TREATMENT SEEKING BEHAVIOUR OF SEXUALLY TRANSMITTED INFECTIONS PATIENTS AT THE TININGA STI CLINIC IN WESTERN HIGHLANDS PROVINCE, PAPUA NEW GUINEA

STEVEN N'DREMACK PANIU

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF PRIMARY HEALTH CARE MANAGEMENT
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2010

Thesis
entitled

TREATMENT SEEKING BEHAVIOUR OF SEXUALLY TRANSMITTED INFECTIONS PATIENTS AT THE TININGA STI CLINIC IN WESTERN HIGHLANDS PROVINCE, PAPUA NEW GUINEA

.....

Mr. Steven N'dremack. Paniu
Candidate

.....

Asst. Prof (Honor) Nate Hongkrailert,
Ph.D.
Major advisor

.....

Assoc. Prof. Jiraporn Chompikul,
Ph.D.
Co-advisor

.....

Prof. Banchong Mahaisavariya,
M.D., Dip. Thai Board of Orthopedics
Dean
Faculty of Graduate Studies
Mahidol University

.....

Ms. Supattra Srivanichakorn,
M.D., M.P.H. (Health Development),
Dip. Thai Board of Preventive Medicine
(Epidemiology)
Program Director
Master of Primary Health Care Management
ASEAN Institute for Health Development
Mahidol University

Thesis
entitled

TREATMENT SEEKING BEHAVIOUR OF SEXUALLY TRANSMITTED INFECTIONS PATIENTS AT THE TININGA STI CLINIC IN WESTERN HIGHLANDS PROVINCE, PAPUA NEW GUINEA

was submitted to the Faculty of Graduate Studies, Mahidol University
for the degree of Master of Primary Health Care Management
on
April 30, 2010

.....
Mr. Steven N'dremack. Paniu
Candidate

.....
Assoc. Prof. Panee Sitakalin,
Dr. P H
Chair

.....
Assoc. Prof. Jiraporn Chompikul,
Ph.D.
Member

.....
Asst. Prof (Honor) Nate Hongkrailert,
Ph.D.
Member

.....
Prof. Banchong Mahaisavariya,
M.D. Dip. Thai Board of Orthopedics
Dean
Faculty of Graduate Studies
Mahidol University

.....
Ms. Supattra Srivanichakorn,
M.D., M.P.H. (Health Development)
Dip. Thai Board of Preventive Medicine
(Epidemiology)
Director
ASEAN Institute for Health Development
Mahidol University

ACKNOWLEDGEMENTS

This thesis would not have been possible without the help and support of many people.

I express my deep sincere gratitude to my supervisors Asst. Prof. (Honor) Nate Hongkrailert and Assoc. Prof. Jiraporn Chompikul for their timeless effort and advice in making it possible me to complete this thesis. I also take this opportunity to sincerely thank the Tininga STI clinic personnel in Western Highlands Province Papua New Guinea, namely Mr. Tintau, Mr. Buka and Ms J. Aska in their assistance in the study. Furthermore I'm in debt to the entire STI patient who had participated in the study, and would sincerely thank them for volunteering in the study.

I would also take this opportunity to sincerely thank World Health Organization as my study sponsor and facilitator, the National Aids Council (NAC) and Western Highlands Provincial Aids Council for allowing me to do the study in Papua New Guinea. And last but not the least I would like to thank Dr. Aska for her assistance in the data collection and Mr. Whalley for his advice on the thesis writing.

Steven N'dremack Paniu

TREATMENT SEEKING BEHAVIOUR OF SEXUALLY TRANSMITTED İNFECTIONS PATIENTS AT THE TININGA STI CLINIC IN WESTERN HIGHLANDS PROVINCE, PAPUA NEW GUINEA

STEVEN N'DREMACK PANIU 5238136 ADPM / M

M.P.H.M.

THESIS ADVISORY COMMITTEE: NATE HONGKRAILERT, Ph.D., JIROPORN CHOMPIKUL, Ph.D.

ABSTRACT

A cross-sectional descriptive study was conducted to examine treatment seeking behaviours of patients with sexually transmitted infections (STIs) seeking treatment at the Tininga Clinic in Mt Hagen , Western Highlands Province, PNG and to identify the socio-demographic, psycho-social, interpersonal and environmental factors affecting those behaviours. The study group comprised two hundred and fifty-five (255) patients who attended the Tininga Clinic and were diagnosed with STI.

The majority of the participants were below the age of 35 years. Most were married and 20% of these marriages were polygamous. The majorities of the participants were either illiterate or had only had primary school education. Most of the participants were unemployed. The study further revealed that a majority (78 %) of the study group had sought a STI clinic as their initial avenue for treatment. The remainder (22 %) had tried other forms of treatment prior to attending the Tininga clinic. Most of the respondents had delayed treatment for two or more weeks prior to seeking any form of allopathic treatment and care. The knowledge and attitude of the respondents was moderate to positive. Most of the respondents had a high level of susceptibility to STI. They also had a level of understanding of the benefits of and barriers to seeking allopathic care at a STI clinic as a curative and preventive measure. In this regard, stigmatization was identified as having a profound influence on the respondents seeking treatment for STI. This study also revealed a significant association between cues to action which prompted patients to seek treatment and their subsequent treatment seeking behaviour.

These study findings lead to recommendations that greater efforts should be made to improve awareness campaigns to educate target populations about STI, about available preventive measures, and about the benefits of seeking timely and appropriate treatment.

KEY WORDS SEXUALLY TRANSMITTED INFECTION / TREATMENT SEEKING BEHAVIOUR/ PAPUA NEW GUINEA/

109 pages.

CONTENTS

CONTENTS (cont.)

CONTENTS (cont.)

LIST OF TABLE

LIST OF FIGURES

Figure **Page**

LIST OFABBREVIATIONS

AIDS	Acquired Immuno-deficiency Syndrome
AIHD	Asean Institute for Health Development
NAC	National Aids Council
STI	Sexually Transmitted Infections
HBM	Health Belief Model
HUM	Health Utilization Model
TRA	Theory of Reasoned Action
HIV	Human Immuno-deficiency Virus
PNG	Papua New Guinea
WHO	World Health Organization
TPB	Theory of Planned Behaviour
VCT	Voluntary, Counseling and Treatment
PMV	Public Motor Vehicle
PGK	PNG Kina (Currency)
UNDP	United Nation Development Found
SER	Social Economics Research
TDR	Tropical Disease Research
STD	Sexually Transmitted Disease

CHAPTER I
INTRODUCTION

1.1 Rationale and justification of the study

Sexually transmitted infection (STI) cases in Papua New Guinea (PNG) have increased in the past two decades. PNG has now become the county in the Pacific with the highest prevalence of STI. With the current advent of an HIV/AIDS epidemic in the country, STI as a cofactor of HIV/AIDS is now receiving a considerable amount of attention as a health problem of major concern. Despite the magnitude of the problem, the issue of "under-reporting" of STI cases is well recognized in the country, and hence the number of officially reported STI cases may be far from the actual number in the population. This may be depicted as the "tip of the ice berg" phenomena in which official statistics may not represent the actual prevalence of STI cases in the population.

Though under-reporting may be attributed to lack of information technology, trained human resources, or health service infrastructure, the health/treatment seeking behaviour of the people needs to be considered as well. According to a study by Mgone et al. (1) only 20 % of female sex workers (FSWs) in two major cities in PNG, sought treatment when they had recognized symptoms of STI. Furthermore, studies by Jenkins (2), Passey (3) and reports from the PNG National Aids Council (NAC) and PNG-National Department of Health (NDoH) show that HIV/AIDS is increasing in the rural areas. This rural trend of STI and HIV/ AIDS is alarming and emphasis now should be on preventative health measures.

The key element of prevention lies in increasing the knowledge and awareness of the general population about treatments and prevention measures for STI. Moreover, there should be more emphasis on health seeking behaviours of individuals suspected with the disease. The rationale for better understanding treatment seeking behaviour is to identify the most probable areas where people are prone to seek treatment, and to target these areas for health intervention strategies, whether they be curative or preventive.

Behavioural studies or health/treatment seeking studies acknowledge that health control tools remain inadequate or underutilized, whether they are in existence or not. Hence, this prompts the importance of understanding human behaviour which is therefore the prerequisite to inducing behavioral change in individuals, which in turn leads to improvement of health practices on the part of individuals concerned. This idea can be extended further to the community or society as a whole in improvement of preventive and healthy practices.

This notion of preventive health strategies in place of curative medicine stems from of the primary health care concept introduced in the 1970s. Since then, there has been a boom in behavioural studies directed towards human perception of a health problem at a community or societal level. This approach was supported and promoted by the UNDP/World Bank/WHO special program for Research and Training in Tropical Disease (TDR). The initial funded studies were mainly focused on the social and economic research (SER) aspects of the TDR, and resulted in an increased emphasis on social-cultural and social-economic aspects.

Further developmental workshops by WHO/TDR on qualitative research methods and the additional incentive of a special collection of all journals, and presentations on behaviour and economic oriented research, further assisted in molding the general direction of research towards health-seeking behavioral studies in tropical disease research (4, 5).

This newfound philosophy was further supported by experts in health policy and intervention. Professionals in this field of health policy and strategic health intervention acknowledged the importance of human behavioural factors in the quality of health care provision and services. Hence the rationale here is to take into account the behavioural factors of the individuals in a society when addressing health problems and introducing, or implementing, any new health intervention strategies.

1.2 Magnitude of the problem

STI has been globally shown to be responsible for acute illness, infertility, disability and even death. It is also responsible for severe medical and psychological consequences in millions of adults and children of both genders (6-8).Worldwide, the prevalence of STI has gradually increased in the past decade coinciding with a similar trend for HIV/AIDS. STI has also been generally proven to facilitate the transmission of HIV (9, 10). A study by Grosskurth et al. (11) in Tanzania in 1995 demonstrated that improving STI treatment in rural areas may reduce the incidence of HIV in the same community. That study found that HIV/AIDS was reduced by 40% in the target community when STI treatment was improved.

In PNG, STI has received a considerable amount of attention since the introduction of the HIV/AIDS epidemic into the country. Since then, there has been enormous concern and work into controlling this epidemic (2). It has been shown by Wasserheit et al. (9) and Laga et al. (12) that there is ample evidence implicating STI as a co-factorial influence on the transmissions of HIV. A community based study by Passey et al. (3) of the female population in the highlands of PNG also concluded that STI is a major problem in that community and that STI is a growing trend in rural areas and not just existent in urban areas. Current treatment regimens and health services have been seen to be inadequate and inappropriate to treat this problem.

Now that the HIV/AIDS epidemic in PNG continues to increase with incident cases reported from every province there is considerably more interest in how awareness and prevention measures can be used to control HIV/AIDS and its associated co-factors (14). Control measures are now directed to promoting more preventive behaviour, and less stigmatization.

1.3 Consequences of the problem

Faced with an increasing incidence rate of STI and HIV/AIDS, PNG is now faced with the dilemma of how to assess accurately the true prevalence of these problems in the population. One option is to encourage people engaging in risky sexual activities to seek treatment or to have their status checked at a STI clinic. By doing so, the true measure of the prevalence of STI in the population would be determined. Currently, however, the number of STI cases in the population can be regarded as the "tip of the iceberg" phenomenon where only a fraction of STI cases seek treatment whilst the bulk remain undetected at large in the population (14). To further elaborate on the ice berg phenomenon it is appropriate to consider the Piots model for STI management (Figure 1.1). From the model, it can be clearly observed that only a minute fraction of the population exposed to STI actually seeks and receives adequate treatment. With regard to PNG, if the problem is not properly addressed it will lead to further increases of STI in the population, which will further coincide with an increase of HIV/AIDS in the country (10, 14, 15).

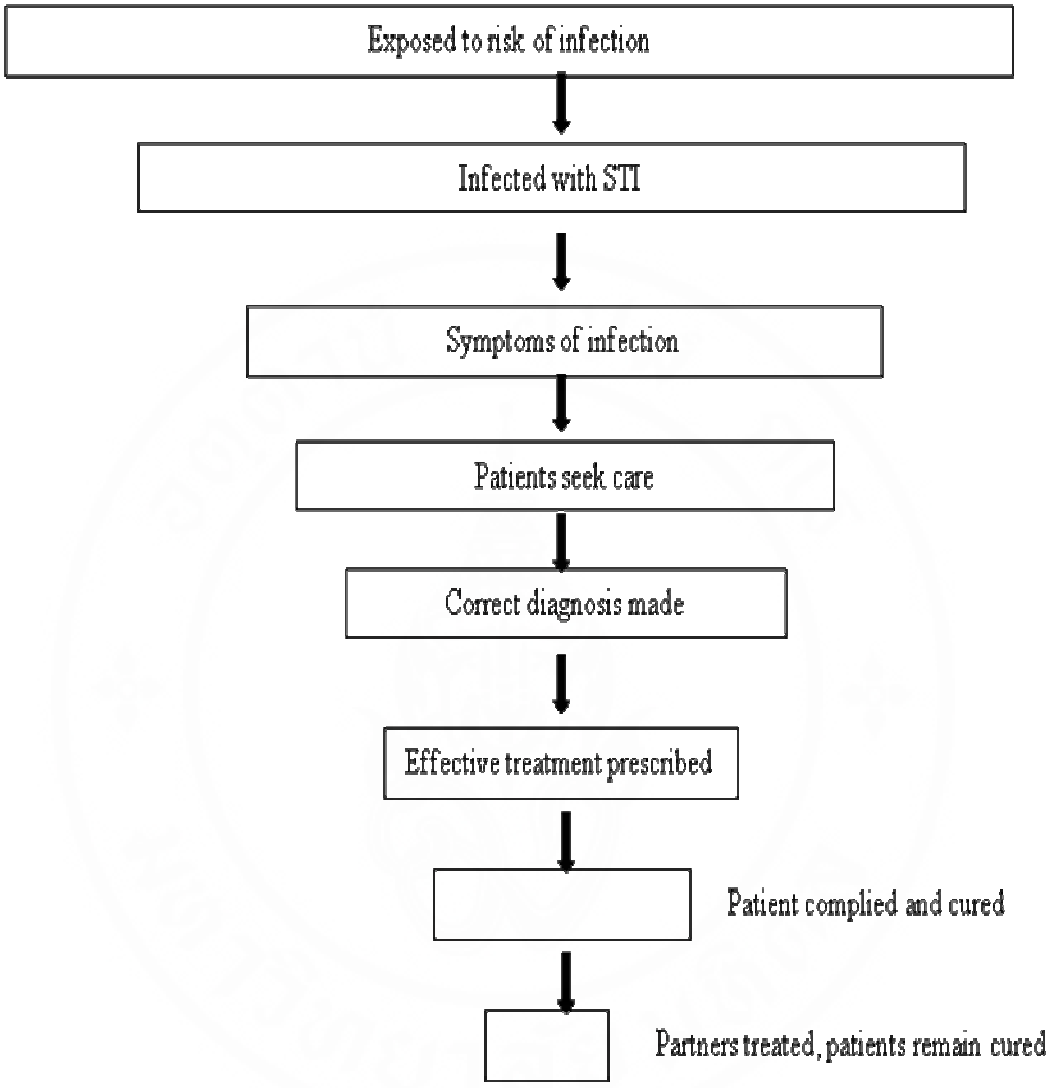

Figure 1.1 Piot's Model of management of STI. Diagram adapted from Rangaiyan 2003. Only a small proportion of individuals with STIs in the population reach effective treatment service, and an even smaller proportion will become and remained cured

Source: Rangaiyan 2003

This study used the Health Belief Model (HBM), the Theory Planned Behaviour Model (TPB) and the Health Utilization Model (HUM), all behavioural models, to investigate and understand the treatment seeking behaviours of STI patients attending a STI clinic in the Western Highlands Province of PNG, and to determine their treatment preferences and related determinant factors of why they do so. Hence,

the independent and dependent variables in the conceptual framework of this study are derived from these three health theoretical models.

1.4 Research Questions

The critical issues to be investigated in this study were as follows

1. What is the pattern of treatment-seeking behaviour of STI patients in the Western Highlands Province, PNG.

2. What are the social influences that encourage or discourage STI patients from seeking medical treatment in the Western Highlands Province, PNG.

3. What are the barriers that would impede or delay access to medical treatment of STI in the Western Highlands Province, PNG.

1.5 Research Objectives

In addressing the above research questions, this research investigated the determinants (factors) that influence the treatment seeking behaviors of STI patients attending the Tininga clinic in the Western Highlands Province. It also considered the extent to which these determinants influenced the treatment seeking behaviours of individuals with STI.

It has been observed that STI has prompted people to seek treatment and further determined their HIV status. Although this may be seen as a positive outcome

of STI infection, the question still remains concerning the number of sexual partners to whom the patient has transmitted the infection prior to seeking treatment (10, 16-18).

1.5.1 General Objectives

The general objectives of the study were to:

1. To identify the patterns of treatment-seeking behaviour of STI patients in the Western Highlands Province, PNG.

2. To explore factors affecting treatment-seeking behaviour of STI patients in the Western Highlands Province, PNG.

1.5.2 Specific Objectives

1. To describe the socio-demographic characteristics of the STI patients seeking STI treatment.

2 To identify barriers that might delay treatment seeking behaviour.

3. To identify the pattern of treatment seeking behaviour of STI patients.

4. To examine the critical signs and symptoms of STI that are recognized, interpreted and acted upon by STI patients.

5. To examine the extent to which psychological factors present in STI patients are associated with decision making about treatment-seeking behaviours.

1.6 Conceptual framework

Treatment seeking behaviour of STI patients at Tininga STI Clinic Western Highlands Province.

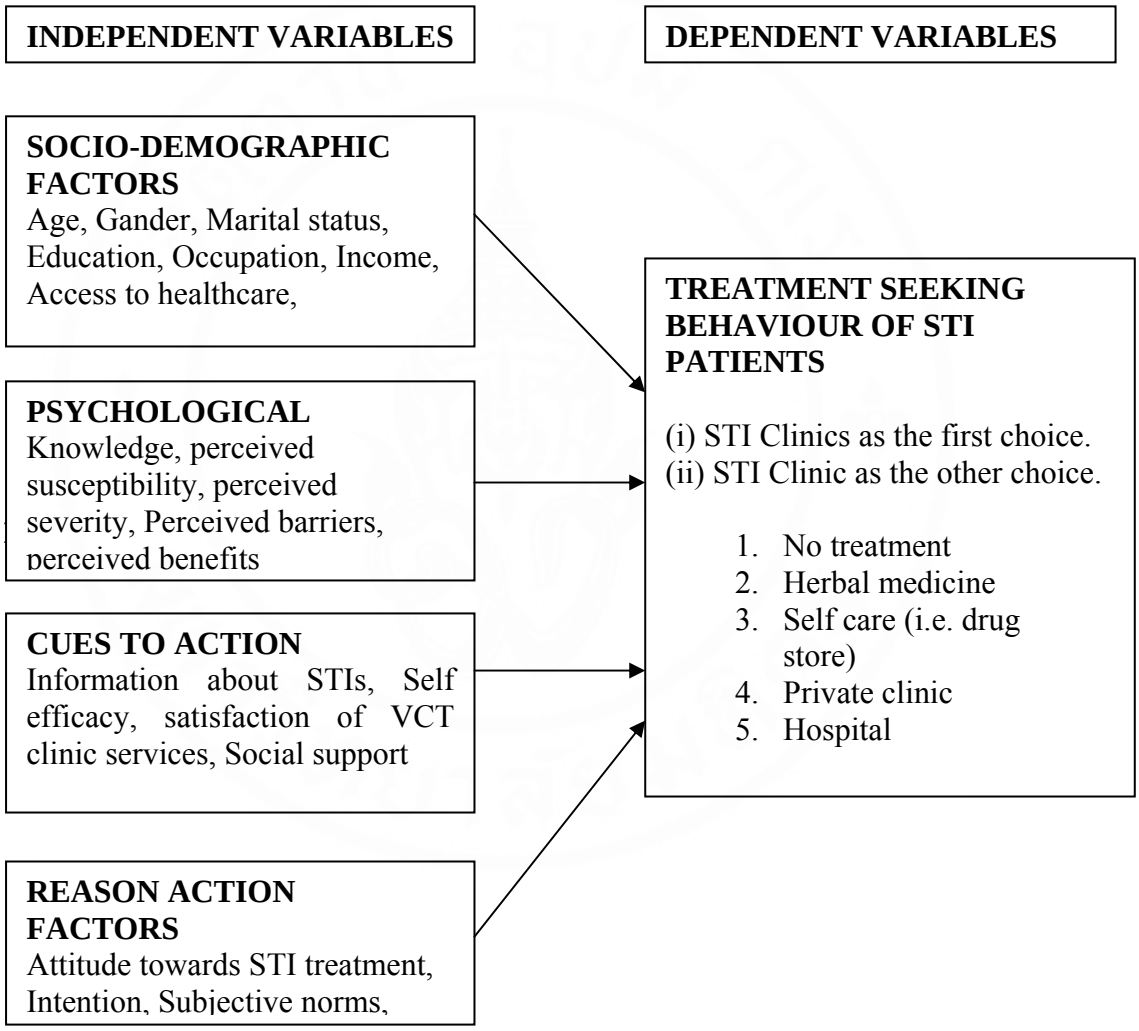

Figure 1.2 Research Conceptual Framework on independent and dependent variables of treatment seeking behaviors of STIs patients

1.7 Operational Definitions of Study Variables

Age: Refers to a respondent's age in years.

Access to STI care: Means the availability, acceptability and affordability of STI care

Access to STI Clinic: The availability and acceptability of affordable STI care or treatment.

Accessibility to health service: Refers to the possibility of a respondent obtaining curative services needed.

Attitude towards behaviour: The degree of positive or negative behaviour a respondent has while being evaluated during STI treatment.

Behaviour: Refers to a respondent's behaviour taking him or herself to a STI clinic for diagnosis and treatment.

Cues to Action: Refers to influence factors that motivate respondents to take themselves to a STI clinic.

Delay treatment: Refers to the duration in weeks from the onset of signs and symptoms of STI to the start of STI treatment.

Knowledge of STI: Refers to the knowledge of the scientific facts about different aspect of STI, including its causes, modes of transmissions, and risks of infection, signs and symptoms.

Perceived susceptibility: An individual's subjective perception of his or her risk of contracting a STI. It includes understanding that STI patients are at high risk of infection and that STIs can easily be transmitted through unsafe sexual practices within families and communities. It was measured using 6 items. Responses were

structured on 3 point scales anchored by the choices of agree, fair, and disagree. Perceived severity was classified into two levels. High level if total scores were more than or equal to the mean. (High = ≥ Mean score, Low = < Mean score). The three point scale score was as follows:

Agree =2 points
Fair = 1 point
Disagree = 0 points

For a negative question the scale score was reversed:

Agree = 0 points
Fair = 1 point
Disagree = 2 points

Perceived barriers: Refers to the potentially negative aspects of a particular health action. The perceived barriers may hinder a person undertaking a recommended behaviour. It includes the belief that an action may be expensive, dangerous, unpleasant, inconvenient, or time consuming. Perceived barriers lead to excuses by STI patient that, for example, they do not have sufficient time to seek treatment or that the distance to a STI clinic is too great or requires too much money or effort. It was measured using 9 items. Responses were structured on a 3 point scale anchored by choices of agreement, fair and disagree. Perceived barriers were classified into two levels. (High = ≥ Mean score, Low = < Mean score). The three point scale was as follows:

Agree =2 point
Fair =1 point
Disagree = 0 points

For a negative question the scale score was reversed:

Agree = 0 points

Fair = 1 point

Disagree = 2 points

Perceived Benefits: Refers to the beliefs of the benefits of STI treatment, including the belief that early diagnosis and immediate treatment will improve the prognosis and reduces the risk of transmission. It was measured using 6 items. Responses were structured on 3 point scale anchored by the choices of agree, fair, and disagree. Perceived barriers were classified into two levels. (High = ≥ Mean score, Low = < Mean score). The three point scale was as follows

Agree =2 points

Fair = 1 point

Disagree = 0 points

For a negative question the scale score was reversed:

Agree = 0 points

Fair = 1 point

Disagree = 2 points

Perceived Severity: Perceived severity refers to feelings concerning the seriousness of an illness or of leaving it untreated. Perceived severity includes evaluation of both medical and clinical consequences, and the possible social consequences. It was measured using 7 items. Responses were structured on a 3 point scale anchored by the choice of agree, fair and disagree. Perceived benefits were classified into two levels. (High = ≥ Mean score, Low = < Mean score). The three point scales were as follows:

Agree = 2 points

Fair = 1 point

Disagree = 0 points

For a negative question the scale was reversed:

Agree = 0 points
Fair = 1 point
Disagree = 2 points

Self-care: Refers to STI patients' maintenance of self- control over their emotions and symptoms and in terms of self-medication by remedy at home or seeking other alternative treatment such drug store, pharmacy or herbal medicine.

Self efficacy: Refers to STI patients' self-belief and self reliance that they can perform necessary actions in order to get appropriate treatment. Responses were structured on a 3 point scale anchored by the choices of agree, fair, and disagree. Self-efficacy measurement was classified into two levels. (High = ≥ Mean, Low = < Mean)

STI Clinic: A specialized clinic for treating STI and HIV/AIDS, and offering for patients and the general public.

Aid post and General Hospital: Institutions that offer allopathic healthcare services but are neither specialized nor equipped to treat STI cases, or to offer professional VCT.

1.8 Limitation of the study

1. The study was a cross-sectional study and cannot determine the relationship between cause and effect in respect of the investigated factors influencing treatment seeking behaviour.
2. The sampling procedure was only focused on the one selected STI clinic which may not be representative of the whole province.

3. The study did not fully measure the prevalence of the STI in the area.
4. There was also the recall bias that the study has to accommodate when asking patients about exact dates of the onset of the symptoms.

CHAPTER II
LITERATURE REVIEW

2.1 STI Global Problem

The incidence of STI remains relatively high in the world, despite diagnostic and therapeutic advances that can render and cure most patients with many forms of STI. In many cultures, changing sexual morals and oral contraceptive practices have eliminated traditional sexual restraints, especially for women, and both physicians and patients have difficulty dealing openly with sexual issues (19). In addition, the development and spread of drug-resistant bacteria (e.g. penicillin-resistant gonococci) make some STIs harder to cure (20). The effects of travel on STI is most dramatically illustrated by the rapid spread of the AIDS virus (HIV-1) from Africa to Europe and the Americas in the late 1970s (21). The common forms of STI among sexually active adolescent girls both with and without lower genital tract symptoms include chlamydia (10–25%), gonorrhoea (3–18%), syphilis (0–3%), Trichomonas vaginalis (8–16%), and herpes simplex virus (2–12%). Among adolescent boys with no symptoms of urethritis, the forms of STI include chlamydia (9–11%) and gonorrhoea (2–3%) (21).

As a result of the increasing trend of STI globally, controlling STI is now recognized as a global priority. This has come about due to the increase of the HIV epidemic. It has been shown that the majority of premature deaths is caused by AIDs. Studies have further shown that other STIs have facilitated the spread of HIV, which subsequently leads to AIDS (22, 23).

2.2 HIV facilitation by STIs

There has been extensive research investigating the association between STI and HIV, and whether one increases the transmission of the other. From this research two main theoretical hypotheses have been developed. The first is that having another STI increases viral shedding in people with HIV, and therefore increases the amount of virus that is transmitted in the venereal fluid. Studies by Kreiss et al.(24) and Plummer et al.(25) have shown significant presence of HIV in genital ulcer cases. Moss et al.(26) also found that there was an increased prevalence of HIV DNA in swab specimens from men suffering from gonorrhoea. Other studies have shown an increased concentration of HIV RNA in semen in men suffering from gonorrhoea, increased concentration of CD4 receptor cells in membranes that have been compromised by STI, and a reduction of cell-free HIV after STI treatment.(27) (28) (29).

The second hypothesis theorized that STIs increase the susceptibility of individuals to infection by HIV by compromising their mucous membranes and genital tracts, which usually act as barriers to HIV (30). This notion was supported by Fauc (31) whose study reported significant receptor cells concentration around areas of damages. A study by Deschamps et al.(32) has also shown that sero-discordant couples in which HIV negative partners developed or have a STI were more likely to develop HIV infection than those HIV negative partners who did not have a STI.

Both hypotheses however have not considered the social aspects of HIV and STI which greatly influence on the transmission of the disease. STI has also been shown to be responsible for other morbidity, social and psychological distresses (33). As a result, most AIDS programmes are developed and integrated with STI programmes in an attempt to address all the associated problems.

A major setback of this approach, however, is the inaccessibility of health facilities, and, secondly, only a minority of those with STIs seek medical health care at public health facilities (34). Consequently, many sexually transmitted diseases, such as syphilis, gonorrhoea and urethritis which can be easily diagnosed and treated,

nevertheless remain untreated. This leads to the continuation of transmission of these diseases which ultimately causes and aggravates severe health problems.

In 1996, the World Health Organization estimated that more than 1 million people were being infected daily. About 60% of these infections occurred in young people under 25 years of age; and, of these, 30% were under 20 years of age. Between the ages of 14 and 19, STIs occur more frequently in girls than boys by a ratio of nearly 2:1; this equalizes by age 20. An estimated 340 million new cases of syphilis, gonorrhoea, chlamydia and trichomoniasis occurred throughout the world in 1999 (7, 21).

The trend in addressing this problem now focuses on preventive health strategies and human behaviour. Understanding what people do when they have symptoms of STI can assist policy planners and health strategists in devising health education programmes or developing other health care initiatives. Therefore, improving the availability and accessibility of health services, training primary health care workers in the care in the diagnosis and management of STIs, screening for STI in pregnant woman, aiming STI prevention and care programmes at vulnerable groups should now be the new alternative approach.

2.3 STI and HIV/AIDS Problem in PNG

PNG has the highest prevalence of HIV/AIDS and STI in the Asia-Pacific region. By December, 2007, more than 23,000 HIV/AIDS cases had been reported in the country, inclusive of 5,000 new diagnoses. More than 76,000 HIV-positive people live in the country. Ninety-four percent of HIV/AIDS cases in PNG were transmitted through heterosexual practices. According to raw data obtained from the Mingende and Kundiawa hospitals in Simbu Province of PNG, HIV cases were most numerous among young girls and older men, and HIV prevalence is now increasing faster in rural areas than in urban areas. (35, 36).

The rate of *gonorrhoea, syphilis* and *chlamydia* has remained high in the past 2 decades in PNG (2, 37-39). Among selected presumably low risk groups, estimated rates range from 18% to 80% for *gonorrhoea,* 4% to 30% for syphilis, and 17% to 44% for *Chlamydia, trichomoniasis* and bacterial *vaginosis* (3, 13, 39-45). It has also been observed that, STIs and HIV are prevalent where women's rights are least valued and respected. Sexual health needs to be promoted in PNG, along with proper sexual and personal hygiene. Other barriers such as denial and lack of ability to discuss sexual health issues are also contributing to the increase in STI and HIV/AIDS cases, and these problems needs to be overcome (35, 36-38). Elimination of these barriers and promoting proper sexual hygiene, however, will only come about through gaining proper knowledge and a correct understanding of the pathology of STI, and how STIs are transmitted.

2.4 Pathology of STIs

STI is an illness that has a significant probability of transmission between humans through the sexual contact, including vaginal intercourse, oral sex, and anal sex. While these illnesses have previously mostly been referred to as sexually transmitted diseases (STDs) or venereal disease (VD), in recent years the term sexually transmitted infection (STI) has been preferred. This is because it has a broader range of meaning; a person may be *infected*, and may potentially infect others, without showing signs of *disease*. Some STIs can also be transmitted via use of an IV drug needle after its use by an infected person, as well as through childbirth or breastfeeding (46, 47). The majority of STI transmissions occur through the mucous membranes of the penis, vulva, rectum, urinary tract, mouth, throat, respiratory tract and eyes. The visible membrane covering the head of the penis is a mucous membrane, though it produces no mucus . Mucous membranes differ from skin in that they allow certain pathogens into the body. Pathogens are also able to pass through breaks or abrasions of the skin. The shaft of the penis is particularly susceptible due to the friction caused during penetrative sex. The primary sources of infection in ascending order are venereal fluids, saliva, mucosal or skin, and particularly the penis;

infections may also be transmitted by faeces, urine and sweat. The amount required to cause infection varies with each pathogen (21).

Though venereal fluids may be the main cause of the higher probability of transmitting many infections is far higher from sex than by more casual means of transmission, such as non-sexual contact (e.g. touching, hugging, and shaking hands) it is not the only reason. Although mucous membranes exist in the mouth as in the genitals, many STIs seem to be easier to transmit through oral sex than through deep kissing. According to a safe sex chart, many infections that are easily transmitted from the mouth to the genitals or from the genitals to the mouth are much harder to transmit from one mouth to another. With HIV, genital fluids happen to contain much more of the pathogen than saliva. Some infections labelled as STIs can be transmitted by direct skin contact. Herpes simplex and HPV are both examples. Kaposi's sarcoma-associated herpes virus (KSHV), on the other hand, may be transmitted by deep-kissing and also when saliva is used as a sexual lubricant (21,47).

Depending on the STI, a person may still be able to spread the infection if no signs of disease are present. For example, a person is much more likely to spread herpes infection when blisters are present than when they are absent. However, a person can spread HIV infection at any time, even if he/she has not developed symptoms of AIDS .

All sexual behaviours that involve contact with the bodily fluids of another person should be considered to contain some risk of transmission of STDs. Most attention has focused on controlling HIV, which causes AIDS, but each STI presents a different problem situation.

As implied by the term, STDs are transmitted from one person to another by certain sexual activities rather than actually caused by those sexual activities. Bacteria, fungi, protozoa or viruses are the causative agents. It is not possible to catch any sexually transmitted disease from a sexual activity with a person who is not carrying an infection; conversely, a person who has STI has received it because of a

sexual liaison with an infected person, or has come in contact with the bodily fluids of such a person (48).

Although the likelihood of transmitting various diseases by various sexual activities varies a great deal, in general, all sexual activities between people should be considered to be a two-way route for the transmission of STIs (48).

Health care professionals suggest safer sex, such as the use of condoms, as the most reliable way of decreasing the risk of contracting STDs during sexual activity, but safer sex should by no means be considered an absolute safeguard. The transfer of and exposure to bodily fluids, such as blood transfusions and other blood products, sharing injection needles, needle-stick injuries, sharing tattoo needles, and childbirth, are other avenues of STI transmission (48).

Epidemiological studies have investigated the networks that are defined by sexual relationships between individuals, and have discovered that the properties of sexual networks are crucial to the spread of STDs. In particular, mixing between people with large numbers of sexual partners seems to be an important factor. It is possible to be an asymptomatic carrier of STDs (21).

Transmission of STI occurs mainly through human sexual activities. Accordingly the suggested approach is to understand the sexual practices of people and the treatment seeking behaviour of people when they have developed a STI (21). It is also important to understand the decision making process of individuals with STI about seeking treatment.

2.5 Theoretical Models

The decision making process of a patients during illness, is probably best explained by either HBM or the TPB which basically assume the rationale of choices the patients make for treatment. In regard to treatment seeking behaviour models in the

context of public health, these are the two most utilized behaviour models. The TPB was further modified to Theory Reasoned Action (TRA) to cater for predictable behavioural variables over which individuals have complete volitional control. The TRA model does not account for this variable. Other models also known and used are the Health Care Utilization or Social-Behavioural Models which were created by Anderson and Aday in 1974. Over the years Anderson and Aday's model have been modified and undergone variations to be more applicable to various medical, sociology and medical anthropology studies. In one way or another, all these models involve the association of variables which have been considered as relevant to predict or explain the health/treatment seeking behaviour of people.

2.5.1 Health Belief Model (HBM)

The HBM was developed in the 1950s and is seen as perhaps the oldest of the behavioural models. The HBM used is the one presented by Sheeran, (49) (Figure 2.1). The model postulated that human behaviour to seek treatment care is guided by 5 factors; namely: a person's perception of his or her the susceptibility to the disease he or she is threatened with; his or her perception of the severity of the disease that he or she may have or been threatened with; the person's perception of the benefits he or she may gain out of seeking treatment; and a person's perception of barriers, and how he or she can be motivated to protecting themselves against the health problem.

The model specifically accounts for an individual perception on the particular health problem. A person's perceived susceptibility depends on how vulnerable they are towards a particular illness or health problem and how they perceived the severity of the illness or health problem and its consequences. The second aspect of the model is health motivation. This aspect was later added into the HBM in the 1970s to accommodate particular health issues that are not directly related to the health problem but nevertheless influence and motivate an individual to seek treatment and care.

The third aspect is the perceived consequence of an unhealthy behaviour and the possible problems that may result from practicing the behaviour or habit. This behavioural evaluation primarily depends on an individual's perception of the benefit that he or she may gain from not practicing the behaviour. This aspect of the model also caters for variables that will operate to prevent a person adapting an unhealthy behaviour if it is perceived it to be not beneficial to him or her (e.g. preventing an adolescent from starting smoking).

The fourth aspect is the cue to action. This aspect includes different, internal and external factors which influence an action. This may be in a form of the nature or intensity of an illness symptom, a health awareness programme or advice from relevant people.

Finally, beliefs and health motivation are conditioned by socio-demographic variables and by the psychological characteristics of the person studied (49). Basically the purpose of socio-demographic variables used by the HBM and other health models is to establish which proper intervention can be directed to counteract the health problem. Usually, these interventions are focused on health promotion which revolves around beliefs, disease threats and behavioural evaluation. These can be resolved through proper health education strategies, however other factors such as culture, poverty and religion also require other means of intervention apart from health education (49).

Though, the HBM has been used to develop health promotion, especially AIDS and TB programmes, and used to investigate a person's perception regarding susceptibility, severity, benefits and barriers, it neglects determinants which are present in other models such as, a person's past experience, advantages of mal-adaptive behaviour, behavioural intention, perceived controls and other factors that need not be mentioned here [Refer to Figure 2.1] (49, 50).

2.5.2 The Theory of Planned Behaviour (TPB) and the Theory of Reasoned Action (TRA)

The drawback of the HBM is mainly addressed through the TRA and TPB (Figure 2.2) which, in the case of this project, are introduced here to cater for the factors that have not been addressed by the HBM. The TPA and TPB have been used extensively in HIV/AIDs research and they focus on factors which lead to a specific intention to act, or behavioural intention. In addition, the TPB focuses mainly on attitude and behaviour (49).

The TRA model was developed by Fisherbein and Ajzen in 1967. It was further modified to TPB in 1988 to address factors in human behaviour that the TRA failed to address when it was used to investigate human behaviour and develop appropriate interventions.

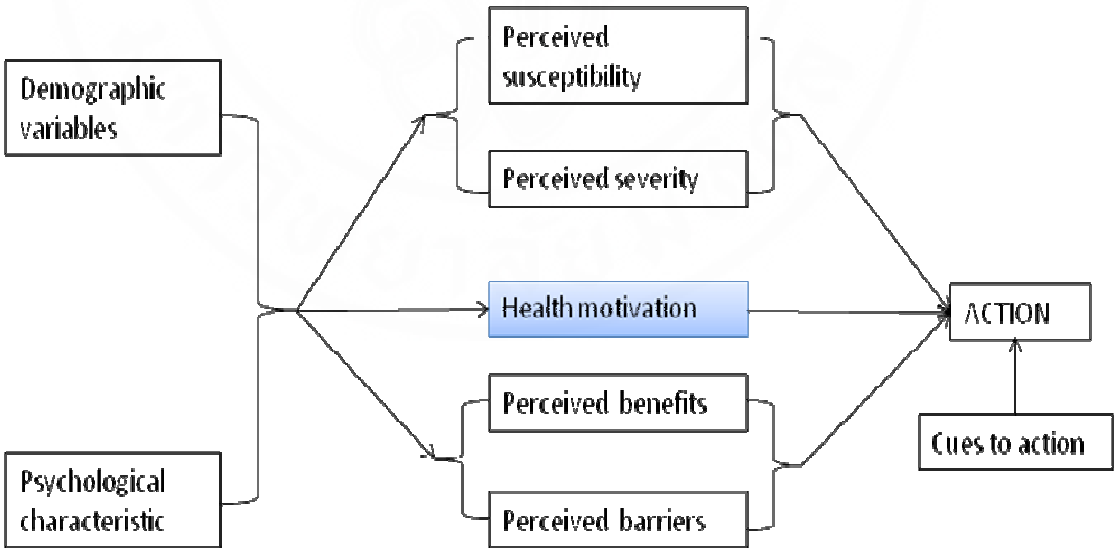

Figure 2.1 Health Belief Model, Sheeran and Abraham, 1995
Source: Sheeran and Abraham 1995

According to the TPB, behavioural intentions are determined by attitudes towards behaviour and by the belief that a specific behaviour will have a major consequence. It also addresses the issue of subjective norms, or beliefs about whether

other relevant persons will approve one's behaviours, plus the personal motivation to fulfil the expectations of others. Furthermore, the TPB model also addresses the perceived behavioural control factors which are determined by belief about access to resources that are needed in order to act successfully. It also takes into account the perceived successfulness of these resources, for example: information, abilities, skills, etc. Like the HBM, the TPB also caters for socio-demographic variables and personality traits. These also influence attitudes, subjective norms and perceived behaviour control(49).

The TPB has an outstanding aspect in mainly influencing the designs of network support, which in years have been utilized in developing health promotion among sex workers. It emphasizes encouraging self-control (51). Thus, in a study by Meyer-Weitz A,et al. (52), the TPB was used to stimulate the feelings of self control and self–efficiency in female study participants to negotiate with their sex partners or clients to use condoms.

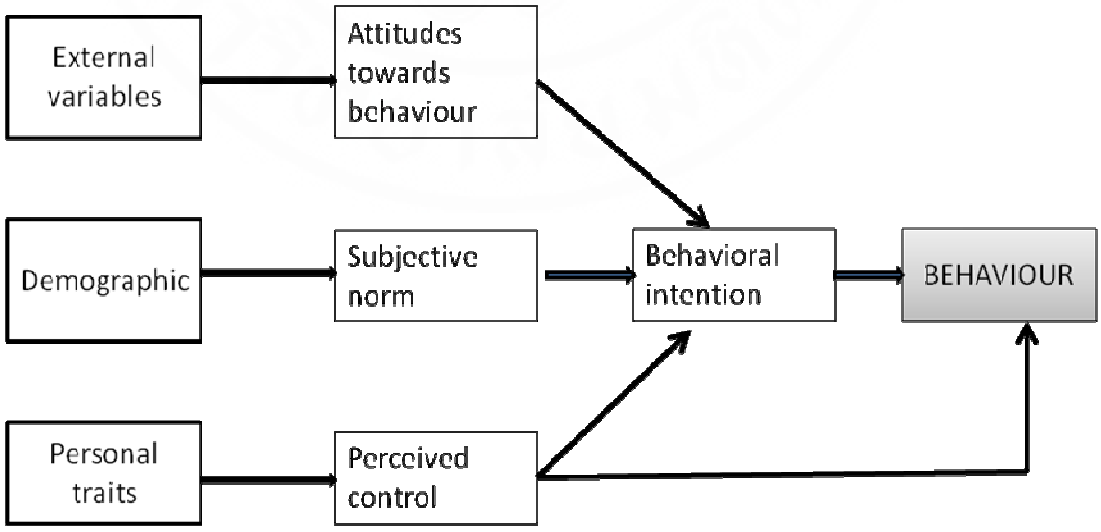

Figure 2.2 Theory of Planned Behaviour schematic diagrams of human behaviour
Source: Conner and Sparks 1995

Although the advantages of the TPB are accounting for motivational aspects of personal disease control and influencing social networks and peer pressure, its limitation is the potential over emphasis on these psychological factors while devaluing structural factors like the limited accessibility or availability of health resources.

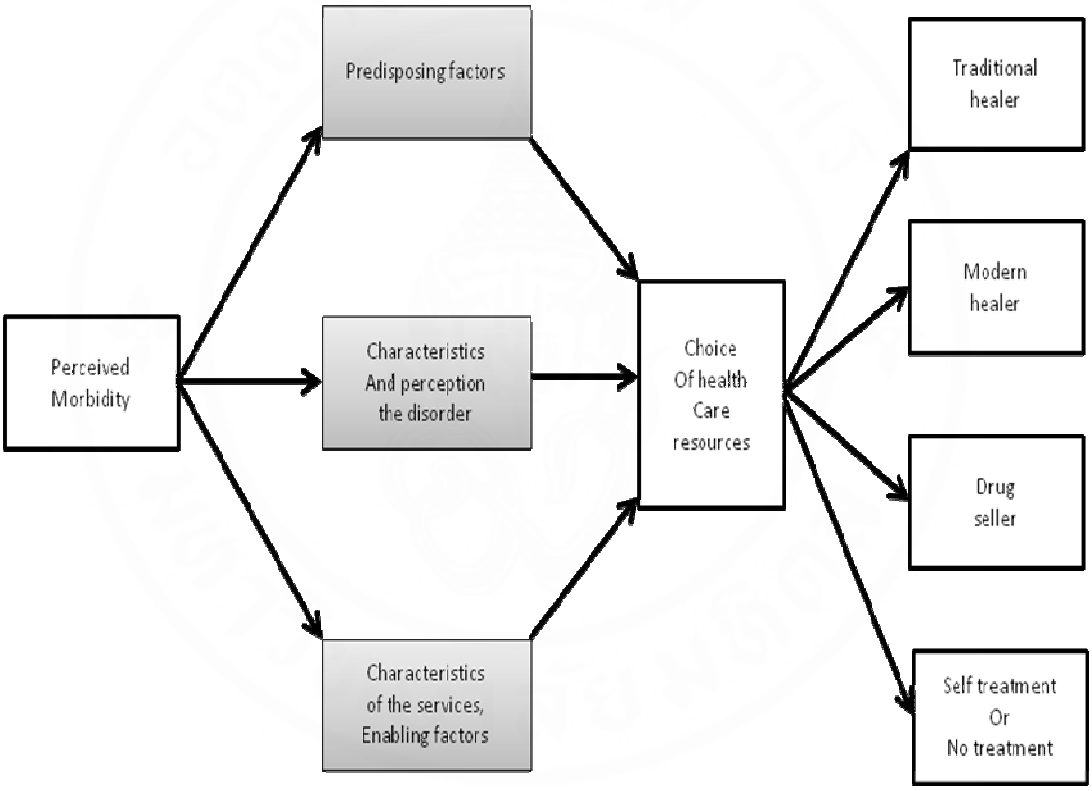

Figure 2.3 Kroeger's 1983 Model on health utilization Model (HUM)
Source: Kroeger 1983

2.5.3 The Health Care Utilization Model (HUM)

In view of limitation of the TPB regarding accessibility or availability of health resources, it is appropriate to consider the development of the HUM to cater for this inadequacy. The health care model was developed by Anderson & Newman in 1973 to investigate the use of biomedical health services, although, through the years, their models have undergone further modification with the inclusion of other variables

such as traditional medicine, self treatment, etc. The model that best depicts the interest of this project is Kroegers' model developed in 1983 (Fig.2.3)(53). Kroegers' model incorporates all the elements of the HUM with inclusion of more elaborate choices of treatment.

2.6 Literature on Outcome Variable

2.6.1 Treatment seeking behaviours in respect of STI

Although there is extensive volume of literature on health seeking behaviour in general, there is very little literature on the treatment seeking behaviours of STI patients. There is, however, literature that is available that provides a framework for approaching an investigation of STI health seeking behaviour in an operational context. A useful approach is provided by Amaro H. et al. (54) into factors affecting utilization of STI prevention and treatment services. Their model incorporates the HBM the Anderson and Newman's models of social and individual determinants of medical care utilization and the TRA.

Amaro and Gornermann's (54) model focused on a combination of patient characteristics and the healthcare provider characteristics in relation to STI. Patient characteristics included socio-demographics, knowledge, skills, beliefs, attitudes and values, psychological and psychological factors, socio-cultural and environmental factors (cultural norms, nature of informal networks, situational factors like childcare responsibilities, transport and time), and treatment provider characteristics. Provider characteristics included socio-demographic factors, knowledge and skills, beliefs attitudes and values, psychological and psychosocial factors, socio-cultural and socio-environmental factors and treatment services structure characteristics (54).

Very little research has yet been done to consider STI health seeking behaviour with any such models, and therefore relevant information has to be cautiously sought in reports whose main focus is generally not health seeking behaviour. There are, however, reports that focus on cultural beliefs about STIs, the

recognition of symptoms, behaviours once symptoms are recognized, and when, where and why people chose particular forms of health care.

2.6.2 Beliefs about STI

In reports from Swaziland on beliefs about STI, most of the people sought traditional healers or herbal doctors. This was mainly due to them believing that STI resulted from sorcery. They also believed modern medicine was not able to treat sorcery. Other studies by Piot et al. (34) showed that most people seeking treatment for STI preferred traditional healers. Another study by O'Toole Erwin also showed that most females with a STI relied on self-care and traditional healers for treatment. Some of them, however, used a combination of all three approaches: self-care, traditional healers and modern medicine. Their behaviour was a result of their beliefs that STI was due to "natural imbalance" faced by the individuals infected (55).

2.6.3 Symptoms and recognition of STI

Treatment seeking behaviour is mostly initiated by the recognition of a STI. However, the symptoms of STI vary greatly; some STIs are asymptomatic or mildly symptomatic, and others are highly symptomatic. Furthermore, other symptoms present in the genital area may not be associated with STI at all.

So an ideal health strategy is to develop taxonomy of not-normal genital conditions and link this to early signs or symptoms of STI, and combine this to self care test or method a person can use to confirm it to be a STI. Moreover another alternative is to educate people to identify what a "not-normal" and "non-genital" conditions attributing to STI. For instance there are symptoms that are clearly associated with STI such as genital ulceration, and urethral discharge. Other symptoms may be related to STIs but are not strictly specific such as vaginal discharge and pelvic pain in women, and inguinal lymphadenopathy which can occur due to other types of infection.

Other studies of Nigerian females showed that the most common symptoms they viewed that impaired reproductive health were lower abdominal pain,

complex of severe abdominal pain with vaginal discharge, itching and irregular dark or smelling menses (55). The extreme of the symptoms were mainly believed to be due to promiscuous behaviour and could be treated with herbs initially treatment, followed by effective antibiotics if the symptoms persisted.

However other studies done on some ethnic groups have showed that some STI patients increase their sexuality as this is said to provide relief from the symptoms. Other studies have showed that people continue to engage in sexual practices despite having genital ulceration (56).

2.6.4 Choice of medical care

The next task is to understand the actions and decisions of people towards seeking treatment when they experience these symptoms. There is a range of options for any individual when deciding to seek treatment. In a developed country, the options can be either a private or a public health care provider. However, in a developing country the options range from public to private allopathic care, traditional healers, or pharmacists. The proportion of people choosing each alternative healthcare from and what influences them to do so are vital for developing STI programs.

The reasons why people select different types of medical care are still poorly understood. There is also very little published on this issue. In many developing countries only a minority of STI patients present themselves to allopathic health facilities, the remaining majority are thought to consult pharmacists for ‘over the counter treatment’ when they have STI symptoms. A similar observation was noted by Piot and Days (57, 58) in their studies. Contrasting studies on prostitutes in the UK showed that prostitutes were prone to seek allopathic care when they experienced any symptoms of STI (58, 59). However, they also were in the habit of sharing their prescribed medication among themselves to be used as prophylaxis. This may also be a factor contributing to the growing problem of drug resistance associated with the many forms of STI.

Other studies have investigated associated factors that result in intention to seek prompt treatment. Such studies have shown that it is mainly due to perceived advantages of treatment, easy access to care, personal risk of getting treatment, and social norm among friends (60). Other than that, there are other factors such as socio-demographics that also influence an individual's treatment seeking behaviour.

2.7 Literature on Independent Variables

2.7.1 Socio - Demographic Factors

A person's behaviour may be explained as the collective function of a person's self. Social demographic factors such as age, gender, marital status, socio-economic status can play an indirect role towards seeking medical attention (49).

Age is one predisposing factor which influences treatment/health seeking behaviour. The reason age is a predisposing factor lies within the difference in age group distribution and is associated with the distribution of illness and suffering. Older people are prone to many health conditional problems and would delay seeking treatment assuming the illness was due to ageing, whereas young people would seek treatment quickly because they have no false assumption of illness pertaining to age.

Another factor is **gender.** Females use more health services then males. A reason is that females are more sensitive to body dysfunction, even minor ones. A female tends to respond promptly to seek medical care; males tend to delay until symptoms become severe before they pursue any form of treatment (49).

Socio economic status is also a determinant factor. Low **income** patients are only limited to standard treatments and are not privileged to have preventive consultation with clinicians. They are prone to such discouraging factors as long queues in public hospitals and they do not have good patient – physician relationships (61).

Level of **education** has been shown to be a factor in influencing in individual's treatment seeking behaviour. Research by Alder et al. (62) showed that most highly educated individuals are more conscious of disease and illness and are more willing to seek medical care than poorly educated individuals. This may be due to the high frequency of work and career demands that are exerted on the individual.

Education has two relatively small effects on health care utilization. First, it is seen that higher educated individuals are making more use of healthcare. Secondly, there is an indirect effect in that higher education leads to less illness and fewer physician visits. Though these two effects may be seen as contrary to each other, closer scrutiny shows that lower educated individuals use the health service more often for diagnoses and treatment, while higher educated people tend to take more advantage of preventive services such as screening programs.

Accessibility of health services also has a profound influence on the treatment seeking behaviour of any individual suffering from any form of ailment. In a study of Canadian university students on promptness to seek medical care, easy access to medical services was highlighted as one of the prime factors (63). Others factors included perceived advantage of seeking medical care, social norms among friends, age (older) and gender (females). Most individuals would seek medical care and treatment if it is easily accessible to them.

2.7.2 Psychological factors

Moreover, studies have shown treatment seeking behaviour of an individual is not entirely influenced by socio-demographic factors alone; psychological factors also affect an individual's treatment seeking pattern. These factors are mainly an individual's particular knowledge of a disease, his or her perception of his or her susceptibility to particular diseases, and his or her perception of the severity of the disease. In addition, other psychological factors such as perceived barriers to seeking treatment and the benefits of a getting treatment also influence an individual seeking treatment.

2.7.3 Knowledge

Knowledge becomes vital based on the assumption that an individual's behaviour is built upon rational decision making founded on knowledge. Hence, individuals make a decision relating to their health after they weigh up the potential risk or benefits of a particular behaviour relating to their health. This is mainly based on an individual's knowledge of the particular disease. Having established knowledge as a focal factor in an individual's treatment seeking pattern, other psychological factors should also be considered such as an individual's perception of disease severity, his or her susceptibility, the benefits of treatment, and the barriers involved for him/her to seek treatment. As stressed by Harvey, (64) to fully appreciate and understand how people reach their decisions regarding their treatment seeking behaviour, it is necessary to understand the information source and how it is being interpreted and also the underlying, unspoken, unconscious feelings and assumptions which support that cognitive process. As confirmed by previous studies, health or treatment seeking behaviours are underpinned by both rational cognitive process and affective emotional processes. However, in spite of this observation, studies done by MacPhail and Campbell (65) suggest that studies done in developing countries have tended not to acknowledge the poor relationship between knowledge and treatment seeking behaviour. Therefore, this suggests the need to develop a more critical approach to conceptualize treatment seeking behaviour in developing countries.

2.7.4 Perceived severity and susceptibility

Perceived severity can be defined as a person's perception of the seriousness of the consequences of contracting a disease. In comparison, perceived susceptibility is defined as a person's perception of the likelihood of contracting a disease. Both factors play a role in defining and understanding the unconscious, emotional perceptions. An individual's beliefs govern a person's decision process, outside the realm of rationale judgment. It is also purely based on the individual's knowledge of the health risk. The belief that a person has regarding the risk of a disease, its severity, how he or she may be affected by it, will contribute to the treatment seeking behaviour of that individual.

As suggested by Campbell, (65) decisions made about sexual behaviour or treatment seeking behaviour in respect of sexually oriented disease are far more complex than traditional health promotion philosophy acknowledges. This is because, as demonstrated by Campbell (65), sexuality, or anything associated with it is shaped by a complex process of identifying other factors within the dynamic web of cultural, psychological and social factors that the individual is accustomed to, and is not only focused on an individual's rational thinking and control which is based on his or her knowledge, attitude and practices (KAP).

Other psychological factors also involved in an individual's decision making process are the perceived benefits that the individual would gain from seeking treatment, and the perceived barriers that are hinder to him or her to seeking treatment. Benefits here will mainly focus on how good the treatment is and its effectiveness in curing the disease. Barriers, however, can include financial considerations, social norms, perceptions regarding the disease, and even geographical considerations. All these factors act in one way or another to obstruct an individual in seeking treatment.

2.7.5 Cues to Action

Barriers to seeking treatment can be overcome by providing more effective cues to action to prompt an individual to seek treatment. Cues to action are defined as factors or signals that prompt an individual to pursue an action. Cues to action can be in the form of free available information about the disease and can be accessible to anybody, a person's self efficacy, a recommendation from someone, satisfaction with the healthcare provider services, or social support.

2.7.6 Reasoned Action Factors

Similar to cues to action, other factors that are worth considering are reasoned action factors. These comprise mainly of the attitude of an individual with a STI regarding STI treatment, his or her intention to seek treatment, and the subjective norms that are associated with the disease in his or her society. Attitude surveys, like KAP surveys, are mostly used in health or treatment seeking behaviour research. The surveys which focus primarily on these three variables are mainly used to understand

health seeking behaviour of a community. However, unlike KAP, attitude forms a more complicated issue. Attitude has been defined by Ribeaux and Poppletion in (66) as a learned predisposition to think, feel and act in a particular way towards a given object or class of objects. Based on this definition, attitude can be defined as a result of a complex interaction of belief, feeling and values. Attitude is important in STI prevention and the treatment seeking behaviour of STI patients as it is mainly utilized in designing promotional health campaigns to change people's attitudes, for example, in relation to condom usage. Individual intentions to seek treatment are influenced by the combination of individual attitudes towards this behaviour, subjective norms associated with the disease, his or her perceived behavioural control, and socio demographic variables. This was highlighted by Conner and Sparks by their TPB. A combination of all these factors will result in a person having a particular intention to seek treatment. Furthermore, part and parcel of a person's intention to seek treatment are the subjective norms that the individual is accustomed to in his or her society. Subjective norms are defined as a person's belief in whether other relevant persons will approve of their behaviour. This is also influenced by a person's personal motivation to fulfil others' or societal expectations of him or her (67).

CHAPTER III
RESEARCH METHODOLOGY

3.1 Study design

A cross-sectional descriptive study design was utilized to identify the patterns and explore the factors associated with the treatment seeking behaviour of STI patients.

3.2 Study population

The target population was adults (above the age of 17) who attended the Tininga STI clinic for STI treatment. The study group composed of attendees of the clinic for treatment seeking purposes at the clinic.

3.3 Study Site

This study site was the Tininga STI clinic located at the Mt Hagen General hospital in Mt Hagen, PNG. The clinic is one of the 4 clinics in the vicinity of Mt Hagen that offers STI treatment and counselling. The services offered by the Tininga clinic were the same as those offered at the other 3 clinics in the province. The clinic reported a total of 2,315 STI attendees in 2008(68).

3.4 Inclusion and exclusion criteria

Inclusion criteria:

- Aged 18 years old or more; female or male
- Living in the Western Highlands Province (Mt Hagen town)
- Attending the Tininga STI clinic and diagnosed and treated for STI
- Willing to be enrolled in the study
- Able to communicate in English or “tok pisin” language
- Signed the informed consent form

Individuals not fitting the above criteria were not included in the study

3.5 Sample size and sampling techniques

The sample size of the study was calculated using the following formula:

$$n = \frac{z^2 NP(1-P)}{z^2 P(1-P) + (N-1)E^2}$$

n = sample size

Z = standard normal score at 95% of confidence interval = 1.96

E = allowance for error = 0.05

N= population size = 2315 (60)

p = proportion of treatment seeking behaviour = 0.20 (11)

$$n = \frac{1.96^2 (2315)(0.2)(0.8)}{1.96^2 (0.2)(0.8) + 2314(0.05)^2}$$

n = 223

Hence, the required sample size was a minimum of 223.

To account for missing or incomplete data or withdrawals from the study, the calculated sample size of 223 was increased by 10% and the minimum sample size was recalculated as 246. In the event, this number was exceeded by 9 and the study group comprised of 255 participants.

3.6 Sample

In this study of the treatment seeking behaviours of STI patients, the study group comprised 255 STI patients who attended for treatment at the Tininga STI clinic in Mt Hagen in the Western Highlands Province of PNG. The study group comprised of individual attending the clinic with the latest episodes of STI diagnosed by the physician at the Clinic, and other follow-up cases. The sampling was done in February, 2010. All the participants in this study satisfied the inclusion criteria.

3.7 Sampling Technique

A purposive sampling technique was employed to select the study group participants. Those who met the above inclusion criteria at the study site and were willing to participate were enrolled in the study.

3.8 Study variables

The study variables investigated in the treatment seeking behaviour of STI patient's studies were as follows:

3.8.1 Independent Variables

1. **Socio-demographic factors**: gender, age, education level, marital status, occupation, income, access to healthcare.
2. **Psychological factors:** knowledge, perceived susceptibility, perceived severity, perceived benefits, perceived barriers.
3. **Cues to action:** information about STI, self efficacy, satisfaction with STI clinic services, social support.
4. **Reasoned action factors:** attitude towards STI treatment, intention, subjective norms,

3.8.2 Dependent variable:

The decision making behaviour of STI patients, when deciding a course of action to seek treatment involved:

- Seeking care at the Tininga clinic.
- No treatment
- Herbal medicine
- Self-care, for example seeking treatment and drugs at a pharmacy (drugstore)
- Seeking care at a private clinic
- Seeking care at a hospital.

In this study, treatment seeking behaviour refers to making the decisional choices of selecting the STI clinic as the initial choice of treatment. Selection of alternative treatment will be referred to as treatment seeking patterns of those STI patients prior to taking medication at one or more allopathic treatment facility.

3.9 Research instrument for data collection

A structured questionnaire was used to collect data. The questionnaire consisted of six parts:

- **Part 1**. Medical records
- **Part 2**. Treatment seeking behaviour
- **Part 3**. Socio-demographic characteristics
- **Part 4**. Knowledge and perception
- **Part 5**. Cues to action
- **Part 6**. Reasoned action

3.9.1 Medical records

This section of the questionnaire consisted of questions about a respondent's medical records after having seen a clinician and been diagnosed and treated. It consist of his or her registration number, name of the STI clinic, name of the province, date of diagnosis, date of treatment, onset of symptoms, examination results and the chief complaints.

3.9.2 Treatment seeking behaviour

This section of the questionnaire consisted of questions on method of symptom relief, choice of treatment relief, reasons for choices of healthcare providers, who influenced a respondent's decision making, switching treatment, switching health care providers, and obstacles to seeking treatment.

3.9.3 Social demographic characteristics

This section of the questionnaire consisted of questions about age, gender, marital status, educational attainment, occupation, family income, and distance from health centre to the family home.

3.9.4 Knowledge and perception

Knowledge of STI

This section consisted of questions about knowledge of STIs. For each question there was only one correct answer. A correct answer received 1 point and an incorrect answer “0” point.

The Benjamin Bloom criteria were used to explore the knowledge of STI patients in this study. Though the Bloom criteria were initially derived in relation to HIV, since the mode of transmission of STI is similar, the same criteria were also applied in this study.

High level of knowledge = If the score is > 80%
Medium level of knowledge = If the score is between 60 and 80%
Low level of knowledge = If the score is < 60% of correct answer

Perception regarding STI

Perception in this study was divided into perception of severity, susceptibility, benefits, and barriers to STI treatment seeking behaviour. The respondents were asked to respond with agree, not sure or disagree with regard to perception statements about severity, susceptibility, benefits, and barriers using a Liket 3 point scale as follows ;

Agree =2 points
Fair=1 point
Disagree=0 points

For negative questions the scale was reversed as follows:

Agree = 0 points
Fair = 1 point
Disagree = 2 points

Cues to action

This section of the questionnaire addressed the influence of media information and individuals on treatment seeking behaviours of the respondents. For each question there was only one correct answer. A correct answer received 1 point and an incorrect answer respondent got “0” points. For question about STI information, every cue that was selected a respondent received “1” point. If a respondent selected no cue, he or she received a score of “0”. The median score was used as the cut-off mark dividing good cues (score >= median score) and poor cues (score < median score).

Attitude

This section consisted of questions about attitudes towards STI. For each question there was only one correct answer. The respondent were asked to respond with agree, not sure or disagree with statements about attitude using a Liket 3 point scale as follows. The median score was used as the cut-off mark dividing moderate and positive attitudes (score >= median score) and negative attitude (score < median score).

Agree =2 points
Fair=1 point
Disagree=0 points

For negative questions the scale was reversed as follows:

Agree = 0 points
Fair = 1 point
Disagree = 2 points

Prior to the data collection and pre-trial testing of the questionnaire, an ethics clearance was sought and received from the Mahidol University IRB and the PNG National Aids Council Ethics Committee. The questionnaire was scrutinized for validity and reliability;

Validity

The questionnaire was reviewed by the supervisors for wording and content validity.

Reliability

The reliability of the questionnaire was established through a pre-trial with 30 STI patients who attended the Tininga STI clinic in Mt Hagen, Western Highlands Province. The Cronbach's Alpha coefficient was used to calculate the reliability of the questionnaire for perception and attitude and KR20 was used for the knowledge part. The reliability was as follows:

Knowledge of STI (12 items)	Reliability	= 0.57
Perceived susceptibility (6 items)	Reliability	= 0.50
Perceived severity (7 items)	Reliability	= 0.75
Perceived benefits (6 items)	Reliability	= 0.66
Perceived barriers (9 items)	Reliability	= 0.83
Attitudes towards STI treatment (11 items)	Reliability	= 0.58

3.10 Data Collection procedure

Data collection was effected using one-on-one interviews with the participants in conjunction with the questionnaire. The raw data collected was analysed using Epi Data 3.02. Respondent patients who attended the clinic at the study site were screened in accordance with the study inclusion criteria. Those who met the inclusion criteria were invited to participate in the study. The objectives, procedure, benefits and potential risks were explained to them. After they had been fully informed of their legal and ethical rights and all the elements of the study, they signed an informed consent form demonstrating their willingness to participate in this study.

Once the consent form was signed, each participant was then allowed to take part in a one-on-one interview using the study questionnaire. The participants were thoroughly guided in both “tok pisin” and English language through the questions by the interviewer. On completion, each participant was sincerely thanked and allowed to leave.

3.11 Data Analysis Procedure and Statistics used

Data analysis was undertaken using Minitab version 13.

Descriptive statistics

Frequency, percentages, means, and standard deviation were used to explain the characteristics of the participants. Percentages were used to determine the proportion of those whose initial choice was the STI clinic.

Inferential statistics

The anticipated outcome of the study was the treatment seeking behaviour of the respondent. The respondents were classified into one of the two following groups:

1. Those who directly attended the Tininga clinic as their first choice of treatment.

2. Those had been to other places prior to coming to the Tininga clinic.

The raw data obtained from the interviews was thoroughly reviewed for completeness and analysed using the Epi Data 3.02 software. The anticipated bivariate analysis was performed using chi-square test to assess the potential association between all the various different factors and the treatment seeking behaviours of the respondents. Continuous variables were assessed using independent t-test to evaluate

the difference in mean between the two groups. The level of significance used in the study was set at the level of 0.05.

Content analysis

Data collected from the interview of all the respondents was reviewed and analyzed by content analysis. The values were then placed in a table and tallied. The common responses were grouped together and the percentage of each response was calculated. Based on the percentage, analysis was completed.

CHAPTER IV
RESEARCH RESULTS

This chapter describes the results of this research and comprises six parts.

4.1 Socio-demographic characteristics

This section describes the socio-demographic characteristics of the respondents in the study. The respondents were all patients diagnosed with STIs, seeking treatment at Tininga STI clinic in Mt Hagen. Table 4.1 shows the socio-demographic characteristics of the 255 study participants. 50.98 % of them were males and 49.02 % were females; 70.58% were below 35 years of age with the bulk of them falling within the 24-29 years age range; the mean age was 31 years. More than three quarters of the participants were married (78.43%) and 20% of the marriages were polygamous marriages. Approximately half (52.94 %) of the respondents had only had primary school education, and 20.78% of them were illiterate. In addition 39% of the study participants were unemployed or self employed in informal agricultural businesses. Most could only generate a monthly income 500 PGK (6, 500 THB), or less. 55.29 % of the participants lived within an hour's travelling time from the Tininga clinic in the vicinity of the Mt Hagen town area.

Table 4.1 Socio-demographic characteristics of the STI patients participating in the study

Population Socio-demographic characteristics	Number n= 255	Percent
Sex		
Male	130	50.98
Female	125	49.02
Age (years)		
18-23	48	18.82
24-29	67	26.27
30-35	65	25.49
36-41	38	14.90
42-47	19	7.45
48-53	13	5.11
53 and above	5	1.96
mean = 31.49	Min = 18	
SD = 9.68	Max = 60	
Marital Status		
Single	32	12.55
Monogamous marriage	149	58.43
Polygamous marriage	51	20.00
Widow	4	1.57
Divorced/separated	19	7.45
Education Level		
Illiterate	53	20.78
Primary school	135	52.94
Secondary / High school	46	18.04
College/University	21	8.24

Table 4.1 Socio-demographic characteristics of the STI patients participating in the study (cont.)

Population Socio-demographic characteristics	**Number n= 255**	**Percent (**
Occupation		
Unemployed/self employed	101	39.00
Private Sector /Public servant	23	8.88
Agriculture	21	8.11
Informal Business	30	11.58
Others	84	32.43
Monthly income		
less than 5 00 PGK	220	86.27
501-2000 PGK	35	13.73
Distance to Clinic (PMV) in hrs		
less than 1 hr	141	55.29
1-4 hrs	89	34.90
More than 4 hrs	25	9.80

4.2 Clinical manifestations of the respondents

Table 4.2 shows the distribution of chief complaints and the clinical manifestations of the diagnoses of the respondents. Though many may have experienced more the one complaint, the three main chief complaints expressed were: vaginal or penile discharge (49.41 %), lower abdominal pains (50.98 %), and other clinical manifestations such as dysuria and swollen genitals (58.43 %). Included in the table also, are the respondents' treatment choices.

A majority of the respondents sought treatment at the STI clinic as their first choice of treatment (77.65%) while around a quarter (22.35 %) sought other forms of treatment before coming to the clinic.

Table 4.2 Chief complaints of the disease and clinical manifestations and the period of time from the earliest symptoms until the diagnosis of STI patients

Variables	Number (n = 255)	Percent
Chief complaints*		
Genital rash	18	7.06
pain in genital areas	75	29.41
Fever	3	1.18
burning sensation urinating	69	27.06
genital sores	21	8.24
Vaginal/penis discharge	126	49.41
lower abdominal pains	130	50.98
others	149	58.43
Treatment seeking Behaviour		
Tininga Clinic as first choice of treatment	198	77.65
Tininga Clinic as the other choice of treatment	57	22.35
self care	3	1.18
Drug store / pharmacy	8	3.14
Private clinic	2	0.78
General Hospital	34	13.33
others	10	3.92
Onset of symptoms		
less than 1 week	75	29.41
2-3 weeks	83	32.55
more than 4 weeks	97	38.04
Stage of infection		
early	75	29.41
middle	83	32.55
late	97	38.04

**more than one answer*

These other treatment choices included self-treatment (1.18%), drug stores or pharmacies (3.14%), private clinics (0.78%), general hospitals (13.33%) and other alternatives such as herbal medicines (3.92%).

A third of the respondents had delayed seeking medical advice for more than 4 weeks after experiencing the onset of symptoms (38.04%). 29.41% sought treatment in the first week of experiencing STI symptoms. Others interviewed had middle (32.55%) to late (38.04%) stage infections.

4.3 Respondents' perceptions of STI and treatment seeking behaviours

The assessment of the perceptions of the respondents' illness conditions is shown in Table 4.3. About 76% of the respondents viewed their illness condition as severe and preferred seeking treatment at the clinic. For those with moderate perceptions of their illness condition, 79.71% also sought treatment at the STI clinic as their initial choice. 77.77% of those who had a mild perception of their illness also sought treatment at the Tininga clinic. The study was unable to detect any significant association between level of illness condition and treatment seeking behaviour.

The study considered the initial action of the individuals after they perceived their symptoms to be a problem and needed medical attention. The first action of the patients to find relief is shown in Table 1B (Appendix B). For the 177 respondents who perceived their illness to be severe, 76.84% sought relief at the Tininga clinic, 14.12% sought relief at the Hagen General Hospital, and 5.08% took other action such as herbs for relief. The other 1.69 % sought relief in self treatment and pharmacies or drug stores. Only 0.56% went to a private hospital as the first action of relief.

Table 4.3 STI Patients perceived illness condition and treatment seeking behaviours

Level of perceived illness condition	Coming to STI clinic as 1st choice	Coming to STI clinic as the other choice	p-value of Chi- square test
Mild	7 (77.77)	2 (22.23)	0.889
Moderate	55 (79.71)	14 (20.29)	
Severe	136 (76.84)	41 (23.16)	

The study also further observed the choice of treatment options the respondents resorted to after resolving to seek treatment. Table 2 B in Appendix B displays the specific choices that they made to relieve their symptoms and the possible association with their perception level of illness condition. Most (76.84%) respondents who had perceived their condition to be severe initially came to the Tininga clinic directly. 1.69% sought care in a private clinic. In the case of respondents who perceived their illness to be moderate, 79.71% preferred the Tininga clinic as their first action to seek relief, 13.04% used the General Hospital, and 5.8% used drug stores or pharmacies. The others (1.45 %) sought other forms of relief such as herbal medicines. Of the 77.78% respondents who had a mild perception of their illness, most also sought the Tininga clinic as their preferred choice while others (11.11%) preferred using drug stores or private clinics (11.11%) to find relief or treatment.

4.4 Association between socio-demographic factors and treatment seeking behaviours

Table 4.4 Characteristics of STI patients and their first action to find relief of symptoms

Characteristics	First action of STI persons to find relief symptoms		
	Tininga Clinic as 1st choice n (%)	**Tininga Clinic as other choice n (%)**	**p-value of Chi- square test**
Socio-demographic characteristic			
Sex			
Male	107 (82.31)	23 (17.69)	0.068
Female	91 (72.80)	34 (27.20)	
Age (years)			
≤35	128 (80.50)	31 (19.50)	0.159
>35	70 (72.92)	26 (27.08)	
Marital Status			
Single	26 (81.25)	6 (18.75)	0.864
Married	154 (77.00)	46 (23.00)	
Other	18 (78.26)	5 (21.74)	
Education Level			
Illiterate or Primary school	149 (79.26)	39 (20.74)	0.302
Secondary or higher	49 (73.13)	18 (26.87)	
Occupation			
Unemployed	144 (79.12)	38 (20.88)	0.372
Employed	54 (73.97)	19 (26.03)	

Table 4.4 Characteristics of STI patients and their first action to find relief of symptoms (cont.)

Characteristics	First action of STI persons to find relief symptoms		
	Tininga Clinic as 1st choice n (%)	**Tininga Clinic as other choice n (%)**	**p-value of Chi- square test**
Monthly income			
less than 5 00 PGK	171 (77.73)	49 (22.27)	0.939
501-2000 PGK	27 (77.14)	8 (22.86)	
Distance to Clinic (PMV) in hrs			
less than 1 hr	103 (73.05)	38 (26.95)	0.120
1-4 hrs	73 (82.02)	16 (17.98)	
More than 4 hrs	22 (88.00)	3 (12.00)	

Similarly the majority of the females who were interviewed preferred the Tininga clinic (79.12%) as their initial choice in seeking treatment. However, a higher (82.31%) proportion of males preferred the STI clinic as their initial choice. A higher proportion of female (27.20%) than males (17.69%) preferred seeking other treatment options before coming to the STI clinic.

In terms of the ages of the study participants, 80.50% who were below 35 years of age selected the Tininga clinic as their first choice of treatment whilst the remaining 19.50% selected other places and forms of treatment. Furthermore a higher proportion of respondents that sought treatment at the STI clinic were below the age of 35. In contrast a higher proportion of respondents that had experience other treatment option were above 35 years of age (27.08%) (Table 4.4).

Moreover, a higher proportion of respondents that sought treatment at the STI clinic were single (81.25%), while a high proportion (23.00%) of respondent that had admitted in using other treatment option, prior to coming to the STI clinic were married.

In terms of level of education of the participants, a higher proportion of the respondent that sought Tininga clinic as their initial choice of treatment were illiterate or only had a primary level of education (79.26%). In comparison a higher proportion (26.87%) of the respondent that sought other treatment option before coming to Tininga clinic had a higher level of education.

Similar observations were noted with regard to the occupation, monthly income and the distance the respondents had to travel to receive health service. In terms of occupation, 82.18% of those who were unemployed selected the Tininga clinic as their initial treatment option. This was the same for the monthly income; 77.73% of the participants receiving 5 00 PGK (≤ 6,500 THB), or less, selected the Tininga clinic as their first choice. The majority of respondents who were patients at the Tininga clinic lived an hour's drive away from the clinic. There was no significant association detected between any of the independent variables and treatment seeking behaviour.

4.5 Clinical complaints and treatment avenue preference

Table 2 B in Appendix B displays the type of treatment options chosen by the respondents based on the type of chief complaints they had. As shown in that table, 86.26% that complained of having genital sores chose to seek treatment at the Tininga clinic as their first choice for treatment. This is also similar for lower abdominal pains; 73.84% of such respondents preferred seeking care at a STI clinic. Of respondents expressing vaginal/penile discharge complaints, 73.81% sought immediate treatment in a STI clinic. Similarly, about 70.43% of respondents having non-specific STI complaints preferred to seek treatment at a STI clinic. Very few of the respondents with these complaints sought treatment in private clinics.

4.6 The delay time from the initial onset of the symptoms to receiving treatment

This study explored the length of time the patients had delayed treatment before seeking any form of health care. The results of these observations are displayed in Table 4.5. It is noted that nearly 80% of the respondents sought treatment at the Tininga clinic after they had delayed for 2 to 3 weeks. 77.32% of the respondents who delayed for more than 4 weeks selected the Tininga clinic as their initial choice. When comparing treatment preference and the length of time delay from the onset of symptoms, the majority sought care at the Tininga STI clinic. This was also similar for patients that delayed treatment for 2 to 3 weeks (79.52%) and less than 1 week (76.00 %). Again, in all three categories, the majority of the patients selected the Tininga clinic as their initial choice for treatment. However, no association was detected using chi-square test.

Table 4.5 Patient suspect themselves having STI and the delay of treatment and the treatment seeking behaviour

Variables	First action of STI persons to find relief symptoms		
	Tininga Clinic n (%)	**Tininga as the other Clinic n (%)**	**p-value of Chi- square test**
Onset of symptoms			
less than 1 week	57 (76.00)	18 (24.00)	0.864
2-3 weeks	66 (79.52)	17 (20.48)	
more than 4 weeks	75 (77.32)	22 (22.68)	
Stage of infection			
less than 1 week (early)	62 (75.61)	20 (24.39)	0.777
2-3 weeks (middle)	83 (79.81)	21 (20.19)	
more the 3 weeks (late)	53 (76.81)	16 (23.19)	

With regard to the stage of infection when treatment was first received, most of those who participated in the study had an infection that was already in its mid

stages and had been experienced for more than 2 weeks prior to seeking treatment. Again, 75.61% of those who had an early stage infection selected the Tininga clinic as their first choice. Similarly, those with middle (79.81%) or late (76.81%) stages of infection also selected the Tininga clinic as their first treatment option. However, no significant association between the variables was detected.

Table 4.6 Knowledge and attitude towards STI patients and the first action by the patients to find relief

Variables	First action of STI persons to find relief symptoms		
	Tininga Clinic as 1st n (%)	**Tininga as the other Clinic n (%)**	**p-value of Fisher-exact test**
knowledge on STI			
poor	19 (86.36)	3 (13.64)	0.229
Good + moderate	179 (76.82)	54 (23. 18)	
Attitude towards STI			
negative	15 (88.24)	2 (11.76)	0.927
Moderate to positive	183 (76.89)	55 (23.11)	

4.7 Knowledge and attitude towards STI

Table 4.6 describes the level of knowledge of the respondents and their attitudes in relation to the specific treatment options. The study shows that those who selected the Tininga clinic as their first choice mostly had good knowledge (76.82 %) of the disease and a positive attitude (76.89 %) towards recovering from their STI and their health in general. Despite this positive observation, no significant association was found between level of knowledge or attitude and preferred treatment options.

4.8 Psychological factors and treatment seeking behaviour

The summary of the psychological factors of the participants who directly chose the Tininga clinic and others who selected other treatment options prior to coming to the clinic is shown in Table 4.7. There were no distinct significant differences in the comparative mean scores of the psychological factors between choosing Tininga as the first choice and choosing other alternatives. The highest P value was 0.661 for knowledge and the lowest was 0.187 for the attitude measured in the participants.

Table 4.7 Comparison of the knowledge, attitude, social support and subjective norms of STI patients by treatment seeking behaviours

variables	Coming to STI clinic as 1st choice		Coming to STI clinic as the other choice				
	mean	SD	mean	SD	t-values	df	p-value
Perceived susceptibility	1.23	1.21	0.89	1.19	1.85	253	0.067
Perceived severity	4.41	1.89	4.63	2.13	-0.70	253	0.457
Perceived Benefits	4.41	1.42	4.25	1.50	-0.47	253	0.630
Perceived barriers	2.27	1.99	2.63	2.28	-1.08	253	0.285
Cues to action	7.02	2.52	6.09	2.58	2.40	253	0.018
Self-efficacy	3.57	0.86	3.72	0.96	-1.05	253	0.295

Table 4.8 Comparisons of the satisfaction of STI patients on STI services by their treatment seeking behaviours

variables	Coming to STI clinic as 1st choice (%) (n = 198)		Coming to STI clinic as the other choice (%) (n = 57)		t-values	df	p-value
	mean	SD	mean	SD			
Satisfaction score	8.23	1.01	8.351	0.813	-0.92	253	0.361

The study also measured the level of satisfaction of the respondents with the services provided by the Tininga clinic. The study then compared the levels of satisfaction using *t- test* with those who had chosen other treatment and care options prior coming to the Tininga clinic and those who had came directly to the clinic. No difference was detected in the mean scores of the two groups in this study (Table 4.8).

4.9 Symptoms presentation and diagnosis

This study examined the symptoms presented at the clinic and their possible association with the choice of treatment. (i.e. the Tininga clinic as the first choice or other choice). As displayed in Table 4.9, a majority of the respondents preferring the Tininga clinic as their initial choice for treatment (*n= 198*). Therefore, no significant association could be detected between the symptoms presented and the two treatment seeking choices investigated in this study. Furthermore, most of the participants were unemployed and received less than 500 PGK (6500 THB) per month. The majority lived an hour's travelling distance from the Tininga clinic (Table 4.4).

4.10 Association between psychological factors and treatment seeking behaviour

The study examined the level of psychological factors and its relation to choice of treatment seeking options. Most of the respondents that selected the Tininga clinic as their first choice to seek treatment had a proportionally higher perceived susceptibility (83.78%) toward STI. However, strangely the study result showed that the respondent that had chose the Tininga clinic had a lower perception of STI severity. This was also observed in the respondent's perception of barriers, benefits and social support. Strangely the study results in each case showed that a higher proportion of respondents selecting Tininga clinic had a low perception of benefit (81.81%), social support (78.95%) and self-efficacy (80.67%) towards STI and its treatment (Table 4.10).

The study results also showed that a higher proportion of respondent that had Tininga as their first option for treatment had a low perception of barrier (78.77%) to hindering treatment, good cues to action (80.29%) high intention to seek treatment (77.82%) and have a relatively positive attitude (77.69%) toward curing from their STI. Despite of these observations only a significant association could be detected between the cues to action and treatment seeking behaviour. The study failed to detect any form of significant association between treatment seeking behaviour and the other psychological factors.

Table 4.9 Symptoms presented upon check-up and diagnosis at the clinic classified by their treatment seeking behavours type

Symptoms	**Coming to STI clinic as 1st choice (%) (n = 198)**	**Coming to STI clinic as the other choice (%) (n = 57)**	**p-value for Chi-squares test**
Genital rash			
Yes	13 (72.22)	5 (27.78)	0.576
No	185 (78.06)	52 (21.94)	
Pain in genital areas			
Yes	60 (80.00)	15 (20.00)	0.557
No	138 (76.67)	42 (23.33)	
Fever			
Yes	3 (100)	0 (0.00)	0.590*
No	195 (77.38)	57 (22.62)	
Burning sensation urinating			
Yes	55 (57.29)	14 (42.71)	0.630
No	143 (76.88)	43 (23.12)	
Genital sores			
Yes	16 (76.19)	5 (23.81)	0.867
No	182 (77.78)	52 (22.22)	
Vaginal/penis discharge			
Yes	93 (73.81)	33 (26.19)	0.146
No	105 (81.39)	24 (18.61)	

**Fisher exact test*

Table 4.9 Symptoms presented upon check-up and diagnosis at the clinic classified by their treatment seeking behavours type (cont.)

Symptoms	Coming to STI clinic as 1st choice (%) (n = 198)	Coming to STI clinic as the other choice (%) (n = 57)	p-value for Chi-squares test
Lower abdominal pains			
Yes	96 (73.85)	34 (26.15)	0.137
No	102 (81.60)	23 (18.40)	
Others			
Yes	117 (78.52)	32 (21.48)	0.690
No	81 (81.00)	25 (19.00)	

Table 4.10 Psychological factors of STI patients and their treatment seeking behaviours

Variables	Coming to STI clinic as 1st choice (%) (n = 198)	Coming to STI clinic as the other choice (%) (n = 57)	p-value of Chi- square test
Perceived susceptibility			
Low	167 (76.61)	51 (23.39)	0.353
High	31 (83.78)	6 (16.22)	
Perceived severity			
Low	68 (81.93)	15 (18.07)	0.253
High	130 (75.58)	42 (24.42)	
Perceived Benefits			
Low	63 (81.81)	14 (18.19)	0.291
High	135 (75.84)	43 (24.16)	
Perceived barriers			
Low	167 (78.77)	45 (21.23)	0.340
High	31 (72.09)	12 (27.91)	
Cues to action			
Poor	31 (65.95)	16 (34.05)	0.030
Good	167 (80.29)	41 (19.71)	

Table 4.10 Psycho-sociological factors of STI patients and their treatment seeking behaviours (cont.)

Variables	Coming to STI clinic as 1st Choice (%) (n = 198)	Coming to STI clinic as the other choice (%) (n = 57)	p-value for Chi- square test
Self-efficacy			
Low	96 (80.67)	23 (19.33)	0.284
High	102 (75.00)	34 (25.00)	
Intention			
Low	12 (75.00)	4 (25.00)	0.790
High	186 (77.82)	53 (22.18)	
Social support			
Low	90 (78.95)	24 (21.05)	0.651
High	108 (76.60)	33 (23.40)	
Attitude towards STI			
negative	3 (75.00)	1 (25.00)	0.781
positive	195 (77.69)	56 (22.31)	
Subjective norms			
Low	19 (73.08)	7 (26.92)	0.561
High	179 (78.17)	50 (21.83)	
Knowledge on STI			
Poor	90 (79.65)	23 (20.35)	0.491
Good	108 (76.05)	34 (23.94)	
Onset of symptoms			
less than 1 week	57 (76.00)	18 (24.00)	0.870
2-3 weeks	66 (79.52)	17 (20.48)	
more than 4 weeks	75 (77.32)	22 (22.68)	

The results of this study showed those respondents who had selected the Tininga clinic as their first choice, had a higher level of subjective norms (78.17%) and a sound knowledge about STI (76.05%). Despite this, a higher proportion of the respondent had delayed treatment for 2 or more weeks before seeking treatment.

Strangely, a higher proportion of respondent who selected Tininga had a poor knowledge (79.65%) of STI. However the study failed to detect any form of association between the two variables and the treatment seeking behaviour.

Table 4.11 Percentage distribution of the STI patients by treatment seeking behaviour and obstacle delaying treatment

Variables	Frequency	Percent
1. Measures of relieving symptoms (n =130)		
Nothing	36	27.69
Buying drugs at stores	6	4.62
Visiting Aid post	87	66.92
Herbal remedies	1	0.77
2. Changing of healthcare providers (n = 25)		
1 time	5	20.00
2 times	13	52.00
More than 3 times	7	28.00
3. Reason for change of treatment (n = 25)		
Treatment didn't work	14	56.00
Not satisfied	10	40.00
Don't know	1	4.00
4. Obstacle delaying treatment (n = 57)		
Finance	8	14.04
Confidentiality	4	7.02
Lack of support	5	8.77
Stigma	18	31.58
Don't Know	7	12.28
Others	15	26.31

Table 4.11, shows a summary of the open ended questions in the questionnaire. Most (66.92 %) respondents opted to seek medical care at their local aid post to relieve their symptoms. The second largest group preferred to do nothing (27.69 %). Moreover, 52% of those who sought other treatment options prior to

coming to the Tininga clinic had changed their healthcare avenues twice. This was usually because either the treatment did not work (56%) or they were not satisfied with the treatment obtained (40%).

4.12 Barriers that delay treatment seeking behaviour

The qualitative analysis shows that there were perhaps 4 main obstacles that hinder people seeking treatment. The main obstacle was stigmatization (31.58%), followed by financial constraints (14.04%), lack of support (8.77%) from their families, relatives or communities, and fears of a breach of confidentiality and trust (7.02%) by the healthcare providers.

CHAPTER V
DISCUSSION

STI is a major cause of health and social problems in many developing countries. It is responsible for many serious economic losses to families and societies. PNG is no exception. STI remains a major national health problem in PNG. Accordingly there is an urgent need to contain and reduce the number of STIs in the country. The gradual elimination of STI in PNG requires an increase of case detection and effective curative treatment. This requires joint collaboration between both health providers and the general population of PNG who must acquire a better knowledge of the disease and have better access to health providing facilities. The primary objective of the research was to observe and to gain insight into the psychological variables that may influence individuals with STI in their behavioural patterns to seek treatment.

This chapter will be presented in two sections.

(i) Discussion of research methodology
(ii) Discussion of the major study findings

5.1 Research Methodology

The research employed a cross-section study design and was based on a clinic setting. A total of 255 participants were enrolled into the study surpassing the initial study sample aim of 246 (inclusion of the 10% fall out rates). The cross-sectional study design was mainly selected because of the limited data collection time available for sampling. A structured question was used in data collection. The study

site was the Tininga STI clinic, one of the formal VCT clinics in Mt Hagen in the Western Highlands Province of PNG. The respondents were selected using purposive sampling and were interviewed in relation to their history of illness, their treatment seeking behaviour, and the psychological factors that might have influenced their treatment seeking behaviour. The study limitations that exist in the study technique and designed have been acknowledged, and were accordingly made to avoid and reduce any such bias in the sampling process. Such bias includes recall errors in the chronology of events in seeking treatment and miss-guided answer responses. Furthermore, because the sampling site was in a hospital setting, the sampling coverage was only limited to people coming to the clinic to seek treatment. In an attempt to reduce such flaws in the study, clinic staffs were well trained as interviewers and incorporated the questionnaire into the clinic's treatment routine to effectively collect the data.

5.2 Research Findings

The main findings in the study are discussed in line with the study objectives.

5.2.1 To describe socio-demographic characteristics of the respondents' treatment-seeking behaviour.

General socio-demographic characteristics

The age range of the participants was from 18 to 60 years. More than half of the participants were aged between 18 and 35 years; 51% were males 49% were female; 20.78% were illiterate, and 52.94% had only had primary school education. 39% of the participants were unemployed and 86.27% had a monthly income less than 500 PGK (6,500 THB) (These findings were similar to a study by Grover et al. (79) in North India. From that study it was found that individuals with higher socio economic status in the society used more self care treatment or private allopathic care than government provided hospitals. This was in contrast to people that have a lower economic status, majority seek care in government provided hospitals and uses less

self care. This pattern can be explained by the monetary advantage the better socio-economic individual has over the lower socio-economic person, that is he or she can afford a variety of health care options that are most convenient for him or her.

Age

Age was found to have had an effect on treatment seeking behaviour of the respondents. Younger adult STI patients seeking treatment (less than 35 yrs of age) were likely to come to the hospital as their first choice of treatment compared to older people (more than 35 years of age). This observation can be explained by age being a factor that influences a person's willingness to seek treatment. Studies have shown that people tend to interpret health problems with the gradual onset and mild symptoms as a consequence of age. Hence, people that have a misconception about attributing illness to age tend to delay seeking treatment. This not only applies to STI patients but also to TB patients (69).

Educational level

The study shows that education seems to effect treatment seeking behaviour. There was a higher prevalence of STI in people with low levels of education. Coincidently there were a higher proportion of them seeking treatment. This may be due to educated people having a more preventive life style because of their knowledge of STI prevention. In terms of treatment seeking behaviour, better educated people prefer seeking treatment outside an STI clinic. This may be a more convenient option for them due to factors such as shorter waiting times and work commitment. Hence, a well educated person would be more likely to seek proper medical care compared to an illiterate or lower educated person (51, 52).

Occupation

Because a better educated person is likely to have a better occupation, it is likely that occupational status is associated with treatment seeking behaviour. A person with a better occupation would be in a better financial position to assess the most appropriate health services available. However, as observed from the study, the majority of the respondents were either unemployed or illiterate. This trend in patients

to the clinic can be presumed to be due to people with higher economic status in society seeking treatment elsewhere (e.g. private clinics) and avoiding the Tininga clinic where there is a higher risk of stigmatization and longer waiting times. Past studies of socio-economic status in association with treatment seeking behaviour substantiate this assumption (70), (71).

The pattern of treatment-seeking behaviour of STI patients

This study found that 77.6% of the respondents selected the Tininga STI clinic as their first choice in seeking treatment. The other 22.4% sought alternative treatment prior to coming to the clinic. The majority of those patients who had sought healthcare elsewhere were referred from the general hospital or other smaller aid post (59.65%). This is mainly because they were not aware of the clinic or they did not knowing they had a STI. Others sought treatment elsewhere experimenting with other treatments such as herbal medicine, or to receive medication and treatment from friends and relations that were clinicians. Others attended private clinics (3.5%), used drug stores or pharmacies for “over the counter” treatments (14.11%) and only 5.3% treated themselves. Their primary purpose was to find relief from the disease, at the least cost, and as conveniently as possible. Those respondents who treated themselves or used drug stores, and were not healed or satisfied with the treatment they received, subsequently came directly to the Tininga clinic or went to the general hospital before they were referred to the Tininga clinic.

Again this behavioural pattern can be explained by the patients with a STI feeling reluctant to seek treatment due to the associated stigmatization or the burden of waiting a long time at the clinic. Another factor that could be considered is that working class people cannot afford to leave their formal jobs during the day and therefore resort to other treatment options that are more convenient and available after hours. Studies by Mayer-Weitz et al. (51, 52), Pitts et al. (72), and Gott et al. (73) support that suggestion.

5.2.2 Critical signs and symptoms of STIs that are recognized interpreted and acted upon by STI patients

From the data and observation notes from the study, the symptoms on the date of examination and diagnosis were slightly different between two groups although both groups selected the Tininga clinic as their first choice and delayed seeking treatment for about 2-3 weeks prior to seeking treatment. For the patients who had sought other treatment options prior to coming to the clinic, the treatment delay can be explained by time consumed seeking or adhering to these treatments before coming to Tininga. The other explanation for the delay in seeking treatment may perhaps be that, at an early stage most STIs are asymptomatic and show no signs or symptoms. The development of the symptoms is gradual and is mild in the initial stage of the disease. Lower abdominal pains for example can be easily disregarded and mistaken for other common ailments. Another explanation is that job commitments may deter people from promptly seeking treatment at a mild containable stage. Studies by Mayer-Weitz et al. (51, 52) have shown that people tend to delay treatment due to work commitments, and only seek treatment when they perceived the ailments to be severe. In the case of STI, such delay will consequently lead to infection of their unsuspecting sexual partners and will result in a "chain reaction" of infection from one person to another if he or she has multiple partners and practice unsafe sex. This suggestion is supported by Mechanic D (1978 cited in Brannon L & Feist J, (74)) who proposed four main characteristics of symptoms that determined a person's response to a disease. Firstly, the visibility of the symptoms, and how readily apparent the symptoms are to the person or others. Secondly, if the symptom characteristics were perceived severe by the individual experiencing it. Hence, more severe symptoms experienced by an individual prompt a more rapid response to see a clinician and receive treatment. Thirdly, the extent to which symptoms interfere with a person's life. The degree of incapacitation affecting the individual from the symptoms will stimulate prompt action for him or her to seek treatment. Finally, the frequency and the persistence of the symptoms will cause some to seek treatment. Thus, an individual will seek healthcare promptly if he or she assumes the condition to be severe and require health care. Otherwise, if an individual deems that the symptoms are

intermittent and unlikely to result in an illness, then he or she is less likely to seek treatment or counselling.

There are other suggestions that all individuals use self care as their initial strategy to find relief but only seek treatment when their conditions worsen and become serious and complicated. Therefore, most patients present themselves in the Tininga STI clinic when the infection is in the mid to later stage and when severe complications begin to occur, after he or she has exhausted other alternatives.

Therefore, as confirmed by the study, a patient that attends the Tininga clinic, or any other STI clinic will have a higher level of psychological attributes such as knowledge of the disease, high level of perception of severity for the disease, cues to action, social support and great deal of intention. Having said that, there are other suggestions that treatment seeking behaviour of STI or any disease is sequential and requires a prior selection of other health remedies and alternatives before coming to a STI clinic.

Finally in the context of PNG, treatment delay or trying for alternative treatment prior to coming to a STI clinic is also greatly influenced by the stigmatization that is bestowed upon the disease by the society in which the disease occurs. In PNG, treatment delay mainly occurs because of the stigma that is associated with STI; individuals will only seek treatment when the symptoms become severe and complicated and can no longer be contained by the individual.

5.2.3 Association of the psychological factors those are present in STI patients with their decision making in treatment-seeking behaviours

Other factors that profoundly influence individuals' treatment seeking behaviour are the psychological factors which are discussed in this section below.

Perceived susceptibility

As is evident in the study results, a person with a high perception of susceptibility to any disease, or in this case STI, will have a more prompt response to treatment when he or she thinks that he or she is exposed and is threatened by it. Health threat or a person's susceptibility to it has a profound influence on triggering the person motivation to engage in health behaviour to avoid the particular adverse condition. It has been shown that people that have a higher level of perceived susceptibility to a disease will have a STI clinic as the initial choice. Furthermore, a person with higher perceived susceptibility will adopt a pro-active action of behaviour to seek medical care.

Perceived severity

Perceived susceptibility is not the only psychological factor that influences an individual to seek treatment; individual perceived severity also influences individual treatment seeking behaviour. An individual's severity belief can be described as one's belief of threat perceptions regarding a person's subjective emotions concerning the seriousness of contracting the health threat. Though the observation in the study showed no significant difference in the two choices of treatment seeking behaviour other studies have indicated differently (75). In this study, the lack of a statistically significant association between perceived severity and treatment seeking behaviour maybe due to the initial symptoms of STI at the early stage being asymptomatic and mild; thus, most STI patients believe that the severity level of the STI symptoms is not serious. Furthermore, due to the unequal distribution of respondents in each treatment choice (i.e. n = 198 vs. n = 57), some possible association may have occurred but yet may not have been able to be detected statistically.

Perceived Benefits

Despite the result showing insignificant association between treatment seeking behaviour, research by Conner and Norman (67) have proven contrary to this finding. They have shown that two main factors influence an individual of health behaviours are: threat perception and behavioural evaluation. A perceived benefit is an

aspect of behavioural evaluation. It can be defined as a personal belief in reference to taking a particular behaviour to prevent a health threat (76). Therefore, medical care may not be sought unless a STI patient perceived great benefits in taking the particular action. Again, as mentioned in the previous section, this study may have failed to detect an association because one selection of treatment choice (i.e. STI clinic as 2nd choice treatment) had a smaller sample compared to the other choice.

Perceived Barriers

Perceived barriers are an aspect of behavioural evaluation. Perceived barriers are factors or aspects that hinder an individual adopting a beneficial behaviour to avoid a health problem. Though in the study there was no statistically significant association between treatment seeking behaviour and barriers, other prior studies have found such a relationship. Hence, an individual with a low perception level of barriers is more likely to seek treatment at a STI clinic compared to someone with a higher level of perceived barriers.

Cues to action

Cues to action can be described as triggering mechanisms to activate behaviour. Cues can be physical symptoms, media, interpersonal interactions, or mere advice from friends. The events experienced by the individual then propel him or her to adopt an action or behaviour that he or she deems beneficial to avoid a health problem. In this study there was a statistically proven association between cues to action and treatment seeking behaviour This is consistent with other studies (77). Therefore, patients that experience a multiple cues to action are more likely to seek treatment at a STI clinic.

Self efficacy

Perceived self-efficacy can be described as an individual's self-belief and self esteem to perform an action. Therefore, it is a primary determinant of initiating and maintaining behaviour that is seen as beneficial. Despite the study showing no statistically significant association with treatment seeking behaviour, prior studies by Janz and backer (77) showed an association between these two variables. For this

study, the lack of association may be due to most STI suffering individuals becoming self efficient in seeking treatment, when the severity of the STI ailments increase. Self efficacy is inversely related to perceived barriers. Both have an opposite effect on each other. If an individual lacks the confidence in his or her ability to overcome an action (.i.e. self efficacy), he or she will experience more barriers in seeking treatment.

Social Support

It was observed that respondents who had preferred the STI clinic as their first choice had high levels of support from family and friends. This may be because people that have a lot of social support are assisted by them coping with the health threat. This factor will assist the STI patient to be able to perform necessary beneficial behaviour to seek medical care in a range of situations.

5.2.4 Knowledge of STI, attitudes towards STI, and psychological factors of STI patients

Knowledge of STI

Knowledge is an essential part of health behaviour of STI patients as in regard to taking action to seek medical care to relieve symptoms. This study has adequately revealed that the knowledge about STI has a clear association with treatment seeking behaviour. Patients with better knowledge and awareness were more likely to select the Tininga clinic as their initial choice than individuals with STI but only poor knowledge. This association between knowledge and treatment seeking behaviour can be explained by the explanation that having a proper knowledge of the STI will enable an individual to recognise the STI symptoms at an early stage and understand the benefits and advantages of seeking proper health care early.

Attitude towards STI

An individual's attitude can be defined as the positive and negative beliefs in relation to a specific behaviour, in this case treatment seeking behaviour. Furthermore it also depends on the degree to which an individual has a favourable or unfavourable outcome evaluation of a specific behaviour (78). In this study it has been

observed that people with a positive approach to life will seek prompt treatment when threatened by a particular disease, and assume they may be affected.

Subjective norms

Subjective norms are the influence of peer and social pressure that is perceived by an individual to perform or not to perform a particular behaviour. Mostly the social pressures stem from significant others or groups from the individual's environment (78). Although there was a higher proportion of mean score indicating an association between subjective norms and the treatment seeking behaviour, this difference has failed to be statistically significant. However, based on previous work and literature, the association has been firmly established. And moreover this association between subjective norms and treatment seeking behaviour is supported by the theory of reasoned action.

There are also other factors that have been found to be associated with treatment seeking behaviour of STI patients such as perceived illness condition. Patients who perceived their condition as moderate or severe were more likely visit the clinic as their first choice of treatment. This can be because patients who are aware of their health condition will fear it becoming more severe and will seek proper health care at a STI clinic as their first choice.

CHAPTER VI
CONCLUSION AND RECOMMENDATIONS

STI has become a major problem since the advent of HIV/AIDS in PNG. The disease not only has a lot of stigma associated with it but is one of the major co factors of HIV/AIDS in the country. Since HIV/AIDS has been declared an epidemic in PNG more efforts are placed into the control programme of the disease and its associated cofactors

6.1 Conclusion of the study

This cross-sectional descriptive study was aimed at assessing the treatment seeking behaviour of STI patients and determining the associations between socio-demographics, patient's illness situation, and psychological factors of STI patients with STI treatment seeking behaviour.

This study revealed that around 77% of the patients that attended the STI clinic actually preferred the clinic as their initial choice of treatment. The other 23% preferred seeking alternative treatment prior to coming to the STI clinic. The 23% that preferred getting treatment elsewhere before coming to the clinic included participants that had preferred getting treatment in the General Hospital, or buying medication from stores or pharmacies, or using self-care remedies to find relief.

There is a major significance in the delay in diagnosis and treatment of all the STI infected persons seeking treatment. It was revealed from the study's data that an individual would delay treatment up to at least 2 to 3 weeks before seeking any form of treatment. The delay in treatment can be a result of multiple factors, including lack of knowledge to identify symptoms in its initial mild stage, fear of stigmatization from the society, work commitments, or even financial difficulty.

A closer observation of the socio-demographics of the patients who have contracted the disease revealed that most were illiterate, unemployed and had low socio-economic status. Moreover, there were significantly higher numbers of young females than males that had the disease. The females were from polygamous marriages or divorced from their husbands. A majority of the females admitted having had a STI in the past and having sought treatment, but they were re-infected by their male partners who were adamant in refusing to seek any form of VCT in the clinic. Questions also remain about whether higher socio-economic individuals seek treatment elsewhere, for example in private clinics, since few such people attended the clinic.

Also determined from the study is the pattern of seeking treatment of an individual suffering from STI. The study data showed that the pattern starts with self-care, followed by purchasing drugs from drug stores or pharmacies, and then if the symptoms continue and condition deteriorate seeking healthcare at a clinic.

Again, the majority of the participants in the study were of lower socio-economic status and were either illiterate or had only primary school education. Hence, socio-economic status still remained a major factor in influencing treatment seeking behaviour. Therefore STI is fast becoming a poverty disease, and, given the limited accessibility to adequate healthcare, self-care methods are chosen as a first step. Furthermore, the study found that patients who preferred coming directly to formal STI healthcare as their first choice tended to have a higher level of knowledge of STI. Again, as mentioned previously, low socio-economic status and lack of proper knowledge of STI may limit the accessibility to healthcare by STI patients.

6.2. Recommendation

The strongest recommendation is increased education about early symptoms of STI, mostly targeting young females in lower socio-economic areas (i.e. settlement, villages). There also needs to be greater emphasis on safe sex and greater condom use targeting the male population and, specifically, married couples.

The second recommendation is to reduce the level of stigmatization that is associated with STI. This would be possible by increasing the level of knowledge about the disease and its severity and susceptibility to everyone. The third recommendation would be to develop further educational material and awareness campaigns using the most effective media to disseminate educational materials. Topics should include:

1. What STI is
2. The benefits of rapid treatment-seeking
3. That symptom alone is not an appropriate indication of a STI; rather the link needs to be made with sexual behaviour
4. The nature of the incubation period of STIs
5. Where to go to seek treatment

Recommendation for future research

1. Conduct a longitudinal study to compare patients selecting the STI clinic as the prime choice of treatment with other individuals that had chosen other treatment options before coming to the clinic.

2. Conduct qualitative research to further understand STI treatment seeking patterns

3. Undertake action research to raise community awareness of STI symptoms and appropriate treatment seeking behaviour.

REFERENCES

1. Mgone CS, Lupiwa T, Yeka W. High prevalence of Neisseria gonorrhoeae and multiple sexually transmitted diseases among rural women in the Eastern Highlands Province of Papua New Guinea, detected by polymerase chain reaction. Sex Transm Dis 2002 Dec;29 (12):775-9.
2. Jenkins C. AIDS in Papua New Guinea. P N G Med J 1996 Sep;39(3):164-5.
3. Passey M, Mgone CS, Lupiwa S, Suve N, Tiwara S, Lupiwa T, et al. Community based study of sexually transmitted diseases in rural women in the highlands of Papua New Guinea: prevalence and risk factors. Sex Transm Infect 1998 Apr;74(2):120-7.
4. Kikwawila, et al. Qualitative research methods: teaching materials from a TDR workshop. UNDP/World bank/ WHO special programme Resource Paper No. 3; for Research and Training in Tropical Disease (TDR).Geneva: WHO 1994:
5. Kikwawila, et al. WHO/TDR workshop on qualitative research methods: reports on field. UNDP/WHO special Programme Resource paper No. 14 for research and Training in Tropical disease (TDR). Geneva: WHO; 1995.
6. PNG NAC et., al, Estimation of HIV Infection, AIDS Case/Death and Other STI 2002 Contract No.: 17.
7. Agacfidan A, Kohl P. Sexually transmitted diseases (STDs) in the world. FEMS Immunol Med Microbiol1999 Jul 15;24 (4):431-5.
8. Lewis DA, Pillay C, Mohlamonyane O, Vezi A, Mbabela S, Mzaidume Y, et al. The burden of asymptomatic sexually transmitted infections among men in Carletonville, South Africa: implications for syndromic management. Sex Transm Infect 2008 Oct;84(5):371-6.
9. Wasserheit JN. Epidermiological synergy. Interrelationships between HIV infection and other STD. Sex Transm Dis 1992;19:61-77.

10. Weatherburn P, Bonell C, Hickson F, Stewart W. The facilitation of HIV transmission by other sexually transmitted infections during sex between men. Evidence regarding epidemiological synergy amoung gay men in UK. London: Sigma Research Faculty of Humanities and Social Science University of Portsmouth; 2000.

11. Grosskurth H, Mosha F, Todd J, Mwijarubi E, Klokke A, Senkoro K, et al. Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomised controlled trial. Lancet 1995 Aug 26;346 (8974):530-6.

12. Laga M, Manoka A, Kivuvu M, Malele B, Tuliza M, Nzila N, et al. Non-ulcerative sexually transmitted diseases as risk factors for HIV-1 transmission in women: results from a cohort study. AIDS 1993 Jan;7(1):95-102.

13. Mgone CS, Passey ME, Anang J, Peter W, Lupiwa T, Russell DM, et al. Human immunodeficiency virus and other sexually transmitted infections among female sex workers in two major cities in Papua New Guinea. Sex Transm Dis 2002 May;29(5):265-70.

14. World Health Organisation. NAC-NDoH, Papua New Guinea. Consensus Report on STI, HIV And AIDS Epidemiology in Papua New Guinea. Papua New Guinea Dept. of Health; 2000.

15. Hayes RJ, Schulz KF, Plummer FA. The cofactor effect of genital ulcers on the per-exposure risk of HIV transmission in sub-Saharan Africa. J Trop Med Hyg 1995 Feb;98(1):1-8.

16.Norton J, Elford J, Sherr L, Miller R, Johnson MA. Repeat HIV testers at a London same-day testing clinic. AIDS 1997 May;11(6):773-81.

17.Tyndall MW, Agoki E, Malisa W, Ndinya-Achola JO, Ronald AR, Plummer FA. Sexual behavior and perceived risk of AIDS among men in Kenya attending a clinic for sexually transmitted diseases. Clin Infect Dis1994 Sep;19(3):441-7.

18. Aska M. Influence of Sexually transmitted infections on HIV/AIDS on VCT clients attending Tininga Clinic. Western Highlands Province Papua New Guinea; 2009.

19. Maher L, Ho H, N C. Cultural influences and HIV risk behaviours among ethnic Vietnamese injecting drug users in Australia. *Int Conf AIDS*2004.

20. Hart CA, Kariuki S. Antimicrobial resistance in developing countries. BMJ 1998 Sep 5;317(7159):647-50.

21. Workowski KA, Berman SM. Sexually transmitted diseases treatment guidelines, 2006. MMWR Recomm Rep2006 Aug 4;55(RR-11):1-94.

22. Cameron DW, Ngugi EN, Ronald AR, Simonsen JN, Braddick M, Bosire M, et al. Condom use prevents genital ulcers in women working as prostitutes. Influence of human immunodeficiency virus infection. Sex Transm Dis 1991 Jul-Sep;18 (3):188-91.

23. Jessamine PG, Ronald AR. Chancroid and the role of genital ulcer disease in the spread of human retroviruses. Med Clin North Am1990 Nov;74(6):1417-31.

24. Kreiss JK, Koech D, Plummer FA, Holmes KK, Lightfoote M, Piot P, et al. AIDS virus infection in Nairobi prostitutes. Spread of the epidemic to East Africa. N Engl J Med 1986 Feb 13;314(7):414-8.

25. Plummer FA, Simonsen JN, Cameron DW, Ndinya-Achola JO, Kreiss JK, Gakinya MN, et al. Cofactors in male-female sexual transmission of human immunodeficiency virus type 1. J Infect Dis 1991 Feb;163(2):233-9.

26. Moss GB, Overbaugh J, Welch M, Reilly M, Bwayo J, Plummer FA, et al. Human immunodeficiency virus DNA in urethral secretions in men: association with gonococcal urethritis and CD4 cell depletion. J Infect Dis 1995 Dec;172(6):1469-74.

27. Atkins MC, Carlin EM, Emery VC, Griffiths PD, Boag F. Fluctuations of HIV load in semen of HIV positive patients with newly acquired sexually transmitted diseases. BMJ1996 Aug 10;313(7053):341-2.

28. Wolff H, Anderson DJ. Male genital tract inflammation associated with increased numbers of potential human immunodeficiency virus host cells in semen. Andrologia 1988 Sep-Oct;20(5):404-10.

29. Cohen MS, Hoffman IF, Royce RA, Kazembe P, Dyer JR, Daly CC, et al. Reduction of concentration of HIV-1 in semen after treatment of urethritis:

implications for prevention of sexual transmission of HIV-1. AIDSCAP Malawi Research Group. Lancet 1997 Jun 28;349(9069):1868-73.

30. Stamm WE, Handsfield HH, Rompalo AM, Ashley RL, Roberts PL, Corey L. The association between genital ulcer disease and acquisition of HIV infection in homosexual men. JAMA 1988 Sep 9;260(10):1429-33.
31. Fauci AS. Immunopathogenesis of HIV infection. J Acquir Immune Defic Syndr 1993 Jun;6(6):655-62.
32. Deschamps MM, Pape JW, Hafner A, Johnson WD, Jr. Heterosexual transmission of HIV in Haiti. Ann Intern Med 1996 Aug 15;125(4):324-30
33. Seth P, Raiji PT, DiClemente RJ, Wingood GM, Rose E. Psychological distress as a correlate of a biologically confirmed STI, risky sexual practices, self-efficacy and communication with male sex partners in African-American female adolescents. Psychol Health Med 2009 May;14(3):291-300.
34. Piot P, Tezzo R. The epidemiology of HIV and other sexually transmitted infections in the developing world. Scand J Infect Dis Suppl1990;69:89-97.
35. Millian J PNG leads Region in AIDs and STI cases. Available from: http://www.accessmylibrary.com/article-1G1-180884493/png-leads-region-aids.html. [Accessed 2009 Oct 18]
36. Millian J PNG leads Region in AIDs Available from: http://www.pngimr.org.pg/imrnius25/i25_8.html.[Accessed 2009 Nov 9]
37. Lombange CK. Trends in sexually transmitted disease incidence in Papua New Guinea. P N G Med J1984 Sep-Dec;27(3-4):145-57.
38. Wesselingh S, Hallsworth P, McDonald PJ, Richens J. Chlamydial infection in Papua New Guinea. Trans R Soc Trop Med Hyg 1988;82 (2):333.
39. Tiwara S, Passey M, Clegg A, Mgone C, Lupiwa S, Suve N, et al. High prevalence of trichomonal vaginitis and chlamydial cervicitis among a rural population in the highlands of Papua New Guinea. P N G Med J 1996 Sep;39(3):234-8.
40. Frank D, Duke T. Congenital syphilis at Goroka Base Hospital: incidence, clinical features and risk factors for mortality. P N G Med J 2000 Mar-Jun;43 (1-2):121-6.

41. Hudson BJ, van der Meijden WI, Lupiwa T, Howard P, Tabua T, Tapsall JW, et al. A survey of sexually transmitted diseases in five STD clinics in Papua New Guinea. P N G Med J 1994 Sep;37(3):152-60.

42. Klufio CA, Amoa AB, Delamare O, Kariwiga G. Endocervical Chlamydia trachomatis infection in pregnancy: direct test and clinico-sociodemographic survey of pregnant patients at the Port Moresby General Hospital antenatal clinic to determine prevalence and risk markers. Aust N Z J Obstet Gynaecol 1992 Feb;32(1):43-6.

43. Theunissen JJ, Kariwiga G, Ossewaarde JM, van Rijsoort-Vos JH, Stolz E, van der Meijden WI. Prevalence of Chlamydia trachomatis in women attending a family planning clinic in Papua New Guinea. Genitourin Med 1995 Oct;71(5):295-8.

44. Wesche DL. Chlamydia trachomatis infections: therapeutic implications. P N G Med J 1989 Mar;32(1):65-70.

45. Zigas V. An evaluation of trichomoniasis in two ethnic groups in Papua New Guinea. Sex Transm Dis 1977 Apr-Jun;4(2):63-5.

46. Shafer MA, Moscick A-B. Sexually Treated infection 2006.

47. Jessamine PG, Plummer FA, Ndinya Achola JO, Wainberg MA, Wamola I, D'Costa LJ, et al. Human immunodeficiency virus, genital ulcers and the male foreskin: synergism in HIV-1 transmission. Scand J Infect Dis Suppl 1990;69:181-6.

48. Cook HA, Furuya EY, Larson E, Vasquez G, Lowy FD. Heterosexual transmission of community-associated methicillin-resistant Staphylococcus aureus. Clin Infect Dis 2007 Feb 1;44(3):410-3.

49. Sheeran P, Abraham C. The Health Belief Model, in predicting health behaviour. Conner M, Norman P, editors. Buckingham: Open University Press; 1995.

50. Hausmann-Muela S. community understanding of malaria, and treatment seeking behaviour, in a holoendemic area of southeastern Tanzania.: Swiss Tropical Institute, University of Basel, Switzerland; 2002.

51. Meyer-Weitz A, Reddy P, Van den Borne HW, Kok G, Pietersen J. Health care seeking behaviour of patients with sexually transmitted diseases:

determinants of delay behaviour. Patient Educ Couns 2000 Oct-Nov;41 (3):263-74.

52. Meyer-Weitz A, Reddy P, Van Den Borne HW, Kok G, Pietersen J. The determinants of health care seeking behaviour of adolescents attending STD clinics in South Africa. J Adolesc 2000 Dec;23 (6):741-52.
53. Kroeger A. Anthropological and Socio-medicinal health care research in developing countries. Soc Sci Med 1983;17 (3):147-61.
54. Amaro H, Gornemann I. Health care utilisation for sexually transmitted disease: influances on patient and provider characteristics. Wasserheit JN, Aral S, Holmes K, Hitchcock P, editors. Washington: American Society for Microbiology; 1992.
55. O'Toote E. Reproductive infections among woman in Ado-Ekitti, Nigeria: Symptoms recognition, percieved causes and treatment choices.1993.
56. O'Farrell N, Hoosen AA, Coetzee KD, van den Ende J. Sexual behaviour in Zulu men and women with genital ulcer disease. Genitourin Med 1992 Aug;68(4):245-8.
57. Piot P, Kapita BM, Were JB, Laga M, Colebunders RL. AIDS in Africa: the first decade and challenges for the 1990s. AIDS 1991;5 Suppl 1:S1-5.
58. Day S, Ward H. Sex workers and the control of sexually transmitted disease. Genitourin Med 1997 Jun;73(3):161-8.
59. Ward H, Mertens TE, Thomas C. Health seeking behaviour and the control of sexually transmitted disease. Health Policy Plan 1997 Mar;12(1):19-28.
60. Godin G, Fortin C, Mahnes G, Boyer R, Nadeau D, Duval B, et al. University students' intention to seek medical care promptly if symptoms of sexually transmitted diseases were suspected. Sex Transm Dis 1993 Mar-Apr;20 (2):100-4.
61. Cockerham G. Primary graft failure caused by herpes simplex virus type 1. Cornea 2001 Oct;20 (7):774-5.
62. Alder N. Socio-economics inequalities in health : no easy solution. JAMA 1993 (269):3140-45.

63. Godin G. University students intension to seek medical care promptly if sexually transmitted disease were suspected. Sexually Transmitted Disease 1993;20 (2):100-4.

64. Harvey S, Kraft J, Taylor A, Pappas-Deluca K, Beckman L. Effects of a health behavior change model--based HIV/STI prevention intervention on condom use among heterosexual couples: a randomized trial. Health Education and Behaviour 1996;36 (5):878-94.

65. Campbell C, Mzaidume Z. Grassroots participation, peer education, and HIV prevention by sex workers in South Africa. Am J Public Health 2001 Dec;91(12):1978-86.

66. Ribeaux S, Poppleton SE, editors. Psychology and Work. An Introduction. London: Macmillan; 1978.

67. Conner M, editor. The theory of Planned Behaviour and health behaviour, in Predicting health Behaviour: Buckingham: Open University press.; 1995.

68. Aska M. 2008 Annual Report for STI/HIV Tininga Clinic. MT HAGEN GENERAL HOSPITAL WESTERN HIGHLANDS PROVINCE. Papua New Guinea Dept. of Health.2008. p. 20.

69. Chimbanrai B. Treatment seeking behaviour of TB Patients, and the Development of Intensive Triad Model programme in Samut Prakan Province Thailand [Ph. D Thesis in Tropical Medicine]. Bangkok: Faculty of Graduate Studies, Mahidol University; 2007.

70. Khe ND, Toan NV, Xuan LT, Eriksson B, Hojer B, Diwan VK. Primary health concept revisited: where do people seek health care in a rural area of Vietnam? Health Policy 2002 Jul;61(1):95-109.

71. Toan NV, Trong LN, Hojer B, Persson LA. Public health services use in a mountainous area, Vietnam: implications for health for policy. Scand J Public Health 2002;30(2):86-93.

72. Pitts MK, Woolliscroft J, Cannon S, Johnson I, Singh G. Factors influencing delay in treatment seeking by first-time attenders at a genitourinary clinic. Int J STD AIDS 2000 Jun;11(6):375-8.

73. Gott CM, Rogstad KE, Riley V, Ahmed-Jushuf I. Delay in symptom presentation among a sample of older GUM clinic attenders. Int J STD AIDS 1999 Jan;10(1):43-6.

74. Brannon L, Fiest J. Health Psychology. Balmont: Wadsworth; 2004.

75. Hausmann-Muela S, Muela Ribera J. Recipe Knowledge: a tool for understanding some apparently irrational behaviour. Antropology and Medicine 2003;10(1):87-105.

76. Rosenstock IM, Strecher VJ, & Becker MH. The health belief model and HIV risk behavior change In: DiClemente RJ, Peterson JL, editors. *Preventing AIDS: Theories and Methods of Behavioral Interventions* New York: Plenum Press; 1994. p. 5-24.

77. Janz NK, Becker MH. The Health Belief Model: a decade later. Health Educ Q1984 Spring; 11(1):1-47.

78. Ajzen I. The theory of planned behaviour. Organisational Behaviour and Human Decision Processes, 1991. ;50(2):179-211.

79. Grover A et, al socio demographic determinants of treatment seeking behaviour among chest symptomatic. Indian Journal of community medicine 2006: 31 (3): 145-9.

APPENDICES

APPENDIX A

QUESTIONNAIRES

TREATMENT SEEKING BEHAVIOUR OF STI PATIENTS AT THE TININGA STI CLINIC IN WESTERN HIGHLANDS PROVINCE, PAPUA NEW GUINEA.

Questionnaires No…… Date of interview……..
Name of VCT Centre…….STI No……

Part 1. Medical record. Patient's illness condition (Symptoms)

Information about medical history and illness condition of sexually transmission Infection patient.

1. Registration (HN) No……
2. Name of health Centre…….
3. Name of Province…….
4. Date of STI Diagnosis…../……/……., Body weight:…….Kg
5. Date of STI treatment started……/……../……
6. Onset of symptoms (number of weeks ago)……weeks
7. Stage of infection; [ ] early [ ] Middle [ ] late
8. Chief complaint (cc): [ ] genital rash [ ] pain in the genital area
   [ ] fever [ ] burning sensation urinating
   [ ] genital sores [ ] Vaginal or penis Discharge
   [ ] frequent lower abdominal pains
   [ ] Others;…….

Part 2 Socio-Demographic Characteristics

1. Age……years
2. Gender: [ ] 1. Male [ ] 2. Female
3. Marital Status
   [ ] 1. Single [ ] 2. Married [ ] 3. Divorced
   [ ] 4.Widowed [ ] 5. Separated
4. Education attainment
   [ ] 1. Illiterate [ ] 2. Primary School [ ] 3. Secondary School
   [ ] 4. High School [ ] 5. College [ ] 6. University
   [ ] 5. Other (specify)……..

Occupation

[ ] 1. Unemployed [ ] 2. Private Sector [ ] 3. Public Servant
[ ] 4. Agriculture [ ] 5. Informal Business [ ] 6. Others (specify)……

5. Family income per month (1 USD = 2.54800 PGK)
   [ ] 1. < 5,00 PGK [ ] 2. 5, 00- 10 00 PGK
   [ ] 3. 1 001 – 15, 00 PGK [ ] 4. 15, 00 – 2,000 PGK
   [ ] 5. > 2 000 PGK

6. How far is the health centre from your home?
   [ ] 1. < 1 hrs [ ] 1. 1-2 hrs [ ] 2. 3-4 hrs
   [ ] 4. > 4 hrs [ ] 5. Don't Know

Part 3. Treatment - seeking Behaviour

1. Describe what you did to have relief from the symptom?.....
   ……
2. What kind of treatment did you take at first choice for relief, and from where did you take the treatment? (If yes for option four (4) skip to section 2).
3.
   [ ] .1 Self- care
   [ ] .2 Seeking care from drug store/ pharmacy
   [ ] .3 seeking care in private clinic
   [ ] .4 Seeking care from Tininga health care centre
   [ ] .5 Seeking care from hospital
   [ ] .6 others

4. What are the reasons to take the above decision?
   [ ] 1. Near to my home
   [ ] 2. Confidentiality
   [ ] 3. Short waiting time
   [ ] 4. Others……

Who had an influence on the decision of you for your treatment.?

[ ] 1. No one, Myself [ ] 2. Family members or relation
[ ] 3. Colleagues [ ] 4. Neighbor
[ ] 5. Community health centre
[ ] 6. Others (specify)……..

5. Did you switch over to some other treatment? (if yes go to Question 7). If no skip to question 8.
   [ ] Yes [ ] No

6. How many time have you change your doctor/HEO/nurse/ VCT clinic etc?.....
   Why did you change your healthcare -providers so many times?.....
   .....

7. What are the obstacles delaying you to seeking treatment……
   ……

Part 4. Knowledge and perception of STIs patients

Knowledge on S TI

1. What is the cause of STIs?
   [ ] Germs [ ] Sex [ ] Alcohol drinking
   [ ] Smoking [ ] don't knowing [ ] Others (specify)…….

2. What is the major STIs symptom?
   1.[ ] Fever 2.[ ] Genital sores
   3.[ ] Lower abdominal pain 4.[ ] Discharge from vagina and penis
   5.[ ] Urinal pains 6.[ ] Answer 2,3,4 and 5 is correct

3. What is the mode of STI transmission?
   [ ] touching [ ] though venial fluids during sex
   [ ] Eating [ ] Breathing

4. Does modern medicine completely cure STIs (excluding HIV/AIDS)?
   [ ] Yes [ ] No

5. What is appropriate for STI prevention?

    [ ] Continue to take drugs
    [ ] Complete medication
    [ ] Stop medication when feeling better
    [ ] practice safe sex or abstinence

6. Does STI always have a symptom?

    [ ] Yes [ ] No [ ] Not sure

7. Do you know that you can have STI without getting sick?

    [ ] Yes [ ] No [ ] Not sure

8. Do you think condom totally protect you against STI transmission?

    [ ] Yes [ ] No [ ] Not sure

9. It's a good idea to have a STI test if;

    a. Only when you had symptoms of STD?*

        [ ] Yes [ ] No [ ] Not sure

    b. When you had unprotected sex?

        [ ] Yes [ ] No [ ] Not sure

    c. Your partner has previously had other sexual partners

        [ ] Yes [ ] No [ ] Not sure

    d. You want to start a new sexual relationship?

        [ ] Yes [ ] No [ ] Not sure

Perceived susceptibility

Items	Opinions		
	Agree	**Fair**	**Disagree**
1. Both healthy and unhealthy person has equal chance of getting STIs			
2. A person whom has been cured from STIs will not get STIs again in future			
3. A person who has multiple sex partners has greater risk of getting STIs			
4. A person that doesn't practice safe sex by using condom has a greater risk of getting STI			
5. STIs can be transmitted by hugging, eating and living with STIs infected people			
6. Everybody who is sexually active has the chance of getting STIs			

Perceived Severity

Items	Opinion		
	Agree	Fair	Disagree
1. STI is a disease that worsen a person's health			
2. If not immediately gets STIs treatment, a person with STI disease can die from STIs			
3. After getting STIs disease, you cannot work as usual			
4. STIs is an obstacle for a daily-living			
5. STIs is a disease that is difficult to treat and has a long time for cure			
6. STIs patient do not take regularly medication can cause the resistance of STIs			
7. STIs is a leading source of cofactors that facilitate HIV infection			

Perceived benefits

Items	Opinion		
	Agree	Fair	Disagree
1. Continuing taking STIs drug is one of STIs control strategies			
2. You can visits for VCT for status check-up although you don't have any STIs symptoms			
3. You can cure STIs if you complete you treatment			
4. Treatment interruption can be done to poor treatment outcome			
5. Free Availability to condoms results in more of its usage			
6. STIs cannot be cured			

Perceived barriers

Items	Opinion		
	Agree	Fair	Disagree
1. You have to wait long time before you get treatment or checked			
2. You cannot go to VCT because you have to work			
3. You don't know where a VCT clinic is located			
4. You have financial difficulties for travel cost for treatment seeking from the health centre.			
5. Taking STIs drugs is too long, to finish medication			
6. Too far (distance) to VCT clinic			
7. Routine health care administration for STIs treatment is too complicated			
8. You depended on others to bring you to the VCT clinic			
9. You are ashamed of people branding you if they know you have STIs			

Part 5. Cues to action factors

1. Are you conveniently accessible to a VCT clinic?
   [ ] Yes [ ] No
2. Do you believe the medicine that you are taking will cure you?
   [ ] Yes [ ] No
3. Have you seen STIs patient in your community?
   [ ] Yes [ ] No

4. STI information

4.1 Have you ever received any STIs information?
[ ] Yes [ ] No

4.2 What information about STIs did you receive? (Multiple answer)
[ ] Sign/Symptoms [ ] causes
[ ] Treatment [ ] Transmission
[ ] Prevention [ ] others (specify)

4.3 Where did you get the information from? (Multiple answers)
[ ] TV [ ] Radio
[ ] Magazine/ Newspaper [ ] Family member /relative
[ ] Posters [ ] Manual / pamphlets
[ ] Health care personnel [ ] Others
(specify)……..

Self-efficiency

1. Before you came to the clinic, did you seek advice on your STIs problem?
   [ ] Yes [ ] No
2. Are you willing to accept the STIs diagnosis?
   [ ] Yes [ ] No
3. Do you believe the medicine that you are taking will cure you?
   [ ] Yes [ ] No [ ] don't know
4. Do you know how long you will take your medication?
   [ ] Yes [ ] No
5. If STIs symptoms disappear or you feel better after taking the medication will you continue taking the medications till you complete your dosage?
   [ ] Yes [ ] No

Satisfaction of services Interaction between patient and health providers

1. Are you satisfied with STIs services of this VCT clinic?
   [ ] Yes [ ] No, why?.....
2. Are you bored / tired sometimes because you have to wait a long time?
   [ ] Yes [ ] No
3. Did the VCT staff pay attention to you when you come to the clinic?
   [ ] Yes [ ] No
4. Are you satisfied with the facilities of this health centre?
   [ ] Yes [ ] No
5. Are you satisfied with the medical examination and treatment?
   [ ] Yes [ ] No
6. Did the clinic staff advice you about STIs disease?
   [ ] Yes [ ] No
7. Did VCT clinic staff advice you about the important of complete the dosage and treatment.
   [ ] Yes [ ] No
8. Do you ask question to VCT clinic staff about your health problems?
   [ ] Yes [ ] No
9. Do the VCT clinic staffs answer all you questions and their answers were easy to understand?
   [ ] Yes [ ] No

Social support

1. Does anyone take care and support you during the course of your illness?
   [ ] Yes [ ] No
2. Did anybody in your village area advice or assist you to get treatment?
   [ ] Yes [ ] No
3. Did anyone in your family or relation support you finically?
   [ ] Yes [ ] No
4. If you have a health problems, who do you feel comfortable to consult?
   [ ] Family member [ ] Relation
   [ ] Colleague [ ] Health volunteer
   [ ] No body [ ] others (specify)……..

Intention to visit this clinic

1. Is it your intention to come to VCT clinic to cure your illness?
   [ ] Yes [ ] No

2. Are you ready and willing to receive any treatment for your illness
   [ ] Yes [ ] No
3. Are you pleased to allow the health personal to advice you on everything?

[ ] Yes [ ] No

4. Have you struggled to seek treatment or assistance for your illness?
   [ ] Yes [ ] No

Part 6. The Reasoned action to ward treatment-seeking behaviour

6.1 Attitude towards STI treatment

Items	Opinion		
	Agree	Fair	Disagree
1. There is no need to go for any treatment if it heals naturally			
2.Traditional medicine can cure the STIs disease quickly and use effective herbal medicine			
3. The modern medicine has side effect which causes more suffering			
4. STIs is caused by multiple factors not only germs			
5. STIs can be cured			
6. Early treatment and prompt treatment is the best way to control STIs			
7. STIs patients must successfully complete the treatment			
8. Modern Medicine is effective treatment			
9. No full compliance to taking drug treatment is the cause to develop drug resistance			
10. There is no treatment facilities to treat STIs			
11. Are comfortable with taking the STIs drugs			

1.2 Subjective norm: normative beliefs

1. Can you spread STIs to others if you don't receive the appropriate treatment and have sex unprotected with them?
   [ ] Yes [ ] No [ ] don't know

2. Illness condition can become severe if don't receive treatment?
   [ ] Yes [ ] No

3. Do you believe that modern medicine can cure STIs?
   [ ] Yes [ ] No [ ] Don't Know

4. Do you trust and have confidence in the efficacy of medication of this VCT clinic.

   [ ] Yes [ ] No [ ] Don't know

Thank you for your time

QUESTIONAIRES

(TOK PISIN VERSION)

Questionnaires No…… Date of interview……..
Name of VCT Centre…….STI No……

Part 1. Medical record. Patient's illness condition (Symptoms)

Information about medical history and illness condition of patient with sexually transmission Infection *(This section of the paper is to be filled by clinic staff or research staff using OPD forms)*

9. Registration (HN) No……
10. Name of health Centre…….
11. Name of Province…….
12. Date of STI Diagnosis…../……/……., Body weight:…….Kg
13. Date of STI treatment started……/……../……
14. Onset of symptoms (number of weeks ago)……weeks
15. Stage of infection; [ ] early [ ] Middle [ ] late
16. Chief complaint (cc):1. [ ] genital rash 2. [ ] pain in the genital area
    3.[ ] fever 4. [ ] burning sensation urinating
    5.[ ] genital sores 6. [ ] Vaginal or penis Discharge
    7. [ ] frequent lower abdominal pains
    8. [ ] Others;…….

Part 2 Sosio-Demografic karektaristiks

7. krismas……(hamas yia)
8. Yu man/meri: [ ] 1. Man [ ] 2. Meri
9. Yu marit o nogat?
   [ ] 1. Ino marit yet [ ] 2. Marit [ ] 3. yu lusim men/meri blong yu.
   [ ] 4.Man/meri i dai pinis [ ] 5. Yu no save stap wantaim man./meri blong yu.
   [ ]6. Yu maritim tupla o moa man o meri
10. Wanem skul yu bin pinisim.
    [ ] 1. No bin go long skul [ ] 2. Pinisim Grad 1-6 [ ] 3. pinisim grad 11-12
    [ ] 4. pinisim grad 7-10 [ ] 5. bin go long colis [ ] 6. Univesiti
    [ ] 7.Narapela skul (wenam kain?)……..
11. Wok blong yu
    [ ] 1. Nogat wok [ ] 2. wok long privait bisnis [ ] 3. wok long gavaman

[ ] 4. planim cas krop [ ] 5. salim ol samting lo market/rot [ ] 6. Ol narapla kain wok (wenam kain)……

12. Hamas moni famili blong yu save kisim long wanpla mun (1 USD = 2.54800 PGK)
    [ ] 1. < 5,00 PGK [ ] 2. 5, 00- 10 00 PGK
    [ ] 3. 1 001 – 15, 00 PGK [ ] 4. 15, 00 – 2,000 PGK
    [ ] 5. > 2 000 PGK

13. Hamaspla awa i save kisim yu, long go long STI klinik klostu long haus blong yu?
    [ ] 1. < 1 awa [ ] 1. 1-2 awa [ ] 2. 3-4 awa
    [ ] 4. > 4 awa [ ] 5. mi no klia long taiem.

Part 3. Wai blong kism marasin – na pasin blong go pain helvim na marasin

1. Yu bin kisim STI sik bipo?
   1. [ ] Yes 2.[ ] Nogat 3.[ ] mi no klia

8. 1. Tokaut long wenam samting yu save wokim long daounim pen blong STI?.....
   .....

9. Wenam kain marasin na lukaut em pespla laik blong yu taiem yu kisim sik STI, na wenam hap yu kisim marasin na lukaut.(sapos yu tok yes long numba 4.) yu kalap go long sekson 2.
   [ ] .1 yu save lukautim yu yet long haus
   [ ] .2 yu save go painim marasin long famasi or marasin long stoa.
   [ ] .3 yu save go painim marasin long praivet hausik
   [ ] .4 kam long Tininga STI klinik long kisim lukaut na marasin.
   [ ] .5 Go long bikpla hausik stret long kisim marasin.
   [ ] .6 Ol narapela rot .

10. Wenam astingting long yu long go long displa rot long kisim marasin na lukaut.?
    [ ] 1. Bikos em hap yeah em stap kolostu long haus blong mi
    [ ] 2. mi laikim olsem nogat man bai save olsem mi gat STI
    [ ] 3. Mi no save wait longpla taiem long kisim marasin o lukaout long hap yeah.
    [ ] 4. ol narapela astingting……

11. Usait em yu save harim toktok blong ol, long wenam rot na advais long kisim marasin na lukaut long stretim sik STI yu gat long em?

    [ ] 1. Nogat man, mi yet [ ] 2. wantok o famili blong mi
    [ ] 3. ol poroman/wanwok [ ] 4. ol lain silip long ol haus kolostu long me
    [ ] 5. ol wokman blong kominiti helt senta
    [ ] 6. narapela lain (wenam ol lain?)……..

12. Yu save sansim marasin o kalap long wenpla hap long marasin go long narapela tu o nogat? (sapos ensa blong yu em yes go long Question 6). Sapos yu tok nogat go long question 8.

    [ ] Yes [ ] Nogat

13. Hamas taiem yu bin sansim dokta ,HEO o hausik we yu save kisim marasin long em?.....
14. Na wai yu wokim olsem ?.....
    ……

Wenam samting save pasim yu long go painim marasin o helvim long pinism sik STI yu gat long
em?.....

Part 4. Save na tingting blong ol man/meri i gat sik STI

Save blong ol long STI

10. Wenam samting save kamapim STIs?

    1.[ ] Gems 2.[ ] kuap long long 3.[ ] dring bia planti
    4.[ ] Simuk 5.[ ] mi no save
    6.[ ] Narapela samting (wenam kain)…….

11. Wenam em bigpla sain olsem yu gat sik STI?

    1.[ ] pilim skin i hot 2.[ ] suwa long hap blong pispis
    3.[ ] Hap tambolo long bel save pain 4.[ ] susu save kamap long hap blong pispis
    5.[ ] Pilim pen taiem yu pispis 6.[ ] Yu ting ensa 2,3,4 and 5 em rait

12. Wena kain pasin o samting i save helvim long STI long kalap long wanpela man i go long narapela?

    1.[ ] tasim skin blong em 2.[ ] long kok/kan wara taem yu kuap
    3.[ ] kaikai 4.[ ] pulum win

13. Yu bilip olsem Marasin blong hausik i bai pinisim i idai olgeta sik STI
    [ ] Yes [ ] Nogat

14. Wena em gutpla rot blong yu long aburusim STI?
    1.[ ] noken stop long kisim marasin
    2.[ ] mas pinisim olget marasin dokta givim yu
    3.[ ] stop long drink marasin taiem yu stat long pilim gut.
    4.[ ] noken kuap, o kuap wentaim wanpla men/meri yu save kuap wantim, we em nogat sik STI.

15. Yu thing olsem olgeta sik STI i save gat sain na bai wokim yu kamap sik ?

    1.[ ] Yes 2.[ ] Nogat 3.[ ] mi no klia

16. Yu ting olsem yu ken gat binatang blong sik STI, tasol yu no soim sain blong sik?

    1.[ ] Yes 2.[ ] Nogat 3.[ ] Mi no klia

17. Yu ting condom em ken banism yu olgeta long kisim sik STI?

    1.[ ] Yes 2.[ ] Nogat 3.[ ] Mi no klia

18. Yu ting em gutpela tingting long go long hausik long sekap yu long STI, taiem;

    a. Taiem yu gat sain blong sik STI tasol long yu?*

       1.[ ] Yes 2.[ ] Nogat 3.[ ] Mi no klia

    b. Taiem yu kuap na no werim condom?

       1.[ ] Yes 2.[ ] Nogat 3.[ ] Mi no klia

    c. Taiem man/meri blong yu save kuap wantaim ol narapela lain tu

       1.[ ] Yes 2.[ ] Nogat 3.[ ] Mi no klia

    d. Taim yu statim niupla pasin poroman,wantaim nuipla man/meri, na yu na poroman/meri blong yu i laik stat kuap nau?
       1.[ ] Yes 2.[ ] Nogat 3.[ ] Mi no klia

Tingting blong yu long, hau bikpla o likik em sans blong yu long kisim sik STI

Aitems	Tingting blong yu		
	Yu wanbel	**Yu no klia**	**Yu No wanbel**
1. Sik man na man nogat sik ,tupla wantem i gat seim sans long kisim sik STI			
2. Man/meri yu bin kisim sik STI na marasin i bin oraitim yu pinis, em bai yu no nap kisim sik bihain taim.			
3. Man/meri i save kuap raunraun i gat bikpla sans long kisim sik STI			
4. Man/meri i no save werim condom taiem em kuap i gat bikpela sens long kisim sik STI			
5. Yu ken kisim sik STI taiem yu stap wantaim man/meri i gat STI long saiem haus ,o holim passim ol, o kaikai wantaim ol			
6. Olgeta lain we krismas blong ol i bikpla, na tu ol i stap long mak blong kuap i gat sans long kisim STI			

Tingting blong yu long nogut blong displa sik

Aitems	Tingting blong yu		
	Yu wanbel	**Yu no klia**	**Yu No wanbel**
1. STI em sik we i save bagarapim helt blong ol man/meri			
2. Sapos yu no kisim marasin hariap yu ken dai long STI			
3.Taiem yu kisim STI yu bai no nap wokim gut ol wok blong yu			
4. STIs em i save banisim yu long wok na stap gut long nomol laip blong yu			
5. STIs em wanpela sik we i save hat long stopim wantaim marasin.i save taekim longpela taiem long pinisim marasin			
6. STIs sikman we ino save pinisim marasin blong em gut bai helvim binatang blong ol STI sik long go strong moa yet na marasin bai ino nap long kilim bihain taiem.			
7. STIs i save helpim tu long stretim rot blong kamapim HIV/AIDs sik			

Ol gutpla samting bai yu kisim

aitems	Tingting blong yu		
	Yu wanbel	**Yu no klia**	**Yu No wanbel**
1.Yu harim tok na pinisim olgeta marasin ol dokta givim long yu em wanpla wei long kontrolim sik STI insait long kominiti blong yumi			
2. Yu ken go kisim fri sekap long STI klinik maski yu nogat sain blong displa sik			
3. Yu ken pinisim displa sik sapos yu pinisim olgeta marasin blong yu.			
4. Yu ken stop na go askim dokta long givim yu nuipela marasin taiem yu pilim olsem marasin yu go kisim ino wok			
5. Planti lain bai stat long usim condom taiem yu putim long peles we isi long ol long kisim			
6. Taiem yu kisim sik STI marasin inonap long makim yu kamap orait gen			

Tingting blong yu long samting i save stopim yu long kisim marasin/helvim long sik blong yu

aitems	Tingting blong yu		
	Yu wanbel	**Yu no klia**	**Yu No wanbel**
1. Yu save weit longpela taiem tumas long kisim marasin			
2. Isa hat long yu long lusim wok blong yu na go long hausik long kisim marasin			
4. Yu save painim hat long painim moni blong baim PMV i kam long STI klinik			
5. Longpela taiem tumas long pinisim marasin na mi save les			
6. Longpela rot tumas long wei mi stap long em i kam long STI klinik			
7. Wei na ,pasin blong kam na sekim mi na kisim marasin blong sik STI em hat tumas long mi long bihainim			
8. Mi save nidim helvim blong ol narapela long bringim mi i kam long STI klinik			
9. Yu sem olsem ol narapela bai bagarapim nem blong yu taiem ol i save olsem yu gat sik STI			

Part 5. Ol samting i save helvim yu long stat painim helvim long sik blong yu

5. Yu stap long wanpela hap we i isi long go long STI klinik?
   1.[ ] Yes 2.[ ] Nogat

6. Yu gat bilip olsem marasin yu kisim bai oraitim yu?
   1.[ ] Yes 2.[ ] Nogat

7. Yu bin lukim ol lian i gat sik STI na ol bagarap em i save kamapim insaiet long kominiti blong yu?
   1.[ ] Yes 2.[ ] Nogat

STI infomeson

7.1 Yu bin kisim pinis ol toktok na skul blong STI? (Sapos nogat kalap go long Self-efficiency section ‘strong blong wanwan long painim marasin’)
1.[ ] Yes 2.[ ] Nogat

7.2 Wenam kain save na skul yu bin kisim? (yu ken makim planti ensa)

1.[ ] Sain blong sik 2.[ ] Wenam samting save kamapim sik
3.[ ] Marasin nah au long pinisim sik 4.[ ] Hau sik save kalap go lo narapla
5.[ ] We blong banisim sik 6.[ ] Ol narapela toktok (wenam)

7.2 Wenam hap na hau yu kisim ol displa infomeson? (Yu ken makim planti ensa)
1.[ ] TV 2.[ ] Radio
3.[ ] Nuispepa 4.[ ] Femili na wantok
5.[ ] Posta 6.[ ] Ol liklik piksa buk
7.[ ] Wokman blo hausik 8.[ ] Narapela wei (wenam)……..

Strong bong wanwan long painim marasin na helvim

6. Bipo yu bin i kam long STI klinik yu bin askim helvim na advis blong ol sampla lain tu?
1.[ ] Yes 2.[ ] Nogat
7. Yu bai hamamas long harim tok na kism wenam kain toktok o marasin dokta bai givim yu?
1.[ ] Yes 2.[ ] Nogat
8. Yu bilip olsem marasin yu kisim bai oraitim yu?
1.[ ] Yes 2.[ ] Nogat 3.[ ] Yu no klia
9. Yu save wenam taiem yu bai kisim long pinisim olgeta marasin blong yu?
1.[ ] Yes 2.[ ] Nogat
10. Taiem yu lukim olsem sik em pinis na yu pilim orait, bai yu stop long kisim marasin o yu dring yet inap yu pinisim olgeta marasin dokta givim yu long em?
1.[ ] Yes 2.[ ] Nogat

Hamamas/na pulap blong yu long ol wok blong hausik na wokman blong em

10. Yu hamas long ol sevis yu kisim long displa STI klinik?
1.[ ] Yes 2.[ ] Nogat, wai?.....
11. Yu save pilim tired bikos yu save weit longpela taim?
1.[ ] Yes 2.[ ] Nogat
12. Ol wokman blong STI klinik save was long yu gut na harim toktok blong yu ?
1.[ ] Yes 2.[ ] Nogat
13. Yu hamamas long ol masin na wokman blong displa klinik?
1.[ ] Yes 2.[ ] Nogat
14. Yu wanbel bel long hau dokta em sekim yu ?
1.[ ] Yes 2.[ ] Nogat

15. Ol wokman blong displa STI klinik givim yu sampla skul toktok long STI sik tu o nogat?
    1.[ ] Yes 2.[ ] Nogat
16. Ol wokma blong displa hausik givim yu advais long gutpla na nogut blong pinisim marasin na hausik lukaut blong yu?
    1.[ ] Yes 2.[ ] Nogat
17. Yu save gat strong long askim ol askim i go long nes na dokta long sik blong yu na ol marasin ol givim o yu save sem o poret? (sapos yes go long question 9. Nogat em go long “femili/wantok supot” hap.
    1.[ ] Yes (go long Q9) 2.[ ] Nogat (kalap go long Femili/wantok supot)
18. Ol lain blong hausik save bakim gut ol askim blong yu na yu save klia gut ,o nogat?
    1.[ ] Yes 2.[ ] Nogat

Femili/wantok supot

5. Taiem yu sik, igat man save lukautim na sapotim yu?
   1.[ ] Yes 2.[ ] Nogat
6. Ibin gat wanpla man/meri i advisim yu long go long hausik na kisim marasin tu o nogat?
   1.[ ] Yes 2.[ ] Nogat
7. Igat wanpla long femili o wantok blong yu i helvim yu long moni taiem yu sik?
   1.[ ] Yes 2.[ ] Nogat
8. Taiem yu gat sik o aswa long sik usait em yu save pilim gut long go askim long advais na helvim long em?
   1.[ ] femili blong yu 2.[ ] wantok
   3.[ ] wanwok 4.[ ] helt wokman
   5.[ ] nogat man 6.[ ] narapla
   (wenampla?)……..

Ol haiet ting ting long wai yu kam long displa hausik

5. Em laik na tingting blong yu long kam long here long pinisim sik blong yu?
   1.[ ] Yes 2.[ ] Nogat
6. Yu redi na hamamas long kisim marasin na lukaut ol wokman here bai givim long yu
   1.[ ] Yes 2.[ ] Nogat
7. Yu bai larim ol wokman blong hausik long givim wenam kain advais ol ting long givim long yu o bai yu strongim saiet?
   1.[ ] Yes 2.[ ] Nogat
8. Yu bin painim hat tu, long kam na kisim marasin long sik blong yu?

1.[ ] Yes 2.[ ] Nogat

Part 6. Asting tingting long go painim marasin o helvim long sik blong yu

5.1 Ol kain pasin blong yu long go painim marasin o helvim

Aitems	Tingting blong yu		
	Yu wanbel	**Yu no klia**	**Yu No wanbel**
1. Nogat nid long go long hausik taim STI sik i pinis long laik blong em			
2.Tumbuna marasin i ken pinisim sik olgeta, na em save usim tu ol lip diwai nambaut			
3. Marasin long hausik i save gat sampla kikbek we i ken makim yu kisim taiem moa yet			
4. STI i save kamap bikos long ol kain kain samtng we i ken helpim long kamapim, na ino gems tasol			
5. Yu ken kamap orait long STI sik			
6. Go long hausik harap taiem sik em nuipla yet em gutpla moa yet long stopim sik long spred.			
7. Man i gat STI sik mas pinisim olgeta marasin blong em			
8. Marasin blong hausik em inap long pinisim STI sik			
9. Sapos yu no pinisim marasin em yu wokim binatang blong STI i bai kamap strong moa yet na bihain marasin bai nonap wok			
10. Ino gat hap long givim marasin long STI sik			
11. Yu pilim orait long kisim marasin blong STI			

8.2 Ol strongpela bilip/tingting yu gat long em

5. Inap yu givim STI sik i go long narapela sapo yu no kisim marasin gut and yu go kuap wantaim ol?
   1.[ ] Yes 2.[ ] Nogat 3.[ ] mi no klia
6. Sik i ken kamap wes sapos yu no kisim marasin harihap?
   1.[ ] Yes 2.[ ] Nogat
7. Yu bilip olsem marasin yu kisim long hausik bai nap pinisim STI sik?
   1.[ ] Yes 2.[ ] Nogat 3.[ ] mi no klia
8. Yu gat bilip long strong blong ol marasin yu kisim long displa STI klinik.
   1.[ ] Yes 2.[ ] Nogat 3.[ ] mi no klia

Tenkyu

APPENDIX B

Table 1B STI patients' illness condition and their first action relieve of symptoms

	First action of STI persons to find relief symptoms						
Level of perception	**Self care**	**Drug store / Pharmacy**	**Private clinic**	**Tininga Clinic**	**General Hospital**	**Others**	**p-value**
Mild	0 (0.0)	1 (11.11)	1 (11.11)	7 (77.78)	0 (0.0)	0 (0.0)	0.376
Moderate	0 (0.0)	4 (5.8)	0 (0.0)	55 (79.71)	9 (13.04)	1 (1.45)	
Severe	3 (1.69)	3 (1.69)	1 (0.56)	136 (76.84)	25 (14.12)	9 (5.08)	

'**Table 2B** Chief complaints of the patient reported and their first action to find relief of the symptoms

Symptoms	First action of STI persons to find relief symptoms						
	Tininga Clinic n (%)	**Self care n (%)**	**Drug store / pharmacy n (%)**	**Private clinic n (%)**	**General Hospital n (%)**	**Others n (%)**	**Total n (%)**
Chief complaints							
Genital rash	13 (72.23)	1 (5.55)	2 (11.12)	1 (5.55)	0(0.00)	1 (5.55)	18 (100)
Pain in genital areas	60 (80.00)	1 (1.33)	2 (2.67)	1 (1.33)	9 (12.00)	2 (2.67)	75 (100)
Fever	3 (100)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	3 (100)
Burning sensation urinating	55 (79.71)	1 (1.45)	5 (7.25)	0 (0.00)	7 (10.14)	1 (1.45)	69 (100)
Genital sores	182 (86.26)	0 (0.00)	0 (0.00)	0 (0.00)	29 (13.74)	0 (0.00)	211 (100)
Vaginal/penis discharge	93 (73.81)	2 (1.59)	3 (2.38)	2 (1.59)	20 (15.87)	6 (4.76)	126 (100)
Lower abdominal pains	96 (73.84)	2 (1.53)	2 (1.53)	0 (0.00)	22 (16.95)	8 (6.15)	130 (100)
Others	81 (70.43)	2 (1.74)	5 (4.35)	2 (1.74)	19 (16.52)	6 (5.22)	115 (100)

APPENDIX C

MU-IRB Approval FORM

COA. No. MU-IRB 2010/032.2101

Documentary Proof of Mahidol University Institutional Review Board

Title of Project. Treatment Seeking Behaviour of Sexually Transmitted Infections (STI) Patients at the Tininga STI Clinic in Western Highlands Province Papua New Guinea
(Thesis for Master Degree)

Principle Investigator. Mr. Steven Paniu

Name of Institution. ASEAN Institute for Health Development

Approval includes. 1) MU-IRB Submission form version received date 19 January 2010
2) Participant Information Sheet version date 19 January 2010
3) Informed Consent form version date 17 November 2009
4) Interview Guideline version received date 17 November 2009

Mahidol University Institutional Review Board is in full compliance with International Guidelines for Human Research Protection such as Declaration of Helsinki, The Belmont Report, CIOMS Guidelines and the International Conference on Harmonization in Good Clinical Practice (ICH-GCP)

Date of Approval. 21 January 2010

Date of Expiration. 20 January 2011

Signature of Chairman. .....
(Professor Shusee Visalyaputra)

Signature of Head of the Institute. .....
(Associate Professor Sansanee Chaiyaroj)
Vice President for Research and Academic Affairs

Office of the President, Mahidol University, 999 Phuttamonthon 4 Rd., Salaya, Phuttamonthon District, Nakhon Pathom 73170. Tel. (662) 8496223-5 Fax. (662) 8496223

APPENDIX D
RCU Approval letter

NATIONAL AIDS COUNCIL SECRETARIAT

PO Box 1345, BOROKO. NCD 121
Papua New Guinea
Telephone: 323 6161 Facsimile: 323 1619

Research Coordination Unit

Date: 20th January 2010 **Our Ref: RES 09 0022**

Mr Steven Paniu,
ASEAN Institute for Health Development (AIHD) Mahidol University,
Salaya Campus,
Phutthamonthon, Nakhon Pathom
Thailand

Dear Mr Paniu,

SUBJECT: RES 09 0022. Treatment seeking behavior of STI patients at Tininga STI clinic in WHP - PNG.

This is to inform you that upon receipt of the revision of your proposal based on reviewer comments, the RCU reviewed your revised proposal. Executive approval is hereby granted for the ethical clearance of your study. Your application for research grants is also approved. You may proceed to conduct research as soon as the funding agreement has been signed.

Congratulations. We wish you success in the conduct of your study. Please liaise with WHP PAC and the clinics.

Thank you.

Yours Sincerely,

Professor Lohi Matainaho.
Deputy Chairperson of Research Advisory Committee

BIOGRAPHY

NAME Steven N'dremack Paniu (Mr)

DATE OF BIRTH April 12, 1981

PLACE OF BIRTH Manus, Papua New Guinea

INSTITUTION ATTENDED University of Papua New Guinea
School of Natural and Physical Science
Bachelor of Science (Biology)
2002-2006
Bachelor of Science Honors
(Biomedical Science)
2006-2007

Mahidol University, Thailand
ASEAN Institute for Health Development,
Master of Primary Health Care Management
2009-2010

FELLOWSHIP/RESEARCH GRANT WHO-PNG/NAC

PRESENT POSITION Scientific Officer
Vector Borne Disease Research
PNG Institute of Medical Research
Madang, Papua New Guinea