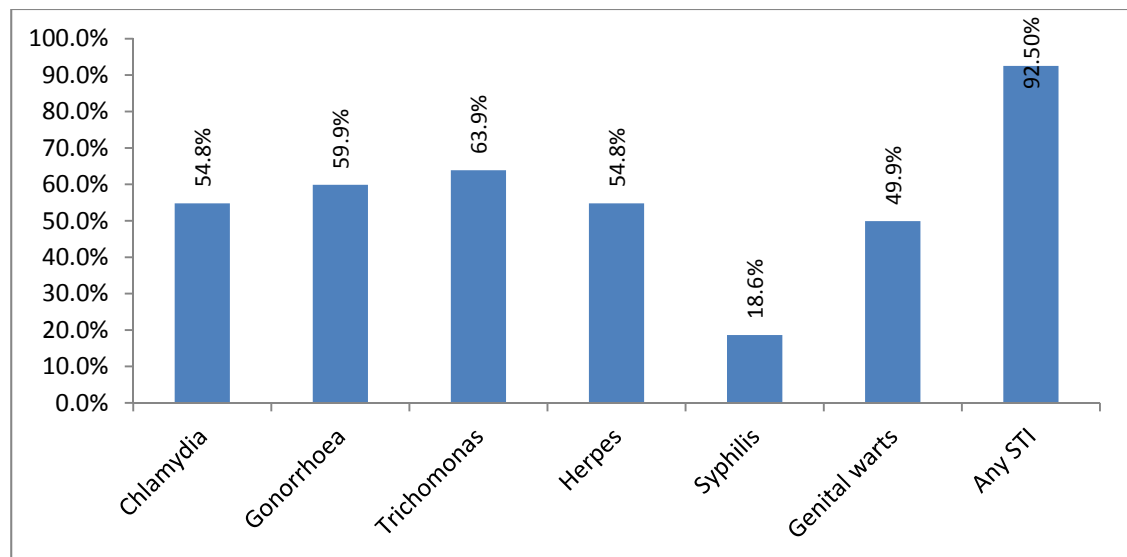
**p (Hosmer and Lemeshow Test) > 0.05

5.4 Syndromic management

The study participants were asked to list STIs for which they had utilised syndromic management. The majority of participants (92.5%) reported that they had, at some time, utilised syndromic management for suspected STI cases. The STI for which most participants utilised syndromic management was *Trichomonas* (63.9%), followed by gonorrhoea (59.9%).

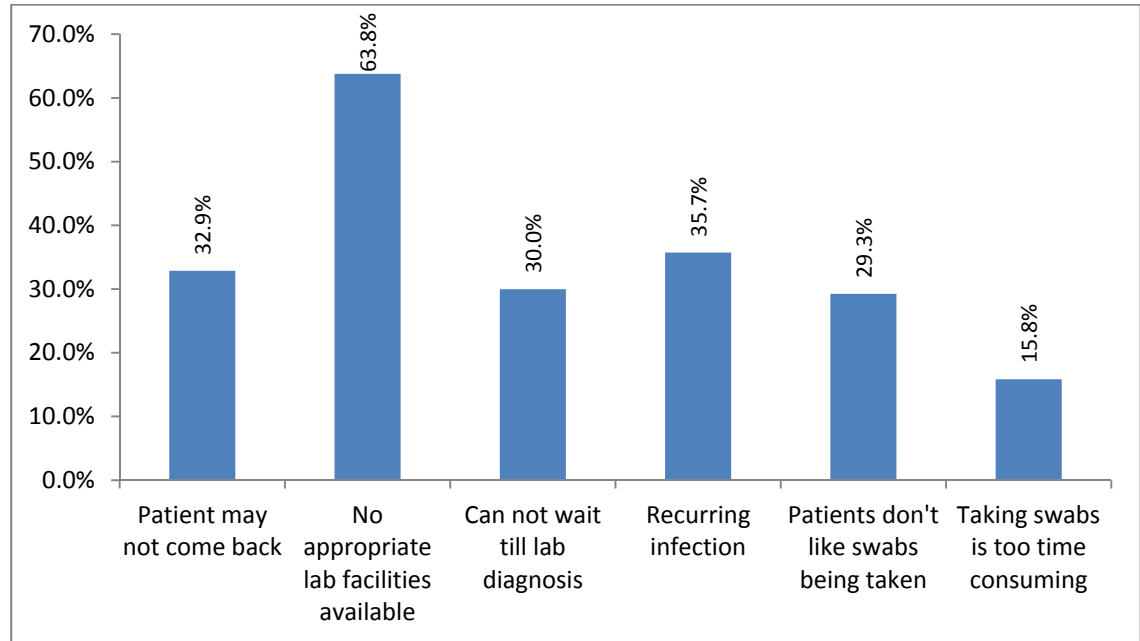
Chlamydia and Herpes both ranked third with 54.8% of participants having utilised syndromic management for these STIs. About half of the participants (49.9%) had utilised syndromic management for genital warts. Syphilis was the STI for which the lowest percentage of participants had utilised syndromic management (18.6%) (Figure 5.7).

Figure 5.7. STI for which participants had utilised syndromic management



The participants were asked to provide reasons for prescribing syndromic management to suspected STI cases. The most common reason for syndromic management was due to “no appropriate laboratory facility available” (63.8%). About one-third of the participants declared “recurring infection” (35.7%) and “patient may not come back” (32.9%) as reasons for syndromic management. Less than one-third of participants stated “can’t wait till lab diagnosis” (30%) and “patients don’t like swab being taken” (29.3%) as their reasons. The lowest percentage of participants mentioned “taking swab is too time consuming” as their reason for syndromic management (15.8%) (Figure 5.8).

Figure 5.8. Reason for syndromic management



Associations between STI syndromic management and participants' characteristics

"Patient may not come back" as reason for STI syndromic management

Bivariate analysis showed that using "patient may not come back" as the reason for STI syndromic management was associated with medical degree; weekly client volume; and place of main practice (Table 5.8). In multivariate analysis, only place of main practice was significant:

- Participants working at district hospital/health centres and CHSs had about one-fifth the odds of those working at D&V facilities (Adj OR=0.23, 95% CI=0.11-0.48 and Adj OR= 0.19, 95% CI= 0.1-0.37, for district and CHSs, respectively).

Table 5.8. Factors associated with using STI syndromic management: patient may not come back

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	370	28.9	1	NA
D&V doctors	47	63.8	4.34 (2.30-8.19)	
Average weekly client volume				
= < 15	196	26.0	1	
16-30	103	35.9	1.59 (0.95-2.66)	NS
> 30	118	41.5	2.02 (1.24-3.28)	
STI diagnoses in the month prior to the survey				
No	121	25.6	1	NS
Yes	296	35.8	1.62 (1.01-2.60)	
Place of main practice				
D&V Centre/hosp.	56	62.5	1	
Prov. hosp./RH/health centre	81	45.7	0.50 (0.25-1.01)	
District hosp./health centre	84	26.2	0.21 (0.10-0.44)	0.23 (0.11-0.48)
CHSs	196	21.9	0.17 (0.09-0.32)	0.19 (0.10-0.37)

* The column reflects the percentage of participants who cited "patient may not come back" as their reason for using syndromic management

**p (Hosmer and Lemeshow Test) > 0.05

"Unavailability of lab facility" as reason for STI syndromic management

Bivariate analysis showed using "unavailability of lab facility" as the reason for STI syndromic management was associated with age; medical degree and place of main practice (Table 5.9).

In multivariate analysis, only place of main practice was significant:

- Participants working at district facilities had 2.41 times the odds of those working at D&V facilities (Adj OR=2.41, 95% CI=1.20-4.84).
- Participants working at CHSs had almost four times the odds of those working at D&V facilities (Adj OR= 3.96, 95% CI= 2.12-7.38).

Table 5.9. Factors associated with STI syndromic management: unavailability of lab facilities

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	126	58.7	1	NS
40-50	234	68.8	1.55 (0.99-2.43)	
51-60	57	54.4	0.84 (0.45-1.57)	
Medical degree				
Non D&V doctor	370	65.7	1	NA
D&V doctors	47	48.9	0.50 (0.27-0.92)	
Place of main practice				
D&V Centre/hosp.	56	41.1	1	2.41 (1.20-4.84)
Prov. hosp./RH/health centre	81	55.6	1.79 (0.90-3.57)	
District hosp./health centre	84	63.1	2.45 (1.23-4.90)	
CHSs	196	74.0	4.08 (2.19-7.59)	

* The column reflects the percentage of participants who mentioned "unavailability of lab facilities".

**p (Hosmer and Lemeshow Test) > 0.05

"Recurring infection" as reason for STI syndromic management

Bivariate analysis showed that using "recurring infection" as the reason for STI syndromic management was associated with medical degree; postgraduate training in STI; and diagnoses of STI cases in the month prior to the survey. Results of multivariate analysis showed that:

- Participants who had postgraduate STI training had almost twice the odds of those who did not have postgraduate STI training (Adj OR=1.81, 95% CI=1.16-2.84).
- Participants who had STI diagnoses in the month prior to the survey had half the odds of those who did not have STI diagnoses (Adj OR=0.56, 95% CI=0.36-0.87).

Table 5.10. Factors associated with STI syndromic management: recurring infection

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	370	33.8	1	NA
D&V doctors	47	51.1	2.05 (1.11-3.77)	
Postgraduate training in STI				
No	138	26.8	1	
Yes	279	40.1	1.83 (1.17-2.86)	1.81 (1.16-2.84)
STI diagnoses in the month prior to the survey				
No	121	45.5	1	
Yes	296	31.8	0.56 (0.36-0.86)	0.56 (0.36-0.87)

* The column reflects the percentage of participants who mentioned "recurring infection".

**p (Hosmer and Lemeshow Test) > 0.05

"Taking swab is too time consuming" as reason for STI syndromic management

Bivariate analysis showed that using "taking swab is too time consuming" as the reason for STI syndromic management was associated with participants' age group; duration of medical practice; average weekly client volume; diagnoses of STI in the month prior to the survey; and place of main practice. In multivariate analysis, only age, STI diagnoses and place of main practice were significant:

- Participants aged 51-60 year old had one-fifth times the odds of those aged under 40 years old (Adj OR=0.16, 95% CI=0.05-0.48).

- Participants who had STI diagnoses in the month prior to the survey had 2.76 times the odds of those who did not have STI diagnoses (Adj OR= 2.76, 95% CI=1.29-5.89).
- Participants not working D&V facilities had much higher odds than those working at D&V facilities (Adj OR=6.78, 95% CI=2.07-22.23, Adj OR= 4.24, 95% CI= 1.24-14.47 and Adj OR=3.36, 95% CI=1.06-10.69 for province, district and CHSs, respectively.

Table 5.11. Factors associated with STI syndromic management: taking swabs is too time consuming

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	126	22.2	1	
40-50	234	15.0	0.62 (0.35-1.07)	
51-60	57	5.3	0.19 (0.06-0.67)	0.16 (0.05-0.48)
Duration of medical practice (in years)				
=<10	111	22.5	1	NS
11-20	143	22.4	0.99 (0.55-1.80)	
>20	163	5.5	0.20 (0.09-0.45)	
Average weekly client volume				
= < 15	196	13.8	1	NS
16-30	103	11.7	0.83 (0.40-1.71)	
> 30	118	22.9	1.86 (1.03-3.35)	
STI diagnoses in the month prior to the survey				
No	121	8.3	1	
Yes	296	18.9	2.59 (1.27-5.27)	2.76 (1.29-5.89)
Place of main practice				
D&V Centre/hosp.	56	7.1	1	
Prov. hosp./RH/health centre	81	25.9	4.55 (1.47-14.11)	6.78 (2.07-22.23)
District hosp./health centre	84	16.7	2.60 (0.81-8.36)	4.24 (1.24-14.47)
CHSs	196	13.8	2.08 (0.69 -6.21)	3.36 (1.06-10.69)

* The column reflects the percentage of participants who mentioned "taking swabs is too time consuming"

**p (Hosmer and Lemeshow Test) > 0.05

5.5 Summary

This chapter presented results on clinical practice. A number of issues in STI clinical practice were identified. Sexual history taking for patients at risk of STI was not well implemented with about one-fifth of participants never taking a sexual history from their patients. Sexual history taking was less frequent for patients with elevated STI risk, including IDUs and SWs, than heterosexual clients. In addition, the actual information taken during sexual history taking was far from sufficient when compared to the information in the core sexual history questions or the “Five Ps” as discussed in Chapter 2. The most common information which the participants reported taking was “number of sex contacts”, “condom usage”, “presenting complaint/reason”, “sexual relationship status” and “history of complaint”. All these information was taken by less than half of the participants. Most of this information was bio-medically oriented. Other aspects in sexual history were rarely taken. It is possible that many did not clearly distinguish sexual history and case history. Factors associated with always taking a sexual history were being D&V doctors; having postgraduate STI training; having postgraduate patient communication training; seeing ≤ 15 patients a week; and working at D&V facilities.

Similarly, contact tracing was not frequently implemented for STI patients. About a half of all participants never conduct contact tracing of IDUs and SW clients, and one-fifth of participants never conduct contact tracing of heterosexual clients. More participants reported being uncomfortable with SW and IDU clients than with heterosexual clients. However, the proportion of participants who cited “doctor not well trained” for SW and IDU clients was not higher than the proportion for heterosexual clients. Although the frequency of organising

contact tracing for SW clients was not much higher than for IDU clients, the proportions of participants quoting reasons for not contact tracing SW clients was lower than that for IDUs clients for all the various reasons.

“Extend consultation time”, “refer to D&V doctor” and “book another appointment” were the most common recommendations for STI patients with psychological distress. About half of the participants named those three options. Multivariate analysis showed that working at D&V facilities was associated with the advice to “extend consultation time” and “book another appointment”. Seeing more than 30 patients a week was associated with the recommendation to “book another appointment” and working at non D&V facilities was associated with “refer to D&V doctor”.

The vast majority of participants had, at some time, utilised syndromic management for suspected STI cases (92.5%). The three most common reasons for using syndromic management were “no appropriate laboratory facility available”, “recurring infection” and “patient may not come back”. Multivariate analysis showed that “no appropriate laboratory facility available” and ““patient may not come back” was associated with working at district facilities and CHSs; “recurring infection” was associated with being a D&V doctor and having postgraduate STI training.

Chapter 6

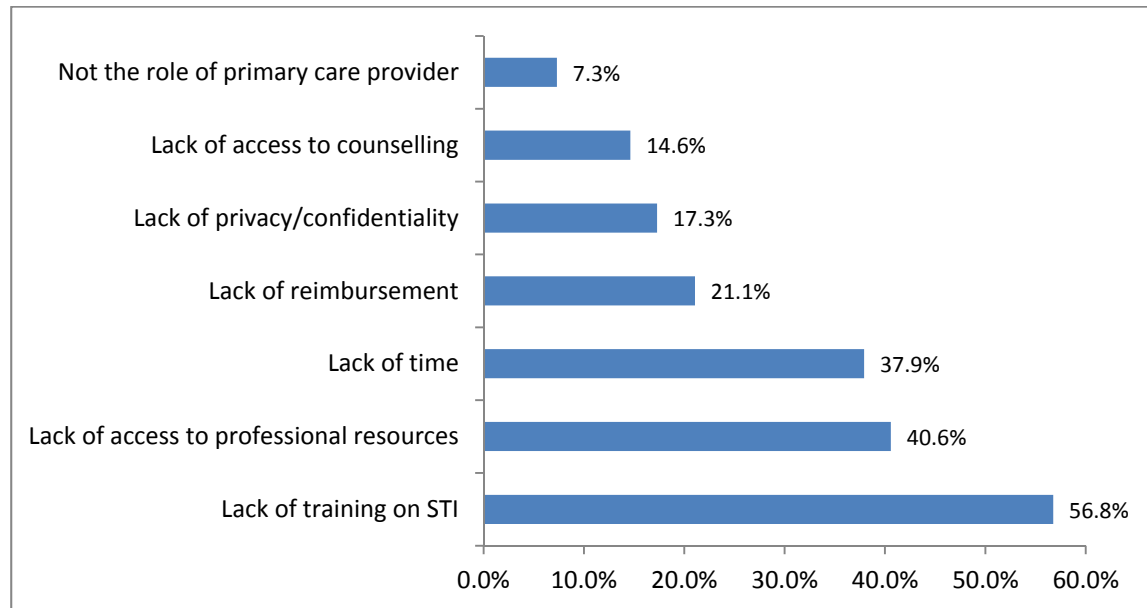
Organisational issues in STI management

Apart from STI knowledge and clinical practices, organisational aspects can have an important role in the provision of quality STI service. The organisational aspects of STI service include professional reference resources for health care providers, STI materials for patients, the implementation of quality assurance activities for STI services, and working conditions. This chapter presents findings on organisational issues that prevent doctors from providing optimal STI care to patients. Specifically, the chapter will describe study participants' views on medical training and professional resources for doctors, facilities for STI services, STI quality assurance, and resources for STI patients. The associations between organisational issues and background characteristics and practice characteristics of participants are also analysed.

6.1 Perceived barriers for STI care

The participants were asked about perceived barriers for STI care and management. The most commonly mentioned barrier was "lack of training in STI" (56.8%). The second common barrier was "lack of resource to professional resources" (40.6%) following by "lack of time" (37.9%). Other barriers listed by the participants included "lack of reimbursement" (21.1%), "lack of privacy/confidentiality" (17.3%), "lack of access to counselling" (14.6%), and "not the role of primary care provider" (7.3%).

Figure 6.1. Perceived barriers for STI care



Associations between participants' perceived barriers for STI care and participant's characteristics

Bivariate and multivariate analysis of the associations between participants' perceived barriers for STI care and participants' characteristics were conducted. The three most commonly mentioned barriers were selected for this analysis, namely, "lack of time", "lack of STI training" and "lack of access to professional resources". Participants' characteristics include sex, age group, medical degree, postgraduate training in STI, postgraduate patient communication training, duration of medical practice, average weekly client volume, having STI case diagnoses the month prior to the survey, and place of main practice. Independent variables found to be associated with outcome variables at $p \leq 0.1$ in the bivariate analysis were included in the multivariate analysis. For the results of multivariate analysis, only adjusted OR that showed significant associations were presented in the tables (OR not including value of 1).

Lack of time as barrier for STI care

Bivariate analyses showed that the naming of “lack of time” as a barrier for STI care was associated with medical degree; STI training; patient communication training; average weekly client volume; and place of main practice. In multivariate analysis, only place of main practice was significant:

- Participants working at district facilities and CHSs had about one-third the odds of those working at D&V facilities (Adj OR=0.37, 95% CI=0.18-0.75 and Adj OR=0.3, 95% CI=0.16-0.57 for district and CHSs, respectively).

Table 6.1. Factors associated with citing “lack of time” as a barrier

Participants’ characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	404	35.9	1	NA
D&V doctors	47	55.3	2.21 (1.20-4.07)	
Postgraduate training in STI				
No	157	28.0	1	NS
Yes	294	43.2	1.95 (1.29-2.97)	
Postgraduate patient communication training				
No	204	29.9	1	NS
Yes	247	44.5	1.88 (1.27-2.78)	
Average weekly client volume				
= < 15	210	31.0	1	NS
16-30	112	39.3	1.44 (0.89-2.33)	
> 30	129	48.1	2.06 (1.31-3.25)	
Place of main practice				
D&V Centre/hosp.	57	61.4	1	
Prov. hosp./RH/health centre	92	47.8	0.58 (0.29-1.13)	NS
District hosp./health centre	91	35.2	0.34 (0.17-0.68)	0.37 (0.18-0.75)
CHSs	211	28.4	0.25 (0.14-0.46)	0.30 (0.16-0.57)

* The column reflects the percentage of participants who mentioned “lack of time”

**p (Hosmer and Lemeshow Test) > 0.05

“Lack of professional resources” as barrier for STI care

Bivariate analyses showed that the naming of a “lack of professional resources” as a barrier to STI care was associated with STI training; patient communication training; duration of medical practice; and place of main practice (Table 6.2). At multivariate level, the three independent variables significant at bivariate level were also significant at multivariate level:

- Participants who had patient communication training had 0.61 times the odds of those who did not have training (Adj OR=0.61, 95% CI=0.4-0.93).
- Participants who had been in medical practice over 10 years had lower odds than those who had been in practice for 10 years or less (Adj OR=0.41, 95% CI=0.24-0.69 and Adj OR=0.61, 95% CI=0.37-0.99 for 11-20 years and more than 20 years, respectively).
- Participants working at district facilities and CHSs had higher odds than those working at D&V facilities (Adj OR=3.23, 95% CI=1.50-6.98 and Adj OR=2.83, 95% CI=1.40-5.73 for district and CHSs, respectively).

Table 6.2. Factors associated with citing “lack of professional resources” as a barrier

Participants’ characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate training in STI				
No	157	50.3	1	
Yes	294	35.4	0.54 (0.36 - 0.80)	NS
Postgraduate patient communication training				
No	204	49.0	1	
Yes	247	33.6	0.53 (0.36 - 0.77)	0.61 (0.40 - 0.93)
Duration of medical practice (in years)				
≤10	119	52.1	1	
11-20	155	31.6	0.42 (0.26 - 0.70)	0.41 (0.24 - 0.69)
>20	177	40.7	0.63 (0.39 - 1.01)	0.61 (0.37 - 0.99)
Place of main practice				
D&V Centre/hosp.	57	22.8	1	
Prov. hosp./RH/health centre	92	33.7	1.72 (0.81 - 3.66)	NS
District hosp./health centre	91	47.3	3.03 (1.44 - 6.37)	3.23 (1.50 - 6.98)
CHSs	211	45.5	2.83 (1.44 - 5.55)	2.83 (1.40 - 5.73)

* The column reflects the percentage of participants who mentioned lack of professional resources

**p (Hosmer and Lemeshow Test) > 0.05

Lack of STI training as barrier to STI care

Bivariate analyses showed that lack of STI training was associated with age; medical degree; STI training; and duration of medical practice (Table 6.3). In multivariate analysis, only STI training made a unique statistically significant contribution to the model. Participants who had STI training had under half the odds of those who did not have training (Adj OR=0.44, 95% CI=0.29-0.68).

Table 6.3. Factors associated with citing “lack of STI training” as a barrier

Participants’ characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	134	64.9	1	
40-50	256	53.9	0.63 (0.41 - 0.97)	NS
51-60	61	50.8	0.56 (0.30 - 1.03)	NS
Medical degree				
Non D&V doctor	404	58.9	1	
D&V doctors	47	38.3	0.43 (0.23 - 0.81)	NA
Postgraduate training in STI				
No	157	69.4	1	
Yes	294	50.0	0.44 (0.29 - 0.66)	0.44 (0.29 - 0.68)
Duration of medical practice (in years)				
≤10	119	63.9	1	
11-20	155	60.0	0.85 (0.52 - 1.39)	NS
>20	177	49.2	0.55 (0.34 - 0.88)	NS

* The column reflects the percentage of participants who mentioned lack of STI training.

**p (Hosmer and Lemeshow Test) > 0.05

6.2 Quality assurance for STI services

In response to the survey questions on integrated supervision activities implemented at their facilities, over one-third (38.1%) of participants reported that their facility was reviewed at least quarterly, fewer than half (42.8%) reported that theirs was reviewed at least annually, and about one-fifth (19.1%) of the participants reported that their facility was never reviewed. Regarding reviewing data on STI services, over half (62.5%) of the participants reported that this was conducted at least quarterly, about one-third (29.5%) that it was conducted at least annually, and 8% reported that service data were never reviewed.

Self-assessment conducted least quarterly was reported by over one-third of the participants (38.4%), another one-third (30.4%) reported least annually and the remaining reported no self assessment (31.3%). Similarly, over one-third (38.1%) of the participants reported quarterly STI service observation, another one-third (29.9%) reported service observation at least annually, and the remainder (31.9%) no service observation at their facilities. Under one-third of the participants reported quarterly collection of client feedback (27.5%), over reported at least annually (23.3%) and almost half reported no collecting client feedback (49.2%).

Figure 6.2. Quality assurance measures performed



Associations between quality assurance performed and participant's characteristics

Self-assessment review at least quarterly

Bivariate analyses showed that reporting self-assessment at least quarterly was associated with gender; medical degree; STI training; patient communication training; and place of main practice (Table 6.4). In multivariate analysis, only three of the independent variables were significant:

- Male had almost twice the odds of females (Adj OR=1.83, 95% CI=1.17 - 2.88).
- Participants who had patient communication training had three times the odds of those who had no training (Adj OR=2.93, 95% CI=1.96-4.38).
- Participants working at provincial facilities and CHSs had much lower odds than those working at D&V facilities (OR=0.37, 95% CI=0.18-0.78 and OR=0.31, 95% CI=0.16-0.59 for province and CHSs, respectively).

Table 6.4. Factors associated with conducting self-assessment case review at least quarterly

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	310	34.5	1	
Males	141	46.8	1.67 (1.11 - 2.50)	1.83 (1.17 - 2.88)
Medical degree				
Non D&V doctor	404	34.4	1	NA
D&V doctor	47	72.3	4.99 (2.55 - 9.76)	
Postgraduate training in STI				
No	157	27.4	1	NS
Yes	294	44.2	2.10 (1.38 - 3.20)	
Postgraduate patient communication training				
No	204	25.0	1	
Yes	247	49.4	2.93 (1.96 - 4.38)	2.78 (1.76 - 4.39)
Place of main practice				
D&V Centre/hosp.	57	61.4	1	
Prov. hosp./RH/health centre	92	37.0	0.37 (0.19 - 0.73)	0.37 (0.18 - 0.78)
District hosp./health centre	91	49.5	0.61 (0.31 - 1.21)	0.70 (0.34 - 1.44)
CHSs	211	28.0	0.24 (0.13 - 0.45)	0.31 (0.16 - 0.59)

* The column reflects the percentage of participants who mentioned "self-assessment case review at least quarterly"

**p (Hosmer and Lemeshow Test) > 0.05

STI service observation at least quarterly

Bivariate analyses showed that STI service observation conducted at least quarterly was associated with medical degree; average weekly client volume; and place of main practice (Table 6.5). In multivariate analysis, only place of main practice was significant:

- Participants working at district facilities and CHSs had lower odds than those working at D&V facilities (Adj OR=0.43, 95% CI=0.21-0.86 and Adj OR=0.42, 95% CI=0.23-0.78 for district and CHSs, respectively).

Table 6.5. Factors associated with conducting STI service observation at least quarterly

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
D&V doctor	404	35.6	1	
Non D&V doctor	47	59.6	2.66 (1.44 - 4.93)	NA
Average weekly client volume				
≤15	210	34.8	1	
16-30	112	33.0	0.93 (0.57 - 1.50)	NS
> 30	129	48.1	1.74 (1.11 - 2.72)	NS
Place of main practice				
D&V Centre/hosp.	57	54.4	1	
Prov. hosp./RH/health centre	92	44.6	0.67 (0.35 - 1.31)	0.63 (0.32 - 1.24)
District hosp./health centre	91	33.0	0.41 (0.21 - 0.81)	0.43 (0.21 - 0.86)
CHSs	211	33.2	0.42 (0.23 - 0.75)	0.42 (0.23 - 0.78)

* The column reflects the percentage of participants who mentioned "STI service observation at least quarterly"

**p (Hosmer and Lemeshow Test) > 0.05

Collecting clients' feedback at least quarterly

Bivariate analyses showed that "collecting clients' feedback at least quarterly" was associated with gender; medical degree; STI training; patient communication training; and place of main practice (Table 6.6). In multivariate analysis, only three of the independent variables were significant:

- Male participants had higher odds than females (Adj OR=1.8, 95% CI=1.13-2.87).
- Participants who had patient communication training had higher odds than those who did not have training (Adj OR=2.3, 95% CI=1.4-3.76).
- Participants working at district facilities and CHSs had lower odds than those working at D&V facilities (Adj OR=0.31, 95% CI=0.14-0.67 and Adj OR=0.42, 95% CI=0.22-0.8 for district and CHSs, respectively).

Table 6.6. Factors associated with collecting clients' feedback at least quarterly

Participants' characteristics	N	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	310	23.5	1	
Males	141	36.2	1.84 (1.19 - 2.83)	1.80 (1.13 - 2.87)
Medical degree				
No	404	24.3	1	
Yes	47	55.3	3.87 (2.08 - 7.17)	NA
Postgraduate STI training				
No	157	21.0	1	
Yes	294	31.0	1.68 (1.07 - 2.66)	NS
Postgraduate patient communication training				
No	204	18.6	1	
Yes	247	34.8	2.33 (1.50 - 3.62)	2.30 (1.40 - 3.76)
Place of main practice				
D&V Centre/hosp.	57	47.4	1	
Prov. hosp./RH/health centre	92	33.7	0.56 (0.29 - 1.11)	0.61 (0.29 - 1.26)
District hosp./health centre	91	19.8	0.27 (0.13 - 0.57)	0.31 (0.14 - 0.67)
CHSs	211	22.7	0.33 (0.18 - 0.60)	0.42 (0.22 - 0.80)

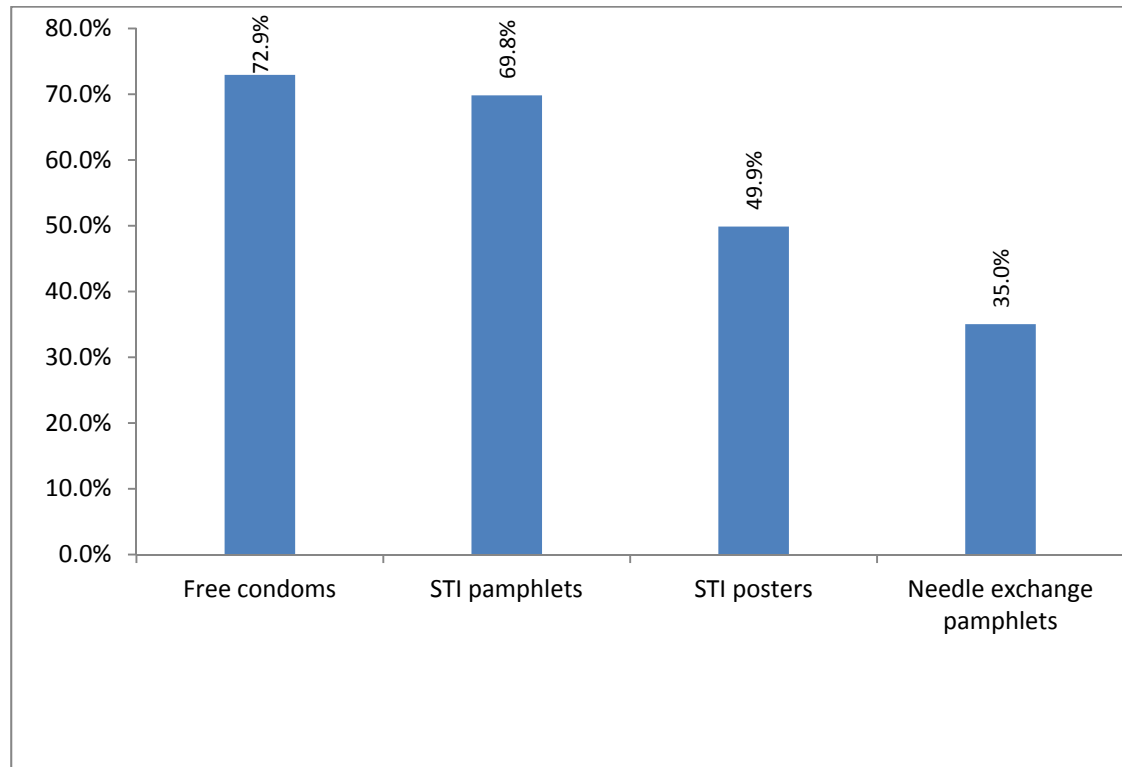
* The column reflects the percentage of participants who mentioned "collecting clients' feedback at least quarterly"

**p (Hosmer and Lemeshow Test) > 0.05

6.3 STI resources for patients

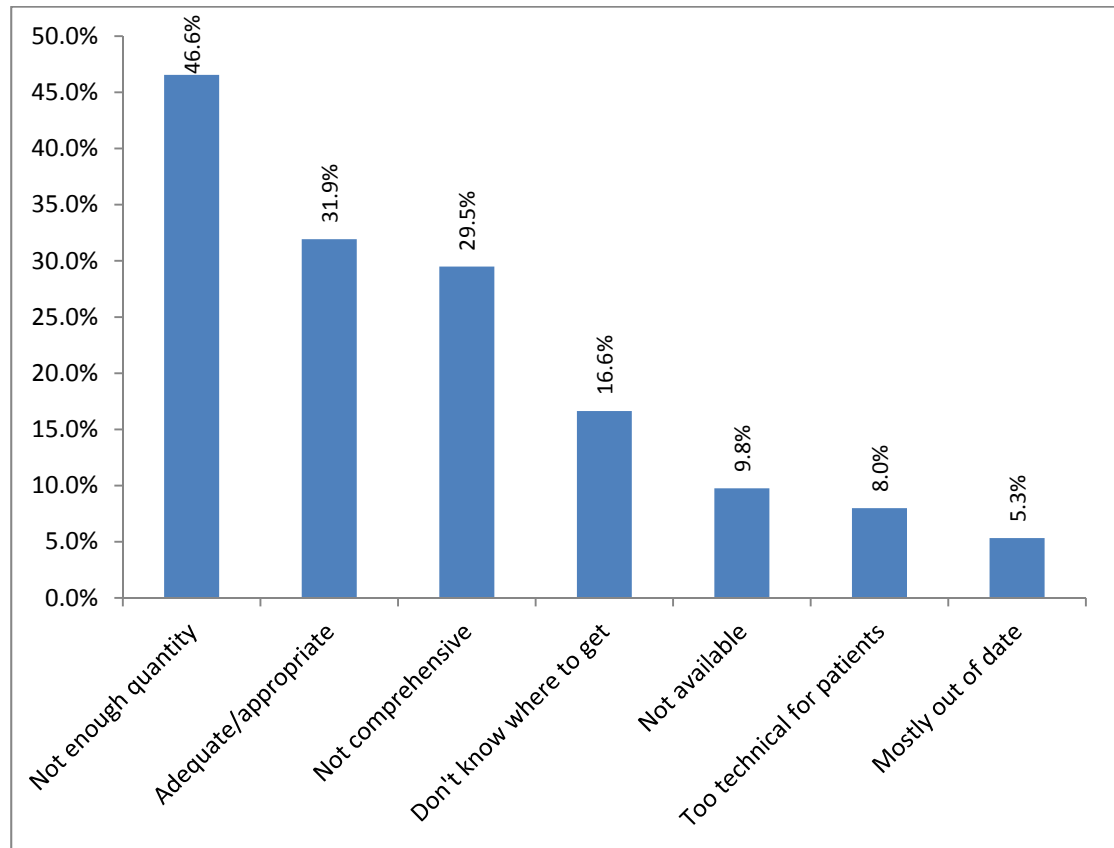
The study participants were asked for their opinion on the availability and quality of STI resources for patients. Resources include free condoms, and Information Education Communication (IEC) materials such as pamphlets and posters. Free condoms and STI pamphlets mentioned by about two-thirds of participants as being available at their facilities (72.9% and 69.8%, respectively). About half of the participants mentioned STI posters and over one-third of participants mentioned needle exchange pamphlets (49.9% and 35%, respectively).

Figure 6.3. Facilities for STI services



Although mentioned as being available by two-thirds of the participants, the quantity of these STI materials was regarded as insufficient by half of the participants (46.6%). Only one-third of the participants thought STI IEC materials were adequate and appropriate (31.9%). One-third of the participants felt that IEC materials for STI were not comprehensive (29.5%). Some participants did not know where to get the IEC materials on STIs (16.6%). STI materials were not available for 9.8% participants, and 8% of the participants considered the available materials too technical for their patients. A small percentage of participants considered the materials mostly out of date (5.3%).

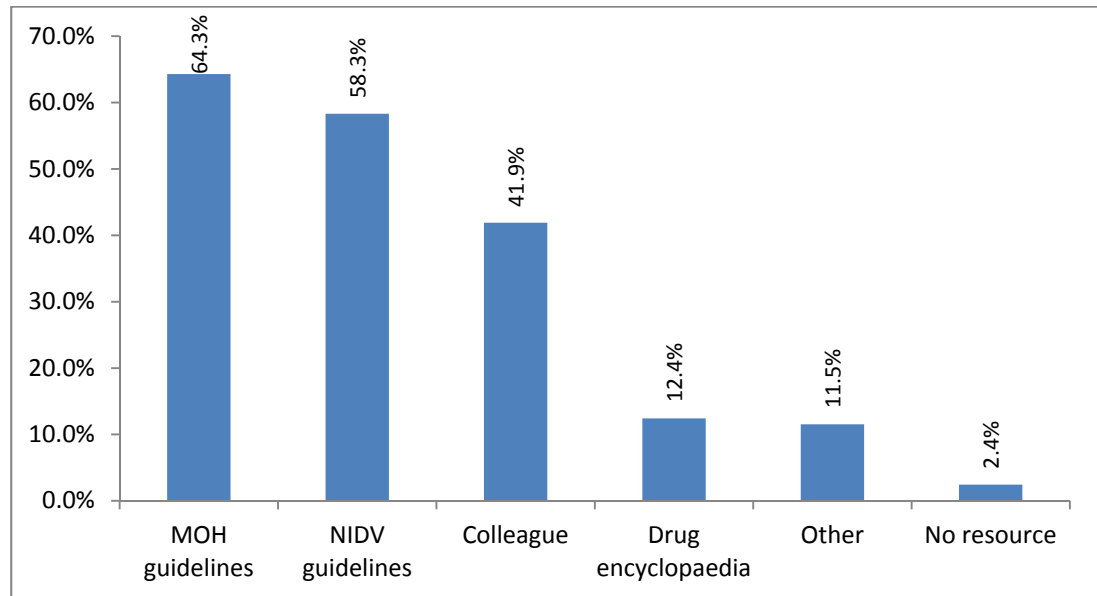
Figure 6.4. STI materials for patients



6.4 STI resources for professionals

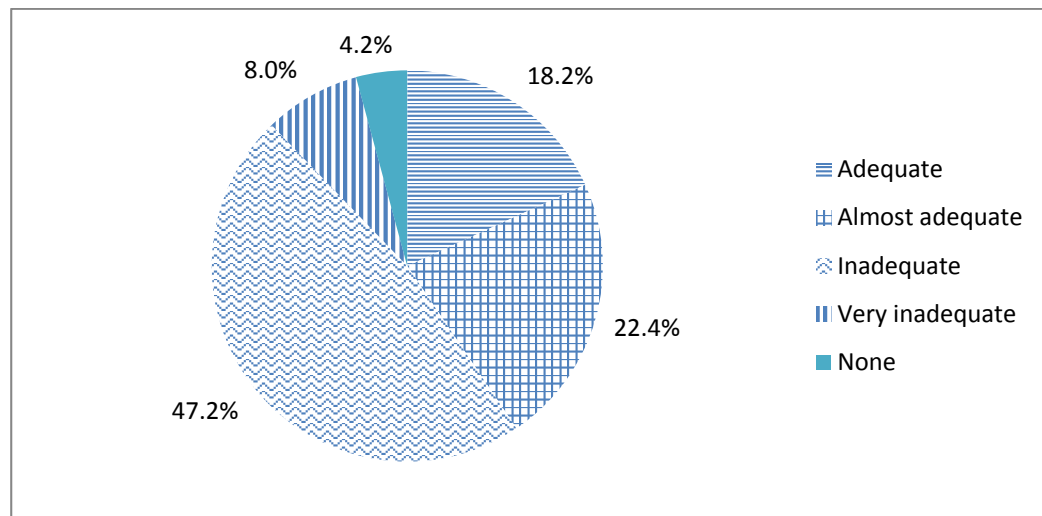
The study participants were asked to list their STI professional reference resources. More than half of the participants mentioned materials from government health agencies such as the Ministry of Health (64.3%) and the National Institute for Venereology and Dermatology (58.3%). Under a half of the participants used their colleagues as a resource for STI reference (41.9%). A small percentage (12.4%) of participants said that they used a drug encyclopaedia when they needed reference information. It should be noted that 2.4% participants mentioned having no professional resources for STI.

Figure 6.5. Resource for STI diagnosis and treatment



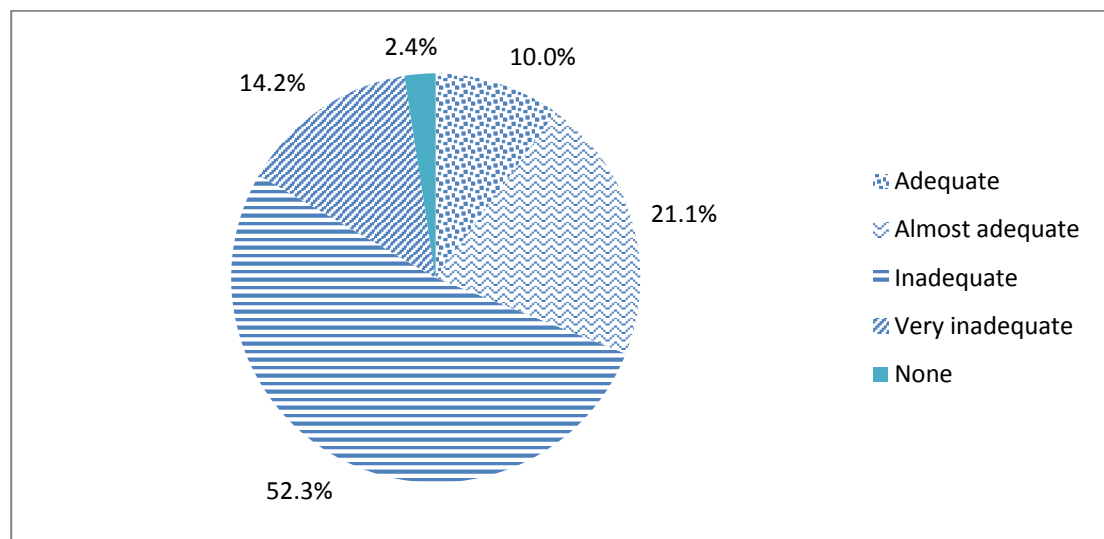
About a half of the participants considered STI reference materials available to them were inadequate (47.2%). About one-fifth of the participants considered STI reference materials almost adequate (22.4%) and under one-fifth of the participants considered having adequate reference materials (18.2%). Some participants mentioned having very inadequate reference materials (8%) and 4.2% did not have reference materials at all.

Figure 6.6. STI reference materials for doctors



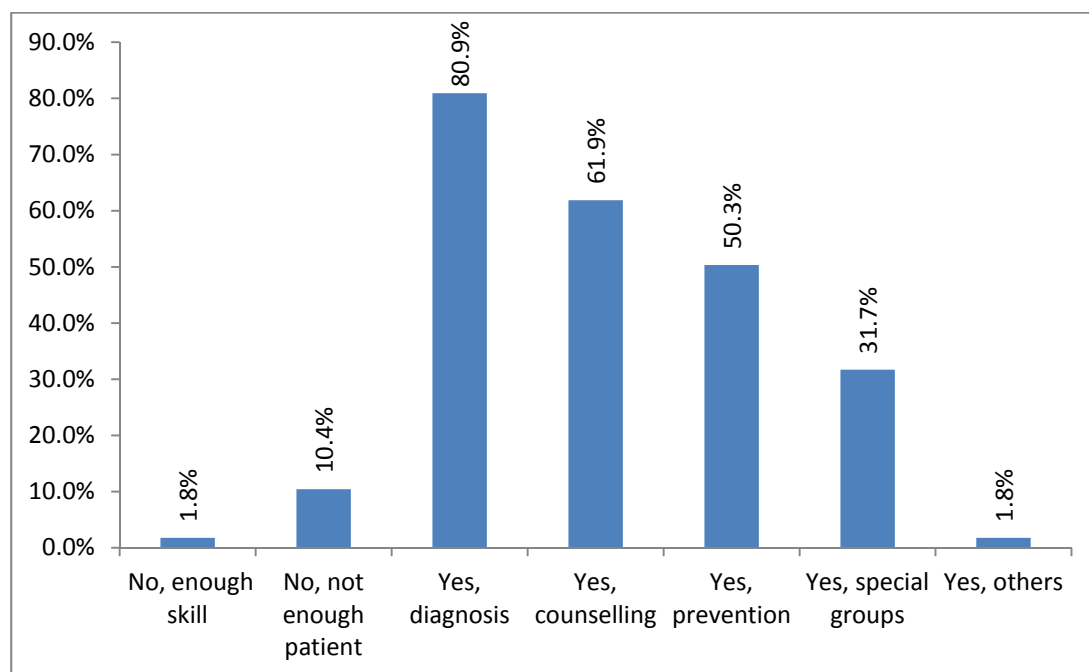
Similarly, over a half of the participants mentioned having inadequate STI training (52.3%). One-fifth of the participants regarded their STI training as almost adequate (21.1%) and only 10% of the participants felt that they had enough STI training. Some participants mentioned having very inadequate STI training (14.2%) and some mentioned having no STI training at all (2.4%).

Figure 6.7. STI training for primary providers



When asked about their STI training need, a small percentage of participants felt they had no need of further training as they had sufficient skills (1.8%) and some said they did not have enough STI patients to warrant further training (10.4%). Among those who replied that they would like further STI training, the majority wanted to have training in STI case diagnosis (80.9%), followed by counselling (61.9%) and STI prevention (50.3%). Only one-third of the participants mentioned the need for training in caring for special client groups such as sex workers, IDUs and homosexuals (31.7%) (Figure 6.8).

Figure 6.8. STI training needs



6.5 Summary

This chapter identified a number of organisational issues which could be obstacles to effective STI services. The issues include the insufficiencies in professional reference resources, STI training, STI quality assurance activities, and STI materials for patients. More than one-third of the participants mentioned the lack of professional reference resources and lack of time. Participants identifying lack of professional resources as an issue was more common among those who did not have postgraduate training, those who had been in medical practice for fewer than 10 years and were working at non D&V facilities. Participants identifying lack of STI training as an issue were more common among participants aged less than 40 years old, who were non D&V doctors, did not have postgraduate training, and worked at non D&V facilities.

It should be noted that even among participants who had postgraduate STI training, half expressed the need for more training.

Around one-third of the participants mentioned conducting at least quarterly implementation of STI facility reviews, STI case reviews, STI service observation and collecting of client feedback. It should be noted that one-third of the participants mentioned never conducting STI case reviews or STI service observation, and about half mentioned never collecting client feedback of STI services. Quarterly implementation of STI clinical case reviews were more common among participants who were males, had postgraduate patient communication training, and worked at D&V facilities. Quarterly implementation of STI service observation was more common among participants who were D&V doctors, saw 15 or fewer patients a week, and worked at D&V facilities. Quarterly collection of client feedback was more common among participants who were males, had postgraduate training in STI or patient communication, and worked at D&V hospitals.

Free condoms and STI pamphlets were available at the clinics of over two-thirds of the participants. STI posters were available at clinics of half of the participants. However, almost half of the participants mentioned an insufficient quantity of STI materials for patients, and one-third felt that those materials were not comprehensive. A tenth of the participants mentioned non-availability of STI materials at their clinics. The need for STI training was recognised by almost nine-tenths of the participants. The areas in need of training mentioned by over half of the participants were STI diagnosis, and counselling. The need for training in dealing with special client groups was recognised by one-third of the participants.

Chapter 7

Discussions

Introduction

Sexually transmitted infections (STIs) are increasing as a public health problem and on a rapid increase in Vietnam. Available literature revealed several issues in STI care in Vietnam such as sub-optimal STI care due to the varying knowledge and practice of physicians, patients dissatisfied with STI services and common STI self-medication (32, 200, 227). However, there has not been a study that comprehensively covers STI care topics such as knowledge on STI asymptomatic epidemiology, awareness of STI notifiable requirements, knowledge on STI diagnostic tests, history taking practice, the use of contact tracing, syndromic management approach and organisational issues that affect the quality of STI care. The present study on management of STIs by medical practitioners in Vietnam addresses this gap in knowledge.

The present study used survey method with a self-administered questionnaire. Study participants were general physicians (doctors, assistant doctors) and dermatology and venereology doctors working at health care facilities in three provinces with higher STI prevalence in Vietnam. The provinces were Quang Ninh province in the north, An Giang and Can Tho provinces in the south. In total, there were 404 non-D&V physicians and 47 D&V doctor participants.

This chapter describes key issues in STI care as identified in the present research and contextualises the findings in relation to available literature on management of STIs. Implications of the study findings and recommendations for interventions and further research

are also discussed. The findings show that the physicians had inconsistencies in knowledge of and skills in STI management. Physicians had limited knowledge of asymptomatic STIs and how to choose STI diagnostic tests. Sexual history taking was not well implemented, and STI syndromic management was commonly used. Quality assurance processes for STI services were not implemented as recommended in the IS/QoC methodology (212).

7.1 Key issues in STI care

7.1.1 Physicians have inadequate knowledge of the asymptomatic nature of STIs

The physicians in the present study had inadequate knowledge of asymptomatic STIs. The findings show that seven out of ten physicians knew about asymptomatic Chlamydia, three out of ten physicians could identify gonorrhoea in women as asymptomatic (in this chapter, percentages are rounded and presented as “out of ten”). Such low levels of knowledge of the possibility of common STIs being asymptomatic could negatively affect early diagnosis of STI infection (198, 228, 229). In the context of the increasing STI/HIV epidemic in Vietnam, this issue needs to be addressed (98).

Physicians’ knowledge of asymptomatic STIs in Vietnam, as reported in the present study, was much lower than knowledge of general practitioners in Victoria and New South Wales, Australia (198, 218). In the present study, seven out of ten physicians did not know about asymptomatic male Chlamydia compared to five out of ten in the survey in New South Wales and two out of ten in the survey in Victoria. One out of ten physicians in the present study realised the possibility of Herpes being asymptomatic in women compared to three out of ten in the survey in New South Wales. It should be noted that comparable data on physicians’

knowledge of asymptomatic STIs from similar studies in Vietnam or other developing countries could not be identified (32, 200, 230-233).

Knowledge of asymptomatic STIs was lower among females; non-D&V doctors; physicians not having post-graduate STI training; physicians practising for less than 20 years; physicians not having STI case diagnoses in the month prior to the survey; and physicians working at the lower level health care facilities. There are two differences in the findings of the present study and those of previous studies. The first difference is that the previous study in New South Wales and Victoria reported a higher knowledge of asymptomatic STI among female physicians than male physicians, while the present study found a higher knowledge among male physicians. The second difference is that the present study found better knowledge among physicians who had been in medical practice for more than 20 years, while the previous studies reported better knowledge among younger physicians (198, 218). In the present study, there was no significant difference in postgraduate STI training between male and female physicians. Possibly, the difference is partly due to gender role differences in Vietnam where females have a lower profile than males at home and in the society. Consequently this influences learning and performance of female physicians (234-237). The difference in the knowledge of asymptomatic STIs and physicians' age between the present study and previous study could be attributed to differences between the countries in the age of physicians entering medical practice. However, data to support or discount this explanation were not available.

7.1.2 Physicians' had inadequate knowledge of appropriate diagnostic tests for STIs

Etiological STI diagnosis is the best STI diagnostic approach. Though facilities for etiological STI management are limited in Vietnam, it is essential that the physicians make best use of the available facilities. Proper utilisation of etiological diagnostic facilities can in turn promote investment in etiological facilities. In developing countries, etiological diagnostic facilities can be both inadequate in quantity and sub-optimally utilised (238-240). For urethritis testing, the first tier tests to be prescribed are a Gram stain to detect gonorrhoea infection and confirm the presence of urethritis; nucleic acid amplification test (NAAT) to detect *Neisseria gonorrhoea* or *Chlamydia trachomatis*; culture of urethral discharge to detect *Neisseria gonorrhoea* and *Chlamydia trachomatis*; KOH prep of urethral discharge to detect fungal hyphae; HIV test to detect HIV; and Venereal Disease Research Laboratory test (VDRL) to detect syphilis (241, 242).

In the present study, the physicians did not have sound knowledge of appropriate STI diagnostic testing. Nearly three out of ten physicians did not know what test to recommend for a patient suspected of having urethritis, and another three out of ten physicians mentioned a urine/urethra discharge test, but could not specify the name of the test. Only two out of ten physicians selected a Gram stain of urethral discharge or urine, and another two out of ten physicians thought wet mount microscopy of urethral discharge would be the appropriate test.

For a patient suspected of having vaginitis, the first tier tests to be prescribed include vaginal pH and amine 'whiff' test of vaginal secretions to detect bacterial infection, wet mount microscopy of vaginal secretions to detect bacterial and yeast infection, and a Gram stain of vaginal secretions to detect bacterial vaginitis (243). Similar to the limited knowledge on

diagnostic testing for urethritis, the physicians in the present study had limited knowledge of vaginitis testing. Two out of ten physicians did not know what test to give a patient suspected of having vaginitis, and another two out of ten physicians mentioned vagina discharge test but could not specify the name of the test.

As with their knowledge of asymptomatic STIs, Vietnamese physicians' knowledge of appropriate STI diagnostic tests as reported in the present study was much lower than that in the surveys on general practitioners in New South Wales, Australia (218). Only two out of ten physicians in the present study named wet mount microscopy of urethral discharge as the appropriate test for urethritis compared to five out of ten as reported in the previous study. The present study found two out of ten physicians selected wet mount microscopy as the test for a suspected vaginitis case, while in the survey of New South Wales physicians, four out of ten selected this (218).

Knowledge of STI diagnostic tests was higher among physicians who were older, had post-graduate STI training, and were not working at CHSs. As for vaginitis only, knowledge of the appropriate test was better among female physicians than male physicians. The findings on the gender of physicians, STI training, location of medical practice are also supported by the results of the survey on general practitioners in New South Wales (218). The finding that female physicians had better knowledge than males of STI diagnostic tests could be explained by the fact that female physicians provide more medical examinations for female clients, hence had better knowledge on diagnostic tests than male physicians.

7.1.3 Sexual history taking was not well implemented

As discussed in Chapter 2, sexual history is the key to effective STI management as it provides a base for getting information about the patient's risks and the issues that need to be further explored. In addition, sexual history taking can be highly effective in initiating the exchange of information, counselling, and in supporting the patient during the meeting (144). As many STIs are asymptomatic, sexual history taking can be immensely useful for detecting risky behaviours that can lead to STI acquisition (145). It has been recommended that a sexual history should be taken for all patients (244).

In general, the physicians in the present study were not successful in the task of sexual history taking. About two out of ten physicians never took sexual history from patients without STI complaints, five out of ten physicians only occasionally took sexual history, and only about three out of ten physicians always took patients' sexual history. In addition, the present study revealed that physicians took sexual history from FSWs and IDUs clients less often than from heterosexual clients. This could have resulted from the attitudes of physicians toward FSWs and IDUs, or those patients could have been less forthcoming with their physicians, or both. Sex work and drug use in Vietnam are stigmatised by the community as they are considered 'social evils' (28, 245-247). There was a tendency among physicians to perceive patients with lower socioeconomic status more negatively and for physicians to interact more with patients about whom they had a more positive attitude (131, 138).

The frequency of sexual history taking for asymptomatic patients, as found in the present study, was lower than data reported in the two studies in the United States and higher than data reported in two studies conducted in Australia. The mail survey by Wimberly et al. on

primary care physicians in Atlanta in 2006 reported that 54.6% of physicians took sexual history from patients during their first visit (197). The cross sectional electronic survey by Mohajer et al. reported that 38.7% of internal medicine physicians in the outpatient setting routinely assessed the HIV risk of patients and 60.7% of internal medicine physicians in the inpatient setting did so (248). The telephone survey by Bangor in Western Australia of GPs who had treated chlamydia cases reported that 8% of physicians took comprehensive sexual history from symptomatic cases (197). The survey of GPs in New South Wales reported that 6.3% of physicians always took sexual history from heterosexual clients without STI complaints (218). However, what the physicians in the present study reported as sexual history could be different from that reported by physicians in studies elsewhere. Similar to the previous findings, comparable data on sexual history taking and details of sexual history taking from similar studies in Vietnam or other developing countries could not be identified (32, 200, 230-233).

In addition to the low frequency of sexual history taking, the information taken during sexual history taking was also insufficient. In comparison with the core sexual history questions (148) and the “5 Ps” (147) recommended for sexual history taking, the physicians in the present study only partly implemented these recommendations. The four most commonly sought pieces of information during sexual history taking were “number of sex contacts”, “condom usage”, “presenting complaint/reason” and “sexual relationship status”. This information was sought by only four out of ten physicians. About three out of ten physicians asked patients about their “history of complaints”. Nearly all this information was bio-medically oriented. Possibly, many physicians regarded sexual history and case history as the same. The remaining recommended sexual history information was only sought by fewer than two out of ten physicians.

Compared to the data reported in the study by Wimberly et al. and the study by Mohajer et al., “number of partners” was the only sexual history item that the was asked more frequently by physicians in the present study than their colleagues in the other studies (197, 248). The higher percentage of physicians in the present study who asked patients about their number of partners might suggest the physicians’ notion that patients contracted STIs due to their promiscuity. Results of the study on perceptions and attitudes of 15–49-year-old men and women in rural Vietnam reported that being promiscuous was the most common cause of STIs and that the patients faced a judgmental attitude from their physician, and some were even shouted at for being promiscuous (33, 34, 38). The low percentage of physicians in the present study seeking other sexual history items suggests that they have inadequate knowledge and skills in talking with patients about sensitive topics such as the number of sex partners, route of sexual act, history of sexual abuse, or sexual orientation. Comparable data from similar studies in Vietnam and other developing countries are not available (32, 200, 230-233).

The physicians in the present study cited patients’ discomfort, physicians’ discomfort, lack of training, time constraints and that sexual history taking was not their regular practice as reasons for not taking sexual history. This finding is also supported by the previous study reporting physicians’ perceived barriers for taking a sexual history, which included patients’ discomfort (146, 201, 249-251); providers’ discomfort (146, 201, 250, 251); inadequate knowledge (146, 196, 250, 252); time constraints (151, 201), the belief that taking sexual history is highly problematic due to the sensitivity and complexity of the issue (146, 249), and the view that it was not their responsibility (146, 196, 249). Generally, the percentage of physicians in the present study citing reasons for not taking a sexual history were much higher than for their colleagues in the New South Wales and Atlanta studies (197, 218). As the other

studies reported barriers to taking a sexual history for all clients, the present study used data for barriers to sexual history of heterosexual clients for comparison. In the present study, 58.9% of physicians cited patients' discomfort as a barrier to sexual history taking, while in the New South Wales study 48.7% of physicians cited this as a reason. Physicians' discomfort was cited by 36.8% of the physicians in the present study compared to 24% in the Atlanta study and 14.7% in the New South Wales study. Doctors' not having enough training was reported by 46.4% in the present study, much higher than the 25% in the study in Atlanta and 18.8% in the study in New South Wales. Time constraints was cited by 53% of physicians in the present study, higher than the 28% reported in the Atlanta study and lower than the 54.8% reported in the New South Wales study. It should be noted that 42.1% of physicians in the present study reported that taking a sexual history was not their regular practice.

7.1.4 Dominant utilisation of syndromic management

Syndromic management is considered inexpensive and effective for the treatment of symptomatic STIs, particularly in countries with limited laboratory facilities (253-255). The advantages of this approach are ease of use, avoidance of treatment delay and patients lost to follow up, low cost, and high cure rate (256, 257). However, this approach also has a number of disadvantages including low sensitivity of STI diagnosis and that many STIs are asymptomatic. Using the syndromic approach can result in both over-diagnosis and under-diagnosis. A study of STIs among women undergoing induced abortions in Hai Phong, Vietnam reported that a third of the RTI cases diagnosed using the clinical approach were actually negative (31). Yin et al. compared symptom-based diagnosis made by physicians in eastern China with laboratory testing; the sensitivity of symptom-based diagnosis was 10%, meaning that, when the syndromic approach was used, 90% of STI cases were not diagnosed (109).

Sensitivity is defined as the probability of the test being positive when disease is present (258). Mahmood and Saniotis reviewed medical records of women having RTI/STI services at health care facilities in Karachi to assess the use of syndromic management for STIs and RTIs and found that the health care providers (doctors/midwives) faced difficulties in using the syndromic management approach. The authors suggested that it could lead to incorrect treatment and increased antibiotic resistance (107). In the study of Admed et al. monitoring susceptibility of *Neisseria gonorrhoea* in Bangladesh from 1997 to 2006, antibiotic resistance of *Neisseria* increased remarkably during the study period. For example, *Neisseria gonorrhoea* resistance to ciprofloxacin increased from 9% in 1997 to 87% in 2006, multidrug-resistant *Neisseria gonorrhoea* first appeared in 1997 and increased by 44% in 2006 (259). The study by Su et al. reported that *Neisseria gonorrhoea* resistance to penicillin rose over five folds from 1999 to 2006, *Neisseria gonorrhoea* resistance to tetracycline rose over twenty one folds during the same period (1.8% to 38.82%) (260).

The majority of physicians in the present study have prescribed STI syndromic management during their medical practice (see Figure 5.7). The prevalent application of syndromic management documented in the present study suggests that many asymptomatic STI cases could have been missed due to the high percentage of STI cases being asymptomatic and low sensitivity of syndromic management as in real practice and that the problem of antibiotics resistance in Vietnam could be a significant issue (109, 226, 253, 254, 261-264).

7.1.5 Quality assurance for STI services was not well implemented

Available data suggest that health worker performance is an issue in developing countries, and that health worker performance is often sub suboptimal (265-267). Poor performance from

health workers can lead to low utilisation of health care services and vice versa (268, 269). There have been many efforts to improve health workers' performance. The review of Rowe et al. revealed two main trends in the interventions to improve health workers' performance: (a) the dissemination of written guidelines as a single intervention was generally ineffective and (b) supervision with feedback was generally effective (265).

Among the many interventions to improve health workers' performance, supervision is a valuable approach (265, 270, 271). Supervision can result in improvements in many aspects of health services. Mogasale et al. reported three- to seven-fold improvements in clinical performance as the result of a quality assurance intervention to improve STI services for SWs, IDUs, MSM and transgender subgroups in India. The intervention included development of guidelines and standards for STI services, development of a supportive supervisory tool, and conducting quarterly supervision visits. The supervision visits included assessment of clinical performance and giving feedback (271). Suh et al. reported remarkable improvements in infection prevention, staff management and services management after two rounds of supervision visits to 45 health facilities in Senegal. These visits made use of checklists to assess the infrastructure, staff technical competency, staff management, services management and record keeping (272). The quality improvement programme for STI clinics in Singapore, including the use of computerised medical records and revised safety guidelines, and a review of clinic operations resulted in reduction in prescription errors and patient complaints (273). The review by Bosch et al. on supervision in low and middle income countries concluded that the use of supervision resulted in increases in health service utilisation and community participation in health care (274).

In the three provinces which were the setting for the present study, integrated supervision/quality of care (IS/QoC) was used as a tool for improving the quality of health care services. Under IS/QoC, all related parties, namely, health care providers, health care managers and clients, contributed to the supervision activities. IS/QoC was recommended to be implemented quarterly. IS/QoC included five activities, namely, client interviews using a self-administered questionnaire, review of health facility using a checklist, review of health service data, service observation and coaching, and self-assessment. Based on the findings from those five activities, facility staff, IS/QoC supervisors and managers met to discuss causes of problems, select which problem to tackle and develop feasible and realistic solutions. Action plans with information for implementation and follow up/evaluation were developed as output of the IS/QoC meeting (212). Below are the discussions about the findings on three main aspects of IS/QoC, namely, client feedback, review of service data and service observation/feedback. These findings are compared with the recommended practice as in IS/QoC methodology (212).

Inadequacy in the collection of patients' feedback

Patients' evaluation of health services is an essential part of quality of care. Input from patients can be used for planning, delivery and evaluation of health services and is essential in patient-centred care (275, 276). Understanding patients' needs and concerns helps health facilities to improve services, leading to increased patient satisfaction. Satisfied patients are more likely to return and encourage their friends and families to use the services at the facilities. Consistent and continuous measurement of patient satisfaction can help health facilities to improve their efficiency and effectiveness (277). As reported in the present study, the implementation of

client feedback collection was low. This was a missed opportunity for health facilities to get input from patients to improve STI services.

Inadequacy in review of STI service data

Available evidence shows that measurement and follow-up of organisational performance can benefit in the development, implementation and revision of organisational strategy (278-280), stakeholders communication and strengthening of reputation (281-284) It can also improve employees' motivation, performance and organisational learning (285-288). However, it is common that organisations are “drowning in data” yet “thirsty for information” and that only a small portion of data collected is analysed and used to the expected level (289-292).

In IS/QoC implementation, service data are collected and analysed to identify problems and to monitor the progress of improvements. In the present study, only six out of ten physicians reported quarterly review of service data, three reported semi-annual data review and one out of ten reported no data review at all. This finding points to a significant inadequacy in the implementation of quality assurance. This under utilisation of collected data can result in limited improvement in the quality of care and performance of health facilities as well as discouraging future data collection due to lack of data usage and feedback.

Inadequacy in clinical service observation/feedback

It is vital that the professionalism of physicians is assessed to ensure their medical competency (293, 294). Assessment of physicians' professionalism can be done by clinical observation, patients' evaluation, paper or simulated tests, research, self assessment and peer assessment. Among those methods, clinical observation with feedback has proved successful in assessing

physicians' performance in practice, and it has been found that feedback after clinical observation can help improve their performance (294-297). Among every ten physicians surveyed, four reported quarterly clinical observation/feedback, and three reported semi-annual clinical observation/feedback and another three reported no clinical observation/feedback implemented at their facilities. Without service observation and coaching, the opportunity to assess and improve health providers' performance and service quality were not realised.

Two other aspects of IS/QoC, namely, facility review and self-assessment, were also not well implemented. Among ten physicians surveyed, only four reported quarterly facility reviews, another four implemented reviews half-yearly, and two reported no facility review. Similarly, among ten physicians responding to the question about implementing self-assessment STI services, four reported semi-annually and three physicians said that they did not conduct any self-assessment.

7.1.6 Physicians had high demand for additional STI training

STI training is one of the major means of improving the quality of STI care. Gong et al. reported significant improvements in STI service quality in China after providing one week's training for service providers and two months' training for key physicians (298). Dreisbach et al. presented improvements after three-day experiential and didactic training in STI care for clinicians from ten states in the United States. The clinicians showed significant gains in mean knowledge score for topics covered in the training including STI risk assessment, clinical examination, diagnosis and treatment (202). The review of scholarly articles published from 1980 to 2009 by Rackal et al. reported improvements in medical outcomes of patients treated by a provider with more

training/expertise (299). Kettinger reported an almost 50% increase in Chlamydia screening rates after an intervention comprised of one hour's training for service providers on the guidelines for Chlamydia screening, information sessions for nursing staff, and the display of the clinic's Chlamydia screening policy (300).

In the present study, the physicians recognised that they were in great need of additional STI training. Among ten physicians surveyed, six physicians mentioned "lack of training in STI" as a barrier to STI care. The most common types of training needed were STI case diagnosis, counselling for STI patients and STI prevention. It should be noted that even among participants with post-graduate STI training, half still reported their lack of STI training as a barrier to STI care. Compared to the survey in New South Wales, the percentage of physicians in the present study requiring additional training was much higher (87.8% vs. 71.5%) (218).

7.2 Limitations of the study

This thesis has presented results of a survey on STI care in medical practice in three provinces in Vietnam and as such may not represent the entire country's STI care situation. However, the results in other areas in Vietnam could be similar as the physicians surveyed all worked at government health facilities and had similar training, guidelines, investment, financial schemes and supervision from the Ministry of Health and the National Institute for Dermatology and Venereology. However, the sample was not a representative sample for Vietnam. Furthermore, the inclusion of assistant doctors in the present study could result in a different interpretation from a study that included doctors only. The focus of the present study, as it was designed, was on STI cases in general practice in comparison with STI cases in D&V practice with no intention to stratify the doctor and assistant doctor participants. Future studies can

implement additional analysis on the difference between doctors and assistant doctors in STI care. In fact, the inclusion of assistant doctors reflected the actual situation in STI management in Vietnam where almost half of physicians were assistant doctors (301). These assistant doctors had a four year medical training and were authorised to implement all doctors' tasks. Another limitation is that although data on physicians' attitudes toward STI patients of different categories were collected, these results have not been presented in this thesis due to time constraints. These results will be published later in journal articles.

Results of the present study were based on the self-reported responses of the physicians and could be prone to social desirability bias as some physicians may have chosen the responses expected of them rather than their actual practices (302). To reduce social desirability bias, the participants were reassured that the purpose of the survey was to assess knowledge and practice on STI care of physicians and that the results would be presented in an aggregated form with no reference to personal identifiable information. In addition, self-reported responses were subject to recall bias as questions were asked about events that had happened in the past (303, 304). In the present study, recall bias was addressed by asking participants to report only on events occurring during the 12 months prior to the survey.

7.3 Recommendations and policy implications

This study assessed different aspects of STI care in medical practice in three provinces in Vietnam, and identified a number of significant issues as discussed earlier in this chapter. The following sections discuss how the identified issues can be addressed in the Vietnamese context to improve STI care in Vietnam.

7.3.1 Improving knowledge and skills for STI care for physicians

The findings revealed that the physicians had limited knowledge and skills in STI care and that the physicians also perceived that they are in great need of additional training in STI care. In the context of the rising number of STIs in Vietnam, it is essential that the physicians' inadequacies in STI care as identified in the present study, including knowledge in epidemiology of asymptomatic STIs, selection of appropriate STI diagnostic tests, sexual history taking, and STI counselling, be improved to ensure the quality of STI services.

One of the reasons for those inadequacies could be the lack of a medical licensing system in Vietnam. The consequence of this is that there is no there was no pressure for physicians to attend in-service training courses to update their knowledge and skills. The Law on Medical Examination and Treatment approved in 2009 and which came into effect on January 1, 2011 has led to an important change in that medical practitioners now need to be licensed to practise medicine and to maintain their licence, they need to participate in CME at least once every two years (305). Although there has been no published study comparing the implementation of professional development for physicians before and after the introduction of the Law on Medical Examination and Treatment and how these affect knowledge and skills of physicians in Vietnam, it has been reported elsewhere that CME does improve physicians' skill and knowledge. Hence, it is plausible to assume that lack of mandatory CME may result in much less improvement in knowledge or skills (306-310). In the current context in Vietnam, it is necessary to advocate for a reasonable STI component in the CME curriculum and CME requirements for medical practitioners.

Insufficient budget for staff professional development can be foreseen as one of the largest obstacles to implementing CME in Vietnam. Only 0.7% of the health sector budget is allocated

for staff professional development, and even this amount is often not fully used (311). In addition, the medical training facilities in Vietnam are already overloaded and lack sufficiently qualified trainers and the infrastructure to provide training for the approximately 300,000 medical practitioners (312, 313). These challenges will need to be overcome if the objective of providing CME, including training in STIs, for medical practitioners is to be achieved. This requires significant commitment from the government in terms of resources, policy support, monitoring and supervision for the provision of CME for medical practitioners.

7.3.2 Innovative approach in sexual history taking

Sexual history taking, as revealed in the present study, was limited, and this needs due attention since sexual history is the first step in STI service. Having time constraints was a common reason that the physicians cited for not taking the sexual history of patients. It could be that they did not have enough time to elicit sexual history or that they did not have enough skill to successfully undertake sexual history taking within the time available. Physicians' time is also about financial efficiency of a health facility and the issue of limited sexual history taking can not simply be solved by committing more staff time to this task. It is necessary to implement new approaches that allow physicians to quickly and efficiently perform this task. The use of a computerised tool to elicit patients' sexual history has the advantages of saving physicians' time, of being acceptable to both patients and physicians, of improving care for patients' specific needs by patient screening and routing, and of improving information collection—especially sensitive information. Furthermore, this method of collection can even be better than a face-to-face (FtF) interview and is able to identify persons with an elevated STI risk (155, 157, 161, 314-316). A feasibility study of using audio computer-assisted self-interviewing (ACASI) in developing countries reported a high comfort level among participants

with ACASI. However, the authors cautioned that the feasibility of ACASI in developing countries could be affected by low literacy, especially in situations where the respondent does not understand the questions (158). Van et al. conducted a study in Kenya to compare ACASI with FtF interviews in their ability to elicit sensitive behaviours. It was reported that about 20% of participants could not complete ACASI due to limited reading skills. ACASI resulted in more frequent reporting of risky behaviours such as injecting drug use, rape, group sex, and payment for sex than in FtF interviews (317). Results of a recent review on the effects of questionnaire delivery mode revealed a significant reduction in reporting bias and an increase in the reporting of sensitive behaviours with the use of ACASI. The authors also promoted the idea that ACASI should be considered in developing countries due to its acceptability and feasibility (318). The study by Le and Vu compared ACASI with FtF interviews and self-administered paper interviews in Vietnam. The authors reported that the advantages ACASI had over the other two techniques were lower refusal rates, and higher reporting of sensitive and risky behaviours. This pattern was observed in both males and females, and in urban and rural settings (319). High literacy rates and a rapid increase in computer/internet usage in Vietnam suggest that ACASI for sexual history taking could be feasible in Vietnam. In Vietnam, it is estimated that literacy was 96.1% among males and 92% among females (18). Internet usage was only 0.3% of the population in 2000, and it increased to 34% in 2012. The introduction of ACASI for sexual history taking in Vietnam could lead to significant improvements in risk assessment for STI services. However, this approach requires the availability of computers and networks at health facilities, support staff, and resources for maintenance of the system. Until an ACASI tool and necessary infrastructure are available, a paper-based patient-administered tool for sexual history taking should be developed and used.

7.3.3 Ensuring the effectiveness of STI syndromic management

As discussed in section 7.1.3, the utilisation of syndromic management can result in incorrect diagnoses of STI cases and over prescribing of antibiotic treatment thereby promoting antibiotic resistance. The high utilisation of syndromic management as reported in the present study indicates that the following needs to be done to ensure the quality of STI syndromic management:

Antibiotic resistance monitoring

Bacterial STIs can be cured if the causal organism is susceptible to the antibiotic therapy. As discussed in section 7.1.3, antibiotic resistance is increasing globally. The World Health Organisation recommends that treatment regimens need to be adapted to the local situation to limit the spread of antibiotic resistance (47). Available data suggest that antibiotic resistance in STI-causing organisms is increasing (259, 260, 320, 321). It is imperative that up-to-date data on STI antibiotic resistance in Vietnam be available to allow timely adjustment of treatment regimens. It is necessary to have antibiotic resistance data both at the national level at local level, such as the provincial level, to ensure timely adaptation of the STI treatment regimens.

Periodic evaluation of STI diagnosis

STI syndromic management can result in extremely low sensitivity (109, 322, 323). Syndromic management is widely used in Vietnam. However, taking into account the many inadequacies in knowledge and skills of physicians, it may be that syndromic management is not being implemented as effectively as it could be. It is necessary that periodic evaluations of STI diagnosis using etiological diagnosis be conducted to verify the effectiveness of syndromic management to ensure appropriate STI diagnosis and treatment.

7.3.4 Improving STI testing by applying point-of-care STI tests

Point-of-care (POC) tests offer an inexpensive, practical, and significantly more sensitive approach than the syndromic management approach and also reduce overtreatment (324-328). POC tests have been developed for HIV, syphilis, HCV, gonorrhoea, Chlamydia, *Trichomonas* and bacterial vaginitis (329). POC tests can be performed by health care providers with minimal non-laboratory training and without the need for additional equipment. The application of POC STI tests offers many more choices for STI testing. STI testing can be implemented at remote or peripheral health care facilities, community organisations, pharmacies and homes (329, 330). POC tests can also help to increase STI testing, improve syndromic management and minimise patient loss to follow up (331).

Results of a multicentre study in India comparing etiological diagnosis with POC testing and syndromic management for STIs revealed that among women with vulvar itching, burning, abnormal vaginal discharge, or sores, POC diagnosis was correct in 83% of laboratory confirmed bacterial vaginitis cases which was double the 40% sensitivity of the syndromic management approach. POC diagnosis was correct in 82% of laboratory confirmed *Trichomonas vaginalis* infection cases compared to the 51% accuracy of syndromic management (324). Samarawickrama et al. compared the performance of POC testing for *Neisseria gonorrhoea* with laboratory testing. The POC test correctly detected 99.4% of cases detected by laboratory tests (332). Rao et al. compared the performance of *Trichomonas* POC testing with laboratory testing and wet-mount microscopy and culture in India. Compared to the culture results, sensitivity and specificity of POC testing was 88.2% and 99.4%, respectively; wet mount microscopy was 82.4% and 98.9%, respectively (333).

Etiological diagnosis requires the availability of laboratory equipment, chemicals/reagents and technicians. Syndromic management can result in many problems. POC testing can be an appropriate choice for STI diagnosis testing in Vietnam. However, the effectiveness and cost benefit of this approach in the Vietnamese context will need to be examined before implementation.

7.3.5 Mystery clients to assess STI services

As discussed earlier, there were many aspects of STI care in Vietnam that need to be improved. Quality assurance is one of the key solutions to the situation. However, the implementation of quality assurance in Vietnam was also sub-optimal. In addition, the currently implemented quality assurance activities have their own disadvantages. For example, self-assessment can be subject to bias of self-reported competency (304, 334, 335); quarterly facility reviews or data reviews may not be sufficient for the timely detection of issues in daily operations and may face difficulties due to limited human resources (212, 265); and clinical service observation is subject to the Hawthorne effect in which physicians perform better knowing that they are being observed – even client exit interviews can be subject to the Hawthorne effect since the client exit interviews are normally conducted in a certain time period and physicians could be aware of the client exit interview being conducted in their facilities (336-341).

“Mystery client”, a market research tool, could be used to evaluate the quality of STI services (265). The use of pseudo-patients as mystery patients in health enables health care services to be evaluated by people trained to act as patients. This approach is becoming more popular, especially with the movement toward patient-centred care (342-344). The benefits of this approach include the avoidance of the Hawthorne effect, a more accurate assessment as the actual practice is assessed and more steady improvement since any client could be the mystery

client (345-348). Regarding the ethical aspect of this approach, the review of Rhodes and Miller concluded that if properly implemented, the use of mystery client in health service can be ethically justified (349)

The use of mystery client in health care service can be adapted to suit specific needs of a health facility. It can be used to target specific issues such as appointment scheduling, phone answering, administrative procedures, clinic design and arrangement, signposts, interpersonal skill of frontline staff and physicians, adherence to service guidelines and policies, and patient confidentiality. The mystery client tool can also be used to assess staff training needs and to identify staff in need of improvements (342, 343, 350, 351). This method has been used to evaluate health interventions in developing countries, such as in the assessment of the effectiveness of intervention using medical representatives to distribute STI counselling information to non-formal providers in Bangladesh, and in the assessment of the effectiveness of training and supervision in strengthening the capacity of pharmacy staff in Vietnam to deliver healthcare information and services for childhood diarrhoea and emergency contraceptive pills (352, 353). Though there is limited literature on the effectiveness of using Mystery Client in Vietnam, this approach is a significant addition to quality assurance for STI services. It is obviously worthwhile examining the feasibility and effectiveness of Mystery Client in STI service in Vietnam.

7.3.6 Strengthening data for decision making

The low implementation of data reviews could be due to insufficient capacity of health care providers in this area, the lack of an effective and user-friendly health information management system, or data not being used to extract information that would guide operations, planning and evaluation of the health facilities. The effective use of data creates a

need to collect and analyse further data. Without this, data collection and management only add to the burden of the clinic staff (354-356).

The data review in IS/QoC meetings is an opportunity to create interaction between data staff and data users. When data staff and data users work together, the data users are more aware of the data collection processes and methods, data sources and related issues. Both data staff and users can address obstacles or problems associated with data use, discuss data analysis and results, discuss concerns and seek clarifications (357, 358), and discuss emerging questions and how to link available data to address these questions. This gives a feeling of ownership to the data staff and data users which leads to an improvement in data collection and analysis and evidence-based decision making (359, 360).

Vietnam abandoned a central planning economy for a market-oriented economy in 1986 (361). Health facilities in Vietnam can now opt to be economically autonomous. This requires the improved capacity of health facilities in data-driven decision making. Training, technical and logistic support is needed from the Ministry of Health, and training and research institutions to improve this aspect of the health care system in Vietnam.

7.4 Future research

Based on the findings presented in the present study, the following topics are recommended for future research in Vietnam. These recommended topics include those that deal with limitations of the present study and those recommended for improving STI care in Vietnam.

As discussed in sections 7.1.3 and 7.3.2, there need to be effective tools to assist physicians to collect comprehensive sexual history information from patients. Such a tool does not exist in Vietnam. In order to introduce this tool to medical practice in Vietnam, there should be a

feasibility study and clinical trial on the use of a computer-assisted self-interviewing tool for sexual history taking in STI service. The studies could be conducted in large hospitals/clinics serving a large number of STI clients. Results from the studies would provide information on the feasibility and effectiveness of such a tool, and provide insight into the design of the tool to be deployed at health care facilities in Vietnam. The application of such a tool would help to improve sexual history taking and subsequently improve STI care in particular, and health care in general in Vietnam.

Results of future studies on STI care in Vietnam would be enhanced by the application of additional methods such as clinical service observation, and desk reviews of patients' records and STI service data. Mystery clients could evaluate health facilities and services to provide more comprehensive data on STI care as well as to enable the cross-linkage and triangulation of the findings. These different methods would complement one another in terms of minimising bias and providing clarification and verification of the study findings. Also, mixed quantitative qualitative design should also be considered as the qualitative arm can be more useful in exploring unknown issues in STI care and provide more detailed information about the issues.

The dominant utilisation of syndromic management in STI care carries the risk that a large number of STI patients are not being identified or correctly diagnosed and treated. In addition to strengthening sexual history taking and screening, there is a need to conduct periodic evaluation of the utilisation of syndromic management. The effectiveness of this approach requires evaluation to ensure it is used appropriately. There is also a need to provide input for the identification of areas of weakness in STI care, the planning of training programs, and the development or revision of training materials.

As discussed in sections 7.1.4 and 7.3.3, antibiotic resistance is a serious issue in health care in Vietnam and globally, and the use of syndromic management can further exacerbate the situation. Surveillance of the antibiotic resistance of common STI pathogens is needed to allow the timely adaptation of STI treatment regimes to improve STI management and control antibiotic resistance in STI treatment and in other general areas of medical practice in Vietnam. The feasibility, diagnostic effectiveness and cost effectiveness of STI point-of-care testing in Vietnam needs to be examined to provide evidence for the introduction of point-of-care testing in health systems in Vietnam and/or the modification of STI diagnostic guidelines. Training materials should include the use of point-of-care testing for STI diagnosis. In addition, there should be studies investigating the use of point-of-care testing in non-medical settings. Community organisations, civil society organisations, or similar organisations that have been participating in STI/HIV control work and providing care and support for people affected by STI/HIV could provide point-of-care testing. There should also be studies investigating the use of patient-administered STI testing for different groups of STI patients, especially people at elevated risk of STI/HIV such as sex workers, men who have sex with men, young people, and others in higher risk groups.

As discussed in sections 7.1.5 and 7.3.5, the use of Mystery Client for ongoing STI quality assurance could lead to a significant improvement in STI care in Vietnam. However, the feasibility and effectiveness of such an approach would be affected by the differences in the socioeconomic situation and characteristics of the patients, and the differences in health care providers and systems. There should be studies investigating the introduction of this approach in STI care and health care in general. Findings from the studies would provide evidence on the feasibility and effectiveness of this approach in health care as well as providing information on

how to maximise the effectiveness of this approach and how to remove the impediments associated with it.

7.5 Summary

The present study highlights a number of issues regarding STI management in medical practice in Vietnam. Although the study was conducted in three provinces where the prevalence of STI was high, the study is comprehensive in so far as it investigated physicians' knowledge, skill and practice for STI care for different client groups. Also, it is the first study in Vietnam that compares general practitioners with D&V doctors in STI care.

Generally, the physicians had many inadequacies in knowledge and skills for STI care. Part of this problem has been caused by a lack of CME and a medical licensing system in the past. The situation regarding CME has now changed with CME at least once every two years being mandatory for physicians to retain the validity of their medical license. However, it can be speculated that providing CME for all medical professionals in Vietnam would be difficult as a budget deficiency has been one of the major obstacles to professional development for medical practitioners and the limited capacity of medical training institutions. In addition to training in knowledge and skills, the findings also suggested that physicians need interventions to improve their attitude toward STI clients and clients of differing socioeconomic status. Improving STI care in medical practice in Vietnam is a long process requiring significant resources and policy commitment, yet it is of immense importance due to the increase in STIs and sub-optimal STI care in Vietnam. The present study recommends operational and policy interventions to improve STI care in Vietnam. The interventions proposed include STI training and post-training supervision to improve physicians' knowledge and skills in STI care, applying

innovative approaches for sexual history taking including a computerised and paper-based patient-administered tool for sexual history taking, regular evaluation STI syndromic management, STI antibiotic surveillance, utilisation of STI point-of-care testing, using mystery clients for evaluation of STI services, and strengthening data-based decision making in health services.

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Annexes

Annex 1: Additional Tables for Chapter 5

Table 0.1. Factors associated with “patients’ discomfort” as a reason for not taking a sexual history from SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	126	67.5	1	
Males	62	45.2	0.40 (0.21-0.74)	0.50 (0.26-0.97)
Medical degree				
Non D&V doctor	158	64.6	1	NA
D&V doctors	30	36.7	0.32 (0.14-0.72)	
Place of main practice				
D&V Centre/hosp.	36	38.9	1	
Prov. hosp./RH/health centre	24	58.3	2.20 (0.77-6.30)	
District hosp./health centre	43	72.1	4.06 (1.58-10.44)	2.94 (1.08-7.97)
CHSs	85	63.5	2.74 (1.23-6.11)	2.31 (1.01-5.27)

* The column reflects the percentage of participants who mentioned “patients’ discomfort”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

Table 0.2. Factors associated with “doctors’ discomfort” as a reason for not taking a sexual history from SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	88	56.8	1	NA
D&V doctors	24	16.7	0.15 (0.05-0.48)	
Postgraduate patient communication training				
No	49	67.3	1	
Yes	63	33.3	0.24 (0.11-0.54)	0.25 (0.10-0.61)
Average weekly client volume				
= < 15	47	63.8	1	NS
16-30	34	29.4	0.24 (0.09-0.61)	
> 30	31	45.2	0.47 (0.19-1.18)	
Place of main practice				
D&V Centre/hosp.	31	25.8	1	
Prov. hosp./RH/health centre	13	30.8	1.28 (0.31-5.32)	
District hosp./health centre	22	68.2	6.16 (1.85-20.56)	5.04 (1.32-19.24)
CHSs	46	58.7	4.09 (1.51-11.06)	3.15 (1.06-9.36)

* The column reflects the percentage of participants who mentioned “doctors’ discomfort “

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.3. Factors associated with “doctors’ not well trained” as a reason for not taking a sexual history from SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	158	36.1	1	NA
D&V doctors	30	10.0	0.20 (0.06-0.68)	
Postgraduate patient communication training				
No	74	51.4	1	
Yes	114	19.3	0.23 (0.12-0.43)	0.20 (0.10-0.42)
Average weekly client volume				
= < 15	85	43.5	1	NS
16-30	49	28.6	0.52 (0.24-1.10)	
> 30	54	16.7	0.26 (0.11-0.60)	
Place of main practice				
D&V Centre/hosp.	36	8.3	1	
Prov. hosp./RH/health centre	24	12.5	1.57 (0.29-8.53)	
District hosp./health centre	43	44.2	8.71 (2.31-32.81)	12.13 (2.87-51.31)
CHSs	85	41.2	7.70 (2.19-27.10)	8.90 (2.32-34.05)

* The column reflects the percentage of participants who mentioned “doctor not well trained”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.4. Factors associated with “presence of another person” as a reason for not taking a sexual history from SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	126	38.9	1	NS
Males	62	22.6	0.46 (0.23-0.92)	
Medical degree				
Non D&V doctor	158	37.3	1	NS
D&V doctors	30	13.3	0.26 (0.09-0.78)	
Postgraduate patient communication training				
No	74	43.2	1	
Yes	114	27.2	0.49 (0.26-0.91)	0.46 (0.23-0.91)
Average weekly client volume				
= < 15	85	42.4	1	NS
16-30	49	30.6	0.60 (0.29-1.26)	
> 30	54	22.2	0.39 (0.18-0.84)	
Place of main practice				
D&V Centre/hosp.	36	11.1	1	
Prov. hosp./RH/health centre	24	25.0	2.67 (0.66-10.71)	
District hosp./health centre	43	48.8	7.64 (2.30-25.33)	6.38 (1.77-23.07)
CHSs	85	37.6	4.83 (1.56-14.93)	4.05 (1.24-13.19)

* The column reflects the percentage of participants who mentioned “presence of another person”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.5. Factors associated with “lack of time” as a reason for not taking a sexual history from SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate training in STI				
No	50	32.0	1	
Yes	138	49.3	2.06 (1.04-4.08)	3.26 (1.45-7.31)
Postgraduate patient communication training				
No	74	56.8	1	
Yes	114	36.8	0.44 (0.24-0.81)	0.28 (0.14-0.57)
Place of main practice				
D&V Centre/hosp.	36	61.1	1	
Prov. hosp./RH/health centre	24	20.8	0.17 (0.05-0.55)	0.18 (0.05-0.63)
District hosp./health centre	43	62.8	1.07 (0.43-2.67)	
CHSs	85	35.3	0.35 (0.16-0.78)	0.36 (0.15-0.83)

* The column reflects the percentage of participants who mentioned “lack of time”

**p (Hosmer and Lemeshow Test) > 0.05

Table 0.6. Factors associated with “not being regular practice” as a reason for not taking a sexual history from SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	158	33.5	1	NA
D&V doctors	30	13.3	0.30 (0.10-0.92)	
Postgraduate patient communication training				
No	74	43.2	1	
Yes	114	21.9	0.37 (0.19-0.70)	0.32 (0.16-0.63)
Place of main practice				
D&V Centre/hosp.	36	13.9	1	
Prov. hosp./RH/health centre	24	20.8	1.63 (0.42-6.39)	
District hosp./health centre	43	48.8	5.92 (1.94-18.10)	7.20 (2.25-23.00)
CHSs	126	32.5	2.73 (0.95-7.82)	

* The column reflects the percentage of participants who mentioned “not regular practice”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.7. Factors associated with “patients’ discomfort” as a reason for not taking a sexual history from IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	66	54.5	1	
Males	43	27.9	0.34 (0.15-0.78)	NS
Medical degree				
Non D&V doctor	84	52.4	1	NA
D&V doctors	25	16.0	0.19 (0.06-0.59)	
Postgraduate training in STI				
No	29	62.1	1	NS
Yes	80	37.5	0.36 (0.15-0.87)	
Postgraduate patient communication training				
No	48	60.4	1	
Yes	61	31.1	0.29 (0.13-0.64)	0.33 (0.13-0.83)
Place of main practice				
D&V Centre/hosp.	32	25.0	1	NS
Prov. hosp./RH/health centre	12	33.3	1.44 (0.34-6.10)	
District hosp./health centre	19	63.2	4.93 (1.44-16.88)	
CHSs	46	52.2	3.01 (1.11-8.12)	

* The column reflects the percentage of participants who mentioned “patients’ discomfort”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.8. Factors associated with “doctors’ discomfort” as a reasons for not taking a sexual history from IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	84	53.6	1	NA
D&V doctors	24	20.8	0.23 (0.08-0.68)	
Postgraduate patient communication training				
No	48	62.5	1	
Yes	60	33.3	0.29 (0.13-0.63)	0.34 (0.15-0.79)
Place of main practice				
D&V Centre/hosp.	31	25.8	1	
Prov. hosp./RH/health centre	12	25.0	0.96 (0.21-4.45)	
District hosp./health centre	19	63.2	4.93 (1.44-16.88)	4.7 (1.32-16.75)
CHSs	46	58.7	3.93 (1.45-10.68)	3.87 (1.38-10.79)

* The column reflects the percentage of participants who mentioned “doctors’ discomfort”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.9. Factors associated with “doctor not well trained” as a reason for not taking a sexual history from IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	72	58.3	1	NS
Males	44	34.1	0.38 (0.17-0.83)	
Medical degree				
Non D&V doctor	91	57.1	1	NA
D&V doctors	25	20.0	0.19 (0.07-0.55)	
Postgraduate patient communication training				
No	53	67.9	1	
Yes	63	33.3	0.22 (0.10-0.49)	0.24 (0.09-0.62)
Average weekly client volume				
= < 15	47	66.0	1	NS
16-30	37	37.8	0.32 (0.13-0.80)	
> 30	32	37.5	0.32 (0.13-0.82)	
Place of main practice				
D&V Centre/hosp.	32	18.8	1	
Prov. hosp./RH/health centre	12	16.7	0.87 (0.15-5.03)	
District hosp./health centre	21	71.4	10.83 (2.96-39.7)	8.85 (1.96-39.9)
CHSs	51	66.7	8.41 (2.91-24.36)	6.48 (1.98-21.25)

* The column reflects the percentage of participants who mentioned “doctor not well trained”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.10. Factors associated with “presence of another person” as a reason for not taking a sexual history from IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	91	47.3	1	
D&V doctors	25	16.0	0.22 (0.07-0.69)	NA
Postgraduate patient communication training				
No	53	50.9	1	
Yes	63	31.7	0.43 (0.20-0.91)	NS
Average weekly client volume				
= < 15	47	57.4	1	
16-30	37	29.7	0.33 (0.13-0.81)	0.34 (0.13-0.86)
> 30	32	28.1	0.30 (0.11-0.79)	0.33 (0.12-0.87)

* The column reflects the percentage of participants who mentioned “presence of another person”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.11. Factors associated with “lack of time” as reason for not taking a sexual history from IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)
Postgraduate patient communication training				
No	53	75.5	1	
Yes	63	50.8	0.33 (0.15-0.72)	

* The column reflects the percentage of participants who mentioned “lack of time”

Table 0.12. Factors associated with “not being regular practice” as a reason for not taking a sexual history from IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	72	55.6	1	NS
Males	44	34.1	0.42 (0.19-0.93)	
Medical degree				
Non D&V doctor	91	53.8	1	NA
D&V doctors	25	24.0	0.28 (0.10-0.76)	
Postgraduate patient communication training				
No	53	60.4	1	
Yes	63	36.5	0.36 (0.17-0.77)	NS
Average weekly client volume				
= < 15	47	61.7	1	NS
16-30	37	35.1	0.35 (0.14-0.85)	
> 30	32	40.6	0.44 (0.18-1.10)	
Place of main practice				
D&V Centre/hosp.	32	28.1	1	NS
Prov. hosp./RH/health centre	12	25.0	0.85 (0.19-3.88)	
District hosp./health centre	21	66.7	5.11 (1.55-16.81)	
CHSs	51	56.9	3.25 (1.26-8.42)	

* The column reflects the percentage of participants who mentioned “not regular practice”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.13. Factors associated with “patients’ discomfort” as a reason for not taking a sexual history from heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	204	56.4	1	
Males	100	44.0	0.61 (0.38-0.98)	0.55 (0.34-0.92)
Duration of medical practice (years)				
=<10	83	39.8	1	
11-20	106	59.4	2.22 (1.24-3.99)	2.55 (1.39-4.68)
>20	115	54.8	1.84 (1.04-3.26)	1.90 (1.05-3.42)
Average weekly client volume				
= < 15	157	45.9	1	
16-30	69	65.2	2.21 (1.23-3.98)	2.32 (1.27-4.24)
> 30	78	53.8	1.38 (0.80-2.37)	

* The column reflects the percentage of participants who mentioned “patients’ discomfort”

**p (Hosmer and Lemeshow Test) > 0.05

Table 0.14. Factors associated with “doctors’ discomfort” as a reason for not taking a sexual history from heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	277	38.6	1	NA
D&V doctors	27	18.5	0.36 (0.13-0.98)	
Patient communication training				
No	156	50.6	1	
Yes	148	22.3	0.28 (0.17-0.46)	0.28 (0.16-0.46)
Place of main practice				
D&V Centre/hosp.	30	16.7	1	
Prov. hosp./RH/health centre	52	23.1	1.50 (0.47-4.77)	
District hosp./health centre	65	41.5	3.55 (1.21-10.46)	4.61 (1.50-14.16)
CHSs	157	43.3	3.82 (1.39-10.50)	3.66 (1.30-10.34)

* The column reflects the percentage of participants who mentioned “doctor feels uncomfortable”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.15. Factors associated with “doctors’ not well trained” as a reason for not taking a sexual history from heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	277	49.1	1	NA
D&V doctors	27	18.5	0.24 (0.09-0.64)	
Postgraduate patient communication training				
No	156	62.8	1	
Yes	148	29.1	0.24 (0.15-0.39)	0.26 (0.16-0.43)
Average weekly client volume				
= < 15	157	54.1	1	NS
16-30	69	39.1	0.54 (0.31-0.97)	
> 30	78	37.2	0.50 (0.29-0.87)	
Place of main practice				
D&V Centre/hosp.	30	26.7	1	
Prov. hosp./RH/health centre	52	26.9	1.01 (0.37-2.80)	
District hosp./health centre	65	46.2	2.36 (0.92-6.06)	
CHSs	157	56.7	3.60 (1.51-8.58)	3.05 (1.21-7.69)

* The column reflects the percentage of participants who mentioned “doctor not well trained”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.16. Factors associated with “presence of another person” as a reason for not taking a sexual history from heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate patient communication training				
No	156	65.4	1	
Yes	148	50.7	0.54 (0.34-0.86)	

* The column reflects the percentage of participants who mentioned “presence of another person”

**p (Hosmer and Lemeshow Test) > 0.05

Table 0.17. Factors associated with “lack of time” as a reason for not taking a sexual history from heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate patient communication training				
No	156	59.6	1	NS
Yes	148	45.9	0.57 (0.36-0.90)	

* The column reflects the percentage of participants who mentioned “lack of time”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.18. Factors associated with “not being regular practice” as a reason for not taking a sexual history from heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	204	47.1	1	
Males	100	32.0	0.53 (0.32-0.87)	0.48 (0.29-0.81)
Postgraduate patient communication training				
No	156	50.6	1	
Yes	148	33.1	0.48 (0.30-0.77)	0.45 (0.28-0.72)

* The column reflects the percentage of participants who mentioned “not being regular practice”

**p (Hosmer and Lemeshow Test) > 0.05

Table 0.19. Factors associated with “doctors’ discomfort” as a reason for not organising contact tracing for SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	154	44.8	1	NA
D&V doctors	30	16.7	0.25 (0.09-0.68)	
Postgraduate patient communication training				
No	74	51.4	1	
Yes	110	32.7	0.46 (0.25-0.84)	0.44 (0.23-0.82)
Place of main practice				
D&V Centre/hosp.	36	30.6	1	
Prov. hosp./RH/health centre	23	17.4	0.48 (0.13-1.74)	
District hosp./health centre	41	56.1	2.90 (1.13-7.43)	3.16 (1.21-8.28)
CHSs	84	42.9	1.70 (0.74-3.91)	

* The column reflects the percentage of participants who mentioned “doctors’ discomfort”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

Table 0.20. Factors associated with “doctor not well trained” as a reason for not organising contact tracing for SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	154	53.9	1	
D&V doctors	30	26.7	0.31 (0.13-0.74)	NA
Postgraduate patient communication training				
No	74	62.2	1	
Yes	110	40.9	0.42 (0.23-0.77)	0.40 (0.21-0.71)
Place of main practice				
D&V Centre/hosp.	36	38.9	1	
Prov. hosp./RH/health centre	23	39.1	1.01 (0.35-2.95)	
District hosp./health centre	41	65.9	3.03 (1.20-7.68)	3.36 (1.29-8.75)
CHSs	84	48.8	1.50 (0.68-3.32)	

* The column reflects the percentage of participants who mentioned “doctor not well trained”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.21. Factors associated with “cause patient not return” as a reason for not organising contact tracing for sex worker clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	55	40.0	1	NS
40-50	104	58.7	2.13 (1.09-4.14)	
51-60	25	76.0	4.75 (1.64-13.77)	
Medical degree				
Non D&V doctor	154	50.6	1	NA
D&V doctors	30	80.0	3.90 (1.51-10.06)	
Postgraduate training in STI				
No	50	40.0	1	
Yes	134	61.2	2.37 (1.22-4.59)	3.05 (1.35-6.88)
Postgraduate patient communication training				
No	74	66.2	1	
Yes	110	48.2	0.47 (0.26-0.87)	0.32 (0.12-0.67)
Duration of medical practice (in years)				
=<10	46	39.1	1	NS
11-20	65	60.0	2.33 (1.08-5.05)	
>20	73	61.6	2.50 (1.17-5.33)	
Place of main practice				
D&V Centre/hosp.	36	80.6	1	
Prov. hosp./RH/health centre	23	26.1	0.09 (0.02-0.30)	0.09 (0.02-0.33)
District hosp./health centre	41	61.0	0.38 (0.13-1.06)	
CHSs	84	50.0	0.24 (0.10-0.61)	0.24 (0.09-0.66)

* The column reflects the percentage of participants who mentioned “cause patient not return”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.22. Factors associated with “get patient upset” as a reason for not organising contact tracing for SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate patient communication training				
No	74	52.7		
Yes	110	33.6	0.45 (0.25-0.83)	0.42 (0.23-0.88)
Average weekly client volume				
= < 15	82	50.0	1	NS
16-30	49	42.9	0.75 (0.37-1.53)	
> 30	53	26.4	0.36 (0.17-0.76)	
Place of main practice				
D&V Centre/hosp.	36	25.0	1	
Prov. hosp./RH/health centre	23	21.7	0.83 (0.24-2.90)	
District hosp./health centre	41	65.9	5.79 (2.14-15.62)	6.01 (2.12-16.98)
CHSs	84	41.7	2.14 (0.90-5.12)	

* The column reflects the percentage of participants who mentioned “will get patient upset”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.23. Factors associated with “not being regular practice” as a reason for not organising contact tracing for SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	154	53.9	1	NA
D&V doctors	30	23.3	0.26 (0.11-0.64)	
Postgraduate patient communication training				
No	74	58.1	1	
Yes	110	42.7	0.54 (0.30-0.98)	0.49 (0.26-0.93)
Place of main practice				
D&V Centre/hosp.	36	25.0	1	
Prov. hosp./RH/health centre	23	34.8	1.60 (0.51-5.02)	
District hosp./health centre	41	68.3	6.46 (2.37-17.6)	7.05 (2.54-19.7)
CHSs	84	53.6	3.46 (1.45-8.24)	3.56 (1.47-8.58)

* The column reflects the percentage of participants who mentioned “not regular practice”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.24. Factors associated with “lack of time” as a reason for not organising contact tracing for SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	154	43.5	1	NA
D&V doctors	30	86.7	8.44 (2.81-25.35)	
Postgraduate training in STI				
No	50	34.0	1	
Yes	134	56.7	2.54 (1.29-5.01)	3.97 (1.72-9.16)
Postgraduate patient communication training				
No	74	60.8	1	
Yes	110	43.6	0.50 (0.27-0.91)	0.27 (0.13-0.58)
Place of main practice				
D&V Centre/hosp.	36	83.3	1	
Prov. hosp./RH/health centre	23	60.9	0.31 (0.09-1.05)	
District hosp./health centre	41	53.7	0.23 (0.08-0.68)	0.26 (0.09-0.80)
CHSs	84	32.1	0.09 (0.04-0.25)	0.09 (0.13-0.25)

* The column reflects the percentage of participants who mentioned “lack of time”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.25. Factors associated with “doctor not being paid” as a reason for not organising contact tracing for SW clients

Participants’ characteristics	Sample (N)	%*	Unadj OR	Adj OR
Gender				
Females	123	45.5	1	
Males	61	29.5	0.50 (0.26-0.96)	0.40 (0.19-0.85)
Postgraduate patient communication training				
No	74	51.4	1	
Yes	110	32.7	0.46 (0.25-0.84)	0.38 (0.20-0.74)
Place of main practice				
D&V Centre/hosp.	36	47.2	1	
Prov. hosp./RH/health centre	23	30.4	0.26 (0.08-0.81)	
District hosp./health centre	41	56.1	1.43 (0.58-3.51)	
CHSs	84	32.1	0.53 (0.24-1.18)	0.38 (0.16-0.92)

* The column reflects the percentage of participants who mentioned “doctor not being paid”

**p (Hosmer and Lemeshow Test) > 0.05

Table 0.26. Factors associated with “doctors’ discomfort” as a reason for not organising contact tracing for IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	70	64.3	1	NS
Males	44	38.6	0.35 (0.16-0.76)	
Postgraduate patient communication training				
No	52	65.4	1	NS
Yes	62	45.2	0.44 (0.20-0.93)	
Place of main practice				
D&V Centre/hosp.	31	35.5	1	
Prov. hosp./RH/health centre	12	33.3	0.91 (0.22-3.72)	
District hosp./health centre	21	81.0	7.73 (2.08-28.76)	5.65 (1.39-22.33)
CHSs	50	60.0	2.73 (1.08-6.90)	1.96 (0.72-5.28)

* The column reflects the percentage of participants who mentioned “doctor feels uncomfortable”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.27. Factors associated with “doctor not well trained” as a reason for not organising contact tracing for IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	90	57.8	1	NA
D&V doctors	24	29.2	0.30 (0.11-0.80)	
Postgraduate patient communication training				
No	52	69.2	1	
Yes	62	37.1	0.26 (0.12-0.57)	0.27 (0.12-0.61)
Diagnosis STI in the month prior to the survey				
No	37	75.7	1	
Yes	77	40.3	0.22 (0.09-0.52)	0.22 (0.09-0.55)

* The column reflects the percentage of participants who mentioned “doctor not well trained”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.28. Factors associated with “causing patient not return” as a reason for not organising contact tracing for IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate patient communication training				
No	52	76.9	1	
Yes	62	48.4	0.28 (0.12-0.64)	0.34 (0.14-0.79)
Average weekly client volume				
= < 15	46	80.4	1	
16-30	36	52.8	0.27 (0.10-0.72)	0.31 (0.11-0.86)
> 30	32	43.8	0.19 (0.07-0.52)	0.22 (0.08-0.63)

* The column reflects the percentage of participants who mentioned “cause patient not return”

**p (Hosmer and Lemeshow Test) > 0.05

Table 0.29. Factors associated with “get patient upset” as a reason for not organising contact tracing for IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	90	63.3	1	NA
D&V doctors	24	37.5	0.35 (0.14-0.88)	
Postgraduate patient communication training				
No	52	69.2	1	NS
Yes	62	48.4	0.42 (0.19-0.90)	
Average weekly client volume				
= < 15	46	73.9	1	
16-30	36	44.4	0.28 (0.11-0.72)	0.31 (0.12-0.81)
> 30	32	50.0	0.35 (0.14-0.92)	

* The column reflects the percentage of participants who mentioned “get patient upset”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.30. Factors associated with “not being regular practice” as a reason for not organising contact tracing for IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	70	67.1	1	
Males	44	47.7	0.45 (0.21-0.97)	0.43 (0.19-0.95)
Medical degree				
Non D&V doctor	90	67.8	1	
D&V doctors	24	29.2	0.20 (0.07-0.52)	NA
Postgraduate patient communication training				
No	52	71.2	1	
Yes	62	50.0	0.41 (0.19-0.88)	0.39 (0.18-0.87)

* The column reflects the percentage of participants who mentioned “not regular practice”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.31. Factors associated with “lack of time” as a reason for not organising contact tracing for IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	32	50.0	1	NS
40-50	66	62.1	1.64 (0.7-3.85)	
51-60	16	87.5	7 (1.36-35.9)	
Medical degree				
Non D&V doctor	90	56.7	1	NA
D&V doctors	24	83.3	3.82 (1.21-12.10)	
Postgraduate training in STI				
No	30	40.0	1	
Yes	84	70.2	3.54 (1.49-8.43)	6.84 (2.18-21.5)
Postgraduate patient communication training				
No	52	75.0	1	
Yes	62	51.6	0.36 (0.16-0.79)	0.18 (0.06-0.51)

* The column reflects the percentage of participants who mentioned “lack of time”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.32. Factors associated with “doctor not being paid” as a reason for not organising contact tracing for IDU clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Postgraduate patient communication training				
No	52	73.1	1	
Yes	62	45.2	0.30 (0.14-0.67)	

* The column reflects the percentage of participants who mentioned “doctor not being paid”

**p (Hosmer and Lemeshow Test) > 0.05

Table 0.33. Factors associated with “doctors’ discomfort” as a reason for not always organising contact tracing for heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	181	31.5	1	
Males	93	19.4	0.52 (0.29-0.95)	0.48 (0.25-0.90)
Postgraduate training in STI				
No	114	34.2	1	NS
Yes	160	22.5	0.56 (0.33-0.95)	
Postgraduate patient communication training				
No	144	35.4	1	NS
Yes	130	18.5	0.41 (0.24-0.72)	
Place of main practice				
D&V Centre/hosp.	22	13.6	1	NS
Prov. hosp./RH/health centre	45	13.3	0.97 (0.22-4.33)	
District hosp./health centre	57	17.5	1.35 (0.33-5.44)	
CHSs	150	37.3	3.77 (1.07-13.33)	

* The column reflects the percentage of participants who mentioned “doctors’ discomfort”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.34. Factors associated with “doctor not well trained” as a reason for not always organising contact tracing for heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Medical degree				
Non D&V doctor	253	61.7	1	NA
D&V doctors	21	28.6	0.25 (0.09-0.66)	
Postgraduate patient communication training				
No	144	70.8	1	
Yes	130	46.2	0.35 (0.21-0.58)	0.39 (0.23-0.65)
Place of main practice				
D&V Centre/hosp.	22	36.4	1	
Prov. hosp./RH/health centre	45	33.3	0.88 (0.30-2.54)	
District hosp./health centre	57	59.6	2.59 (0.94-7.15)	
CHSs	150	70.0	4.08 (1.60-10.41)	3.4 (1.29-8.95)

* The column reflects the percentage of participants who mentioned “doctor not well trained”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.35. Factors associated with “cause patient not return” as a reason for not always organising contact tracing for heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	181	52.5	1	
Males	93	37.6	0.55 (0.33-0.91)	0.47 (0.27-0.83)
Age (years)				
<40	84	39.3	1	
40-50	157	47.8	1.41 (0.83-2.42)	
51-60	33	66.7	3.09 (1.33-7.20)	3.54 (1.44-8.73)
Postgraduate patient communication training				
No	144	59.0	1	
Yes	130	34.6	0.37 (0.22-0.60)	0.31 (0.18-0.53)

* The column reflects the percentage of participants who mentioned “cause patient not return”

**p (Hosmer and Lemeshow Test) > 0.05

Table 0.36. Factors associated with “get patient upset” as a reason for not always organising contact tracing for heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	84	44.0	1	NS
40-50	157	47.1	1.13 (0.66-1.93)	
51-60	33	66.7	2.5 (1.1-5.9)	
Medical degree				
Non D&V doctor	253	50.6	1	NA
D&V doctors	21	23.8	0.31 (0.11-0.86)	
Postgraduate patient communication training				
No	144	56.9	1	
Yes	130	39.2	0.49 (0.30-0.79)	0.57 (0.34-0.95)
Average weekly client volume				
= < 15	145	55.2	1	NS
16-30	62	48.4	0.76 (0.42-1.38)	
> 30	67	34.3	0.42 (0.23-0.77)	
Diagnosis STI in the month prior to the survey				
No	104	57.7	1	NS
Yes	170	42.9	0.55 (0.34-0.90)	
Place of main practice				
D&V Centre/hosp.	22	22.7	1	NS
Prov. hosp./RH/health centre	45	28.9	1.38 (0.42-4.53)	
District hosp./health centre	57	47.4	3.06 (0.99-9.42)	
CHSs	150	58.7	4.83 (1.69-13.77)	3.06 (1.01-9.27)

* The column reflects the percentage of participants who mentioned “get patient upset”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.37. Factors associated with “not being regular practice” as a reason for not always organising contact tracing for heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Males	181	51.4	1	
Females	93	35.5	0.52 (0.31-0.87)	0.42 (0.24-0.74)
Age (years)				
<40	84	34.5	1	NS
40-50	157	49.7	1.87 (1.08-3.24)	
51-60	33	57.6	2.57 (1.13-5.87)	
Postgraduate patient communication training				
No	144	55.6	1	
Yes	130	35.4	0.44 (0.27-0.71)	0.40 (0.24-0.67)
Duration of medical practice (in years)				
=<10	77	32.5	1	NS
11-20	96	50.0	2.08 (1.12-3.88)	
>20	101	52.5	2.30 (1.24-4.25)	

* The column reflects the percentage of participants who mentioned “not regular practice”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.38. Factors associated with “lack of time” as a reason for not always organising contact tracing for heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Age (years)				
<40	84	39.3	1	NS
40-50	157	46.5	1.34 (0.78-2.30)	
51-60	33	63.6	2.70 (1.18-6.22)	
Medical degree				
Non D&V doctor	253	44.3	1	NA
D&V doctors	21	71.4	3.15 (1.18-8.38)	
Postgraduate training in STI				
No	114	38.6	1	
Yes	160	51.9	1.71 (1.05-2.79)	2.49 (1.36-4.55)
Postgraduate patient communication training				
No	144	56.9	1	
Yes	130	34.6	0.40 (0.25-0.65)	0.25 (0.14-0.47)
Place of main practice				
D&V Centre/hosp.	22	77.3	1	
Prov. hosp./RH/health centre	45	26.7	0.11 (0.03-0.35)	0.13 (0.04-0.45)
District hosp./health centre	57	45.6	0.25 (0.08-0.76)	0.25 (0.07-0.81)
CHSs	150	48.0	0.27 (0.10-0.77)	0.24 (0.08-0.72)

* The column reflects the percentage of participants who mentioned “lack of time”

**p (Hosmer and Lemeshow Test) > 0.05

NA: Not applicable

NS: Not significant

Table 0.39. Factors associated with “doctor not being paid” as a reason for not always organising contact tracing for heterosexual clients

Participants’ characteristics	Sample (N)	%*	Unadj OR (95% CI)	Adj OR (95% CI)**
Gender				
Females	181	44.8	1	
Males	93	30.1	0.53 (0.31-0.90)	0.46 (0.26-0.83)
Age (years)				
<40	84	34.5	1	
40-50	157	38.9	1.21 (0.69-2.09)	
51-60	33	57.6	2.57 (1.13-5.87)	2.98 (1.23-7.22)
Postgraduate patient communication training				
No	144	50.7	1	
Yes	130	27.7	0.37 (0.22-0.62)	0.36 (0.21-0.62)
Place of main practice				
D&V Centre/hosp.	22	45.5	1	
Prov. hosp./RH/health centre	45	17.8	0.26 (0.08-0.81)	0.22 (0.07-0.74)
District hosp./health centre	57	38.6	0.75 (0.28-2.04)	
CHSs	150	46.0	1.02 (0.42-2.51)	

* The column reflects the percentage of participants who mentioned “doctor not being paid”

**p (Hosmer and Lemeshow Test) > 0.05

Annex 2: Information sheet for participants, informed consent form

INFORMATION SHEET FOR PARTICIPANTS

Research Project: MANAGING SEXUALLY TRANSMISSIBLE INFECTIONS IN CLINICAL PRACTICE: EVIDENCE FROM VIETNAM

I wish to invite you to participate in my research on above topic. The details of the study follow and I hope you will consider being involved. I am conducting this research project for my PhD at the University of New England. My supervisors are Professor Victor Minichiello, A/Prof Rafat Hussain and Dr Asad Khan, Senior Lecturer of University of Queensland. Professor Victor Minichiello can be contacted by email at pvcdp@une.edu.au or by phone on 612 6773 3862. A/Prof Rafat Hussain can be contacted by email at rhussain@une.edu.au or by phone on 612 6773 3678, Dr Asad can be contacted at a.khan2@uq.edu.au or by phone on 617 3346 7456 and I can be contacted by email at kdo@une.edu.au or phone on 612 6773 2855.

Aim of the Study:

This study aims to assess the knowledge and practice of the medical practitioners in sexually transmissible infection (STI) management in Vietnam. The areas covered include knowledge and skill of medical practitioners in screening, diagnosis and treatment of STIs, attitude of medical practitioners toward STI patients in general and female sex worker (FSW), injecting drug user (IDU), males who have sex with males (MSM), lesbian, young (under 25 years) in particular, the characteristics of general practice that facilitate or inhibit more responsive sexual health care, how are the prevention of STIs and promotion of sexual health being implemented, how does STI care in general practice differ from that of Dermatology and Venereology (D&V) doctors.

Time Requirements:

Participants will be asked to complete a questionnaire about how they manage STI cases. It will take about 30-45 minutes to complete the questionnaire.

It is unlikely that this research will raise any personal or upsetting issues but if it does you may wish to contact the student researcher at 612 6773 2855.

Interviews:

Participation is completely voluntary. You may withdraw from the project at any time and there will be no disadvantage if you decide not to participate or withdraw at any time.

Research Process:

It is anticipated that this research will be completed by the end of March 2012. The results may also be presented at conferences or written up in journals without any identifying information.

This project has been approved by the Human Research Ethics Committee of the University of New England (Approval No. HEP10/148 Valid to 20/08/2011).

Should you have any complaints concerning the manner in which this research is conducted, please contact the Research Ethics Officer at the following address:

Research Services

University of New England

Armidale, NSW 2351.

Telephone: (02) 6773 3449 Facsimile (02) 6773 3543

Email: ethics@une.edu.au

Thank you for considering this request and I look forward to further contact with you.

Regards

Consent Form for Participants

Research Project: MANAGING SEXUALLY TRANSMISSIBLE INFECTIONS IN CLINICAL PRACTICE:
EVIDENCE FROM VIETNAM

I,, have read the information contained in the Information Sheet for Participants
and any questions I have asked have been answered to my satisfaction.

Yes/No

I agree to participate in this activity, realising that I may withdraw at any time.

Yes/No

I agree that research data gathered for the study may be published using a pseudonym

Yes/No

.....

Participant

.....

Date

.....

Researcher

.....

Date

Annex 3: Ethical approval



Ethics Office
Research Development & Integrity
Research Division
Armidale NSW 2351
Australia
Phone 02 6773 3449
Fax 02 6773 3543
jo-ann.sozou@une.edu.au
www.une.edu.au/research-services

HUMAN RESEARCH ETHICS COMMITTEE

MEMORANDUM TO: Prof V Minichiello, A/Prof R Hussain, Dr A Khan & Mr K Do
School of Rural Medicine

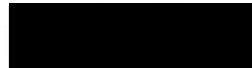
This is to advise you that the Human Research Ethics Committee has approved the following:

PROJECT TITLE: Managing Sexually Transmissible Infections in Clinical Practice: Evidence from Vietnam.
APPROVAL No.: HE10/148
COMMENCEMENT DATE: 20/08/2010
APPROVAL VALID TO: 20/08/2011
COMMENTS: Nil. Conditions met in full.

The Human Research Ethics Committee may grant approval for up to a maximum of three years. For approval periods greater than 12 months, researchers are required to submit an application for renewal at each twelve-month period. All researchers are required to submit a Final Report at the completion of their project. The Progress/Final Report Form is available at the following web address: <http://www.une.edu.au/research-services/researchdevelopmentintegrity/ethics/human-ethics/hrecform.php>

The *NHMRC National Statement on Ethical Conduct in Research Involving Humans* requires that researchers must report immediately to the Human Research Ethics Committee anything that might affect ethical acceptance of the protocol. This includes adverse reactions of participants, proposed changes in the protocol, and any other unforeseen events that might affect the continued ethical acceptability of the project.

In issuing this approval number, it is required that all data and consent forms are stored in a secure location for a minimum period of five years. These documents may be required for compliance audit processes during that time. If the location at which data and documentation are retained is changed within that five year period, the Research Ethics Officer should be advised of the new location.



20/08/2010

Jo-Ann Sozou
Secretary/Research Ethics Officer

A09/0598

Annex 4: Survey questionnaire

Serial Number:

(for office use only)

MANAGEMENT OF SEXUALLY TRANSMITSIBLE INFECTIONS (STIs)

Participant's name:.....

Office address:.....

Contact telephone:.....

1. Age (*years*):

2. Sex (*Circle one only*)

- a. Male
- b. Female

3. Medical degree (*Circle one only*)

- a. D & V doctor
- b. General practitioner
- c. Assistant doctor
- d. Other (specify).....

4. Do you have any postgraduate training in STIs?

- a. Yes
- b. No

4a. If yes, please specify name of course and duration (*Please list the highest one you had*):

.....

5. Do you have any postgraduate training in patient communication?

- a. Yes
- b. No

5a. If yes, please specify name of course and duration (*Please list the highest one you had*):

.....

6. Number of years practicing medicine:

7. What is the place of your main practice (*main practice is where you work during office hours*) (*Circle one only*)

- a. D&V Centre/hospital
- b. Provincial hospital
- c. District hospital
- d. Communal Health Station
- e. Private
- f. Other (please specify).....

8. No. of STI cases you diagnosed last month:.....

9. Average number of patients seen per week:.....

10. Which of the following STIs usually have no symptoms? (*Tick ✓ where appropriate*)

	Males	Females
a. Chlamydia		
b. gonorrhoea		
c. Trichomonas		
d. Herpes		
e. syphilis		
f. HPV (genital warts)		
g. HIV		
h. Hepatitis B		
i. Hepatitis C		

11. Which STI is notifiable in Vietnam? (*Circle as many as apply*)

- a. Chlamydia Trachomatis
- b. gonorrhoea
- c. Trichomonas
- d. Herpes
- e. syphilis
- f. HPV (genital warts)
- g. Chancroid
- h. HIV

- i. Hepatitis B
- j. Hepatitis C

12. What investigation(s) will you recommend for patients with the following symptoms? *(Please write Don't Know if you don't know the answer)*

- a. Urethritis (dysuria and/or discharge):.....
- b. Vaginal discharge:.....
- c. Anogenital ulceration:.....

13. For testing genital Chlamydia in females, *(Please write Don't Know if you don't know the answer)*

- a. The appropriate specimen for testing is:.....
- b. The appropriate site(s) for taking swabs is:.....

14. Do you ever undertake syndromic management for any of the following STIs? *(Tick ✓ where appropriate)*

(Syndromic management is defined here as treatment without confirmed lab diagnosis.)

Syndromic management for	Never	Sometimes
a. Chlamydia		
b. gonorrhoea		
c. Trichomonas		
d. Herpes		
e. syphilis		
f. genital warts		

15. If you offer syndromic management for suspected STIs, what are the reasons for doing so? *(Circle as many as apply)*

- a. Patient unlikely to come for follow-up
- b. No appropriate lab facilities available in the town
- c. Cannot wait till lab diagnosis
- d. Recurring infection
- e. Patients don't like swabs being taken
- f. Taking swabs is too time consuming
- g. Other (please specify)

16. If you need information about STI diagnosis and treatment, what resources do you

use? *(Circle as many as apply)*

- a. MOH guidelines
- b. NIDV guidelines
- c. Drug encyclopaedia
- d. Colleague
- e. Other (please specify)
- f. I do not have any resource

17. Which of the following actions are you most the likely to take for STI patients with moderate-severe psychological distress? *(Circle as many as apply)*

- a. Extend consultation time
- b. Book another appointment to provide more info and counselling
- c. Refer to a D&V specialist
- d. Refer to a community support group
- e. Other (please specify).....
- f. Nothing, just as other patients

18. What do you perceive as barriers to quality STI care and management in your setting? *(Circle as many as apply)*

- a. Lack of time
- b. Lack of reimbursement
- c. Lack of privacy/confidentiality
- d. Lack of access to counselling
- e. Lack of access to professional resources
- f. Not the role of primary care provider
- g. Lack of training in STI
- h. Other (please specify).....

19. In the last 12 month, was any of the following activity conducted in your clinic?

		Regular (at least quarterly)	Sometimes	Never
a.	Review of facility for STI services			
b.	Review of data on STI cases			
c.	Record review for STI cases			
d.	Observation of STI service provisions			
e.	Collect feedback from STI patients			

20. Do you have any of the following in your clinic? *(Circle as many as apply)*
- a. STI posters displayed in the waiting room
 - b. STI pamphlets in the waiting room
 - c. Pamphlets about needle-syringe exchange
 - d. Free condoms for patients
21. What do you think about the printed STI information materials for patients? *(Circle as many as apply)*
- a. Adequate/ appropriate
 - b. Not comprehensive
 - c. Too technical for patients
 - d. Mostly out of date
 - e. Not enough produced for clinics
 - f. Not available in my practice
 - g. Don't know where to get
 - h. Other (please specify)
22. What do you think about the adequacy of professional literature on STIs for yourself? *(Circle one only)*
- a. Adequate
 - b. Almost adequate
 - c. Inadequate
 - d. Very inadequate
 - e. None
23. What do you think about the adequacy of training in STI care for primary providers such as GPs? *(Circle one only)*
- a. Adequate
 - b. Mostly adequate
 - c. Inadequate
 - d. Very inadequate
 - e. None
24. If you response Do you think you need additional training in STI care and management?
No, because *(Circle as many as apply)*

- a. I have enough skill
- b. I do not have enough case load
Yes, I need additional training in *(Circle as many as apply)*
- c. Diagnosis and treatment
- d. Counselling
- e. Prevention
- f. Working with special groups (e.g. SW, IDUs, MSM, Lesbian)
- g. Others (please specify).....

25. In the last 12 months,

Do you know these people among your patients?	SW	IDU	MSM	Lesbian	Heterosexual, not SW nor IDU
a. Yes → TICK ✓ WHERE APPROPRIATE THEN GO TO 11a					
b. No → TICK ✓ WHERE APPROPRIATE THEN GO TO 11b					
11a. If yes, how did you get that information <i>(Answer in vertical order for each category)</i>					
a. I asked a concrete question					
b. The patient told me					
c. Others (specify)					
11b. If no, what do you think is the reason? <i>(Answer in vertical order for each category)</i>					
a. I did not ask					
b. The patient did not want to tell					
c. None of my patients is					
d. Others (specify)					

INSTRUCTION: if you have never seen a certain type of patients, please fill 0 for the answer for that patient in question 26-34.

- 26.** If STI is not the presenting complaint, how often do you take a sexual history from a patient who is *(Tick ✓ where appropriate)*

	SW	IDU	MSM	Lesbian	Heterosexual, not SW nor IDU
a. Never					
b. Sometimes					
c. Always					

- 27.** If you do not always take sexual history from a patient who has a high index of suspicion for STI, what are the reasons? *(Tick ✓ where appropriate)*

	SW	IDU	MSM	Lesbian	Heterosexual, not SW nor IDU
a. Patient would feel uncomfortable					
b. I don't feel comfortable					
c. I don't feel well trained					
d. Presence of another person					
e. Lack of time					
f. Not part of my normal practice					
g. Other (please specify)					

- 28.** What information will you ask a patient about their sexual history? *(please write key words only)*

.....
In the last 12 months, how often do you organize contact tracing for STIs patients who are? *(Tick ✓ where appropriate)*

	SW	IDU	MSM	Lesbian	Heterosexual, not SW nor IDU
a. Never					
b. Sometimes					
c. Always					

- 29.** If you do not always organize contact tracing for STIs patients, what are the reasons?
(Tick ✓ where appropriate)

	SW	IDU	MSM	Lesbian	Heterosexual, not SW nor IDU
a. I don't feel comfortable					
b. I don't feel well trained					
c. It causes my patients not to return					
d. It gets my patient upset with me					
e. It is not part of my regular practice					
f. Lack of time					
g. I am not being paid for that					

- 30.** Please rate how your experience with the patients? (Rate 1-5 for each type of patient,
1 being least and 5 being most)

	SW	IDU	MSM	Lesbian	Heterosexual, not SW nor IDU
The demanding irritating patient					
a. How demanding was this patient?					
b. How time consuming is caring for this patient?					
c. How difficult is patients' personality?					
Physician dysphonia					
d. Overall, how positive do you feel about caring for this patient?					
e. How at ease did you feel when you were with this patient today?					
f. How hopeless do you feel about helping this patient?					
Compliance and communication					
g. Does this patient understand your explanations of medical condition?					
h. How difficult is it to communicate with this patient?					
i. How compliant is this patient?					

- 31.** Please rate your responses about these statements (*Please rate 1-5, 1 = completely disagree and 5 = completely agree*).

	SW	IDU	MSM	Lesbian	Heterosexual, not SW nor IDU
a. The doctor is the one who should decide what gets talked about during a visit.					
b. It is often best for patients if they do not have a full explanation of their medical condition.					
c. When doctors ask a lot of questions about a patient's background, they are prying too much into personal matters.					
d. If doctors are truly good at diagnosis and treatment, the way they relate to patients is not that important.					
e. Many patients continue asking questions even though they are not learning anything new.					
f. Patients should be treated as if they were partners with the doctor, equal in power and status.					
g. Most patients want to get in and out of the doctor's office as quickly as possible.					
h. It is not that important to know a patient's culture and background in order to treat the person's illness.					

- 32.** In a patient with suspected or confirmed STI, do you usually provide information on (*write down key words only, if you provide no info, please write "No info provided"*)?

For patients who are Heterosexual, not being SW, IDU, MSM or Lesbian:

.....

For patients who are SW (If you provide no more info than the "Heterosexual, not being SW, IDU, MSM or Lesbian", please write "Same as Heterosexual":

.....

For patients who are IDUs (If you provide no more info than the "Heterosexual, not being SW, IDU, MSM or Lesbian", please write "Same as Heterosexual":

.....
 For patients who are MSM (If you provide no more info than the “Heterosexual, not being SW, IDU, MSM or Lesbian”, please write “Same as Heterosexual”:

.....
 For patients who are Lesbian (If you provide no more info than the “Heterosexual, not being SW, IDU, MSM or Lesbian”, please write “Same as Heterosexual”:

34. Please rate your response about these statements? (1 = *totally disagree*, 5 = *totally agree*)

	Statement	Rating
a.	Sex between two people of the same sex is just plain wrong.	
b.	Homosexuality is not a natural expression of sexuality in human.	
c.	It would be beneficial to society to recognize homosexuality as normal.	
d.	Homosexuality endangers the institution of the family.	
e.	Those in favour of homosexuality tend to be gay or lesbian themselves.	
f.	I avoid gays and lesbians whenever possible.	
g.	Educating and promoting condom use will only increase promiscuity	
h.	MSM is socially unacceptable	
i.	Lesbian is socially unacceptable	
j.	SW is socially unacceptable	
k.	IDUs is socially unacceptable	
l.	MSM is pathological	
m.	Lesbian is pathological	
n.	SW is pathological	
o.	IDUs is pathological	
p.	MSM is immoral	
q.	Lesbian is immoral	
r.	SW is immoral	
s.	IDUs is immoral	

Thank you for taking the time to fill in this questionnaire.

Annex 5: SPSS Code Book

Qes. item No.	Full variable name	SPSS variable name	Coding instructions
	Identification number	id	Subject identification number
1	Age	age	in years
2	Sex	sex	1=males, 2=females
3	Highest Medical Degree	degree	1= D & V doctor 2= General practitioner 3= Assistant doctor 4= Ob/Gyn doctor 5= Master
4	Postgraduate training in STIs	trainsti	1=yes 0=no
4a	Name of postgraduate STI training course	spec1	Name of course
4a	Length of postgraduate STI training course	spec2	In weeks
5	Postgraduate training in patient communication	traincom	1=yes 0=no
5a	Name of postgraduate patient communication training course	spec3	Name of course
5a	Length of postgraduate patient communication training course	spec4	In weeks
6	Years practicing medicine	medprac	In years
7	Place of your main practice	mainprac	1= D&V Centre/hospital 2= Provincial hospital 3= District hospital 4= Communal Health Station 5= Provincial RH centre 6= Provincial health centre 7= District health centre

8	No. of STI cases you diagnosed last month	Stidiag	No. of cases
9	Average number of patients seen/week	Ptweek	No. of cases
10	STIs usually have no symptoms	chla1, chla2, gono1, gono2, tricho1, tricho2, herpes1, herpes2, syphi1, syphi2, hpv1, hpv2, hiv1, hiv2, hepb1, hepb2, hepc1, hepc2 (<i>note: variable ends with 1 =male, 2=female</i>)	1=yes, 0=no
11	STI notifiable in Vietnam	chla3, gono3, tricho3, herpes3, syphi3, hpv3, hiv3, hepb3, hepc3	1=yes, 0=no
12	Investigation recommended for patients with: urethritis	invest1	
12	Investigation recommended for patients with: vaginal discharge	invest2	
12	Investigation recommended for patients with: anogenital ulceration	invest3	
13	Investigation for Chlamydia in females: sample for taking sample	Speci	
13	Investigation for Chlamydia in females: site for taking sample	Site	
14	Ever undertake presumptive STI treatment: Chlamydia	presum1	1=sometimes, 0=never
14	Ever undertake presumptive STI treatment: gonorrhoea	presum2	1=sometimes, 0=never
14	Ever undertake presumptive STI treatment: Trichomonas	presum3	1=sometimes, 0=never
14	Ever undertake presumptive STI treatment: Herpes	presum4	1=sometimes, 0=never
14	Ever undertake presumptive STI treatment: syphilis	presum5	1=sometimes, 0=never
14	Ever undertake presumptive STI treatment: genital warts	presum6	1=sometimes, 0=never

15	Reason for presumptive STI treatment: patient unlikely to come for follow-up	reason1	1=Sometimes, 0=No
15	Reason for presumptive STI treatment: No appropriate lab facilities available in the town	reason2	1=Sometimes, 0=No
15	Reason for presumptive STI treatment: Cannot wait till lab diagnosis	reason3	1=Sometimes, 0=No
15	Reason for presumptive STI treatment: Recurring infection	reason4	1=Sometimes, 0=No
15	Reason for presumptive STI treatment: Patients don't like swabs being taken	reason5	1=Sometimes, 0=No
15	Reason for presumptive STI treatment: Taking swabs is too time consuming	reason6	1=Sometimes, 0=No
15	Reason for presumptive STI treatment: Others	reason7	1=Sometimes, 0=No
16	Resource for STI diagnosis and treatment: MOH guidelines	resour1	1=Sometimes, 0=No
16	Resource for STI diagnosis and treatment: NIDV guidelines	resour2	1=Sometimes, 0=No
16	Resource for STI diagnosis and treatment: Drug encyclopaedia	resour3	1=Sometimes, 0=No
16	Resource for STI diagnosis and treatment: Colleague	resour4	1=Sometimes, 0=No
16	Resource for STI diagnosis and treatment: Other	resour5	1=Sometimes, 0=No
16	Resource for STI diagnosis and treatment: no resource	resour6	1=Sometimes, 0=No
17	Actions for STI patients with moderate-severe psychological distress: extend consultation time	treat1	1=Sometimes, 0=No
17	Actions for STI patients with moderate-severe	treat2	1=Sometimes, 0=No

	psychological distress: book another appointment		
17	Actions for STI patients with moderate-severe psychological distress: refer to D&V doctors	treat3	1=Sometimes, 0=No
17	Actions for STI patients with moderate-severe psychological distress: refer to community support	treat4	1=Sometimes, 0=No
17	Actions for STI patients with moderate-severe psychological distress: other	treat5	1=Sometimes, 0=No
17	Actions for STI patients with moderate-severe psychological distress: nothing	treat6	1=Sometimes, 0=No
18	Perceived barrier for quality STI care and management: Lack of time	barier1	1=Yes, 0=No
18	Perceived barrier for quality STI care and management: Lack of reimbursement	barier2	1=Yes, 0=No
18	Perceived barrier for quality STI care and management: Lack of privacy/confidentiality	barier3	1=Yes, 0=No
18	Perceived barrier for quality STI care and management: Lack of access to counselling	barier4	1=Yes, 0=No
18	Perceived barrier for quality STI care and management: Lack of access to professional resources	barier5	1=Yes, 0=No
18	Perceived barrier for quality STI care and management: Not the role of primary care provider	barier6	1=Yes, 0=No
18	Perceived barrier for quality STI care and management: Lack of training in STI	barier7	1=Yes, 0=No

18	Perceived barrier for quality STI care and management: Other	barier8	1=client unaware of STI services 2= lack of STI testing facility
19	Q&A activity conducted in facility: STI facility review	qa1	1=regular, 2=sometimes, 3= never
19	Q&A activity conducted in facility: STI data review	qa2	1=regular, 2=sometimes, 3= never
19	Q&A activity conducted in facility: STI case review	qa3	1=regular, 2=sometimes, 3= never
19	Q&A activity conducted in facility: service observation	qa4	1=regular, 2=sometimes, 3= never
19	Q&A activity conducted in facility: patient's feedback	qa5	1=regular, 2=sometimes, 3= never
20	Facility for STI services: STI posters	faci1	1=yes, 0=no
20	Facility for STI services: STI pamphlets	faci2	1=yes, 0=no
20	Facility for STI services: needle exchange pamphlets	faci3	1=yes, 0=no
20	Facility for STI services: free condoms	faci4	1=yes, 0=no
21	Dr's ideas about STI materials for patients: Adequate/ appropriate	matep1	1=yes, 0=no
21	Dr's ideas about STI materials for patients: Not comprehensive	matep2	1=yes, 0=no
21	Dr's ideas about STI materials for patients: Too technical for patients	matep3	1=yes, 0=no
21	Dr's ideas about STI materials for patients: Mostly out of date	matep4	1=yes, 0=no
21	Dr's ideas about STI materials for patients: Not enough produced for clinics	matep5	1=yes, 0=no
21	Dr's ideas about STI materials for patients: Not available in my practice	matep6	1=yes, 0=no

21	Dr's ideas about STI materials for patients: Don't know where to get	matep7	1=yes, 0=no
21	Dr's ideas about STI materials for patients: Others	matep8	1=yes, 0=no
22	Dr's ideas about STI materials for doctors	mateg	1=Adequate, 2=Almost adequate, 3= Inadequate, 4=Very inadequate, 5=None
23	Dr's ideas about STI training for primary providers	training	1=Adequate, 2=Almost adequate, 3= Inadequate, 4=Very inadequate, 5=None
24	Need additional STI training: No, enough skill	Train1	1=yes, 0=no
24	Need additional STI training: No, not enough patient	Train2	1=yes, 0=no
24	Need additional STI training: Yes, diagnosis	Train3	1=yes, 0=no
24	Need additional STI training: Yes, counselling	Train4	1=yes, 0=no
24	Need additional STI training: Yes, prevention	Train5	1=yes, 0=no
24	Need additional STI training: Yes, special groups	Train6	1=yes, 0=no
24	Need additional STI training: Yes, others	Train7	1=yes, 0=no
25	Have patients in the last 12 months: SW	Sw	1=yes, 0=no
25	Have patients in the last 12 months: IDU	Idu	1=yes, 0=no
25	Have patients in the last 12 months: Lesbian	lesbian	1=yes, 0=no
25	Have patients in the last 12 months: hetero	hetero	1=yes, 0=no

25a	Reason for knowing patient's group: Ask patient concrete question	sw1, idu1, msm1, les1, hetero1	1=yes, 0=no
25a	Reason for knowing patient's group: Patient told doctor their group	sw2, idu2, msm2, les2, hetero2	1=yes, 0=no
25a	Reason for knowing patient's group: others	sw3, idu3, msm3, les3, hetero3	1=yes, 0=no
25a	Others: patient's group specified in referral paper	sw3a, idu3a, msm3a, les3a, hetero3a	1=, 0=no
25a	Others: know the patient personally in community	sw3b, idu3b, msm3b, les3b, hetero3b	1=yes, 0=no
25b	Reason for not having patient: Did not ask patient	sw4, idu4, msm4, les4, hetero4	1=yes, 0=no
25b	Reason for not having patient: patient did not want to tell	sw5, idu5, msm5, les5, hetero5	1=yes, 0=no
25b	Reason for having no patient: none of them were	sw6, idu6, msm6, les6, hetero6	1=yes, 0=no
25b	Other reasons for having no patient	sw7, idu7, msm7, les7, hetero7	1=, 0=no
26	Taking sexual history from patient who do not have STI complaints	sw8, idu8, msm8, les8, hetero8	1=never, 2=sometimes, 3=always
27	Reasons for not taking sexual history: patient feels uncomfortable	sw9, idu9, msm9, les9, hetero9	1=yes, 0=no
27	Reasons for not taking sexual history: doctor don't feel comfortable	sw10, idu10, msm10, les10, hetero10	1=yes, 0=no
27	Reasons for not taking sexual history: doctor not well trained	sw11, idu11, msm11, les11, hetero11	1=yes, 0=no
27	Reasons for not taking sexual history: presence of another person	sw12, idu12, msm12, les12, hetero12	1=yes, 0=no
27	Reasons for not taking sexual history: lack of time	sw13, idu13, msm13, les13, hetero13	1=yes, 0=no

27	Reasons for not taking sexual history: not being normal practice	sw14, idu14, msm14, les14, hetero14	1=yes, 0=no
27	Reasons for not taking sexual history: others	sw15, idu15, msm15, les15, hetero15	1=yes, 0=no
28	Information asked during sexual history taking	history	Keywords
29	How often organize contact tracing for STI patient: SW	contact1	1=never, 2=sometimes, 3=always
29	How often organize contact tracing for STI patient: IDU	contact2	1=never, 2=sometimes, 3=always
29	How often organize contact tracing for STI patient: MSM	contact3	1=never, 2=sometimes, 3=always
29	How often organize contact tracing for STI patient: Lesbian	contact4	1=never, 2=sometimes, 3=always
29	How often organize contact tracing for STI patient: heterosexual	contact5	1=never, 2=sometimes, 3=always
30	Reasons for not always organize contact tracing: doctor don't feel comfortable	sw16, idu16, msm16, les16, hetero16	1=Sometimes, 0=No
30	Reasons for not always organize contact tracing: doctor don't feel well trained	sw17, idu17, msm17, les17, hetero17	1=Sometimes, 0=No
30	Reasons for not always organize contact tracing: will cause patients not return	sw18, idu18, msm18, les18, hetero18	1=Sometimes, 0=No
30	Reasons for not always organize contact tracing: get patient upset	sw19, idu19, msm19, les19, hetero19	1=Sometimes, 0=No
30	Reasons for not always organize contact tracing: not regular practice	sw20, idu20, msm20, les20, hetero20	1=Sometimes, 0=No
30	Reasons for not always organize contact tracing: doctors are lack of time	sw21, idu21, msm21, les21, hetero21	1=Sometimes, 0=No
30	Reasons for not always organize contact tracing: doctors not being paid	sw22, idu22, msm22, les22, hetero22	1=Sometimes, 0=No

30	Reasons for not always organize contact tracing: others	sw23, idu23, msm23, les23, hetero23	0=No, 1= clients could not bring partners
31	Difficult doctor Patient Relationship Question (DDPRQ) demanding patient	sw24, idu24, msm24, les24, hetero24	Score 1-5
31	DDPRQ: time consuming patient	sw25, idu25, msm25, les25, hetero25	Score 1-5
31	DDPRQ: difficult patient	sw26, idu26, msm26, les26, hetero26	Score 1-5
31	DDPRQ: Dr's fell about caring for patient	sw27, idu27, msm27, les27, hetero27	Score 1-5
31	DDPRQ: Dr's fell at ease with patient	sw28, idu28, msm28, les28, hetero28	Score 1-5
31	DDPRQ: Dr's fell hopeless helping patient	sw29, idu29, msm29, les29, hetero29	Score 1-5
31	DDPRQ: patient understand explanation	sw30, idu30, msm30, les30, hetero30	Score 1-5
31	DDPRQ: patients are difficult to communicate with	sw31, idu31, msm31, les31, hetero31	Score 1-5
31	DDPRQ: patients is compliant	sw32, idu32, msm32, les32, hetero32	Score 1-5
32	Patient-provider orientation scale (PPOS): doctor decide what gets talked about during a visit	sw33, idu33, msm33, les33, hetero33	Score 1-5
32	PPOS: often best for patients not to have a full explanation of their medical condition.	sw34, idu34, msm34, les34, hetero34	Score 1-5
32	PPOS: when doctors ask a lot of questions about a patient's background, they are prying too much into personal matters.	sw35, idu35, msm35, les35, hetero35	Score 1-5
32	PPOS: If doctors are truly good at diagnosis and treatment, the way they relate to patients is not that important.	sw36, idu36, msm36, les36, hetero36	Score 1-5

32	PPOS: patients continue asking questions without learning anything new.	sw37, idu37, msm37, les37, hetero37	Score 1-5
32	PPOS: patients should be treated as if they were partners with the doctor, equal in power and status.	sw38, idu38, msm38, les38, hetero38	Score 1-5
32	PPOS: most patients want to get in and out of the doctor's office as quickly as possible.	sw39, idu39, msm39, les39, hetero39	Score 1-5
32	PPOS: It is not that important to know a patient's culture and background in order to treat the person's illness.	sw40, idu40, msm40, les40, hetero40	Score 1-5
33	Information provided to STI patients: disease's cause	sw41, idu41, msm41, les41, hetero41	1=yes, 0=no
33	Information provided to STI patients: mode of transmission	sw42, idu42, msm42, les42, hetero42	1=yes, 0=no
33	Information provided to STI patients: partner treatment	sw43, idu43, msm43, les43, hetero43	1=yes, 0=no
33	Information provided to STI patients: the likely treatment duration	sw44, idu44, msm44, les44, hetero44	1=yes, 0=no
33	Information provided to STI patients: abstinence, while infected	sw45, idu45, msm45, les45, hetero45	1=yes, 0=no
33	Information provided to STI patients: long term monogamous sexual relationship	sw46, idu46, msm46, les46, hetero46	1=yes, 0=no
33	Information provided to STI patients: reduce number of sexual partners	sw47, idu47, msm47, les47, hetero47	1=yes, 0=no
33	Information provided to STI patients: condom and how to use condom	sw48, idu48, msm48, les48, hetero48	1=yes, 0=no
33	Information provided to STI patients: STI checks up	sw49, idu49, msm49, les49, hetero49	1=yes, 0=no
33	Information provided to STI patients: other	sw50, idu50, msm50, les50, hetero50	51 =consequence of STI,

			52 STI therapy, 53 early treatment, 54=safe injection 55 VCT 56 community support 57= condom negotiation 58= using lubricant
34	Dr's attitude: Sex between two people of the same sex is just plain wrong.	state1	Score 1-5
34	Dr's attitude: Homosexuality is not a natural expression of sexuality in human.	state2	Score 1-5
34	Dr's attitude: It would be beneficial to society to recognize homosexuality as normal.	state3	Score 1-5
34	Dr's attitude: Homosexuality endangers the institution of the family.	state4	Score 1-5
34	Dr's attitude: Those in favour of homosexuality tend to be gay or lesbian themselves.	state5	Score 1-5
34	Dr's attitude: I avoid gays and lesbians whenever possible.	state6	Score 1-5
34	Dr's attitude: Educating and promoting condom use will only increase promiscuity	state7	Score 1-5
34	Dr's attitude: MSM is socially unacceptable	state8	Score 1-5
34	Dr's attitude: Lesbian is socially unacceptable	state9	Score 1-5
34	Dr's attitude: SW is socially unacceptable	state10	Score 1-5
34	Dr's attitude: IDUs is socially unacceptable	state11	Score 1-5
34	Dr's attitude: MSM is pathological	state12	Score 1-5
34	Dr's attitude: Lesbian is pathological	state13	Score 1-5

34	Dr's attitude: SW is pathological	state14	Score 1-5
34	Dr's attitude: IDUs is pathological	state15	Score 1-5
34	Dr's attitude: MSM is immoral	state16	Score 1-5
34	Dr's attitude: Lesbian is immoral	state17	Score 1-5
34	Dr's attitude: SW is immoral	state18	Score 1-5
34	Dr's attitude: IDUs is immoral	state19	Score 1-5