



THE THIRD
NATIONAL HEALTH AND MORBIDITY SURVEY
2006
(NHMS III)

SEXUAL BEHAVIOUR

INSTITUTE FOR PUBLIC HEALTH
NATIONAL INSTITUTES OF HEALTH
MINISTRY OF HEALTH
MALAYSIA
2008



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Malaysia

Tel: +603-22979400 / +603-22831050
Fax : +603-22823114 / +603-22832050

Any enquiries about or comments on this report should be directed to:

Principal Investigator,
The Third National Health and Morbidity Survey Project,
Institute for Public Health,
National Institutes of Health,
Ministry of Health,
Jalan Bangsar, 50590 Kuala Lumpur,
Malaysia

Tel: +603-22831050
Fax : +603-22832050

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LIST OF RESEARCH TOPICS

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Topic 2	Oral Health
Topic 3	Load of Illness
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Topic 5	Injury and Risk Reduction Practice
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THE THIRD NATIONAL HEALTH AND MORBIDITY SURVEY 2006 (NHMS III)

SEXUAL BEHAVIOUR

Authors:

Dr Jasvinder Kaur
Institute for Public Health, NIH, MOH

Dr Ahamad Jusoh
Division of Disease Control, MOH

Dr Ahmad Faudzi Hj. Yusoff
Institute for Public Health, NIH, MOH

Dr Azman Abu Bakar
State Health Department, Negeri Sembilan

Ms Hasimah Ismail
Institute for Health Behavioural Research, NIH, MOH

Dr Mohamed Naim bin Abdul Kadir
District Health Office, Timur Laut, Penang

Dr Nik Rubiah binti Nik Abdul Rashid
Family Health Development Division, MOH

Dr Sulaiman bin Che Rus
Division of Telehealth, MOH

S Thavaraj a/l S Subramaniam
Institute for Health Behavioural Research, NIH, MOH

Dr Sarfraz Manzoor Hussain
Department of Psychiatry and Mental Health
Hospital Kuala Lumpur

Principal Investigator
Dr Ahmad Faudzi Hj. Yusoff

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Institute for Public Health,
Ministry of Health Malaysia.*

MESSAGE FROM THE DIRECTOR GENERAL OF HEALTH MALAYSIA

Since independence, Malaysia has achieved remarkable progress economically and socially, notably in the health sector, through a well planned and comprehensive health care delivery system. However, Malaysia's health care system still has to grapple with many challenges, particularly the rising costs of health care and the increasing demands and expectations for quality care by our consumers. In this respect, the Ministry of Health formed the 'National Institutes of Health' to spearhead health research that will provide the body of evidence to help formulate health policies and create new tools to measure health impacts arising from the series of interventions made in the provision of health care. This will lead to an environment of better governance.

The first National Health & Morbidity Survey (NHMS) was conducted in 1986 by the Institute for Public Health (IPH) which is currently one of the research organizations under the umbrella of the National Institutes of Health (NIH). IPH was also given the task of conducting the second NHMS II in 1996 and the current NHMS III in 2006. Data and information gathered by these surveys are consistently and extensively been used by the Ministry of Health in formulating the Malaysian Health Plans and evaluating the intervention programmes.

The publication of the current NHMS III report would generate much interest amongst of all health care stakeholders in the country as well as international health organizations. It is my sincere wish that the data and information generated by NHMS III be fully distributed, discussed and utilized to enhance further the provision of health care in this country. The data generated on the national health and health-related prevalence would be useful in assessing the national health burden as well as allowing for international comparison of health systems achievements.

I would like to take this opportunity to congratulate all those directly involved in the conduct of the survey, namely members of the National Steering Committee, the Advisory Committee, Research Groups and the Working Committee for their untiring efforts in the planning and conduct of the survey as well as publication of the reports. I would like to specially place on record the Ministry's appreciation of the excellent work done by the Principal Investigator and his team and for their dedication and tenacious efforts in spearheading this project to fruition. The Ministry of Health is committed to conduct these National Health and Morbidity Surveys on a regular basis and hope that IPH will continue to provide the leadership in conducting future National Health and Morbidity Surveys in this country.

Thank you.



Tan Sri Datuk Dr Hj. Mohd Ismail Merican
Director General of Health, Malaysia.

MESSAGE FROM THE DEPUTY DIRECTOR GENERAL OF HEALTH (RESEARCH AND TECHNICAL SUPPORT)

The Research and Technical Support Programme of the Ministry of Health emphasizes the need for research in supporting decision making and planning the activities in the Ministry. Only then can we ensure that every decision made either in planning resources or providing services to the people is supported by evidence based information and ensuring better results and outcome. We would certainly prefer local expertise rather than depend on foreign experts to carry out local research.

Under the umbrella of the National Institutes of Health, the Institute for Public Health has actively been involved in conducting research in public health and the National Health and Morbidity Survey is one of the major research conducted by IKU. This is the third time IKU has been given the responsibility to conduct such a mammoth task. I am very pleased that a lot of improvement have been made in the way this survey was conducted based on the experience learnt during the first and second surveys. However, due to the nature of the community survey, not all diseases and health issues were able to be covered in this survey. The research teams had to conduct an extensive literature reviews for relevant and up to date information on the health status of the Malaysian population.

I believe that the information in these reports are extremely valuable to all decision makers at the National State and district levels as well as those interested in the health of the Malaysian population. It can be a tool in providing guidance in developing and implementing strategies for the disease prevention and control programme in Malaysia.

I would like to take this opportunity to congratulate the research team members who have successfully undertaken and completed this survey. I would also like to thank all individuals and agencies who directly or indirectly made the completion of this survey possible.

The Institute for Public Health again gained a feather in its cap by successfully completing the Third National Health and Morbidity Survey.



**Datuk Ir. Dr. M. S. Pillay,
Deputy Director General of Health (Research and Technical Support).**

MESSAGE FROM THE DIRECTOR OF INSTITUTE FOR PUBLIC HEALTH

This is the third time the Institute for Public Health (IPH) was given the task to conduct the National Health and Morbidity Survey. The frequency of the study is every 10 years and I am proud that the Institute is able to conduct the surveys successfully since it was first initiated in 1986.

I would like to take this opportunity to thank the Director-General of Health Malaysia, Tan Sri Datuk Dr. Hj. Mohd Ismail Merican, and the Deputy-Director General of Health (Research and Technical Support), Datuk Ir Dr.M.S. Pillay, whose invaluable support and guidance were instrumental in the successful completion of the third National Health and Morbidity Survey (NHMS III). Our appreciations are also extended to all members of the Steering Committee and the Advisory Committee of NHMS III.

I would like also to take this opportunity to congratulate the Principal Investigator and his Project Team Members in completing the NHMS III study and the publication of its report. The NHMS III was made possible through the collaboration of all agencies. The meetings, workshops and conferences that were organised, met their intended objectives and the hard work put up by the field staffs, ensured the three months data collection productive and successful.

My sincere gratitude also goes to Dr.Nirmal Singh, the former Director of the Institute for Public Health, Chairman of the Advisory Committee for his continuous support and guidance which contributed towards the successful completion of the study.

I hope the documentation of this report will be beneficial for future reference.

Finally, I would like to thank all those involved in the survey for a job well done, in making the NHMS III a success and finally producing the national report of this survey.



Dr. Yahya Baba,
Director, Institute for Public Health.

MESSAGE FROM THE PRINCIPAL INVESTIGATOR NHMS III

It is indeed a challenging task when the responsibility was given to me to conduct this survey. I learned the hard way and gained a lot of valuable experience in leading the survey. The survey also taught me lots of new techniques and how it should be addressed which is not available in the textbook. In doing so, I also learned the meaning of friendship and honesty, how to manage people involved and manage properly the given budget.

I would like to take this golden opportunity to thank the Director General of Health Malaysia, Tan Sri Datuk Dr. Hj. Mohd Ismail Merican, Chairman of the Steering Committee for giving me the confidence, valuable support and guidance for the success of this survey.

I would also like to thank the Deputy Director General of Health Malaysia (Research & Technical Support), Datuk Ir. Dr. M.S. Pillay as Co-chairman of the Steering Committee for his patience in seeing through the survey until its completion the production of the national report.

My sincere appreciation to current Director of Institute for Public Health (IPH), Dr.Yahya Baba and former Directors of IPH, Dr.Nirmal Singh, Dr.Sivashamugam and Dr.Sulaiman Che Rus for their trust in me to carried out this survey. Their support for the survey has resulted the smooth conduct and success of the survey.

Special thanks to all State Directors, State Liaison Officers, Field supervisors, Scouts, Data Collection Team members for their full cooperation and efforts to ensure the success of the data collection. My appreciation is also extended to the Assistant Principal Investigator, Dr.Mohd Azahadi Omar, Main Research Group members, members of the Working Committee, Data Management group members, Statistics Consultant, Research group members , Research Officers and Research Assistants for their patience and tolerance of my behaviour to ensure the success of the study. Nevertheless I acknowledge a lot more can be done in strengthening the study.

I believe this report will serve as a useful reference for future surveys and helps in improving the local data sources and also add new valuable information for the Ministry of Health to use in the planning process. I also would like to encourage all research members to participate in further analysis of the data and publish the findings in peer review journals.

Thanks to everyone.



**Dr. Hj. Ahmad Faudzi Hj. Yusoff,
Principal Investigator, The Third National Health and Morbidity Survey,
Institute for Public Health.**

*A***UTHORS' STATEMENT**

This is the first national community based household sexual behaviour survey conducted in Malaysia.

This module is the culmination of several months of hard work by team members with a wide scope of knowledge and experience.

The module focused on limited, specific and important issues in view of the wide scope of the survey covering seventeen other modules. The instrument comprised of a self-administered questionnaire. However this survey revealed that respondents were reluctant to reveal their private sexual practices in the home setting. This was evident by the poor response rate to certain sensitive questions although sufficient effort was made to convince them on the confidentiality of the study.

The authors welcome any enquiries, comments and suggestions for further improvement of this module.

*A*CKNOWLEDGEMENT

The sexual behaviour module for the NHMS III was developed by a research team which comprised of members from the Institute for Public Health, Institute for Health Behavioural Research, Disease Control Division, Telehealth Division, Family Health Development Division, Ministry of Health, Negeri Sembilan State Health Department and Hospital Kuala Lumpur. The members were selected on the basis of professional expertise in STI / AIDS Control, Behavioural Social Science, Public Health Epidemiology, Family Health and Mental Health. The project team was headed by the Head of the Family Health Development Division of IPH. The NHMS III consultant on statistics also assisted the team on the general framework for biostatistics analysis.

The project team wishes to acknowledge the selfless commitment and contributions of every team member from research planning to the successful completion of the final report writing. Our appreciation is also extended to the Principal Investigator, Heads of Organizations of teams and their members. There are also others who are too numerous to be mentioned individually, but have nonetheless contributed to the success of this module.

ABSTRACT

The Sexual Behaviour module comprised of 20 questions in a self-administered format in one of four preferred languages (Bahasa Malaysia, English, Mandarin and Tamil). It elicited information regarding sexual orientation and practices, age at first sexual intercourse, sexual activity and partners in the past 12 months, level of knowledge and prevalence of sexually transmitted infections (STI), level of knowledge of human immunodeficiency virus (HIV) transmission, utilization of HIV testing services and condom usage. The module was administered to 39,910 eligible respondents in selected households, and out of which 27,864 (69.8%) responded. However, the response rates varied with the individual questions, ranging from 15.5% to 94.8%. Characteristics of the respondents were 95.7% Malaysians, 53.3% females with mean age of 32.3 years (range 13 to 85 years) while mean age of males 34.1 years (range 13 to 84 years); 58.7% married and the majority were Malays (59.8%). Among those who revealed their sexual orientation, 95.8% (CI: 95.4 – 96.2) were estimated heterosexuals, while the rest consisted of 2.2% (CI: 1.9 – 2.5) bisexuals and 2.0% (CI: 1.8 – 2.3) homosexuals. As for the types of sexual practice, 97.0% admitted to single and only 3.0% to dual practice. None claimed to have triple sexual practice. The mean, mode and median ages at first sexual intercourse among the males were 24.8 (CI: 24.7 – 25.0), 25.0 and 25.0 years respectively. The mean, mode and median ages for females were 22.8 (CI: 22.7 – 22.9), 20.0 and 22.0 years respectively. The mean age at first sexual intercourse for the males was significantly higher than the females. The estimated prevalence for sex in the last 12 months was 80.3% (CI: 79.4 – 81.1). 79.4% (CI: 78.2 – 80.0) of respondents were aware about STI but only 39.1% (CI: 38.0 – 40.1) were really knowledgeable about STI symptoms. 75.5% (CI: 74.8 – 76.2) of respondents perceived sex with multiple partners, not using condoms and sex with prostitutes as high risk factors for HIV transmission. However, the estimated prevalence of using condoms correctly to protect from HIV infection was low at 32.7% (CI: 32.0 – 33.4). The estimated prevalence of genital discharge / ulcers was only 2.2% (CI: 2.0 – 2.4) and 44.0% of them sought treatment. Among those who had treatment, 78.6% sought treatment from government hospitals. Although 94.7% of the study population was knowledgeable about high risk practices to HIV / STD, only an estimated 15.9% of those who had sex with prostitutes, practiced regularly safe sexual intercourse. The estimated prevalence for HIV testing was 11.9% (CI: 11.4 – 12.4) and 61.6% had the test done more than a year ago. The two main reasons for not being tested for HIV were the perception that the test was not necessary (63.8%) and ignorance of the venue for testing (24.2%).

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
BSS	Behavioural Surveillance Surveys
CDC	Centers for Disease Control
CI	Confidence Interval
CSWs	Commercial Sex Workers
DE	Design Effect
EB	Enumeration Block
FT	Federal Territory
HIV	Human Immunodeficiency Virus
IDUs	Injecting Drug Users
IPH	Institute for Public Health
LQ	Living Quarter
MOH	Ministry of Health
NHMS III	The Third National Health and Morbidity Survey
NIH	National Institutes of Health
NSU	Non-Specific Urethritis
PPS	Probability Proportional to Size
RR	Response Rate
STD	Sexually Transmitted Diseases
STI	Sexual Transmitted Infections
TB	Tuberculosis
WHO	World Health Organization

1. INTRODUCTION

Sexually transmitted infections (STI) particularly Acquired Immunodeficiency Syndrome (AIDS) are diseases of significant public health importance that cause serious morbidity and mortality in Malaysia. Since the first AIDS case in Malaysia was detected in 1986, there were a total of 76,389 human immunodeficiency virus (HIV) infections up to December 2006.

The HIV/AIDS control and prevention programmed was initiated in 1985 by the Ministry of Health to control the escalating number of people infected with HIV. Currently, injecting drug users (IDUs) are the major population group affected. However, infections among women and through sexual transmission are on the rise.

Important information on sexual risk factors on HIV transmission and the behaviours of sexually active population groups including their knowledge, attitudes and practices are critically required. This is to evaluate strategies implemented in the prevention and control of HIV / STI programmed.

Currently no nationwide community-based study has been conducted on sexual behaviour in the country. Therefore, a module on sexual behaviour was included in the Third National Health and Morbidity Survey (NHMS III).

2. LITERATURE REVIEW

2.1 Background Information

Sexually transmitted infections (STI) including AIDS are defined as infections that are mainly transmitted through sexual contacts. In Malaysia, the commonest STI are Gonorrhoea, Syphilis, Chlamydia, Chancroid, Non-Specific Urethritis (NSU) and HIV / AIDS. The annual prevalence of gonorrhoea showed a decreasing trend since 1986. Screening among foreign workers showed the number of gonorrhoea cases declined from 3,623 in 1998 to 756 in 2001 (Ministry of Health Malaysia 2002). The incidence of gonorrhoea in 2006 was 447 cases (1.6%/100,000 population). Similarly, the incidence of syphilis in Malaysia declined from 17055 cases (7.7/100,000 population) to only 750 cases (2.8/100,000 population) in 2006 (AIDS/STD Section MOH 2008).

Acquired Immunodeficiency Syndrome (AIDS) is the terminal stage of Human Immunodeficiency virus (HIV) infection where the person has low T-helper cells (below 200/dl) and is prone to opportunistic infections such as pneumocystis carinii pneumonia, extensive oral candidiasis and Kaposi's sarcoma.

The first world AIDS's case was reported to Centers for Disease Control (CDC), Atlanta, USA on 5th June 1981 (CDC Atlanta USA 2001). Since then, up to December 2007, WHO estimated there were a total of 33.2 (Range: 30.6 – 36.1) million people living with HIV world-wide. Adult HIV comprised of 30.8 (Range: 28.2 – 33.6) million and about half 15.4 (Range: 13.9 – 16.6) million were women. There were a total of 2.1 million (Range 1.9 – 2.4) deaths due to AIDS in 2007. In South and South-East Asia,

there were 4.0 million (Range 3.3 - 5.1) people living with HIV up to December 2007 and 270,000 (Range 230,000 – 380,000) deaths due to AIDS in 2007 (UNAIDS/WHO 2007). The last population based prevalence survey showed that the worst countries in Africa had a HIV prevalence of 25.2% and 23.5% (WHO 2005).

The first AIDS case in Malaysia was detected in 1986. Since then a total of 76,389 HIV / AIDS cases were reported up to December 2006. About 9,155 of them had died. In the year 2006 at the rate of 3.66/100,000 population, it was the second commonest cause of mortality due to infectious diseases. The infection was predominantly among males (92.6%) and 80% of the cases were among economically productive age group of 20-39 years. The commonest mode of HIV transmission was through the sharing of drug equipment among injecting drug users (IDUs) which accounted for 72.7% of the cases. However, sexual transmission is on the rise.

Malaysia initiated the HIV / AIDS Prevention and Control Programmed in 1985 before the first AIDS case was detected (AIDS/STD Section MOH 2005). The safe blood donation programmed was launched nationwide in 1986 together with the health education campaigns. HIV / AIDS were added to the list of notifiable diseases under the Infection and Control of Infectious Diseases Act 1988. Screening for HIV was instituted among inmates of correctional institutions in 1989. Routine screening for HIV infection among tuberculosis (TB) patients has been in place in Malaysia since 1990. Data indicates that HIV infection among TB patients has been increasing. In 2004, HIV infection was detected in 8.47 percent of TB patients, a huge increase from 5.9 percent from the previous year and a marked rise from the proportion of cases in 1992 (0.5%) (AIDS/STD Section MOH 2005). In 2002, the prevalence of HIV was estimated at 0.4% with a projected maximum of 0.5% (Chin 2003). Similar HIV surveillance among the high-risk groups such as commercial sex workers and anonymous voluntary HIV testing was offered at government health facilities. There were local studies conducted to estimate the prevalence and burden of HIV / AIDS in the country. Such studies were conducted in 1999, 2001 and 2004. The last study conducted in 2006 estimated the prevalence of HIV at 0.4% (UNAIDS/WHO 2007).

The Ministry of Health recently formulated the National Strategic Plan on HIV / AIDS for 2006-2010 (Ministry of Health Malaysia 2006). The six major strategic approaches of the plan are:

- a) Strengthening leadership and advocacy
- b) Training and capacity enhancement
- c) Reducing HIV vulnerability among injecting drug users and their partners
- d) Reducing HIV vulnerability among women, young people and children
- e) Reducing vulnerability among marginalized and vulnerable groups and
- f) Improving access to prevention, diagnostics, treatment and care

The thematic Healthy Lifestyle Campaign on HIV was launched in 1992. Since then several studies were conducted to evaluate the effectiveness of HIV / AIDS prevention and control programmed was conducted. However most of the studies were centered among specific and limited target groups and areas. There is to date no nationwide community based study conducted on HIV / AIDS.

STI are noted as significant risk factor for the sexual transmission of HIV / AIDS. The notified cases of STI were low due to non and under-reporting. In an effort to improve the reporting of STI, a modified syndromic approach of STI management was initiated for vaginal discharge symptoms, urethral

discharge signs and genital ulcers syndrome. The number of treated STI symptoms including asymptomatic cases increased from 1,183 cases in 2002 to 2,631 cases in 2004 (Ministry of Health Malaysia 2005).

In an effort to control the escalating incidence of HIV globally, WHO has encouraged member countries to conduct Behavioural Surveillance Surveys (BSS). BSSs are an integral part of HIV surveillance and help facilitate interpretation of epidemiological and biological data in a specified population. The objective of the surveys is to assess behaviour-related indicators to enable the monitoring of trends among population groups. The last BSS conducted among commercial sex workers in this country in 2004 showed that the number of paying partners (for the previous week) averaged 15.0, with more than a third of the respondents having one to five paying partners. Further, 15.2% of them had six to ten clients while 12.2% had 11 to 15 paying partners. In addition, 18.6% claimed that they had more than 25 paying partners for the previous week. Female Commercial Sex Workers (CSWs) had the highest average number of paying partners (15.8 partners) compared to 14.2 partners for the transsexuals and 13.3 for male CSWs. Most transsexuals (31.8%) and female CSWs (37.2%) had one to five paying partners. Among the male CSWs, 31.4% had 11 to 15 paying partners, 15.7% one to five clients, 21.6% six to ten, 17.6% 16 to 20, 3.9% 21 to 25 and 7.8% had more than 25 paying partners for the previous week. Almost one quarter (23.4%) of the female CSWs had more than 25 paying partners compared to only 14.3% of transsexuals with similar number of partners. In addition, 13.9% of the female CSWs had six to ten, 9.1% eleven to 15 and another 10.2% with 16 to 25 paying partners for the previous week. Among the transsexuals, 15.1% had six to ten, 12.2% had 11 to 15, 15.2% with 16 to 25 paying partners the previous week. More than one third (35.3%) of respondents did not have non paying partners the previous week, while 42% had only one, 9.1% had two, 4.3% had three, 2.2% four and 7.0% more than four non paying partners. More female CSWs (40.1%) had no non-paying partners than the males CSWs (11.4%) and transsexuals (32.1%). At any rate 11.4% had one, 22.9% had two, 14.3% had three, 17.1% had four and 13.7% had more than four non-paying partners the previous week. Almost half (43.8%) of the female CSWs had only one, 5.6% two, 1.7% had three and 8.7% had four more non paying partners the previous week. While almost one third (32.1%) of the transsexuals had no nonpaying partners, 42.9% had one, 11.8% had two, 6.3% had three, and 6.8% had four or more the previous week. More than one third (35.3%) of the respondents did not have a non paying partners the previous week, while 42% had only one, 9.1% had two, 4.3% had three, 2.2% four and 7.0% more than four non paying partners the previous week. More female CSWs (40.1%) had no non-paying partners the previous week than the males (11.4%) and transsexuals (32.1%). At any rate 11.4% had one, 22.9% had two, 14.3% had three, 17.1% had four and 13.7% had more than four non-paying partners the previous week. Almost half (43.8%) of the female CSWs had only one, 5.6% two, 1.7% had three and 8.7% had four ore more non paying partners the previous week. While almost one third (32.1%) of the transsexuals had no nonpaying partners, 42.9% had one, 11.8% had two, 6.3% had three, and 6.8% had four or more the previous week (UNAIDS/WHO 2007).

2.2 Type of Sexual Orientation

Sexual orientation is an enduring emotional, romantic, sexual or affectional attraction to another person. It exists along a continuum that ranges from exclusive homosexuality to exclusive heterosexuality and includes various forms of bisexuality. Bisexual persons can experience sexual, emotional and attraction to both their own sex and the opposite sex. Persons with a homosexual orientation are sometimes referred to as gay (both men and women) or as lesbian (women only).

Sexual orientation is different from sexual behaviour because it refers to feelings and self-concept. Persons may or may not express their orientation in their behaviours.

There are various theories about the origins of a person's sexual orientation. Most scientists today agree that sexual orientation is most likely the result of a complex interaction of environmental, cognitive and biological factors. In most people, sexual orientation is shaped at an early age. There is also considerable recent evidence to suggest that biology, including genetic or inborn hormonal factors, play a significant role in a person's sexuality (American Psychological Association 2007).

Recent studies indicated strong sexual orientation among men appears to be connected with brain metabolism. Researchers reported finding differences between exclusive homosexual and exclusive heterosexual males in glucose metabolism in the hypothalamus and other brain areas following the administration of fluoxetine, the generic equivalent of the drug Prozac. Heterosexual men had a much stronger response to the Prozac in the hypothalamus than did the homosexual men (Harms 2003).

Social orientations in particular on the size of homosexual population are invaluable to public health policy makers. Two of the earliest studies on the demographics of human sexual orientation were Dr. Alfred Kinsey's *Sexual Behavior in Human Male* (1948) and *Sexual Behavior in the Human Female* (1953). These studies used a seven-point spectrum to define sexual behaviour, from 0 for completely heterosexual to 6 for completely homosexual. Kinsey concluded that a small percentage of the population was to one degree or another bisexual (on the scale from 1 to 5) (Wikipedia 2007).

An Australian survey reported in 2003, a thorough survey conducted by telephone interview of 19,307 respondents between the ages of 16 and 59 in 2001 / 2002 found that 97.4% of men were heterosexual, 1.6% gay and 0.9% bisexual. For women 97.7% were heterosexual, 0.8 % gay and 1.4% bisexual. The American National Health Interview Survey of 9,000 households in 1990-1992 found 2-3% of respondents admitted of sex of men with men. In general, a mean of 4-5% were often cited in the mainstream media (Wikipedia 2007).

Studies in many Asian countries have found that significant minorities (3-6%) of young men regularly have sex with other men and 15-20% has ever had sex with a man (Gubhaju 2002).

2.3 Age at First Sexual Intercourse

A study to determine the prevalence of sexual intercourse among secondary school students aged 12 to 19 years was conducted in Negeri Sembilan, Malaysia in 2001 (Lee et al. 2006). This was a cross-sectional school survey among 4,500 adolescent students based on a structured questionnaire. Data was collected using the self-administered questionnaire (translated version of the Youth Risk Behaviour Surveillance in Bahasa Malaysia). The study showed that 5.4% of the total sample reported to have had sexual intercourse. The proportion among male students who had had sex was higher (8.3%) compared with female students (2.9%). The mean age at first sexual intercourse was 15 years. Adolescent sexual intercourse was significantly associated with socio-demographical factors (age, gender); environmental factors (staying with parents) and substance use (alcohol use, cigarette smoking, drug use), even after adjustment for demographical factors.

The percentage of premarital sexual activity seemed to have increased in Malaysia over the years. This could be due to rapid modernization and social changes in the country. However, the result of this study was lower compared to those of other countries (percentage of adolescents aged 15-19 years who had had sex; Thailand- 15%, Brazil - 33%, Great Britain - 60% and USA - 50%) (WHO 2001). In earlier local studies, the proportion of unmarried adolescents aged 15-21 years who had experienced sexual intercourse was also higher, i.e. 13% and 9% (Zulkifli & Low 2000). This could be due to the fact that in this study, all the respondents were students while in the other studies, the respondents were older youths. We also have to bear in mind that the figures in this study may not show the true picture as adolescents in Malaysia are not forthcoming about sex, which was probably why the results were rather conservative.

In this study, adolescent sexual activity varies greatly with gender in several important ways. Adolescent males were more likely to be sexually experienced than adolescent females, with 8.3% boys reporting that they had had sex, compared to only 2.9% of girls. These figures were higher when compared to the figures from the Second National Health and Morbidity Survey in 1996 where only 2.5% of boys and 1.3% of girls reported having had sexual intercourse. In other settings, youth's degree of sexual experience varies across regions, but is generally consistent within regions. Studies of female youths suggest that 2%-11% of Asian women have had sexual intercourse by the age of 18 years; 12%-44% of Latin American women by the age of 16 years and 45%-52% of sub-Saharan African women by the age of 19 years (WHO 2001). In developed countries, most young women have had sex prior to the age of 20 years – 67% in France, 79% in Great Britain and 71% in the USA (Darroch et al. 2001). Among male youths, studies suggest that 24%-75% of Asian men have had sex by the age of 18 years; 44%-66% of Latin American men by the age of 16 years and 45%-73% of sub-Saharan African men by the age of 17 years (WHO 2001). In developed countries, most young men have had sex prior to the age of 20 years – 83% in France, 85% in Great Britain and 81% in the USA (Darroch et al. 2001). This suggests a gender-based double standard where there is lesser social pressure on boys to remain virgins until marriage or greater tolerance to premarital sexual experimentation among boys than girls. This gender imbalance where boys are more sexually active than girls may be due to the condoning attitude and behaviour of the young people and the society.

Male adolescents become sexually active at earlier ages than females (14.9 years old as compared to 14.4 years old). The mean age at first sexual intercourse for males in the study was 14.9 years and the median age was 15 years. For females, the mean age at first sexual intercourse was 14.4 years and the median age was 15 years. Age at first intercourse is important in health terms, as it places young people into a group exposed to risks of unintended pregnancy and sexually transmitted diseases, including AIDS, and these risks vary by age at onset of sexual activity. Younger ages at first intercourse were associated with higher odds of sexually-transmitted infection in comparison with older ages (Kaestle et al. 2005). At the population level, a younger age at first intercourse results in more sexually active teens and a longer period of sexual activity before entering into a lasting relationship. Studies have shown gender differences in the age at first sexual experience (Singh et al. 2000; Rani et al. 2003).

In the household survey, 1% admitted to have had sexual intercourse, while 24% had confirmed in the media survey. Of these, 18.4% had their first sexual intercourse between 15 and 18 years, when most of them would have completed their formal schooling and were away from parental guidance. An earlier study conducted nationwide in 1992 found that 52% of the youth aged 17-24 had had more than one sex partner, and half of them had engaged in premarital sex (Ministry of Health Malaysia 1992).

Another study conducted among 1,200 respondents aged 15-21 found that 45% had dated and 9% reported having had premarital sexual intercourse (Zulkifli et al. 1995). Among those who had dated, 26% of the boys and 5% of the girls had had sexual intercourse. As in most studies of this nature, more boys than girls reported having sexual intercourse, confirming the belief that there is less pressure for boys to remain virgins or that they are more aggressive when it comes to having sex (Lee et al. 2006).

A comprehensive global study in 59 countries of sexual behaviour, British researchers found that people aren't losing their virginity at ever younger ages and there is no firm link between promiscuity and sexually transmitted diseases. Promiscuity may be less important than factors such as poverty and education especially in the encouragement of condom use in the prevention of transmission of sexually transmitted diseases. Nearly everywhere men and women have their first sexual experiences in their late teens (aged 15-19 years), with generally younger for women than for men. However, there are considerable discrepancies across countries. In the United Kingdom men and women tend to lose their virginity at ages 16.5 and 17.5 respectively. In comparison, the men and women in Indonesia waited until they were 24.5 and 18.5 respectively before crossing the sexual threshold (London School of Hygiene & Tropical Medicine 2006).

2.4 Sexual Intercourse in the Last 12 Months

Sexual behaviour may be the most important of all human activities. It is the central behaviour around which families are formed, and it is a key component in the emotional lives of individuals. Increasing life expectancy has been accompanied by improvements in the health and quality of life. However, little is known how this change has affected their sexual health. Brock (2002), in the Global Study of Sexual attitudes and Behavior surveyed 27,500 men and women in 30 countries representing all world regions. Globally, the majority of men (84%) and women (66%) reported that they were sexually active within last 12 months. However, in the same study the Malaysian statistics showed a lower overall sexual activity of 60%. In another international study in 2002 involving 26,000 men and women aged 40-80 years from 28 countries reported an overall 83.1% had sex last 12 months (Gingell et al. 2002).

A study from Gujarat, India in 2000 showed among university students, percentage of students who had said that they had ever had sex was 17.5%. The mean age at first sexual intercourse for the students was 19 years. 12.3% of the students had reported that they had sexual intercourse in the preceding twelve months (Family Health International 2000).

2.5 Types of Sexual Partners in the Past 12 Months

BSS conducted in Kenya (UNHCR 2004) showed of the sexually active respondents 43% had a regular sex partner. The mean number of regular sex partners in the last 12 months among female refugees and local females (youth) was 0.9 and 5.8 respectively; among male refugees and local males in the same age group was 2.2 and 1.0, respectively.

In Zambia the community Behavioural Surveillance Baseline Survey (Kusanthan 2002) most of the respondents (88%) reported having had at least one regular sexual partner in the last year.

Another study from Gujarat, India in 2000 showed that 6% of female sex workers had said that they

had one-time clients and 75% had stated that they also had regular clients. Regarding condom usage, 93% sex workers who had one-time clients had reported that these clients used a condom during the last sexual intercourse with them. The corresponding figure for regular clients was 90%. Among university students, percentage of students who had said that they had ever had sex was 17.5%. The mean age at first sexual intercourse for the students was 19 years. 12.3% of the students had reported that they had sexual intercourse in the preceding twelve months (Family Health International 2000).

2.6 Sexually Transmitted Infection (STI)

WHO estimated there are 333 million new STIs that occur in the world every year. At least one-third occur in young people under 25 years of age. WHO estimates 1 in 20 adolescents worldwide acquire STI each year. In one large African city, the incidence of gonorrhoea was 3,000 to 10,000 per 100,000 population, whereas a study from the United States reported an annual incidence of gonorrhoea as 233 per 100,000 population in 1991 and in Sweden, about 39 per 100,000 population in 1987 (Kasule et al. 1997). The prevalence of STIs in Ethiopia is among the highest in Africa: one clinic-based study showed up to 64% of Ethiopian women had at least three separate infections (Duncan et al. 1994).

In the Western Pacific Region, surveys indicate a high prevalence of at least one STI among individual with high risk behaviours, e.g. 67% of sex workers in Ulaanbataar (2001) and also among low risk antenatal mothers in some Pacific islands (2000).

Sexual behaviours were the strongest and most significant risk factor for STIs. In particular are the number of sexual partners, anal sex, prostitution, condom use and testing positive for other sexually transmitted diseases.

Five out of ten studies that examined the relationship between the number of sexual partners and STIs found that adolescents who had a higher number of sexual partners were more likely to have an STI. In Jamaica, Kenya, Zambia, Cameroon and Benin, males who exchanged money for sex were more than three times more likely to have an STI, compared with males who did not. In Thailand, soldiers who had anal sex with other men were nearly five times more likely to have had an STI in the past six months (WHO 2005).

2.7 Knowledge about HIV Sexual Transmission

Public knowledge of HIV transmission is crucial in the strategy for effective prevention and control of HIV / AIDS. The AIDS control programmed was initiated by the Ministry of Health since 1985 before any HIV / AIDS case was detected in the country. The public health education programmed is one of the key strategies employed and various studies were conducted to assess the effectiveness of the health education programmed. Periyapayyan (2002) conducted a study on the availability and accessibility of HIV / AIDS information and level of awareness among students in plantation schools in Peninsular Malaysia. Majority of the students (94%) knew of HIV / AIDS. Majority of students also correctly identified that promiscuous sex could transmit the infection. Generally, 85% of the students had some knowledge of HIV / AIDS. However, Associate Professor Dr. Lekhraj Rampal from Universiti Putra Malaysia (Rampal 2005) conducted a survey of 18,805 respondents aged 15 and above. The survey showed 92% of the people polled knew the definition of HIV. However, the depth of knowledge

on HIV infection was still shallow. 48% of respondents were unsure whether a HIV-infected woman could transmit the virus while breast-feeding her baby. Similarly, 40% of respondents believed a beautiful or handsome man could not be infected with the virus.

Awareness about AIDS is near universal, particularly the knowledge that AIDS can be transmitted through sexual intercourse if one of the partners has AIDS (99%) (Durex-Mode 1996).

2.8 Protection from HIV by Using Condom Correctly

Men who have sex with men are more likely to use condoms in commercial than casual sex, but condom use in male-male sex is still lower than with female sex workers. Hughes (2005) reported condom use with female sex workers in Asia was 23% in Bangladesh (2 cities), 91% in Cambodia, 58% in Sichuan, China, 78% in India (5 cities), 45% in Indonesia (3 cities) and 97% in Hoi Chi Minh City, Vietnam. Rojanapithayakorn and Hanenberg (1996) as reported in World Bank (1999) showed rising condom use from less than 20% (1988) to around 95% (1994) and declining STIs in male from around 240,000 cases (1988) to around 25,000 cases (1994).

In India on average 20% of those interviewed were condom users for various users and 93% used for the prevention of transmission of sexually transmitted diseases (Durex-Mode 1996). A study from Gujarat, India in 2000 (Family Health International 2000) on condom usage, 93% sex workers who had one-time clients had reported that these clients used a condom during the last sexual intercourse with them. The corresponding figure for regular clients was 90%.

A study on HIV prevention in Lusaka (Kusanthan 2002) revealed two thirds (65%) of the respondents reported having ever used a condom. Among those who had sex with a regular partner, 31% reported using a condom during the last sexual encounter and 11% claimed to be using condoms every time.

BSS conducted in Kenya (UNHCR 2004) showed the use of a condom during the last sexual encounter with a regular sex partner was low; 7.2% (CI: 2.8–11.5; n=138) among refugee youth, and 6% (CI: 2.9–9.0; n=233) among local youth. Condom use with a regular partner among adults (25 – 49 years) was also relatively low at 6.3% (CI: 3.9 – 8.7; n=394) and 1.8% (CI: 0.7– 2.8; n=623) among refugees and host nationals, respectively. Over 70% of male refugees did not have protected sex because they trusted their partners; 33% of refugee women did not know what a condom was (compared to 50% of national women); and 33% refugee women disliked condoms. Condom use in marriage or with a regular sexual partner was associated with distrust and infidelity rather than concern for the partner's health in many settings, including refugee camps.

In Zambia the community Behavioural Surveillance Baseline Survey (Kusanthan 2002) about two thirds (65%) of the respondents reported having ever used a condom. Among those who had sex with a regular partner 31% reported using a condom during the last sexual encounter and 11% claimed to be using condoms every time.

2.9 Risk Perception of Contracting HIV / STI

A report by WHO in 2005 reviewed the assumption that improvement of knowledge may delay the age

of sexual debut and encourage the use of condom for sexually active people. Out of three studies that measured relationship between knowledge about AIDS and sex only one found significant protective effect. On knowledge of STI and sex, one found no relationship, one found adolescents with more knowledge of STIs have a higher risk of sexual activity and another found that higher levels of knowledge about STIs reduced the risk of early sexual debut (WHO 2005).

2.10 Prevalence of Genital Discharge / ulcer Past 12 Months

In Zambia Sexual Behaviour Survey (Kusanthan 2002), it was found that the percentages reporting an ulcer or discharge were (6.1% among males and 4.3% among females). A slightly higher percentage of rural respondents reported genital ulcer or discharge (5.6%) compared to urban respondents (4.4%).

Changing genital ulcer patterns similar have been reported in other places (Thailand, Cambodia, Nairobi, and Uganda) that have had success in reversing generalized HIV epidemics (Hayes et al. 1995; Korenromp et al. 2001).

In Cambodia (1996), 8.3% of brothel-based sex workers had a genital ulcer. In 2001, the prevalence of genital ulcers among sex workers was only 2.1% (Ministry of Health Cambodia 2003).

It have been reported by the Department of HIV / AIDS and Reproductive Health Research, World Health Organization, Geneva, Switzerland where Chancroid was the most common cause of genital ulcer disease in 1993, yet it became a rare event by 2002, meanwhile, syphilis was disappearing among all patient groups. A high prevalence of chancroid in a community is an indicator of high-risk sexual behavior and the absence of good medical services. In the face of the decreasing prevalences of bacterial and protozoal STDs, viral STDs, specifically genital herpes, could be more common now than they were in 1993 (Schmid et al. 2005).

3. OBJECTIVES

3.1 General Objectives

- 3.1.1 To determine the prevalence of sexual behaviour in general population,
- 3.1.2 To assess the prevalence and level of knowledge of STI
- 3.1.3 To assess the level of knowledge of HIV in general population.

3.2 Specific Objectives

- 3.2.1 To determine the prevalence of sexual orientation

- 3.2.2 To determine the prevalence of sexual practices
- 3.2.3 To determine the age at first sexual intercourse
- 3.2.4 To determine the prevalence of sexual activity in the last 12 months
- 3.2.5 To determine the status of sexual partners of those sexually active in the past 12 months
- 3.2.6 To determine the level of knowledge of STI
- 3.2.7 To determine the level of knowledge of HIV
- 3.2.8 To determine the prevalence of STI
- 3.2.9 To assess the level of healthcare utilization and health seeking behaviour in STI
- 3.2.10 To determine the prevalence of HIV testing
- 3.2.11 To determine the prevalence of utilization of HIV testing services
- 3.2.12 To determine the reasons for not coming for HIV test
- 3.2.13 To determine the frequency of condom usage during sex
- 3.2.14 To determine the prevalence of condom use during the last sexual act
- 3.2.15 To establish the reasons for using and not using condom during the last sexual encounter

4. METHODOLOGY

4.1 Scope of the Study

Research problems, scopes and main issues to be included in NHMS III were obtained from discussions and feedbacks from Ministry of Health state health managers, as well as experts from the local universities and individuals. The main research team members of the NHMS III reviewed and studied closely the feasibility and practicality of the suggested research topics for this community-based household survey. Extensive literature review was initiated. Technical and research experts in the field related to the identified research areas were consulted for further advise and comments. The main research group used the following criteria in considering the suggested scopes for this survey;

- a) The issue/problem is current or has potential of high prevalence
- b) The issue/problem is focused on disease/disorders associated with affluence lifestyle, environment and demographic changes

- c) The issue/problem is causing physical, mental or social disability
- d) The issue/problem has important economic implications
- e) It is feasible to implement interventions to reduce the problem
- f) The information related to the issue/problem is not available through the routine monitoring system or other sources
- g) The information is more appropriately obtained through a nation-wide community survey, and
- h) It is feasible to obtain through a nation-wide community-based survey

The short-listed research topics were then presented to the Advisory Group Members for further deliberation and decisions. These topics were later refined by the research team members based on the decisions made at the Advisory Committee meeting. It was tabled to the Steering Committee and 18 research topics were approved to be included in the NHMS III.

4.2 Sampling Design and Sample Size

In calculating the sample size, stratification and sampling design, the Methodology Division Department of Statistics Malaysia as well as several other biostatistics consultants was roped in for advice.

4.2.1 Sampling frame

The sampling frame for this survey is an updated 2004 version; an effort undertaken prior to the implementation of Labour Force Survey (LFS) 2004. In general, each selected Enumeration Blocks (EB) comprised of 8 sampled Living Quarters (LQ). The EBs was geographically contiguous areas of land with identifiable boundaries. Each contains about 80-120 LQs with about 600 persons. Generally, all EBs are formed within gazetted boundaries.

The EBs in the sampling frame was also classified into urban and rural areas. The classification into these categories was in terms of population of gazetted and built-up areas as follows;

Stratum	Population of gazetted areas and built-up
Metropolitan	75,000 and above
Urban Large	10,000 to 74,999
Urban Small	1,000 to 9,999
Rural	The rest of the country

For sampling purposes, the above broad classification was found to be adequate for all states in Peninsular Malaysia and the Federal Territories of Kuala Lumpur and Labuan. However, for Sabah and Sarawak, due to problems of accessibility, the rural stratum had to be further sub-stratified based on the time taken to reach the area from the nearest urban centre.

For the purpose of urban and rural analysis, Metropolitan and Urban Large strata are combined together thus referred to as 'urban' stratum, while for Urban Small and the various sub-divisions of the rural areas they are combined together to form to a 'rural' stratum.

4.2.2 Sampling design

A two stage stratified sampling design with proportionate allocation was adopted in this survey. The first stage sampling unit was the EB and within each sampled EB, the LQs were selected as second stage unit. One LQ is estimated to comprise of 4.4 individuals. The whole household and persons within a selected LQ were studied.

4.2.3 Sample size

The sample size was determined based on 95% confidence interval and the following factors were taken into consideration;

a) Expected prevalence rate

The prevalence rate of the health problems for Malaysia obtained from the National Health and Morbidity Survey 2 (NHMS II) were used to estimate the overall sample size. Using the previous finding of 10% prevalence rate, the initial sample size at the state level was calculated in order to come up with overall sample size. The size was further apportioned for each state using the probability proportionate to size (PPS) method.

b) Response rate of the NHMS II

The response rates, which ranged from 83 to 97% for the NHMS II of each state, were taken into consideration in the course of the determination of sample size.

c) Margin of error and design effect

As the factors of precision and efficient of the survey are paramount, the decision reached for the targeted margin of error is 1.2 and the design effect valued at 2. These values were used at the initial stages of the calculation of the sample size of each state.

The survey findings addressing the specific objectives of this survey are expected to be used for state level programmed planning. Thus, the calculation for the sample size has taken into consideration data to be analyzed at the state level.

In addition to the major factors mentioned earlier, the availability of resources, namely, financial and human resources, and the time taken to conduct this survey also becomes part of the process of the determination of sample size.

4.3 Preparation of Field Areas and Logistic Support

A number of state liaison officers were recruited in preparation for the survey proper. Strong networking with state liaison officers and District Health Officers (MOH and local authorities) from the areas sampled for the survey was established. Field scouts were mobilized from these areas to identify and tag the LQ's selected for the survey, as well as to inform the community and related government agencies of the importance and schedule of the planned survey. State liaison officers were also

assisting Field Supervisors in the arrangement of transportation, accommodation and other logistics for the survey teams.

4.4 Method of Data Collections

A cross-sectional community household survey was conducted throughout Malaysia during April to July 2006. All research topics for the questionnaire were arranged into modules ranging from A to Z. Certain topics that cover a similar area were arranged into sub-modules under a particular module. Questions comprise of both close ended and open ended. The questions in each module are tailored for the target age group.

Respondents were given a self administered questionnaire according to respondent's age [booklet for age group 13 – ≤16 years (green) or >16 years (peach)]. The booklets were collected on the following day and sealed in an envelope to ensure confidentiality. Additional copies purely in vernacular language such as Mandarin and Tamil were also made available. Translation into these languages was done by qualified teachers proficient in the language. In addition, a list of selected words / terminologies from the questionnaires was also made available in Mandarin and Tamil to assist the enumerators during their interviews with the respondents.

4.5 Field Preparations

Two main survey implementation groups were been formed: the Central Coordinating Team and the Field Teams. The Central Coordinating Team's main role was to monitor and coordinate the progress of implementation and provide administrative support in terms of financial and logistic arrangement for the field survey. The Field Teams were responsible to oversee and manage the field data collection process as well as undertake quality control checks.

The field data collection was conducted throughout Malaysia simultaneously, spanning a continuous period of 4 months starting from April 2006. Teams were organized to move into 5 regions in Peninsular Malaysia, 2 regions in Sabah and 4 regions in Sarawak for data collection.

4.5.1 Pilot study

A pilot was conducted on a sample of EB's (not included in the NHMS III) about two months prior to the actual nationwide survey. It was conducted in three different areas in and around the Klang Valley, namely Sepang, Klang and Bangsar. The population in these locations comprise of three distinct socio-demographic strata that are rural, semi-urban and urban. The pilot study was focus on the following aspects such as testing of the questionnaire, testing of field logistic preparation, testing of scouting activities and testing of central monitoring and logistics support.

4.5.2 Training of data collection teams

Training was held for two weeks for interviewers, team leaders, nurses and scouts to familiarize them with the questionnaire, develop their interpersonal communication skills and appreciate the need for teamwork. Mock interviews in the class room, and individual interviewing practice under supervision, both in simulated situations and in actual field settings were held.

4.6 Quality Control

Quality control process was carried out at two stages, field stage and central stage. Details description of quality control process has been described in NHMS III protocol.

4.7 Data Management

4.7.1 Data screening

The following data screening exercises were conducted at the field and central level prior to data entry;

- a) Field data screened by each interviewers at the end of his/her interview
- b) Field data screened for each question by peer interviewers through exchanging questionnaire booklets
- c) Field data screened by team leaders and field supervisors
- d) Central data screening of the questionnaire by the quality control team

4.7.2 Data entry

The data entry system was developed to record the information collected during the data collection phase. It is a web based system that allows multiple simultaneous accesses to the database. The NHMS III used a double manual data entry method and any discrepancy between both entries was verified by the supervisors. The data entry started simultaneously with data collection (first week of April 2006) and was completed at the end of January 2007. The data entered was stored in the database according to the module. The databases were designed using Structured Query Language (SQL) which is a standard language for relational database management system.

4.7.3 Data analysis

Data analysis was done by exporting the data into other analytical tools such as Microsoft Excel, SPSS and STATA. The data in database (text form) was exported to the Microsoft Excel form then to the SPSS and STATA. The raw data was cleaned and analysed according to the terms, working definition and dummy table prepared by the research groups. All the analytical process were monitored and advised by the NHMS III Statistics Consultant.

4.8 Definition of Terms / Variables (Sexual Behaviour Module)

4.8.1 Eligible respondents

Individuals in the selected Living Quarters (LQ) aged 13 and above who stayed in LQ more than 4 continuous weeks and sharing the same cooking pot.

4.8.2 Respondents

Eligible respondents who answered at least one question from Sexual Behaviour Module (Module Y)

4.8.3 Non-respondents

Eligible respondents who did not answer Module Y

4.8.4 Sexual orientation

- a) Male homosexual

Respondents who answered question 3 (sex?) as "male" in module A2 and question 1 (Do you have the following sexual partners?) as "male" in Sexual Behaviour Module (male had male sexual partner).

- b) Female homosexual

Respondents who answered question 3 (sex?) as "female" in module A2 and question 1 (Do you have the following sexual partners?) as "female" in Sexual Behaviour Module (female had female sexual partner).

- c) Heterosexual

Respondents who answered question 3 (sex?) as "male" in module A2 and question 1 (Do you have the following sexual partners?) as "female" in Sexual Behaviour Module (male had female sexual partner).

OR

Respondents who answered question 3 (sex?) as "female" in module A2 and question 1 (Do you have the following sexual partners?) as "male" in Sexual Behaviour Module (Female had male sexual partner).

- d) Bisexual

Respondents who answered question 1 (Do you have the following sexual partners?) as "both male and female" in Sexual Behaviour Module.

- e) No sexual partner

Respondents who answered question 1 (Do you have the following sexual partners?) as "none of the above" in Sexual Behaviour Module.

4.8.5 Sexual practices

- a) Single practice

Respondents who answered question 2 (Do you usually practice the following with your sexual partners) as "anal sex" OR "oral sex" OR "vaginal sexual intercourse" in Sexual Behaviour Module.

- b) Dual practice

Respondents who answered question 2 as "anal sex" plus "oral sex" OR "anal sex" plus "vaginal sexual

intercourse" OR "oral sex" plus "vaginal sexual intercourse" in Sexual Behaviour Module.

c) All practices

Respondents who answered question 2 as "anal sex" AND "oral sex" AND "vaginal sexual intercourse" in Sexual Behaviour Module.

4.8.6 Sexually active

Respondents who answered question 1 as "only male" OR "only female" OR "both sexes" AND question 4 as "YES".

4.8.7 Knowledge of STI

a) Knowledgeable about STI

Respondents who answered question 7 (symptoms of STI) as "YES" to "genital discharge" AND "foul smelling genital discharge" AND "genital ulcers/sores".

b) Poor knowledge or Incorrect knowledge

Poor knowledge were respondents who answered question 7 as "YES" to "genital discharge" OR "foul smelling genital discharge" OR "genital ulcers/sores" AND any other combination of symptoms.

Incorrect knowledge was respondents who answered question 7 as "NO" AND/OR "DON'T KNOW" to all symptoms.

4.8.8 Knowledge of HIV transmission

Respondents who answered "NO" to question 8 (Can people protect themselves from HIV solely by abstaining from sexual intercourse).

4.8.9 Knowledge about use of condom

Respondents who answered "YES" to question 9 (Can people sufficiently protect themselves from HIV virus by using condom correctly every time having sex).

4.8.10 Perception of risk of contracting HIV / STI

Respondents who answered question 10 (What do you think is the risk of contracting HIV/STI when one has multiple partners / condom is not used during sexual intercourse / one has sex with prostitute) as perceived risk or no risk.

4.8.11 Safe sex practices

Respondents who answered question 17 (How often did you and all of your partners use a condom during the past 12 months when having sex with prostitutes) as "EVERYTIME".

5. FINDINGS

5.1 General

5.1.1 Response rate

There were 39,910 eligible respondents for Sexual Behaviour module (aged 13 years and above) out of the total 56,710 respondents for the NHMS III. Respondents were individuals in the selected living quarters aged more than 13 years old, stayed in the said living quarters for more than 4 continuous weeks, shared the same cooking pots and answered at least one question in the Sexual Behaviour module. Non-respondents were those who did not answer any question in the Sexual Behaviour module. The exclusion criteria were those in Correctional Institutions, Armed Forces including police barracks and hostels.

The response rate for the Sexual Behaviour module was 69.8% (27,864 respondents). The non-respondents were 30.2% (12,046).

The state which had the highest response rate was Labuan FT (81.7%) and the state with the lowest response rate was Sarawak (58.2%). The seven states that had higher response rates than the National rate were Terengganu (70.9%), Johore (74.2%), Negeri Sembilan (74.3%), Melaka (74.4%), Selangor (79.5%) and Labuan FT (81.7%). However, the eight states that had lower than the National response rate were Sarawak (58.2%), Penang (64.4%), KL FT (64.4%), Sabah (66.7%), Kelantan (66.8%), Penang (68.1%), Perlis (68.1%) and Kedah (68.4%) (Appendix : Table 1).

There were 20 questions in the Sexual Behavior module and the individual response rate varied from 15.5% for the question on sexual practice to 94.8% on awareness of STI. The highest responses were observed to the questions on knowledge. However, it was noticed that the Malaysian community was reluctant to reveal information to questions on sexual status and practices. There were only 86 respondents who admitted to having sex with prostitutes. In addition, there were only 12 and 15 responses respectively to questions on reasons on the use of condom and refusal of its use for sex with prostitutes. (Appendix : Table 2).

5.1.2 Comparison of respondents and non-respondents

Characteristics of respondents and non-respondents were similar with respect to gender. However, majority of the respondents (56.3%) were aged below 35 years as compared to the majority of non-respondents (53.1%) who were aged more than 49 years. The proportion of respondents was greater among the Malays (74.7%) and urban dwellers (73.8%). Singles (84.7%) were proportionately more represented in the respondents than the non-respondents (15.3%).

Details of socio-demographic profile of respondents and non-respondents are as in (Appendix : Table 3).

5.1.3 Profile of respondents

The respondents (27,864) comprised of 95.7% Malaysians, 59.6% Malays, 46.7% males, 58.7%

married, 22.5% aged less than 20 years, 27.9% with household income of RM1000-1999, 57.2% with secondary education and 62.0% urban dwellers.

There were no obvious socio-demographic differences between male and female respondents (Appendix : Table 4).

5.2 Prevalence on Health and Health Related Problems

5.2.1 Types of sexual orientation

Of the 27,864 respondents, 15,345 (55.1%) revealed their sexual orientation. Among the respondents who revealed their sexual orientation, majority of the respondents were heterosexuals 95.8% (CI: 95.4 - 96.2), 2.2% (CI: 1.9 – 2.5) bisexuals, and 2.0% (CI: 1.8 – 2.3) homosexuals. There was no significant difference in types of sexual orientation between males and females. Among the 311 homosexuals, 2.1% (CI: 1.8 – 2.4) were female homosexuals (lesbian) and 1.9% (CI: 1.6 – 2.2) were male homosexuals (gay) (Table 5.1).

Table 5.1: Types of sexual orientation by sex, Malaysia 2006

Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Sexual orientation (overall)					
Heterosexual	14,694	5,579,961	95.8	95.4	96.2
Homosexual	311	116,414	2.0	1.8	2.3
Bisexual	340	126,792	2.2	1.9	2.5
Total	15,345	5,823,167	100.0	100.0	100.0
Sexual orientation (male)					
Heterosexual	6,834	2,588,486	95.9	95.4	96.4
Homosexual	137	51,210	1.9	1.6	2.2
Bisexual	160	59,726	2.2	1.9	2.6
Total	7,131	2,699,423	100.0	100.0	100.0
Sexual orientation (female)					
Heterosexual	7,860	2,991,475	95.8	95.3	96.2
Homosexual	174	65,203	2.1	1.8	2.4
Bisexual	180	67,066	2.1	1.8	2.5
Total	8,214	3,123,744	100.0	100.0	100.0

The estimated prevalence of male homosexuals was highest among the Chinese [3.2% (CI: 2.4 – 4.2)] and significantly different than the Malays [1.2% (CI: 0.9 – 1.6)]. The estimated prevalence of male homosexuals was also higher among rural [2.2% (CI: 1.7 – 2.9)] than urban area [1.8% (CI: 1.4 – 2.2)] (Appendix : Table 5).

There were only 263 (4.2%) adolescents aged 13 – 19 years who revealed their sexual orientation. Among 125 male adolescents, 62.4% (78) claimed they were heterosexual, 19.2% (24) homosexual, and 18.4% (23) bisexual. Among 138 female adolescents, 79.7% (110) claimed they were heterosexual, 10.9% (15) homosexual and 9.4% (13) bisexual (Appendix : Table 5).

Those who did not reveal their sexual orientation (12,519), majority were at the extremes of age (aged below 20 years and above 75 years) (Figure 5.1).

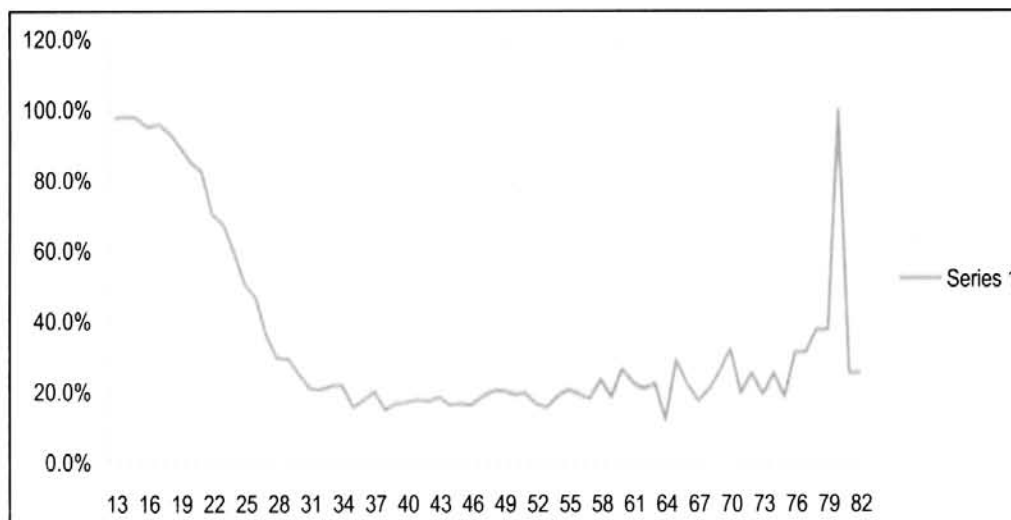


Figure 5.1: Proportion of respondents who did not reveal their sexual orientation by age, Malaysia 2006

5.2.2 Sexual practices

The response rate to this question was only 15.5% (4,318 respondents), the lowest response among the questions in the Sexual Module. Among the 4,318 respondents, 97.0% (4,187) had single route of practice and 3.0% (131) had dual route of practice. No respondents claimed to practice all three routes of vaginal, oral and anal.

Among those who practised single route, 94.3% (CI: 93.5 – 95.1) were exclusively vaginal, 1.7% (CI: 1.3 – 2.2) oral and 0.8% (CI: 0.6 – 1.2) anal only (Table 5.2) and [Appendix : Table 6(a)].

Among the respondents with dual route of sexual practice, the commonest route was oral and vaginal [2.8% (CI: 2.3 – 3.5)]. Dual sexual practice was more common among the urban as compared to the rural respondents (Table 5.2) and [Appendix : Table 6(b)].

Table 5.2: Type of sexual practices, Malaysia 2006

Sexual practice	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Single practice					
Vaginal only	4,076	1,546,469	94.3	93.5	95.1
Oral only	74	27,826	1.7	1.3	2.2
Anal only	37	13,923	0.8	0.6	1.2
Dual practice					
Oral & Vaginal	118	45,834	2.8	2.3	3.5
Anal & Oral	7	2,687	0.2	0.1	0.4
Anal & Vaginal	6	2,452	0.1	0.1	0.4
TOTAL	4,318	1,639,192	100.0	100.0	100.0

5.2.3 Age at first sexual intercourse

A total of 12,984 (46.6%) respondents revealed their age at first sexual experience. The males had their first sexual intercourse at a later age than females. There was a significant difference in the mean age of first sexual intercourse among the males 24.8 years (CI: 24.7 - 25.0) as compared to the females [22.8 years (CI: 22.7 - 22.9)] (Table 5.3 and Table 5.4).

Table 5.3: Age of first vaginal sexual intercourse by sex, Malaysia 2006

	Male(Yrs)	Female(Yrs)
Mean	24.8 (CI: 24.7 - 25.0)	22.8 (CI: 22.7 - 22.9)
Median	25.0	22.0
Mode	25.0	20.0
Min	7.0	4.0
Max	60.0	55.0
TOTAL	6,006	6,978

Table 5.4: Mean age of first sexual intercourse by sex, Malaysia 2006

Gender	n	Estimated population	Mean age (years)	CI	
				Lower	Upper
Male	6,007	2,283,974	24.8	24.7	25.0
Female	6,977	2,668,551	22.8	22.7	22.9
Total	12,984	4,952,525	23.7	23.6	23.8

Males of Other Bumis (22.8 years), Other races (23.8 years) and the Chinese males (24.4 years) had their first sexual intercourse at a significantly earlier age as compared to the males of the Malays (25.3 years) and the Indians (25.5 years) (Table 5.5 and Figure 5.2).

However, females of Other races (20.5 years), Other Bumis (21.1 years) and the Malays (22.7 years) had their first sexual intercourse at a significantly earlier age than the females of Indians (23.3 years) and the Chinese females (23.7 years) (Table 5.5 and Figure 5.2).

Table 5.5: Mean age of first sexual intercourse by sex and ethnic group, Malaysia 2006

Sex	Ethnic group	n	Estimated population	Mean age (years)	95% CI	
					Lower	Upper
Male	Malays	3,419	1,291,983	25.3	25.1	25.4
	Chinese	1,260	507,938	24.4	24.1	24.7
	Indian	502	202,493	25.5	25.1	25.8
	Other bumis	637	212,780	22.8	22.4	23.1
	Others	188	68,780	23.8	23.2	24.4
Female	Malays	4,056	1,542,878	22.7	22.6	22.9
	Chinese	1,365	553,975	23.7	23.5	24.0
	Indian	578	234,056	23.3	23.0	23.6
	Other bumis	713	239,718	21.1	20.8	21.4
	Others	265	97,923	20.9	20.5	21.3

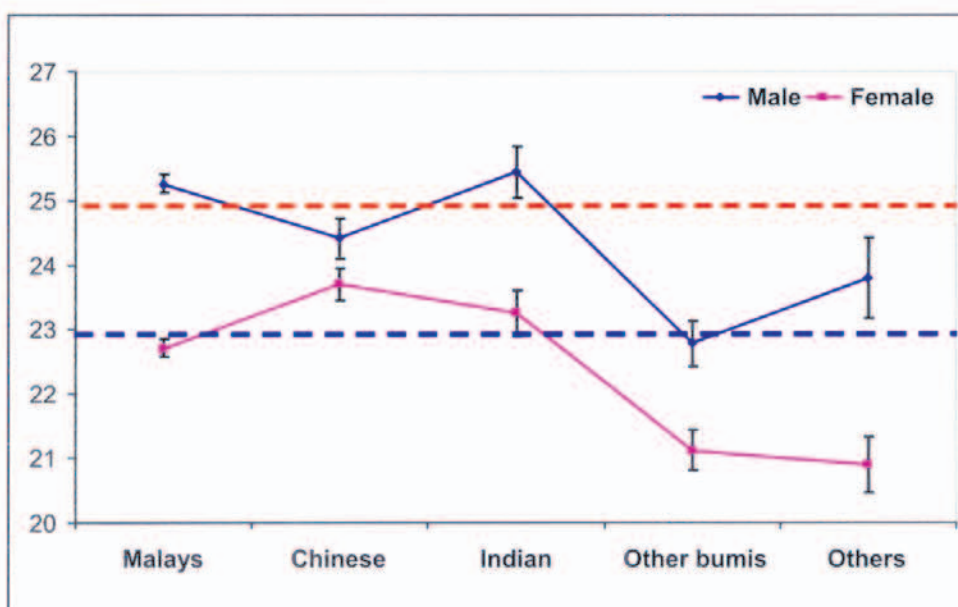


Figure 5.2: Mean age at first vaginal sexual intercourse by sex and ethnic group, Malaysia 2006

Generally, the females had an earlier sexual experience as compared to the males except those below 20 -24 years age group where the males had an earlier sexual experience. There was no changing trend of age at first sex for those age cohorts of above 30 years old as compared to age cohorts below 30 years old which showed a trend towards an earlier sexual experience (Figure 5.3).

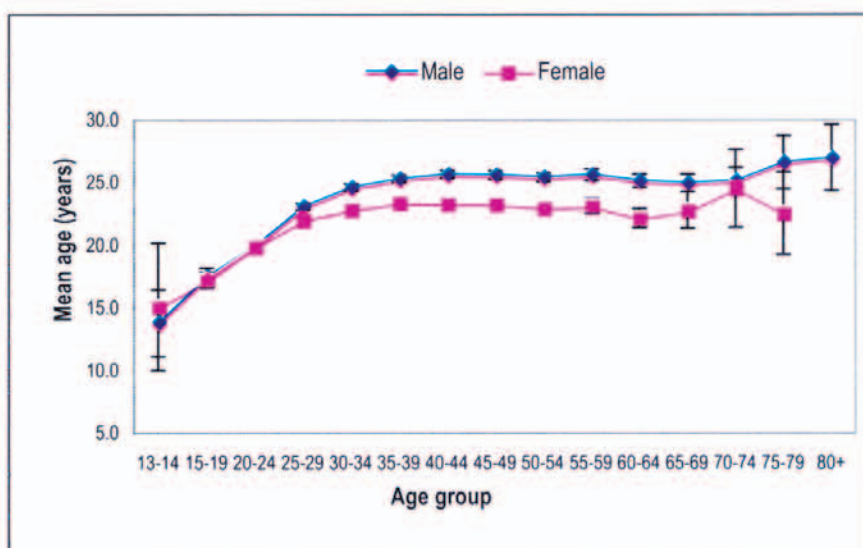


Figure 5.3: Mean age at first sex and age group, Malaysia 2006

5.2.4 Sexual intercourse in the last 12 months

The response rate to this question was 49.9% (13,893 respondents). The overall estimated prevalence of respondents who had sexual intercourse (anal/vaginal) in the last 12 months was 80.3% (CI: 79.4 – 81.1). There was no significant prevalence difference between male respondents [80.5% (CI: 79.4 – 81.5)] and female respondents [80.1% (CI: 79.0 – 81.0)]. The estimated sexual intercourse prevalence was significantly higher among urban residents [81.3% (CI: 80.2 – 82.2)] than rural dwellers [77.8% (CI: 76.3 – 79.2)]. The sexual prevalence among ethnic groups were significantly higher among the Malays [82.4% (CI: 81.4 – 83.3)] and the Chinese [82.3% (CI: 80.5 – 84.0)] as compared to the Indians [67.7% (CI: 64.4 – 70.9)], Other Bumis [78.4% (CI: 75.8 – 80.8)] and Other’s race [69.7% (CI: 65.3 – 73.8)] (Table 5.6).

Table 5.6: Prevalence of sexual intercourse in the last 12 months by sex, ethnic group and residential strata, Malaysia 2006

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Overall	11,131	4,242,439	80.3	79.4	81.1
Gender					
Male	5,214	1,981,387	80.5	79.4	81.5
Female	5,917	2,261,052	80.1	79.0	81.0
Ethnicity					
Malays	6,530	2,477,308	82.4	81.4	83.3
Chinese	2,293	924,983	82.3	80.5	84.0
Indian	765	312,210	67.7	64.4	70.9
Other bumis	1,181	395,908	78.4	75.8	80.8
Others	362	132,030	69.7	65.3	73.8
Residence					
Urban	7,408	3,051,101	81.3	80.2	82.2
Rural	3,723	1,191,338	77.8	76.3	79.2

5.2.5 Types of sexual partners in the past 12 months

There were 11,131 eligible respondents who had sexual intercourse in the last 12 months. However, only 10,463 respondents chose to reveal their sexual partners, giving a response rate of 94.0% for this question. The estimated prevalence of sexual experience in the last 12 months was 97.7% (CI: 97.4 – 98.0). Among those who responded, 96.8% (CI: 96.4 – 97.2) responses were with their spouses, 56.2% (CI: 54.5 – 58.0) with live-in sexual partners, 4.7% (CI: 4.2 – 5.2) with regular sexual partners, 1.1% (CI: 0.9 – 1.3) were with non-regular sexual partners and 0.9% (CI: 0.8 – 1.2) were with prostitutes (Table 5.7).

Table 5.7: Prevalence of types of sexual partners in the last 12 months, Malaysia 2006

Sexual partners	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Had sexual partner	10,463	3,984,824	97.7	97.4	98.0
Type of sexual partners*					
Husband/wife	10,219	3,890,462	96.8	96.4	97.2
Live in sex partner	5,335	2,034,093	56.2	54.5	58.0
Regular sex partner	418	162,913	4.7	4.2	5.2
Non-regular sex partner	99	37,334	1.1	0.9	1.3
Prostitutes	86	32,953	0.9	0.8	1.2

* Multiple responses

Among those who disclosed their sexual partners, 58.6% (CI: 56.7 – 60.5) comprised of Malays, 21.4% (CI: 19.9 – 23.0) Chinese, 7.4% (CI: 6.6 – 8.2) Indians, 9.5% (CI: 8.5 – 10.8) Other Bumis and 3.1% (CI: 2.7 – 3.5) Other's race (Table 5.8).

Table 5.8: Ethnic distribution of those who disclosed their sexual partners, Malaysia 2006

Ethnicity	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Malays	6,163	2,335,603	58.6	56.7	60.5
Chinese	2,110	852,976	21.4	19.9	23.0
Other bumis	1,136	380,407	9.5	8.5	10.8
Indian	720	294,075	7.4	6.6	8.2
Others	334	121,763	3.1	2.7	3.5

Among those who declared their spouses as their sexual partners in the last 12 months (10,219), they also had sex with live-in sexual partners [55.7% (CI: 53.9 – 57.5)], regular sexual partners [3.1% (CI: 2.7 – 3.5)], non-regular sexual partners [0.5% (CI: 0.4 – 2.7)] and prostitutes [0.7% (CI: 0.5 – 0.9)] (Table 5.9).

Table 5.9: Prevalence of other sexual partners of husband / wife, Malaysia 2006

Sexual partners	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Live in sex partner	5,241	1,997,737	55.7	53.9	57.5
Regular sex partner	275	107,327	3.1	2.7	3.5
Non-regular sex partner	50	18,882	0.5	0.4	2.7
Prostitutes	63	23,725	0.7	0.5	0.9

The ethnic distribution of live-in sexual partner comprised of 60.4% (CI: 58.2 – 62.5) Malays, 48.0% (CI: 44.8 – 51.2), Chinese, 53.9% (CI: 48.6 – 59.1) Indians, 48.4% (CI: 44.3 – 52.6) Other Bumis and 48.5% (CI: 42.0 – 55.1) others (Table 5.10).

Table 5.10: Ethnic distribution of live in sexual partners of husband / wife, Malaysia 2006

Ethnicity	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Overall	5,241	1,997,737	55.7	53.9	57.5
Residence					
Malays	3,336	1,258,973	60.4	58.2	62.5
Chinese	919	371,761	48.0	44.8	51.2
Other bumis	486	166,387	48.4	44.3	52.6
Indian	354	146,689	53.9	48.6	59.1
Others	146	53,927	48.5	42.0	55.1

5.2.6 Awareness of sexually transmitted infection (STI)

The response rate to this question was 94.8% (26,408 respondents), the highest response among the 20 questions in the Sexual Behaviour module. Overall, the estimated prevalence of awareness of STI among respondents was high at 79.4% (CI: 78.7 – 80.0), of which the prevalence among Malaysians was 80.0% (CI: 79.4 – 80.6). Highest awareness was also among females [79.9% (CI: 79.1 – 80.7)], those married [85.2% (CI: 84.5 – 85.9)], urban dwellers [80.0% (CI: 79.2 – 80.8)], and age group 35 – 39 years [86.7% (CI: 85.3 – 88.0)]. Awareness among the Malays [82.1% (CI: 81.4 – 82.9)] was significantly higher than the national average while Other's race was the lowest awareness [67.9% (CI: 64.3 – 71.2)]. Among the states, Pahang [83.8% (CI: 81.3 – 86.1)] had significantly higher STI awareness than the national average while Sabah [73.0% (CI: 70.8 – 75.1)] was the state with the lowest awareness for STI (Appendix : Table 7).

5.2.7 Knowledge on symptoms of STI

Out of 24,864 respondents, only 16,578 (59.5%) responded to the question on symptoms of STI. Even though the majority of the respondents (79.4%) claimed to be aware of STI, the estimated prevalence on the correct knowledge for the individual STI symptoms was low (50.9% - 53.8%) (Table 5.11).

Table 5.11: Knowledge of individual symptoms of STI, Malaysia 2006

STI symptoms	n	Estimated population	(%)	95% CI	
				Lower	Upper
Genital discharge	7,891	3,028,294	50.9	49.9	51.9
Foul smell	8,370	3,204,355	53.7	52.7	54.7
Burning pain	8,185	3,132,664	52.5	51.5	53.4
Genital ulcers	8,423	3,215,955	53.8	52.8	54.9

In addition, the estimated prevalence of respondents who were really knowledgeable on the symptoms of STI (on at least 3 symptoms) was only 39.1% (CI: 38 – 40.1). In this respect, females were more knowledgeable than the males at 40.4% (CI: 39.2 – 41.7) and 37.4% (CI: 36.1 – 38.7) respectively (Table 5.12).

Table 5.12: Knowledgeable of overall symptoms of STI, Malaysia 2006

Knowledgeable of overall symptoms	n	Estimated population	(%)	95% CI	
				Lower	Upper
Overall	5,940	2,279,035	39.1	38.0	40.1
Gender					
Female	3,330	1,282,554	40.4	39.2	41.7
Male	2,610	996,481	37.4	36.1	38.7

5.2.8 Knowledge of HIV sexual transmission

A high response rate of 92.4% (25,754 responded) was recorded for this question. However, only 49.7% (CI: 48.9 – 50.5) of the estimated population was really knowledgeable on HIV transmission through sexual intercourse (were correct on all three routes of transmissions). The estimated prevalence was higher among females than males at 50.8% (CI: 49.8 – 51.8) and 48.3% (CI: 47.3 – 49.4) respectively. Knowledge was better among age group (20 – 44) years (range 51.4% - 59.4%) as compared to the extremes of age group [(13 – 14) years and more than 70 years (range 24.6% - 33.4%)]. Highest prevalence was also observed among the Malays [53.8% (CI: 52.8 – 54.8)], the married [50.5% (CI: 49.4 – 51.5)], tertiary students [73.4% (CI: 71.6 – 75.1)] and lowest among Other Bumis [41.0% (CI: 38.8 - 43.2)] and Other races [40.9% (CI: 36.8 – 45.2)], widow/widower [41.2% (CI: 36.4 – 46.1)], housewives [45.3% (CI: 43.8 – 46.9)] and those with least household income (less than RM400) [39.6% (CI: 36.4 - 43.0)]. Among the states, Terengganu [61.3% (CI: 57.6 – 64.9)] had the highest prevalence of those knowledgeable on HIV sexual transmission while Sarawak the lowest [41.2% (CI: 38.5 – 44.0)] (Appendix : Table 8).

5.2.9 Knowledge on protection from HIV by using condom correctly

A high response rate of 90.4% was also recorded for this question (25,186 responded). However, the estimated prevalence of knowledge on the use of condom correctly to protect from HIV was very low at 32.7% (CI: 32.0 – 33.4). Very low knowledge was observed among females [30.0% (CI: 29.3 – 30.8)], widow/widower [9.8% (CI: 8.5 – 11.3)], Other races [21.7% (CI: 19.4 – 24.2)], those without

education [1.6% (CI: 1.2 – 2.0)], and age group 13-14 years [14.8% (CI: 13.3 – 16.4)]. Among the various religions, the Muslims were most knowledgeable [33.7% (CI: 32.9 – 34.5)] (Appendix : Table 9).

5.2.10 Risk perception of contracting HIV / STI

The response rate for this question was satisfactory at 85.1% (23,709 respondents). The estimated proportion of respondents who correctly perceived that all three risk factors (having multiple partners, not using condom during sexual intercourse and having sex with prostitutes) were high risk in contracting HIV / STI was 75.5% (CI: 74.8 – 76.2).

Among respondents who considered risk of sex with multiple partners, an estimated 94.0% (CI: 93.6 – 94.4) perceived it as high risk in contracting HIV/STI. Females [95% (CI: 94.5 – 95.4)] perceived it a higher risk than males [93% (CI: 92.4 – 93.5)]. Similarly, Malays considered it the highest risk compared to the perception of other races (range 86.7% - 95.2%). However, among the age groups, the 13-14 years age group perceived it the lowest risk [84.3% (CI: 82.3 – 86.0)] when compared to all other age groups (range 88.0% – 100.0%) [Appendix : Table 10(a)].

However, fewer people [79.4% (CI: 78.7 – 80.0)] perceived it as high risk when not using condom as compared to sex with multiple partners. The profile of respondents who considered it high risk when not using condom was similar to respondents who perceived sex with multiple partners as high risk [Appendix : Table 10(b)].

Among all the three high risk factors, an estimated 94.8% (CI: 94.5 – 95.1) of respondents perceived sex with prostitutes as high risk. The profile of respondents who perceived it high risk to have sex with prostitutes was similar to those who perceived sex with multiple partners and sex without condoms as high risk [Appendix : Table 10(c)].

5.2.11 Prevalence of genital discharge/ulcer past 12 months

The response rate to past history of genital discharge/ulcer was 89.2% (24,861 responded). Based on the responses, the estimated prevalence of genital discharge or ulcers in the past 12 months was very low at 2.2% (CI: 2.0 – 2.4). Females [2.5% (CI: 2.2 – 2.8)] were more affected than males [1.8% (CI: 1.6 – 2.1)]. The genital discharge or ulcers were also more common among divorcees [3.7% (CI: 2.1 – 6.4)], Indians [3.5% (CI: 2.7 – 4.5)] and housewives [2.6% (CI: 2.2 – 3.2)] (Table 5.13).

Table 5.13: Profile of those with genital discharge / ulcer past 12 months, Malaysia 2006

Socio-demographic characteristics	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Overall	535	203,072	2.2	2.0	2.4
Gender					
Male	206	77,683	1.8	1.6	2.1
Female	329	125,389	2.5	2.2	2.8
Marital status					
Not married	202	74,848	2.1	1.8	2.4
Married	310	119,594	2.2	1.9	2.5
Divorcee	12	4,180	3.7	2.1	6.4
Widow/Widower	10	4,016	2.7	1.5	5.0
Unclassified	1	434	1.4	0.2	9.5
Race					
Malays	261	98,284	1.7	1.5	2.0
Chinese	131	52,196	2.9	2.4	3.5
Indian	67	26,832	3.5	2.7	4.5
Other bumis	49	16,412	1.9	1.4	2.6
Others	27	9,348	2.7	1.9	4.0
Job					
Civil servant	44	15,881	1.5	1.1	2.1
Housewife	107	41,157	2.6	2.2	3.2
Private sector employee	180	70,047	2.5	2.1	2.9
Self-employed	68	25,203	2.0	1.6	2.6
Still studying	81	30,341	1.7	1.4	2.2
Unemployed	38	14,113	2.4	1.8	3.3

Among 535 respondents who admitted of having genital discharge/ulcers, 464 (86.7%) responded to the question on seeking treatment. The estimated proportion of those who had genital discharge / ulcers and went for treatment was 44.0% (CI: 39.4 – 48.8). Majority of those who sought treatment were males [45.4% (CI: 38.2 – 52.8)], of Chinese race [49.9% (CI: 40.2 – 59.6)], and received tertiary education [53.2% (CI: 39.9 – 66.2)] (Table 5.14).

Table 5.14: Profile of those with genital discharge / ulcer past 12 months who sought treatment, Malaysia 2006

Socio-demographic characteristics	n	Estimated population	(%)	95% CI	
				Lower	Upper
Overall	204	77,553	44.0	39.4	48.8
Gender					
Male	79	29,736	45.4	38.2	52.8
Female	125	47,817	43.2	37.5	49.1
Race					
Malays	93	34,613	41.4	34.9	48.3
Chinese	56	22,430	49.9	40.2	59.6
Indian	24	9,724	39.8	28.7	52.0
Other bumis	19	6,663	46.1	31.4	61.6
Others	12	4,123	47.2	28.7	66.5
Education					
Primary	55	20,520	41.5	33.3	50.1
Secondary	119	45,558	43.9	37.8	50.1
Tertiary	28	10,594	53.2	39.9	66.2
Unclassified	2	880	52.8	13.4	88.9

Only 56 (27.5%) respondents of the 204 who claimed to seek treatment for genital discharge / ulcers revealed the sites for the treatment. Majority (78.6%) sought treatment from government hospitals (Table 5.15).

Table 5.15: Site of treatment of those with genital discharge / ulcers past 12 months, Malaysia 2006

Site of treatment	n	(%)
Government hospital	44	78.6
Private hospital	8	14.3
Traditional practitioner	3	5.4
Self-medication	1	1.8
Total	56	100.0

5.2.12 HIV testing

The response rate for HIV testing was 89.2% (24,858 responded). The estimated prevalence for HIV test was 11.9% (CI: 11.4 – 12.4). The estimated prevalence for HIV test was highest among the females [13.3% (CI: 12.6 – 13.9)], urban residents [13.2% (CI: 12.5 – 13.9)], among the Chinese [16.6% (CI: 15.3 – 18.0)], and in the state of Johor [17.7% (CI: 16.0 – 19.6)] (Table 5.16).

Table 5.16: Prevalence of HIV test, Malaysia 2006

Socio-demographic characteristics	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Overall	2,893	1,118,274	11.9	11.4	12.4
Sex					
Male	1,146	448,850	10.4	9.8	11.0
Female	1,747	669,423	13.3	12.6	13.9
Resident					
Urban	2,029	839,716	13.2	12.5	13.9
Rural	864	278,558	9.2	8.5	10.0
Ethnicity					
Malays	1,641	628,400	11.2	10.6	11.8
Chinese	738	296,220	16.6	15.3	18.0
Indian	193	78,668	10.1	8.7	11.7
Other bumis	233	81,136	9.4	8.1	10.8
Others	88	33,849	10.0	8.0	12.4
States					
Johor	499	197,537	17.7	16.0	19.6
Kedah	179	65,735	9.9	8.5	11.6
Kelantan	111	36,979	7.4	6.0	9.2
Melaka	95	40,160	14.0	11.2	17.4
N.Sembilan	98	35,900	10.6	8.4	13.3
Pahang	126	50,102	10.0	7.9	12.6
Pulau Pinang	149	53,316	10.7	9.1	12.6
Perak	188	81,292	10.2	8.7	12.0
Perlis	32	12,002	14.0	8.5	22.2
Selangor	650	270,356	13.0	11.8	14.3
Terengganu	129	44,789	12.2	10.0	14.9
Sabah	208	65,005	8.0	6.7	9.5
Sarawak	207	82,635	11.5	9.9	13.2
W.P Kuala Lumpur	162	63,762	13.3	11.2	15.7
W.P Labuan	60	18,705	13.3	9.2	18.9

Among the 2,727 respondents who had HIV test done, the majority of the HIV test was done more than a year ago [61.6% (CI: 59.6 – 63.6)](Table 5.17).

Table 5.17: Duration of HIV test, Malaysia 2006

Duration of HIV test	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
< 1 month	147	56,690	5.4	4.5	6.3
1 - 6 months	420	163,130	15.5	14.0	17.0
6 - 12 months	478	185,102	17.5	16.0	19.2
>1 year	1,682	649,960	61.6	59.6	63.6
Total	2,727	1,054,883	100.0		

Among the 19,896 respondents who did not undergo the HIV test, 63.8% (CI: 62.9 – 64.7) claimed that the test was not necessary, 24.2% (CI: 23.4 – 25.0) attributed to ignorance of the place for testing, 3.0% (CI: 2.8 – 3.3) were afraid of the HIV / AIDS results, 1.6% (CI: 1.5 – 1.8) unsure of confidentiality, 1.6% (CI: 1.4 – 1.8) considered it not beneficial, 0.8% (CI: 0.7 – 1.0) mentioned stigma and 4.9% (CI: 4.6 – 5.3) due to other factors (Table 5.18).

Table 5.18: Reasons for NOT doing the HIV test, Malaysia 2006

Reasons	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Not necessary	12,592	4,791,633	63.8	62.9	64.7
Do not know place	4,895	1,818,078	24.2	23.4	25.0
Others	982	368,864	4.9	4.6	5.3
Afraid of the results	615	226,140	3.0	2.8	3.3
Unsure of confidentiality	332	122,983	1.6	1.5	1.8
No benefit	320	121,303	1.6	1.4	1.8
Stigma	160	62,421	0.8	0.7	1.0
Total	19,896	7,511,422	100.0		

5.2.13 Condom use among those visiting prostitutes

53 (61.6%) respondents revealed that they use condom during the last sexual intercourse with prostitutes. However, only 30 of them could recall the frequency of using condom in the last 12 months and only 5 [15.9% (CI: 6.7 – 33.3)] of them used it every time they had sex (Table 5.19).

Table 5.19: Prevalence of using condom in the last 12 months, Malaysia 2006

Using condom past 12 months	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Every time	5	1,844	15.9	6.7	33.3
Almost every time	2	786	6.8	1.7	23.6
Sometimes	11	4,412	38.2	22.6	56.6
Never	12	4,521	39.1	23.5	57.3
Total	30	11,563	100.0		

The main reasons for not using condom in the last sexual encounter were that they did not like using condoms (78.6%), partner's objection (14.3%), condoms not available (5.4%), and condoms too expensive (1.8%) (Table 5.20).

Table 5.20: Reasons for not using condoms, Malaysia 2006

Reasons for not using condoms	n	(%)
Don't like it	57	78.6
Partner objected	28	14.3
Not available	18	5.4
Too expensive	1	1.8

6. DISCUSSION

This was a community-based nationwide survey which utilized a two-stage stratified random sampling of living quarters (LQ). For the purpose of this Sexual Behaviour module, all respondents aged 13 years and above in the selected LQs were included in the study. Confidentiality was assured to the respondents before information was obtained through a self-administered questionnaire.

This module had an overall satisfactory response rate of 69.8%. However, the response rate for each individual question varied from 15.5% to 94.8%, the lowest were for questions on sexual contacts and related practices. This was due to the sensitive nature of the questions and the unsuitable home environment in which respondents had to answer the questionnaires.

The response rate for states ranged from 58.2% (Sarawak) to 81.7% (Labuan FT). The lowest response rate in Sarawak was probably due to the language difficulty in understanding the questionnaire.

Response rate was also highest among the Malays (74.7%) than other races. Higher response rate was also observed among the males than females. Higher responses were also found among singles, urban and younger age groups. Therefore, in the Malaysian context, sexual behaviour and practices are culturally sensitive and vary with ethnicity and social background of respondents and are important determinants in the trend of responses observed in this survey.

As in common to other communities in the world, the Malaysian population was also largely heterosexuals (95.8%). Similarly, the prevalence of homosexual (2.0%) and bisexual (2.2%) practices were low. This was similar to the United States of America national study on sexual behaviour (2002) where the prevalence of heterosexuals was 90%, male and female homosexuals 3.0%, and bisexuals 1.8%.

As for sexual practices, exclusive vaginal sex remained the preferred mode of sexual intercourse. Dual practice was low at 3.0%. No respondents reported to have all three practices. In a study by the Centers for Disease Control (2002), 11% of males and females had engaged in anal sex with someone of the opposite sex, whilst 3% of males aged 15 - 19 years had anal sex with males. 55% of males and 54% of female aged 15 - 19 years had oral sex with someone of the opposite sex.

There was a significant difference in the mean age at first sexual intercourse between males [24.8 years (CI: 24.7 - 25.0)] and females [22.8 years (CI: 22.7 - 22.9)]. The mean age of first sexual intercourse among male Chinese was significantly earlier than Malay and Indian males. However, the reverse trend was observed among female Chinese as compared to the other two races. There were social, cultural and economic factors which contributed to this pattern. The mean age of first sexual intercourse for Malaysians aged 16 - 55 years was higher (23.6 years) as compared to Thailand (18.7 years), China (22.0 years), and India (20.3 years) (Global survey by Condom Maker SSL International 2000).

In one Danish High School study (2001), 40% of the boys and 42% of girls, aged 15 -17 years, reported having their first sexual intercourse before the age of 16 years. Sexual intercourse in the last 12 months was 81.4% for men and 81.8% for women. This was comparable to other global experiences

but considerably higher than the global study by Pfizer (2004) which showed an overall of 61%. However, this difference could be partly due to the higher age group 40 – 80 years of the respondents.

There is potential risk of sexual transmission in the population for HIV / STI as evident by the low knowledge on HIV sexual transmission (49.7%) and average knowledge of STI (50.9% - 53.8%), a known risk factor for HIV transmission. In addition, there was low knowledge on the use of condom for HIV prevention (57.1%). However, only 185 of 11,131 respondents admitted to sex with non-regular partners and prostitutes. The reluctance to admit to promiscuous sex is probably due the study being conducted in the home environment.

Knowledge of STI was low among younger age group (<19 years). It increased with age and peaked at young adults and subsequently decreased with increasing age. Due to lack of educational campaign on STI during the past 25 years, the level of knowledge was expectedly lower in the older age group. Conversely the knowledge of HIV transmission were higher in the older age group.

Percentages of those who had genital discharge or ulcer in the past 12 months is only 2.2% in this survey. The low prevalence is similar to the global experiences such as Zambia (6.1% among males and 4.3% among females).

Changing genital ulcer patterns similar have been reported in other places (Thailand, Cambodia, Nairobi, and Uganda) that have had success in reversing generalized HIV epidemics (Schmid et al. 2005; Hayes et al. 1995).

In Cambodia (1996), 8.3% of brothel-based sex workers had a genital ulcer (Caroline Ryan, personal communication). In 2001, the prevalence of genital ulcers among sex workers was only 2.1% (Zambia Sexual Behaviour Survey 2005).

In Botswana survey 2002 (American Psychological Association 2007) and compared the findings with those from a survey of a similar population conducted in 1993 showed the observed proportion of cases of genital ulcer disease due to chancroid decreased from 25% in 1993 to 1% in 2002, whereas the proportion of ulcers due to herpes simplex virus increased from 23% in 1993 to 58% in 2002.

It have been reported by the Department of HIV / AIDS and Reproductive Health Research, World Health Organization, Geneva, Switzerland where Chancroid was the most common cause of genital ulcer disease in 1993, yet it became a rare event by 2002. Meanwhile, syphilis was disappearing among all patient groups. A high prevalence of chancroid in a community is an indicator of high-risk sexual behaviour and the absence of good medical services. In the face of the decreasing prevalence of bacterial and protozoal STDs, viral STDs, specifically genital herpes, could be more common now than they were in 1993 (WHO 2005).

The HIV / STI prevention and control programme for HIV / STI need to be strengthened as evident by the increasing number of HIV detected particularly through sexual transmission, the low knowledge on its prevention and only 11.6% had HIV test done.

6.1 Limitation of survey

- 6.1.1 The exclusion criteria of correctional institutions, Armed Forces including police barrack and hostels were pockets of presumed homosexuality which this survey methodology was unable to detect.
- 6.1.2 This survey was conducted in the community level at the home setting. This could have been a bias as respondents may not have answered the questionnaire truthfully.

7. CONCLUSION

This survey which is the first nation-wide community based survey on sexual behaviour clearly showed sensitive and private information (such as sexual promiscuity and sex with prostitutes) is not suitable in household surveys as evidenced by the very low response rate to the respective questions. However, other general questions were well received which confirmed the high rate of heterosexuals (95.8%) and the low rates of homosexuality in the community (2.0%).

Since this is the first community survey which revealed the genital discharge or ulcer in general population in Malaysia. The study findings regarding the number of cases of genital ulcers with a bacterial etiology have decreased, and the number of cases with a viral etiology have increased should be supported by surveillance data, which is often of uncertain quality in Malaysia.

Risk of sexual transmission in the spread of HIV / STI in the country is significant as evident by the prevalence of early sexual experience and sex outside legitimate marriage.

8. RECOMMENDATIONS

Community based surveys on sexual behaviour are still suitable for general and less sensitive questions. However, for sensitive and private questions, information is best obtained when strict confidentiality and anonymity are ensured.

Focus group discussion may be useful to elicit further sensitive information among specific target groups such as adolescents, sex workers etc.

The health education campaign on HIV / STI need to be strengthened as the survey revealed the level of knowledge and preventive practices for the prevention and control of HIV/STI is not wide spread.

To be effective, health promotion and education packages need to be appropriate and customized to the needs of specific target groups. This package should contain not only general information but appropriate and relevant information to increase awareness but also motivate clients towards positive behavioral change and facilitate early health seeking behaviour.

For the adolescent and young people in particular, health information and promotion packages should be creative and innovative to motivate them to be responsible and avoid unhealthy practices which will lead to negative consequences in adult life.

Health messages should contain relevant information such as early symptoms and signs of diseases, prevention of diseases, mode of spread, consequences of the disease if not detected and treated early and where to seek help.

Many health educational materials (printed and website portals) have been developed by Ministry of Health and other stakeholders which need to be strategically marketed to reach to the specific target groups as well as general population.

The study also revealed a significant number of respondents did not go for HIV testing because they do not know the place for testing. As such it is important for all health managers to review their policies towards client friendly services and to ensure better signage to promote the various services provided to the public.

Smart partnership with other agencies, media, NGOs need to be enhanced. Active participation and involvement of all stakeholders including the communities young and old, in health care need to be continuously encouraged.

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APPENDIX

APPENDIX

Table 1: Number and percentage of respondents and non-respondents by state, Malaysia 2006

State	Eligible respondents	Respondents	Non-respondents	Response rate (%)
Labuan FT *	616	503	113	81.7
Selangor	6,743	5,362	1,381	79.5
Melaka	1,020	759	261	74.4
Negeri Sembilan	1,493	1,110	383	74.3
Johore	4,460	3,309	1,151	74.2
Terengganu	1,696	1,202	494	70.9
Kedah	3,000	2,052	948	68.4
Penang	2,406	1,638	768	68.1
Perlis	379	258	121	68.1
Pahang	2,130	1,437	693	67.5
Kelantan	2,503	1,671	832	66.8
Sabah	4,715	3,144	1,571	66.7
Kuala Lumpur FT	2,185	1,408	777	64.4
Perak	3,096	1,994	1,102	64.4
Sarawak	3,468	2,017	1,451	58.2
MALAYSIA	39,910	27,864	12,046	69.8

* FT=Federal Territory

Table 2: Response rate by questions

No	Question (N= 27,864)	Respondents (%)
1	Sexual Partner	15,345(55.1)
2	Sexual Practice	4,318 (15.5)
3	Age at 1 st sexual intercourse (vagina / anal)	12,984 (46.6)
4	Sexual intercourse last 12 months	13,893 (49.9)
5*	Types of sexual partners(n=11,131)	10,463 (94.0)
6	Awareness of STI	26,408 (94.8)
7	Knowledge of STI symptoms	16,578 59.5)
8	Knowledge of HIV sexual transmission	25,754 (92.4)
9	Knowledge of condom protection against HIV	25,186 (90.4)
10	Perception of risk of contracting HIV / STI	23,868 (85.6)
11	Symptoms of STI (12mths)	24,861(89.2)
12*	STI treatment (n=535)	464 (86.7)
13*	Place of STI treatment (n=204)	56 (27.5)
14	HIV testing	24,858 (89.2)
15*	HIV test timing (n=2893)	2,727 (94.3)
16*	Reasons for HIV test refusal (n=21,965)	19,896(90.6)
17*	Prostitutes - frequency of condom use (n=86)	30 (34.9)
18*	Prostitutes - condom use during lastsexual intercourse (n=86)	27 (31.4)
19*	Prostitutes - reasons for condom use (n=12)	8 (66.7)
20*	Prostitutes - refusal to condom use (n=15)	15(100.0)

* Eligible respondents that were less than 27,864 (eligible respondents who responded to the question)

Table 3: Socio-demographic profile of respondents and non-respondents, Malaysia 2006

Socio-demographic characteristics	Respondent		Non-respondents		Total
	Number	%	Number	%	
N	27,864	69.8	12,046	30.2	39,910
Sex					
Male	13,013	71.6	5,148	28.4	18,161
Female	14,851	68.3	6,898	31.7	21,749
Total	27,864	69.8	12,046	30.2	39,910
Age group					
13-14	2,037	88.2	272	11.8	2,309
15-19	4,245	88.8	535	11.2	4,780
20-24	3,308	85.4	566	14.6	3,874
25-29	3,153	84.1	595	15.9	3,748
30-34	2,938	81.9	646	18.1	3,584
35-39	2,835	77.8	808	22.2	3,643
40-44	2,882	74.2	1,003	25.8	3,885
45-49	2,314	65.4	1,223	34.6	3,537
>49	4,152	39.4	6,394	60.6	10,546
Total	27,864	69.8	12,046	30.2	39,910
Residence					
Urban	17,284	73.8	6,147	26.2	23,431
Rural	10,580	64.2	5,899	35.8	16,479
Total	27,864	69.8	12,046	30.2	39,910
Ethnicity					
Malay	16,605	74.7	5,631	25.3	22,236
Chinese	4,994	63.3	2,896	36.7	7,890
Indian	2,205	67.7	1,054	32.3	3,259
Other Bumi	2,981	64.1	1,667	35.9	4,648
Others	1,079	57.5	798	42.5	1,877
Total	27,864	69.8	12,046	30.2	39,910
Religion					
Islam	19,101	73.1	7,039	26.9	26,140
Christian	2,459	67.5	1,185	32.5	3,644
Buddha	4,202	61.9	2,586	38.1	6,788
Hindu	1,803	66.9	893	33.1	2,696
Others	261	45.7	310	54.3	571
Unclassified	38	53.5	33	46.5	71
Total	27,864	69.8	12,046	30.2	39,910
Citizenship					
Malaysian	26,668	71.0	10,916	29.0	37,584
Non-Malaysian	1,196	51.4	1,130	48.6	2,236
Total	27,864	69.8	12,046	30.2	39,910
Marital Status					
Single	10,617	84.7	1,923	15.3	12,540
Married	16,355	66.6	8,194	33.4	24,549
Divorce	339	45.3	410	54.7	749
Widow	451	23.8	1,443	76.2	1,894
Unclassified	102	57.3	76	42.7	178
Total	27,864	69.8	12,046	30.2	39,910

Table 4: Socio-demographic characteristics of respondents by sex, Malaysia 2006

Socio-demographic characteristics	Male		Female		Total	
	Number	%	Number	%	Number	%
Overall	13,013	46.7	14,851	53.3	27,864	100.0
Mean (years)	34.1		32.3		33.1	
Median (years)	33.0		31.0		31.0	
Mode (years)	13.0		14.0		14.0	
Citizenship						
Malaysian	12,512	96.2	14,156	95.3	26,666	95.7
Non-Malaysian	501	3.8	695	4.7	1,198	4.3
Total	13,013	100.0	14,851	100.0	27,864	100.0
Age group						
13-14	980	7.5	1,057	7.1	2,037	7.3
15-19	2,054	15.8	2,191	14.8	4,245	15.2
20-24	1,429	11.0	1,879	12.7	3,308	11.9
25-29	1,302	10.0	1,851	12.5	3,153	11.3
30-34	1,252	9.6	1,686	11.4	2,938	10.5
35-39	1,219	9.4	1,616	10.9	2,835	10.2
40-44	1,310	10.1	1,572	10.6	2,882	10.3
45-49	1,068	8.2	1,246	8.4	2,314	8.3
50-54	911	7.0	841	5.7	1,752	6.3
55-59	698	5.4	519	3.5	1,217	4.4
60-64	400	3.1	220	1.5	620	2.2
65-69	236	1.8	125	0.8	361	1.3
70-74	104	0.8	31	0.2	135	0.5
75-79	41	0.3	12	0.1	53	0.2
80+	9	0.1	5	0.03	14	0.1
Total	13,013	100.0	14,851	100.0	27,864	100.0
Ethnicity						
Malays	7,777	59.8	8,828	59.4	16,605	59.6
Chinese	2,369	18.2	2,625	17.7	4,994	17.9
Indian	994	7.6	1,211	8.2	2,205	7.9
Other bumis	1,414	10.9	1,567	10.6	2,981	10.7
Others	459	3.5	620	4.2	1,079	3.9
Total	13,013	100.0	14,851	100.0	27,864	100.0
Marital status						
Not married	5287	40.6	5330	35.9	10617	38.1
Married	7539	57.9	8816	59.4	16355	58.7
Divorcee	77	0.6	262	1.8	339	1.2
Widow/Widower	48	0.4	403	2.7	451	1.6
Unclassified	62	0.5	40	0.3	102	0.4
Total	13,013	100.0	14,851	100.0	27,864	100.0
Residence						
Urban	7,828	60.2	9,456	63.7	17,284	62.0
Rural	5,185	39.8	5,395	36.3	10,580	38.0
Total	13,013	100.0	14,851	100.0	27,864	100.0
Religion						
Islam	8,896	68.4	10,205	68.7	19,101	68.6
Christian	1,138	8.7	1,321	8.9	2,459	8.8
Buddha	1,998	15.4	2,204	14.8	4,202	15.1
Hindu	830	6.4	973	6.6	1,803	6.5
Others	132	1.0	129	0.9	261	0.9
Unclassified	19	0.1	19	0.1	38	0.1
Total	13,013	100.0	14,851	100.0	27,864	100.0

Table 4: Socio-demographic characteristics of respondents by sex, Malaysia 2006 (continue)

Socio-demographic characteristics		Male		Female		Total	
		Number	%	Number	%	Number	%
Education	None	71	0.5	125	0.8	196	0.7
	Primary	3,898	30.0	4,473	30.1	8,371	30.0
	Secondary	7,442	57.2	8,497	57.2	15,939	57.2
	Tertiary	1,493	11.5	1,643	11.1	3,136	11.3
	Unclassified	109	0.8	113	0.8	222	0.8
	Total	13,013	100.0	14,851	100.0	27,864	100.0
Occupation	Civil servant	1,558	12.8	1,369	9.4	2,927	10.9
	Housewife	-	-	4,781	32.8	4,781	17.9
	Private sector employee	4,718	38.8	3,490	23.9	8,208	30.7
	Self-employed	2,667	21.9	1,275	8.7	3,942	14.7
	Still studying	2,387	19.6	2,713	18.6	5,100	19.1
	Unemployed	843	6.9	957	6.6	1,800	6.7
	Total	12,173	100.0	14,585	100.0	26,758	100.0

Table 5: Sexual orientation by gender for various socio-demographic characteristics of respondents, Malaysia 2006

Age group	Gender	Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
						Upper	Lower
13-14	Male	heterosexual	6	2,040	23.0	10.6	42.8
		homosexual	13	4,734	53.3	34.1	71.6
		bisexual	6	2,109	23.7	10.9	44.1
		Total	25	8,883	100.0	100.0	100.0
	Female	heterosexual	6	2,443	45.5	20.9	72.6
		homosexual	6	2,178	40.6	18.2	67.6
		bisexual	2	748	13.9	3.4	42.6
		Total	14	5,369	100.0	100.0	100.0
15-19	Male	heterosexual	72	27,782	72.1	62.3	80.2
		homosexual	11	3,877	10.1	5.7	17.2
		bisexual	17	6,857	17.8	11.2	27.1
		Total	100	38,516	100.0	100.0	100.0
	Female	heterosexual	104	38,514	83.1	75.3	88.8
		homosexual	9	3,516	7.6	4.0	14.0
		bisexual	11	4,312	9.3	5.2	16.0
		Total	124	46,342	100.0	100.0	100.0
20-24	Male	heterosexual	265	99,967	93.0	89.3	95.5
		homosexual	5	1,996	1.9	0.8	4.4
		bisexual	14	5,518	5.1	3.0	8.5
		Total	284	107,481	100.0	100.0	100.0
	Female	heterosexual	565	210,125	95.3	93.2	96.7
		homosexual	11	4,115	1.9	1.0	3.4
		bisexual	17	6,307	2.9	1.8	4.6
		Total	593	220,548	100.0	100.0	100.0
25-29	Male	heterosexual	690	262,136	96.6	94.9	97.7
		homosexual	10	3,960	1.5	0.8	2.7
		bisexual	14	5,321	2.0	1.1	3.4
		Total	714	271,417	100.0	100.0	100.0
	Female	heterosexual	1,170	442,678	95.8	94.6	96.8
		homosexual	24	8,594	1.9	1.2	2.8
		bisexual	29	10,748	2.3	1.6	3.3
		Total	1,223	462,019	100.0	100.0	100.0
30-34	Male	heterosexual	927	350,191	96.1	94.7	97.2
		homosexual	20	7,485	2.1	1.3	3.2
		bisexual	18	6,554	1.8	1.1	2.8
		Total	965	364,231	100.0	100.0	100.0
	Female	heterosexual	1,270	478,137	95.6	94.3	96.6
		homosexual	29	10,513	2.1	1.5	3.0
		bisexual	31	11,642	2.3	1.6	3.3
		Total	1,330	500,292	100.0	100.0	100.0

Table 5: Sexual orientation by gender for various socio-demographic characteristics of respondents, Malaysia 2006 (continue)

Age group	Gender	Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
						Upper	Lower
35-39	Male	heterosexual	988	369,413	96.4	95.1	97.4
		homosexual	20	6,938	1.8	1.2	2.8
		bisexual	18	6,703	1.7	1.1	2.8
		Total	1,026	383,054	100.0	100.0	100.0
	Female	heterosexual	1,298	489,897	97.3	96.3	98.1
		homosexual	13	4,960	1.0	0.6	1.7
		bisexual	23	8,530	1.7	1.1	2.6
		Total	1,334	503,387	100.0	100.0	100.0
40-44	Male	heterosexual	1,074	403,695	97.2	96.1	98.0
		homosexual	16	6,159	1.5	0.9	2.4
		bisexual	15	5,369	1.3	0.8	2.1
		Total	1,105	415,223	100.0	100.0	100.0
	Female	heterosexual	1,234	471,612	96.4	95.1	97.3
		homosexual	20	7,795	1.6	1.0	2.5
		bisexual	27	10,061	2.1	1.4	3.0
		Total	1,281	489,468	100.0	100.0	100.0
45-49	Male	heterosexual	887	337,153	96.7	95.3	97.7
		homosexual	13	4,930	1.4	0.8	2.5
		bisexual	18	6,620	1.9	1.2	3.0
		Total	918	348,702	100.0	100.0	100.0
	Female	heterosexual	938	361,201	96.2	94.7	97.2
		homosexual	23	8,706	2.3	1.5	3.5
		bisexual	16	5,755	1.5	0.9	2.5
		Total	977	375,662	100.0	100.0	100.0
50-54	Male	heterosexual	736	279,362	96.0	94.3	97.2
		homosexual	11	4,362	1.5	0.8	2.7
		bisexual	20	7,260	2.5	1.6	4.0
		Total	767	290,983	100.0	100.0	100.0
	Female	heterosexual	639	248,378	95.1	93.2	96.5
		homosexual	20	8,020	3.1	2.0	4.7
		bisexual	13	4,733	1.8	1.1	3.1
		Total	672	261,131	100.0	100.0	100.0
55-59	Male	heterosexual	561	216,817	96.4	94.5	97.6
		homosexual	10	3,758	1.7	0.9	3.1
		bisexual	12	4,423	2.0	1.1	3.4
		Total	583	224,998	100.0	100.0	100.0
	Female	heterosexual	374	144,394	95.1	92.5	96.9
		homosexual	12	4,455	2.9	1.7	5.1
		bisexual	8	2,943	1.9	1.0	3.9
		Total	394	151,792	100.0	100.0	100.0

Table 5: Sexual orientation by gender for various socio-demographic characteristics of respondents, Malaysia 2006 (continue)

Age group	Gender	Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
						Upper	Lower
60-64	Male	heterosexual	327	123,298	98.5	96.5	99.4
		homosexual	1	400	0.3	0.0	2.2
		bisexual	4	1,451	1.2	0.4	3.0
		Total	332	125,149	100.0	100.0	100.0
	Female	heterosexual	152	60,225	97.5	93.4	99.0
		homosexual	2	718	1.2	0.3	4.6
		bisexual	2	852	1.4	0.3	5.3
		Total	156	61,795	100.0	100.0	100.0
65-69	Male	heterosexual	187	72,523	95.9	92.0	97.9
		homosexual	6	2,276	3.0	1.4	6.6
		bisexual	2	826	1.1	0.3	4.3
		Total	195	75,625	100.0	100.0	100.0
	Female	heterosexual	81	32,445	96.8	90.3	99.0
		homosexual	2	645	1.9	0.5	7.4
		bisexual	1	434	1.3	0.2	8.6
		Total	84	33,524	100.0	100.0	100.0
70-74	Male	heterosexual	75	28,676	96.5	89.6	98.9
		homosexual	1	335	1.1	0.2	7.6
		bisexual	2	716	2.4	0.6	9.1
		Total	78	29,727	100.0	100.0	100.0
	Female	heterosexual	22	8,589	96.4	78.0	99.5
		homosexual	1	324	3.6	0.5	22.0
		Total	23	8,914	100.0	100.0	100.0
		75-79	Male	heterosexual	33	13,204	100.0
Total	33			13,204	100.0	100.0	100.0
Female	heterosexual		4	1,680	100.0	0.0	100.0
	Total		4	1,680	100.0	100.0	100.0
80+	Male	heterosexual	6	2,229	100.0	100.0	100.0
		Total	6	2,229	100.0	100.0	100.0
	Female	heterosexual	3	1,158	63.6	22.4	91.4
		homosexual	2	662	36.4	8.6	77.6
Total	5	1,820	100.0	100.0	100.0		

Table 5: Sexual orientation by gender for various socio-demographic characteristics of respondents, Malaysia 2006 (continue)

Ethnicity	Gender	Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
						Upper	Lower
Malays	Male	heterosexual	3,934	1,482,593	97.2	96.7	97.7
		homosexual	53	18,807	1.2	0.9	1.6
		bisexual	66	23,467	1.5	1.2	2.0
		Total	4,053	1,524,867	100.0	100.0	100.0
	Female	heterosexual	4,601	1,741,189	96.6	96.1	97.1
		homosexual	83	30,574	1.7	1.4	2.1
		bisexual	85	30,564	1.7	1.4	2.1
		Total	4,769	1,802,327	100.0	100.0	100.0
Chinese	Male	heterosexual	1,398	561,885	94.7	93.4	95.8
		homosexual	47	18,742	3.2	2.4	4.2
		bisexual	31	12,616	2.1	1.5	3.0
		Total	1,476	593,243	100.0	100.0	100.0
	Female	heterosexual	1,501	607,412	95.2	94.0	96.2
		homosexual	52	20,589	3.2	2.4	4.3
		bisexual	23	9,811	1.5	1.0	2.3
		Total	1,576	637,812	100.0	100.0	100.0
Indian	Male	heterosexual	531	214,634	90.7	87.6	93.1
		homosexual	16	6,393	2.7	1.6	4.4
		bisexual	41	15,636	6.6	4.7	9.1
		Total	588	236,664	100.0	100.0	100.0
	Female	heterosexual	608	247,133	92.8	90.2	94.8
		homosexual	11	4,538	1.7	0.9	3.0
		bisexual	38	14,609	5.5	3.7	8.0
		Total	657	266,281	100.0	100.0	100.0
Other bumis	Male	heterosexual	747	248,381	95.4	93.5	96.7
		homosexual	14	4,919	1.9	1.1	3.2
		bisexual	20	7,139	2.7	1.7	4.3
		Total	781	260,439	100.0	100.0	100.0
	Female	heterosexual	820	275,348	93.5	91.5	95.1
		homosexual	24	8,060	2.7	1.8	4.1
		bisexual	31	11,063	3.8	2.6	5.4
		Total	875	294,471	100.0	100.0	100.0
Others	Male	heterosexual	224	80,992	96.2	92.8	98.0
		homosexual	7	2,350	2.8	1.3	5.8
		bisexual	2	868	1.0	0.3	4.0
		Total	233	84,209	100.0	100.0	100.0
	Female	heterosexual	330	120,392	98.0	95.8	99.1
		homosexual	4	1,443	1.2	0.4	3.1
		bisexual	3	1,019	0.8	0.3	2.6
		Total	337	122,854	100.0	100.0	100.0

Table 5: Socio-demographic characteristics of respondents by type of sexual orientation and gender, Malaysia 2006(continue)

Residence	Gender	Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
						Upper	Lower
Urban	Male	heterosexual	4,378	1,799,440	96.4	95.7	96.9
		homosexual	80	32,748	1.8	1.4	2.2
		bisexual	85	35,173	1.9	1.5	2.4
		Total	4,543	1,867,360	100.0	100.0	100.0
	Female	heterosexual	5,224	2,147,692	96.3	95.7	96.8
		homosexual	111	44,869	2.0	1.7	2.4
		bisexual	92	38,204	1.7	1.4	2.1
		Total	5,427	2,230,765	100.0	100.0	100.0
Rural	Male	heterosexual	2,456	789,046	94.8	93.8	95.7
		homosexual	57	18,463	2.2	1.7	2.9
		bisexual	75	24,554	3.0	2.4	3.7
		Total	2,588	832,062	100.0	100.0	100.0
	Female	heterosexual	2,636	843,783	94.5	93.6	95.3
		homosexual	63	20,334	2.3	1.8	2.9
		bisexual	88	28,862	3.2	2.6	4.0
		Total	2,787	892,979	100.0	100.0	100.0

Table 5: Socio-demographic characteristics of respondents by type of sexual orientation and gender, Malaysia 2006 (continue)

Religion	Gender	Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
						Upper	Lower
Islam	Male	heterosexual	4,498	1,670,911	97.2	96.6	97.6
		homosexual	63	21,956	1.3	1.0	1.6
		bisexual	76	27,006	1.6	1.3	2.0
		Total	4,637	1,719,873	100.0	100.0	100.0
	Female	heterosexual	5,306	1,981,735	96.6	96.1	97.0
		homosexual	99	35,922	1.8	1.4	2.1
bisexual		97	34,570	1.7	1.4	2.1	
	Total	5,502	2,052,228	100.0	100.0	100.0	
Christian	Male	heterosexual	654	241,452	95.8	93.8	97.1
		homosexual	14	5,416	2.1	1.3	3.7
		bisexual	14	5,298	2.1	1.2	3.6
		Total	682	252,167	100.0	100.0	100.0
	Female	heterosexual	746	277,186	94.2	92.1	95.7
		homosexual	21	7,738	2.6	1.7	4.0
bisexual		25	9,404	3.2	2.1	4.8	
	Total	792	294,329	100.0	100.0	100.0	
Buddha	Male	heterosexual	1,177	473,097	94.1	92.5	95.3
		homosexual	43	17,178	3.4	2.5	4.6
		bisexual	31	12,583	2.5	1.8	3.6
		Total	1,251	502,858	100.0	100.0	100.0
	Female	heterosexual	1,252	507,839	95.1	93.7	96.2
		homosexual	42	16,515	3.1	2.2	4.3
bisexual		23	9,580	1.8	1.2	2.7	
	Total	1,317	533,933	100.0	100.0	100.0	
Hindu	Male	heterosexual	428	173,315	89.6	86.2	92.3
		homosexual	16	6,336	3.3	2.0	5.4
		bisexual	36	13,697	7.1	5.1	9.8
		Total	480	193,349	100.0	100.0	100.0
	Female	heterosexual	477	194,025	92.4	89.4	94.6
		homosexual	10	4,233	2.0	1.1	3.7
bisexual		30	11,674	5.6	3.7	8.4	
	Total	517	209,931	100.0	100.0	100.0	
Others	Male	heterosexual	71	27,551	95.0	87.4	98.1
		homosexual	1	323	1.1	0.2	7.5
		bisexual	3	1,142	3.9	1.3	11.3
		Total	75	29,017	100.0	100.0	100.0
	Female	heterosexual	73	28,379	91.5	83.4	95.9
		homosexual	2	794	2.6	0.6	9.6
bisexual		5	1,838	5.9	2.5	13.5	
	Total	80	31,011	100.0	100.0	100.0	
Unclassified	Male	heterosexual	6	2,159	100.0	0.0	100.0
		Total	6	2,159	100.0	100.0	100.0
	Female	heterosexual	6	2,312	100.0	0.0	100.0
		Total	6	2,312	100.0	100.0	100.0

Table 5: Socio-demographic characteristics of respondents by type of sexual orientation and gender, Malaysia 2006(continue)

Education	Gender	Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
						Upper	Lower
None	Male	heterosexual	39	13,679	91.3	78.9	96.7
		homosexual	1	323	2.2	0.3	13.8
		bisexual	3	976	6.5	2.1	18.5
		Total	43	14,978	100.0	100.0	100.0
	Female	heterosexual	77	27,760	87.8	79.0	93.3
		homosexual	10	3,449	10.9	5.9	19.4
		bisexual	1	392	1.2	0.2	8.3
		Total	88	31,602	100.0	100.0	100.0
Primary	Male	heterosexual	1,794	662,324	93.6	92.4	94.7
		homosexual	48	17,991	2.5	1.9	3.4
		bisexual	74	26,998	3.8	3.0	4.8
		Total	1,916	707,314	100.0	100.0	100.0
	Female	heterosexual	2,048	761,699	94.5	93.5	95.4
		homosexual	62	22,952	2.8	2.2	3.6
		bisexual	56	21,095	2.6	2.0	3.4
		Total	2,166	805,746	100.0	100.0	100.0
Secondary	Male	heterosexual	3,940	1,494,395	96.5	95.8	97.0
		homosexual	72	26,903	1.7	1.4	2.2
		bisexual	73	27,887	1.8	1.4	2.3
		Total	4,085	1,549,185	100.0	100.0	100.0
	Female	heterosexual	4,722	1,802,265	95.8	95.2	96.3
		homosexual	89	34,056	1.8	1.5	2.2
		bisexual	122	45,185	2.4	2.0	2.9
		Total	4,933	1,881,506	100.0	100.0	100.0
Tertiary	Male	heterosexual	1,005	398,262	97.9	96.9	98.6
		homosexual	14	5,231	1.3	0.8	2.2
		bisexual	8	3,150	0.8	0.4	1.6
		Total	1,027	406,643	100.0	100.0	100.0
	Female	heterosexual	962	380,084	98.7	97.8	99.2
		homosexual	13	4,746	1.2	0.7	2.1
		bisexual	1	394	0.1	0.0	0.7
		Total	976	385,223	100.0	100.0	100.0
Unclassified	Male	heterosexual	56	19,826	93.1	82.9	97.4
		homosexual	2	762	3.6	0.9	13.2
		bisexual	2	715	3.4	0.8	12.6
		Total	60	21,302	100.0	100.0	100.0
	Female	heterosexual	51	19,667	100.0	0.0	100.0
		Total	51	19,667	100.0	100.0	100.0

Table 5: Socio-demographic characteristics of respondents by type of sexual orientation and gender, Malaysia 2006(continue)

Occupation	Gender	Sexual orientation	n	Estimated population	Prevalence (%)	95% CI	
						Upper	Lower
Civil servant	Male	heterosexual	1,250	472,187	97.4	96.5	98.2
		homosexual	15	5,352	1.1	0.7	1.8
		bisexual	19	7,009	1.4	0.9	2.3
		Total	1,284	484,548	100.0	100.0	100.0
	Female	heterosexual	968	366,663	97.7	96.6	98.5
		homosexual	15	5,507	1.5	0.9	2.4
		bisexual	8	3,045	0.8	0.4	1.6
		Total	991	375,215	100.0	100.0	100.0
Private sector employee	Male	heterosexual	2,824	1,085,709	96.2	95.4	96.8
		homosexual	45	17,587	1.6	1.2	2.1
		bisexual	69	25,759	2.3	1.8	2.9
		Total	2,938	1,129,055	100.0	100.0	100.0
	Female	heterosexual	1,708	667,526	96.2	95.3	97.0
		homosexual	30	11,534	1.7	1.2	2.4
		bisexual	38	14,481	2.1	1.5	2.9
		Total	1,776	693,540	100.0	100.0	100.0
Self-employed	Male	heterosexual	1,843	674,405	95.9	94.9	96.7
		homosexual	40	14,611	2.1	1.5	2.9
		bisexual	38	13,944	2.0	1.4	2.7
		Total	1,921	702,961	100.0	100.0	100.0
	Female	heterosexual	921	346,174	96.1	94.7	97.2
		homosexual	18	6,933	1.9	1.2	3.0
		bisexual	19	7,118	2.0	1.3	3.1
		Total	958	360,225	100.0	100.0	100.0
Still studying	Male	heterosexual	50	19,966	60.8	50.0	70.6
		homosexual	19	6,981	21.3	13.8	31.2
		bisexual	15	5,903	18.0	11.1	27.7
		Total	84	32,850	100.0	100.0	100.0
	Female	heterosexual	58	22,632	80.2	69.4	87.8
		homosexual	10	3,656	12.9	7.0	22.6
		bisexual	5	1,944	6.9	2.9	15.6
		Total	73	28,231	100.0	100.0	100.0
Unemployed	Male	heterosexual	227	86,670	91.8	87.5	94.7
		homosexual	9	3,272	3.5	1.8	6.6
		bisexual	12	4,449	4.7	2.7	8.1
		Total	248	94,390	100.0	100.0	100.0
	Female	heterosexual	191	72,779	90.2	85.2	93.6
		homosexual	14	5,194	6.4	3.8	10.7
		bisexual	7	2,752	3.4	1.6	7.0
		Total	212	80,725	100.0	100.0	100.0
Housewife	Female	heterosexual	3,866	1,456,791	95.5	94.8	96.1
		homosexual	84	31,158	2.0	1.7	2.5
		bisexual	101	36,966	2.4	2.0	3.0
		Total	4,051	1,524,915	100.0	100.0	100.0

Table 6(a): Distribution of single sexual practices by socio-demographic characteristics, Malaysia 2006

Socio-demographic characteristics	Single practice					
	Anal	(%)	Oral	(%)	Vaginal	(%)
Age group						
13-14	1	2.7	1	1.4	2	0.0
15-19	2	5.4	4	5.4	31	0.8
20-24	4	10.8	6	8.1	250	6.1
25-29	5	13.5	12	16.2	668	16.4
30-34	3	8.1	8	10.8	723	17.7
35-39	3	8.1	6	8.1	639	15.7
40-44	5	13.5	9	12.2	582	14.3
45-49	4	10.8	14	18.9	434	10.6
50 and above	10	27.0	14	18.9	747	18.3
Total	37	100.0	74	100.0	4706	100.0
Ethnicity						
Malays	15	40.5	22	29.7	2377	58.3
Chinese	10	27.0	30	40.5	841	20.6
Indian	7	18.9	13	17.6	285	7.0
Other bumis	4	10.8	6	8.1	425	10.4
Others	1	2.7	3	4.1	148	3.6
Total	37	100.0	74	100.0	4706	100.0
Residence						
Urban	22	59.5	52	70.3	2675	65.6
Rural	15	40.5	22	29.7	1401	34.4
Total	37	100.0	74	100.0	4076	100.0
Religion						
Islam	19	51.4	26	35.1	2720	66.7
Christian	3	8.1	8	10.8	406	10.0
Buddha	8	21.6	27	36.5	697	17.1
Hindu	7	18.9	12	16.2	208	5.1
Others	0	0.0	1	1.4	42	1.0
Unclassified	0	0.0	0	0.0	3	0.1
Education						
None	1	2.7	0	-	41	1
Primary	15	40.5	19	25.7	910	22.3
Secondary	15	40.5	48	64.9	2430	59.6
Tertiary	6	16.2	7	9.5	668	16.4
Unclassified	0	-	0	-	27	0.7
Occupation						
Civil servant	3	8.3	9	12.3	742	19.1
Housewife	13	36.1	15	20.5	1066	27.5
Private sector	13	36.1	26	35.6	1237	31.9
Self-employed	5	13.9	15	20.5	718	18.5
Still studying	2	5.6	4	5.5	15	0.4
Unemployed	0	-	4	5.5	102	2.6
Total	36	100.0	734	100.0	3880	100.0

Table 6(b): Distribution of dual sexual practices by socio-demographic characteristics, Malaysia 2006

Socio-demographic characteristics	Dual practice					
	Anal + oral	(%)	Vaginal + anal	(%)	Vaginal + oral	(%)
Age group						
13-14	0	-	0	-	1	0.8
15-19	1	14.3	0	-	4	3.4
20-24	0	-	2	33.3	4	3.4
25-29	1	14.3	1	16.7	26	22.0
30-34	3	42.9	1	16.7	28	23.7
35-39	0	-	1	16.7	19	16.1
40-44	0	-	0	-	20	16.9
45-49	0	-	0	-	7	5.9
50 and above	2	28.6	1	16.7	9	7.6
Total	7	100.0	6	100.0	118	100.0
Ethnicity						
Malays	1	14.3	2	33.3	59	50.0
Chinese	3	42.9	2	33.3	26	22.0
Indian	2	28.6	2	33.3	14	11.9
Other bumis	1	14.3	0	-	15	12.7
Others	0	-	0	-	4	3.4
Total	7	100.0	6	100.0	118	100.0
Residence						
Urban	6	85.7	5	83.3	92	78.0
Rural	1	14.3	1	16.7	26	22.0
Total	7	100.0	6	100.0	118	100.0
Religion						
Islam	1	14.3	2	33.3	67	56.8
Christian	0	-	0	-	18	15.3
Buddha	3	42.9	2	33.3	20	16.9
Hindu	3	42.9	1	16.7	12	10.2
Others	0	-	1	16.7	1	0.8
Unclassified	0	-	0	-	0	-
Total	7	100.0	6	100.0	118	100.0
Education						
None	0	-	0	-	0	-
Primary	0	-	0	-	12	10.2
Secondary	3	42.9	5	83.3	60	50.8
Tertiary	2	28.6	1	16.7	46	39.0
Unclassified	2	28.6	0	-	0	-
Total	7	100.0	6	100.0	118	100.0
Occupation						
Civil servant	1	20.0	0	-	20	17.4
Housewife	0	-	1	16.7	14	12.2
Private sector	3	60.0	3	50.0	60	52.2
Self-employed	1	20.0	0	-	18	15.7
Still studying	0	-	2	33.3	2	1.7
Unemployed	0	-	0	-	1	0.9
Total	5	100.0	6	100.0	115	100.0

**Table 7: Awareness of sexually transmitted infection (STI)
by socio-demographic characteristics, Malaysia 2006**

Socio-demographic characteristics		n	Estimated population	Prevalence (%)	95% CI	
					Lower	Upper
Overall		20,914	7,904,559	79.4	78.7	80.0
Citizenship	Malaysian	20,207	7,640,976	80.0	79.4	80.6
	Non-Malaysian	707	263,583	64.5	61.1	67.9
Gender	Male	9,665	3,635,109	78.7	77.9	79.5
	Female	11,249	4,269,450	79.9	79.1	80.7
Age group	13-14	950	353,752	48.3	46.0	50.6
	15-19	2,919	1,084,366	71.0	69.4	72.5
	20-24	2,562	967,329	80.9	79.4	82.3
	25-29	2,604	989,029	86.3	84.9	87.5
	30-34	2,365	888,471	84.6	83.1	85.9
	35-39	2,315	870,156	86.7	85.3	88.0
	40-44	2,349	890,024	86.5	85.1	87.9
	45-49	1,855	708,856	85.5	83.9	87.0
	50-54	1,312	501,482	82.1	80.0	84.0
	55-59	900	346,949	80.5	77.9	82.8
	60-64	417	160,181	76.9	73.0	80.4
	65-69	244	95,620	77.4	72.3	81.9
	70-74	82	32,035	68.1	59.2	75.9
	75-79	31	12,794	65.4	51.0	77.3
80+	9	3,516	76.1	45.8	92.3	
Marital status	Not married	7,247	2,723,515	70.7	69.7	71.8
	Married	13,038	4,938,124	85.2	84.5	85.9
	Divorcee	258	101,504	83.6	78.9	87.4
	Widow/Widower	306	117,019	73.2	68.5	77.4
	Unclassified	65	24,398	76.8	66.3	84.7
Ethnicity	Malays	12,917	4,853,247	82.1	81.4	82.9
	Chinese	3,674	1,481,036	77.9	76.3	79.3
	Indian	1,477	596,054	71.0	68.5	73.4
	Other bumis	2,162	722,403	77.2	75.2	79.0
	Others	684	251,819	67.9	64.3	71.2
Residence	Urban	13,171	5,411,915	80.0	79.2	80.8
	Rural	7,743	2,492,644	78.0	76.9	79.1
States	Johor	2,531	985,447	80.9	79.1	82.5
	Kedah	1,533	555,873	80.0	78.0	81.9
	Kelantan	1,245	413,784	78.3	75.4	80.9
	Melaka	609	251,125	83.7	80.4	86.6
	N.Sembilan	800	290,229	78.2	74.9	81.2
	Pahang	1,136	440,699	83.8	81.3	86.1
	Pulau Pinang	1,224	434,447	80.3	77.5	82.9
	Perak	1,412	599,674	73.4	70.7	76.0
	Perlis	181	66,429	77.0	70.2	82.7
	Selangor	4,203	1,738,625	80.4	78.9	81.8
	Terengganu	907	312,849	81.2	77.8	84.1
	Sabah	2,125	653,068	73.0	70.8	75.1
	Sarawak	1,530	612,031	80.0	77.6	82.3
	W.P Kuala Lumpur	1,099	432,555	82.9	80.7	84.9
W.P Labuan	379	117,723	80.0	72.5	85.8	

Table 8: Knowledgeable on HIV sexual transmission by socio-demographic characteristics, Malaysia 2006

Socio-demographic characteristics	n	Estimated population	Estimate (%)	95% CI	
				Lower	Upper
Overall	12,784	4,828,381	49.7	48.9	50.5
Citizenship					
Malaysian	12,447	4,701,042	50.4	49.5	51.2
Non-Malaysian	337	127,339	32.9	29.0	37.1
Gender					
Male	5,778	2,177,169	48.3	47.3	49.4
Female	7,006	2,651,212	50.8	49.8	51.8
Age group					
13-14	649	241,698	33.4	31.3	35.5
15-19	1,947	722,709	48.0	46.3	49.6
20-24	1,745	658,656	56.0	54.0	57.9
25-29	1,766	670,122	59.4	57.4	61.3
30-34	1,525	572,512	56.4	54.3	58.4
35-39	1,354	510,185	52.1	50.0	54.2
40-44	1,355	511,998	51.4	49.4	53.5
45-49	993	379,396	47.6	45.3	49.9
50-54	657	253,775	42.5	39.9	45.2
55-59	429	165,991	40.8	37.7	44.0
60-64	197	75,869	37.6	33.5	42.0
65-69	114	44,836	36.7	31.2	42.5
70-74	37	14,130	30.8	22.8	40.2
75-79	13	5,472	29.2	17.7	44.2
80+	3	1,032	24.6	7.8	55.7
Marital status					
Not married	4,946	1,858,088	49.0	47.8	50.2
Married	7,493	2,836,538	50.5	49.4	51.5
Divorcee	132	51,750	44.4	38.7	50.4
Widow/Widower	164	63,815	41.2	36.4	46.1
Unclassified	49	18,190	57.0	45.7	67.6
Ethnicity					
Malays	8,312	3,114,026	53.8	52.8	54.8
Chinese	2,102	848,510	45.7	44.0	47.5
Indian	864	349,468	43.1	40.5	45.7
Other bumis	1,114	370,319	41.0	38.8	43.2
Others	392	146,059	40.9	36.8	45.2
Residence					
Urban	8,114	3,324,432	50.4	49.4	51.5
Rural	4,670	1,503,950	48.1	46.8	49.4
Religion					
Islam	9,242	3,429,554	52.4	51.4	53.4
Christian	1,021	380,000	44.9	42.6	47.3
Buddha	1,730	699,032	45.0	43.1	46.9
Hindu	683	276,819	41.6	38.8	44.5
Others	89	35,924	37.7	31.1	44.7
Unclassified	19	7,052	52.0	34.8	68.7

Table 8: Knowledgeable on HIV sexual transmission by socio-demographic characteristics, Malaysia 2006 (continue)

Socio-demographic characteristics	n	Estimated population	Estimate (%)	95% CI	
				Lower	Upper
State					
Johor	1,393	542,314	46.4	44.1	48.7
Kedah	950	345,046	51.0	48.5	53.6
Kelantan	897	298,183	57.4	54.2	60.6
Melaka	306	124,500	41.8	38.1	45.6
N.Sembilan	450	162,075	45.8	41.7	50.0
Pahang	703	272,924	52.8	48.9	56.7
Pulau Pinang	790	280,217	52.9	49.3	56.5
Perak	933	397,860	49.2	46.2	52.1
Perlis	129	48,151	56.2	48.1	64.0
Selangor	2,604	1,079,847	50.6	48.8	52.4
Terengganu	682	234,315	61.3	57.6	64.9
Sabah	1,209	372,503	43.8	41.4	46.3
Sarawak	774	310,768	41.2	38.5	44.0
W.P Kuala Lumpur	723	284,566	56.9	53.7	60.0
W.P Labuan	241	75,112	53.0	46.2	59.7
Education					
None	46	16,643	30.1	23.2	38.0
Primary	3,030	1,125,679	40.3	39.0	41.5
Secondary	7,393	2,778,341	49.6	48.7	50.6
Tertiary	2,227	874,651	73.4	71.6	75.1
Unclassified	88	33,067	42.6	35.5	50.0
Occupation					
Civil servant	1,802	681,370	65.4	63.4	67.3
Housewife	1,954	732,839	45.3	43.8	46.9
Private sector employee	3,900	1,502,937	51.4	50.1	52.8
Self-employed	1,658	609,333	47.1	45.3	48.9
Still studying	2,213	833,379	45.1	43.6	46.7
Unemployed	800	290,033	47.8	45.3	50.4
Household Income					
Less than RM 400	488	175,041	39.6	36.4	43.0
RM 400 - RM 699	1,371	478,351	43.3	41.2	45.4
RM 700 - RM 999	1,289	468,431	45.7	43.5	47.8
RM 1000 - RM 1999	3,529	1,319,045	48.9	47.5	50.3
RM 2000 - RM 2999	2,311	893,293	51.7	49.9	53.5
RM 3000 - RM 3999	1,286	505,882	55.3	52.9	57.7
RM 4000 - RM 4999	608	237,975	52.4	48.9	55.9
RM 5000 & above	1,511	599,738	57.5	55.1	59.9
Unclassified	391	150,626	48.3	44.2	52.4

Table 9: Knowledgeable on correct usage of condom in HIV protection by socio-demographic characteristics, Malaysia 2006

Socio-demographic characteristics	n	Estimated population	Estimate (%)	95% CI	
				Lower	Upper
Overall	12,799	4,869,319	32.7	32.0	33.4
Gender					
Male	6,413	2,424,903	35.9	35.0	36.7
Female	6,386	2,444,417	30.0	29.3	30.8
Marital status					
Not married	3,853	1,459,602	31.2	30.2	32.2
Married	8,600	3,274,203	35.7	34.8	36.5
Divorcee	137	54,648	19.4	16.5	22.6
Widow/Widower	177	68,697	9.8	8.5	11.3
Unclassified	32	12,169	18.3	13.2	24.8
Race					
Malays	7,652	2,888,834	35.2	34.3	36.1
Chinese	2,710	1,093,746	34.6	33.1	36.1
Indian	842	341,308	26.2	24.2	28.3
Other bumis	1,194	398,248	25.7	23.9	27.6
Others	401	147,184	21.7	19.4	24.2
Education					
None	60	21,187	1.6	1.2	2.0
Primary	2,869	1,074,713	20.6	19.9	21.4
Secondary	7,718	2,921,817	42.5	41.6	43.4
Tertiary	2,058	815,274	61.2	59.3	63.0
Unclassified	94	36,329	24.4	20.2	29.0
Religion					
Islam	8,602	3,208,933	33.7	32.9	34.5
Christian	1,112	416,509	31.1	29.1	33.2
Buddha	2,293	925,070	34.0	32.5	35.6
Hindu	657	266,123	24.7	22.6	26.9
Others	121	47,309	21.7	17.8	26.4
Unclassified	14	5,375	19.7	12.1	30.5
Age group					
13-14	333	126,239	14.8	13.3	16.4
15-19	1,392	521,512	29.6	28.2	31.0
20-24	1,497	567,569	39.2	37.4	40.9
25-29	1,728	657,726	46.5	44.7	48.4
30-34	1,638	618,412	46.2	44.3	48.0
35-39	1,539	578,781	42.5	40.8	44.3
40-44	1,557	591,008	40.6	38.9	42.3
45-49	1,193	459,898	34.6	32.9	36.4
50-54	851	327,479	28.2	26.4	30.0
55-59	557	217,006	22.9	21.2	24.7
60-64	266	104,582	16.8	14.9	18.9
65-69	169	66,770	12.5	10.8	14.5
70-74	55	22,356	6.6	5.0	8.6
75-79	19	8,028	4.3	2.7	6.8
80+	5	1,952	1.3	0.5	3.1

Table 10(a): Knowledgeable on multiple sexual partners as high risk by socio-demographic characteristics, Malaysia 2006

Socio-demographic characteristics	n	Estimated population	Estimate (%)	95% CI	
				Lower	Upper
Overall	22,330	8,439,968	94.0	93.6	94.4
Gender:					
Male	10,172	3,829,098	93.0	92.4	93.5
Female	12,158	4,610,870	95.0	94.5	95.4
Age group					
13-14	1,414	526,860	84.3	82.3	86.0
15-19	3,387	1,255,609	92.0	90.9	92.9
20-24	2,720	1,025,678	94.6	93.7	95.4
25-29	2,646	1,005,814	95.1	94.2	96.0
30-34	2,434	915,684	96.1	95.2	96.9
35-39	2,325	872,339	95.3	94.2	96.1
40-44	2,398	909,352	96.3	95.4	97.0
45-49	1,877	718,053	96.2	95.2	97.0
50-54	1,364	524,099	95.9	94.7	96.9
55-59	914	354,556	94.2	92.4	95.6
60-64	445	171,170	91.2	88.0	93.6
65-69	273	107,630	93.6	90.0	95.9
70-74	85	33,597	88.0	79.9	93.2
75-79	39	15,933	95.5	83.5	98.9
80+	9	3,595	100.0	0.0	100.0
Ethnicity					
Malays	13,817	5,195,604	97.0	96.7	97.3
Chinese	3,808	1,535,530	86.7	85.5	87.7
Indian	1,561	635,797	89.2	87.3	90.9
Other bumis	2,356	781,572	95.2	94.1	96.0
Others	788	291,464	92.6	90.3	94.4

Table 10(b): Knowledgeable on non usage of condom as high risk by socio-demographic characteristics, Malaysia 2006

Socio-demographic characteristics	n	Estimated population	Estimate (%)	95% CI	
				Lower	Upper
Overall	18,320	6,950,675	79.4	78.7	80.0
Gender					
Male	8,336	3,153,666	78.5	77.6	79.4
Female	9,984	3,797,009	80.1	79.3	80.9
Age group					
13-14	1,052	392,791	64.6	62.1	67.0
15-19	2,503	932,956	70.0	68.4	71.5
20-24	2,181	826,371	77.3	75.7	78.9
25-29	2,243	854,579	82.6	81.1	84.1
30-34	2,073	780,789	83.9	82.4	85.4
35-39	1,962	739,145	82.7	81.0	84.3
40-44	2,023	768,363	83.5	81.8	85.0
45-49	1,593	611,384	83.9	82.1	85.6
50-54	1,170	450,726	84.9	82.7	86.8
55-59	791	307,185	84.8	82.2	87.2
60-64	373	144,348	80.6	76.6	84.0
65-69	235	93,646	83.5	78.3	87.6
70-74	81	32,208	85.7	77.0	91.5
75-79	32	12,922	80.8	64.7	90.6
80+	8	3,263	90.8	55.1	98.7
Race					
Malays	11,067	4,176,956	80.2	79.4	81.0
Chinese	3,406	1,374,139	78.2	76.7	79.6
Indian	1,299	529,715	76.1	73.5	78.6
Other bumis	1,919	635,219	79.9	77.9	81.8
Others	629	234,645	77.4	74.0	80.5

Table 10(c): Knowledgeable on sex with prostitutes as high risk by socio-demographic characteristics, Malaysia 2006

Socio-demographic characteristics	n	Estimated population	Estimate (%)	95% CI	
				Lower	Upper
Overall	22,247	8,431,155	94.8	94.5	95.1
Gender					
Male	10,264	3,874,948	94.8	94.3	95.2
Female	11,983	4,556,207	94.8	94.4	95.2
Age group					
13-14	1,355	506,040	82.3	80.3	84.1
15-19	3,310	1,231,174	91.4	90.3	92.3
20-24	2,711	1,025,736	95.3	94.4	96.1
25-29	2,657	1,012,483	96.5	95.7	97.1
30-34	2,442	920,475	97.1	96.4	97.7
35-39	2,337	879,301	96.2	95.4	96.9
40-44	2,394	909,888	97.3	96.5	97.9
45-49	1,883	721,106	97.3	96.5	97.9
50-54	1,366	525,775	97.1	96.1	97.9
55-59	928	360,604	97.3	96.0	98.1
60-64	452	174,959	95.0	92.6	96.7
65-69	272	107,608	94.5	91.2	96.6
70-74	94	37,187	98.2	92.9	99.5
75-79	38	15,651	97.8	86.0	99.7
80+	8	3,169	88.2	48.1	98.4
Race					
Malays	13,550	5,102,463	96.1	95.7	96.4
Chinese	4,039	1,631,177	92.9	92.1	93.7
Indian	1,609	655,047	92.4	90.6	93.8
Other bumis	2,279	756,829	93.7	92.6	94.7
Others	770	285,640	91.9	89.7	93.6

