



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

WOMEN'S HEALTH

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

INSTITUTE FOR PUBLIC HEALTH

ISBN 978-983-3887-20-0



9 789833 887200

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JANUARY 2008**

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ISBN: 978-983-3887-20-0

Suggested citation:

Institute for Public Health (IPH) 2008. The Third National Health and Morbidity Survey (NHMS III) 2006, Women's Health. Ministry of Health, Malaysia

Produced and Distributed by:

The Third National Health and Morbidity Survey Project,
Institute for Public Health,
National Institutes of Health,
Ministry of Health,
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Published by Institute for Public Health, Ministry of Health, Malaysia

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
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WOMEN'S HEALTH

CHAPTER I:
Breast Health Awareness

CHAPTER II:
Pap Smear

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*This research project was sponsored by Ministry of Health
{Project Code: (P42-251-170000-00500(00500099) Sub code project: 42005000990001)}
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 and 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***UTHOR'S STATEMENT**

This volume is the culmination of several months of collaborative effort by the authors who have strived to ensure the integrity of this work.

The findings in this volume have adjusted for the differences in population composition of the survey sample and the 2006 Malaysian population.

The authors welcome any inquiries, comments and suggestions for further improvement of this volume.

*A*CKNOWLEDGEMENT

This report would not have been possible without the ideas and insights gained from previous NHMS studies.

We, the researchers, wish to express sincere gratitude and appreciation to the;

- Third National Health and Morbidity Survey Steering Committee and Advisory Committee
- Directors of all State Health Departments
- Director, Family Health Development Division, Ministry of Health
- Director, Institute for Medical Research
- Director, Institute for Public Health
- Principal Investigator, Third National Health and Morbidity Survey
- All individuals who have been involved directly or indirectly in this research project.

Expertise and useful comments from reviewers and editors are gratefully acknowledged. However, any errors and omissions are those of the authors.

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ABBREVIATIONS

ACS	America Cancer Society
BSE	Breast Self Examination
CBE	Clinical Breast Examination
CC	Craniocaudal
CCT	Central Coordinating Team
DCIS	Ductal Carcinoma in Situ
DNA	Deoxyribonucleic Acid
EB	Enumeration Blocks
HPV	Human Papillomavirus
LBC	Liquid-Based Cytology
LFS	Labour Force Survey
LQ	Living Quarters
ML	Mediolateral
NHMS II	The Second National Health and Morbidity Survey
NHMS III	The Third National Health and Morbidity Survey
NPFDB	National Population and Family Development Board of Malaysia
PPS	Proportionate to size
SQL	Structured Query Language
SPSS	Statistical Package for Social Science
STATA	Statistic Data Analysis
VIA	Visual Inspection with Acetic Acid
VILI	Lugol's Iodine

CHAPTER I

BREAST HEALTH AWARENESS



ABSTRACT

The objectives of breast health awareness module is to determine the prevalence of breast screening methods among women 18 years and above by socio demographic characteristics. This is a population-based cross-sectional study covering a two-stage stratified sampling design of 18902 female aged 18 year and above using a questionnaire. The response rate for this module was 99.1%. A prevalence rate of 70.4% was reported based on breast examination by any of three methods (clinical breast examination (CBE), mammography and breast self examination (BSE). By each of the three methods, the highest prevalence was for BSE (57.1%) followed by CBE (51.8%) and mammography (7.6%). The prevalence rate of breast examination by any method was higher in Selangor (75.1%), urban locality (72.4%), age group between 30 - 34 years old (82.0%), Malays (74.4%), not married (72.3%), tertiary level of education (86.9%), and household income between RM4000 – RM4999 (78.7%). Almost sixty percents of respondents learnt about BSE. The medical personnel were the commonest source of information for BSE, reported by more than half of the respondent (56.9%), and followed by brochure (14.8%) and magazine (11.2%). More than 75% of those who did BSE, done it at least once a month. Thirty five percents did BSE more frequent than once a week, with 10.8% did it daily and 14.5% did it once a week.

1. INTRODUCTION

Breast cancer is a malignant and potentially life-threatening tumour of the breast compared to other type of breast diseases and conditions. It is also most common cancers in women and makes up 18% of all female cancers in UK (McPherson et al. 2000). It is also the most common cancer among Singapore women. For the five-year period from 1998 to 2002, the incidence of breast cancer was 67.3 per 100,000 females per year (Seow et al. 2004) and an average of 273 women died from the disease each year. Fifty-four percent of all cases occur in women 50 years of age and older. Breast cancer has been linked to a number of risk factors including age, personal or family history of breast cancer, smoking, high-fat diets and obesity.

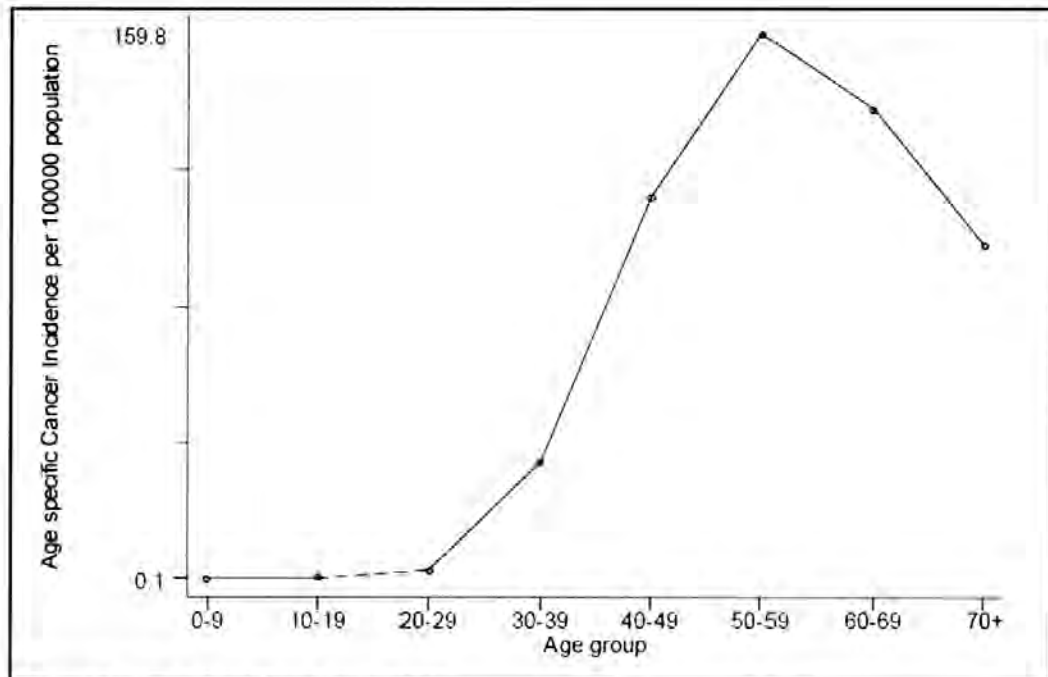
The National Cancer Registry (Lim & Halimah (eds) 2004) reported that breast cancer is the commonest cancer among Malaysian women in all ethnic groups and all age groups in females from the age of 15 years. It is also the leading cause of cancer death among women in Malaysia. In 2003, there were 3 738 female breast cancer cases reported, making it the most common cancer diagnosed in women; and accounts for 31% of newly diagnosed cancer cases in Malaysian women. The overall age-standardized incidence rate (ASR) of breast cancer in Peninsular Malaysia is estimated to be 46.2 per 100,000 populations (Lim & Halimah (eds) 2004) which is lower than the previous year i.e. ASR 52.8 per 100,000 populations, with the ethnic trend remain the same (Lim et al. (eds) 2003).

The age pattern showed a peak age specific incidence rate at 50-59 age group in all three Malays, Chinese and Indians races, and declines in older age groups. Of the cases diagnosed, 46% cases involved women below the age of 50 (Table 1.1 & Figure 1.1). Chinese women had the highest incidence with an ASR of 59.7 per 100,000 populations followed by the Indian and the Malays of 55.8 per 100,000 populations and 33.9 per 100,000 populations respectively (2nd Report of National Cancer Registry 2003). Report from the Penang Cancer Registry (1994-1998) showed 15.4% of cases presented at stage 1, 46.9% of cases presented at stage 2 and 36.7% of cases presented at stage 3 and 4 which is the advanced stage of cancer.

Table 1.1: Age specific breast cancer incidence per 100,000 populations, female, Peninsular Malaysia 2003

Age, year	No	%	Crude Incidence Rate
0-9	2	0.1	0.1
10-19	5	0.1	0.3
20-29	39	1	2.5
30-39	457	12.2	34.1
40-49	1255	33.6	111.9
50-59	1141	30.5	159.8
60-69	571	15.3	137.7
70+	268	7.2	97.9

Source: 2nd Report of National Cancer Registry 2003



Source: 2nd Report of National Cancer Registry 2003

Figure 1.1: Age specific breast cancer incidence per 100,000 populations, female, Peninsular Malaysia 2003

The Ministry of Health, Malaysia has been promoting Breast Self Examination (BSE) and annual breast examination by trained health workers as part of breast health awareness campaign since 1995. This was in tandem with the mass campaign on Cancer through Healthy Lifestyle Campaign with theme on cancer. However, the NHMS II in 1996 showed that only 34.2% women did monthly Breast Self Examination (BSE), 31.1% Clinical Breast Examination (CBE) and 3.7% mammography (MMG) (Institute of Public Health 1999). Mammography services are available in the major hospitals in the Ministry of Health but are mainly for diagnostic purposes and for screening of high risk women with past history of breast disease or positive family history.

Currently, there is no formal and regular data collection on BSE and CBE at the national level. Therefore, there is a need to include the topic on breast examination in this NHMS III. This will facilitate the evaluation and planning of breast health awareness campaign.

2. LITERATURE REVIEW

Breast cancer is the most common cancer among women worldwide. It is estimated that 1 in 8 women will develop breast cancer during an expected lifetime of 80 years. (Feuer et al. 1993). In Malaysia, breast cancer accounted for 31% of all the newly diagnosed cancers among women in 2003 (Lim & Halimah (eds) 2004). The peak age specific incidence rate is among women aged 50-59 years old for all major ethnics in Malaysia.

In Europe, breast cancer mortality has remained fairly constant, even though the incidence is still on the rise. This can be attributed to the progress in treatment and also on the improved early detection of the tumour. Breast cancer is among the few cancers (other than cervical and oral cancer) that have a good opportunity to be detected early. Breast cancer detection is currently primarily based on chance findings by women (breast self-examination), physical examination by health care professionals and mammography used for diagnosis or for routine screening (IARC 2002). Other radiological methods available are positron emission tomography scanning, electrical impedance scanning, scintimammography and thermography.

Breast cancer risk can be categorized as low to average, high, and very high. Women at low to average risk have risk factors that confer no greater than a 1.5-fold relative risk of developing breast cancer. Elevated or high risk includes women with a Gail model 5-year risk score of 1.66% or higher (defined subsequently), prior history of atypical hyperplasia, or family history that includes 1 affected first-degree relative. Very high-risk women include BRCA1 or BRCA2 gene mutation carriers and those with a history of LCIS, Ductal Carcinoma in Situ (DCIS), or irradiation before the age of 20 years.

Breast self examination (BSE) and annual breast examination by trained health care worker was promoted as part of the Healthy Lifestyle Campaign in 1995 under the 'Cancer' theme. At that time, the recommended interval for regular BSE was monthly. However, according to the guidelines for breast cancer screening (2005) by the American Cancer Society (ACS), it no longer recommends monthly BSE. It is up to the women to choose to do regular BSE, occasionally, or not to do it at all. The Society also recommends informing women about the potential benefits, limitations, and harm associated with BSE. This change in recommendation is based on the absence of evidence of the value of BSE. A large randomized controlled trial in China found no positive effect of BSE on breast cancer mortality after 10 years follow up; and has double the rate of biopsies due to false positive findings (Thomas et al. 2002). A review of BSE's sensitivity as a method for breast cancer screening was reported as low, with an estimated sensitivity of 20% to 30% (O'Malley & Fletcher 1987). Still, BSE is acknowledged as an inexpensive method that empowers women in increasing awareness about changes in their breast (Gaskie & Nashelsky 2005).

The ACS recommends women with average risk for breast cancer to undergo clinical breast examination (CBE) every 3 years between the ages of 20 to 39 and annually for those 40 years and above. The calculated sensitivity of CBE in detecting breast cancer based on randomized trials, gave an overall estimate of 54% and specificity of 94% (Elmore et al. 2005). The sensitivity of CBE was found to improve with spending more time (Campbell et al.1991) using a more systematic technique and training (Barton et al. 1999). In several studies, they even found 4.5% to 7% cases of breast cancers which were picked up by CBE technique that were missed by mammography (Green & Taplin 2003).

Mammography has been used as the principle tool for screening of breast cancer in the last two to three decades. Screening mammography is done with a combination of two standard views; craniocaudal (CC) and mediolateral (ML) view, which when performed properly can include all of the women's breast tissue. Diagnostic imaging utilizes additional views tailored to the patient's specific breast problem. Concerns were raised about the risk of contracting breast cancer by radiation exposure due to mammography as it utilizes ionizing rays to image the breast tissue. Based on the reported risk estimates provided by the Biological Effects of Ionizing Radiation Review in 1997, by the National Academy of Sciences, an annual two view mammography over 10 consecutive years of 100,000 women aged 40 years should result in no more than eight breast cancers during the lifetime of these women. However, when the benefits of screening mammography were considered in the discussion of risk, it clearly showed that the potential benefits outweigh the risk. The benefit-to-harm ratio was estimated to be 48.5 lives saved per 1 life lost to radiation exposure.

Based on 7 population-based community screening programs in the United States, the overall sensitivity of mammography was 75% and specificity of 92.3% (Elmore et al. 2005). The accuracy of mammography seemed to be influenced by breast density and age (Carney et al. 2003). Women with extremely dense breast had an adjusted sensitivity of 63% compared to 87% in women with entirely fatty breast. With regards to age, the adjusted sensitivity increased with age (69% in women aged 40 to 49 years and 83% in those aged 80 to 89).

A meta-analysis of randomized trials on the use of mammography in screening for breast cancer, demonstrated statistically significant reductions of 20% to 35% in mortality from breast cancer for women aged 50 to 69 years (Fletcher & Elmore 2003). The benefit of screening women in their 40s is not as good as women above 50 because they have denser breast tissue, lower incidence of breast cancer, and these women on average, have faster growing cancers (Carney et al. 2003).

Therefore, the ACS guideline for early detection of breast cancer in average risk women emphasized the combination of CBE, counselling to raise awareness of breast symptoms and eventually regular mammography.

3. OBJECTIVES

3.1 General Objective

To determine the prevalence of breast examination among women aged 18 years and above by socio-demographic characteristics.

3.2 Specific Objectives

- 3.2.1 To determine the prevalence of breast examination among women 18 years and above
- 3.2.2 To determine the method of breast examination
- 3.2.3 To describe the characteristics of women who undergo breast examination
- 3.2.4 To determine the source of information for breast self examination
- 3.2.5 To determine the frequency of breast self examination
- 3.2.6 To compare the trend of breast examination with NHMS II

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 advice 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 was updated until 2004; 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 by urban and rural areas. The classification into these strata was made up 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 II (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 stage of the calculation of the sample size of each state.

The survey findings answering to 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 that the data is 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 become 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 informed to 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

4.4.1 The questionnaire

A bi-lingual (Bahasa Malaysia and English) pre-coded questionnaire had been designed, pre-tested and piloted prior to the survey. Women's Health module of the NHMS III questionnaire was dedicated to questions on Breast Health Awareness and Pap Smear. The module was subjected to all female respondents aged 18 years and above in the households of selected LQs. Questions comprise of both close ended and open ended.

All the FI questionnaires had a consent form to be read and signed by the respondent. The outside cover of all questionnaires had to be filled with a unique individual identification (ID) number by the enumerator. The enumerator also had to fill his or her ID as well as the code for the outcome of the interview as part of the quality assurance process.

4.4.2 The interview

As far as possible, all females who qualify from the selected LQ's had been face-to-face interviewed by the relevant teams members. Interview was commenced beginning in the morning till late evening. Where an interview had been unsuccessful due to the absence of the respondent at the selected LQ, repeat visits was conducted after leaving messages with neighbours or by other means for an interview at a later date. A household member was classified as a non-respondent if at least 3 visits were unsuccessful.

4.5 Field Preparations

Two main survey implementation groups had been formed: the Central Coordinating Team (CCT) and the field team. The CCT'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.

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

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 & testing of central monitoring and logistics support.

4.5.2 Training of data collection teams

A training period of 2 weeks for field supervisors, team leaders, nurses and interviewers were held to familiarize them with the questionnaire, developed their interpersonal communication skills and appreciate the need for a good teamwork. Briefing on the questionnaire, mock interview in the classroom and individual practice under supervision was conducted during the training.

4.6 Quality Control

Quality control procedures for the data collection were done at two stages, field and central. 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 had been conducted at field and central levels prior to data entry;

- a) Field data screen by each interviewers at the end of his/her interview
- b) Field data screen of each question by peer interviewers through exchanging questionnaire booklets
- c) Field data screen 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 analysis 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 analysis process were monitored and advised by the NHMS III Statistics Consultant.

5. FINDINGS

Total number of eligible respondents (ie: women aged 18 years old and above) for Breast Health Awareness module was 19,081. However only 18,902 respondents responded to this module, giving a response rate of 99.1%.

5.1 Description of the Respondents by Socio-demographic Characteristics

The socio-demographic characteristic of the 18,902 respondents for this module are shown in Appendix: Table 1. The distribution of respondents by state reflected the population structure of the country, where the highest number were from Selangor (17.8%), Sabah (11.6%) and Johore (11.4%), with the lowest number were from Perlis (0.9%), Labuan (1.6%) and Malacca (2.76%). By stratum, 60.8% of the respondents were urban dwellers, while rural dwellers accounted for the remaining 39.2%. About 70% of the respondents were less than 50 years old with the highest frequency was in the 40 – 44 years

The ethnic distribution also generally reflected the ethnic distribution of the population, with Malays constituting slightly more than half (54.9%), followed by the Chinese (19.9%), Other Bumis (11.6%) and Indian (8.6%). Muslims accounted for almost two-third (65.0%) of the respondents, while Buddhist accounted for 17.1%. Christians constituted for 9.3% and Hindus for 7.1%.

Almost ninety five percents (93.6%) of the respondents were Malaysians. Almost half of the respondents (48.0%) had education up to secondary level, 27.6% up to primary level of education and 14.4% had no formal education at all. Majority of the respondents were housewife (42.3%) and service workers (13.9%). Almost seventy percents (69.8%) of the respondents were married, 18.0% single and 8.9% widowed with only 2.9% divorcee.

By household income, the highest (25.7%) came from the category of monthly income of RM1,000 to RM1,999. Almost three-quarter of the respondents came from household income below RM3,000. More than 8% of the respondents came from household with income of more than RM5,000 per month.

5.2 Percentages of Breast Health Awareness

Almost eighty percent of the respondents were aware of the purpose of breast examination (Figure 5.1)

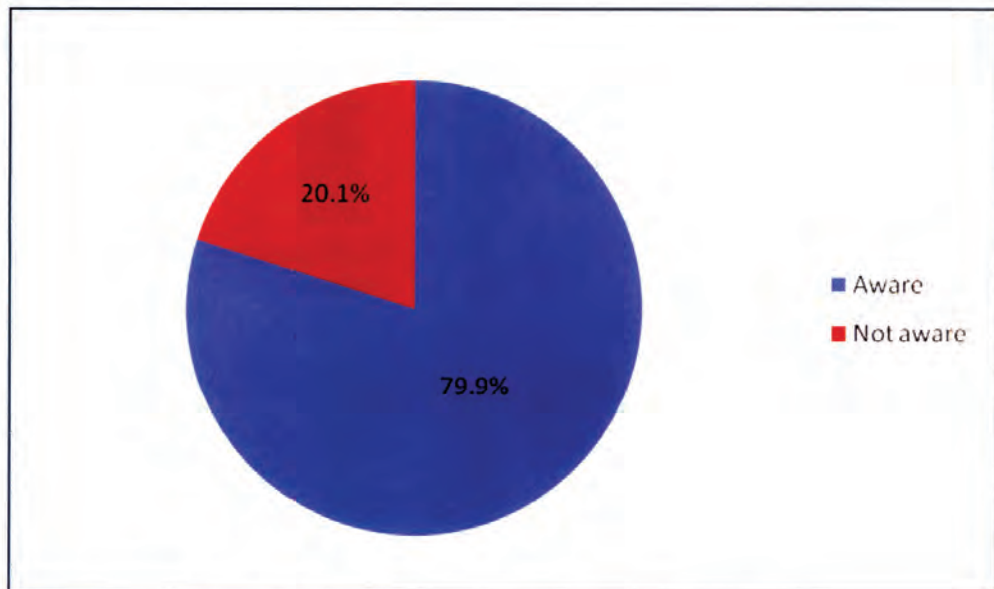


Figure 5.1: Awareness of the purpose of breast examination

5.3 Prevalence of Breast Examination

Seventy percents [70.4% (CI: 69.6 – 71.1)] of the respondents had undergone breast examination by any of the three breast examination methods. However, the most common breast examination method was breast-self examination (BSE) [57.1% (CI: 56.5 – 58.0)], followed by clinical breast examination (CBE) [51.8% (CI: 50.9 – 52.6)] and mammography [7.6% (CI: 7.1 – 8.1)] (Figure 5.2).

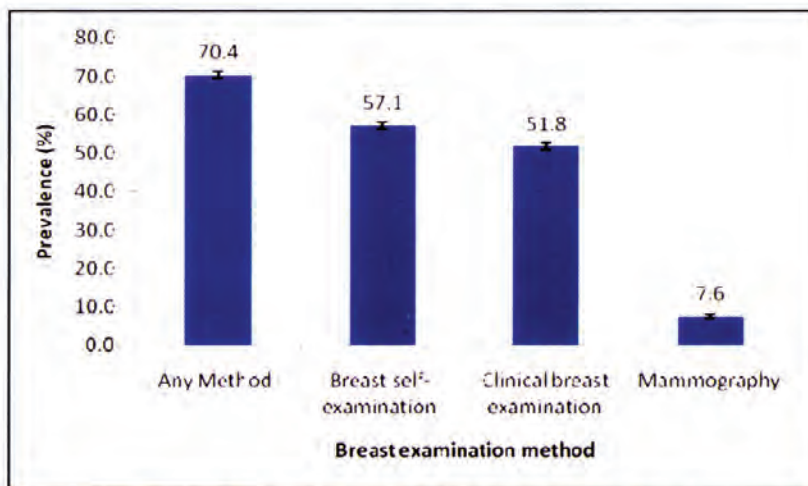


Figure 5.2: Prevalence of breast examination method

5.4 Prevalence of Breast Examination by Socio-demographic Characteristics

5.4.1 Prevalence of breast examination by state

Figure 5.3 showed the prevalence of breast examination by state. The lowest breast examinations (any method) were seen in Kelantan [60.1% (CI: 56.8 – 63.5)] and Sabah [59.9% (CI: 57.0 – 62.7)] while the highest was in Selangor [75.1% (CI: 73.3 – 76.8)]. The pattern of the method for breast examination almost similar in all states with the highest was for BSE, followed by CBE and mammography. However, for Penang and Perak, the pattern was CBE, followed by BSE and mammography.

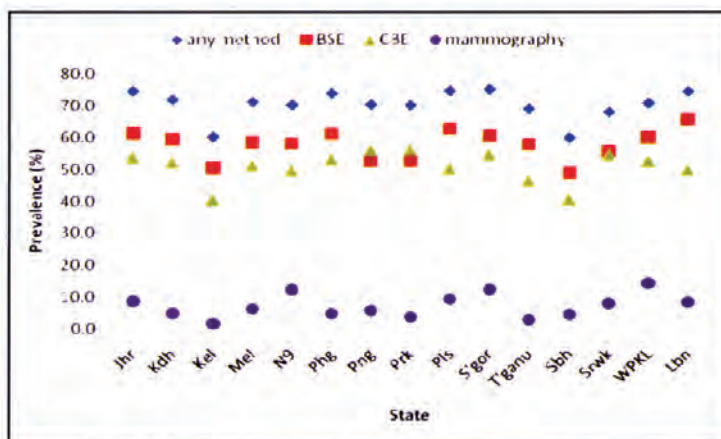


Figure 5.3 : Prevalence of breast examination by state

5.4.2 Prevalence of breast examination by strata

Breast examinations for all methods were higher among urban population compared than rural (Figure 5.4). The patterns for breast examination were similar for both urban and rural with BSE was the commonest method followed by CBE and mammography.

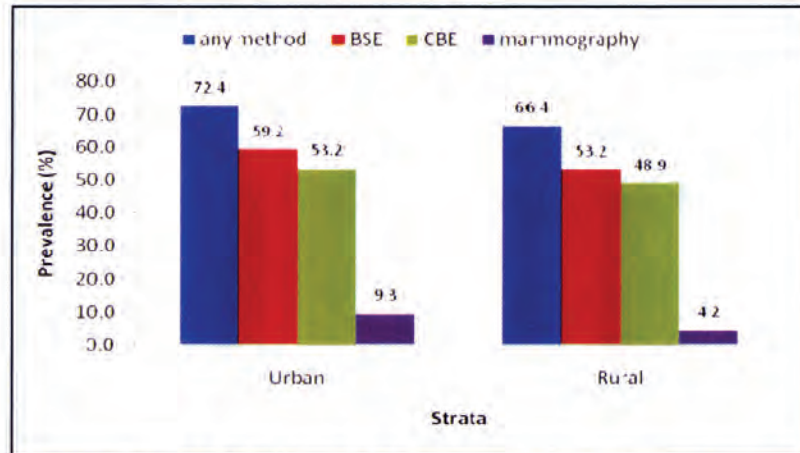


Figure 5.4 : Prevalence of breast examination by strata

5.4.3 Prevalence of breast examination by age group

Breast examinations increased with age with the peak at the age between 30 to 44 years old and gradually decreased after 45 years old. The pattern in age groups below 50 years was BSE, CBE and mammography. However, in respondents aged 50 years and above, the pattern was highest in CBE followed by BSE and mammography (Figure 5.5).

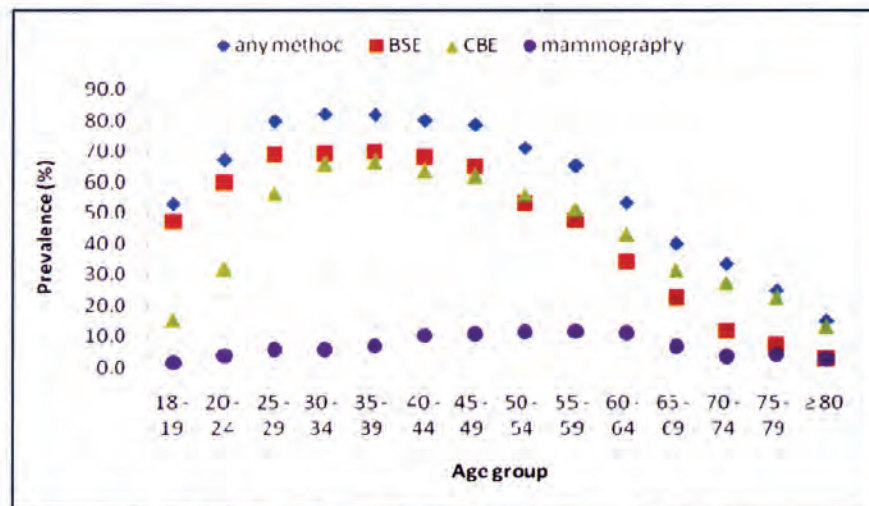


Figure 5.5 : Prevalence of breast examination by age group

5.4.4 Prevalence of breast examination by ethnic group

Malays had higher prevalence of breast examination (any method) than other ethnic groups. For BSE, the highest was in Malays while the highest for CBE was among Chinese. Indians showed higher prevalence of mammography than other ethnic groups. In Malays, BSE was higher than CBE while in Chinese and Indians; the CBE was higher than BSE (Figure 5.6).

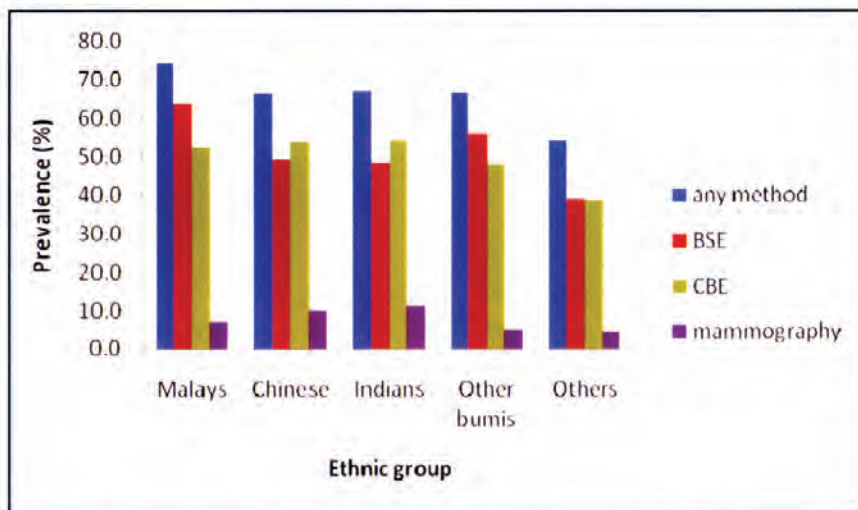


Figure 5.6 : Prevalence of breast examination by ethnic group

5.4.5 Prevalence of breast examination by religion

Figure 5.7 showed the prevalence of breast examination by religion. The highest prevalence for BSE was among Muslim and Christians showed highest prevalence for both BSE and mammography. The patterns for breast examination in Muslim and Christians (from highest to lowest prevalence) were BSE, CBE and mammography whilst in Buddhist, Hindu and other religions were CBE, BSE and mammography.

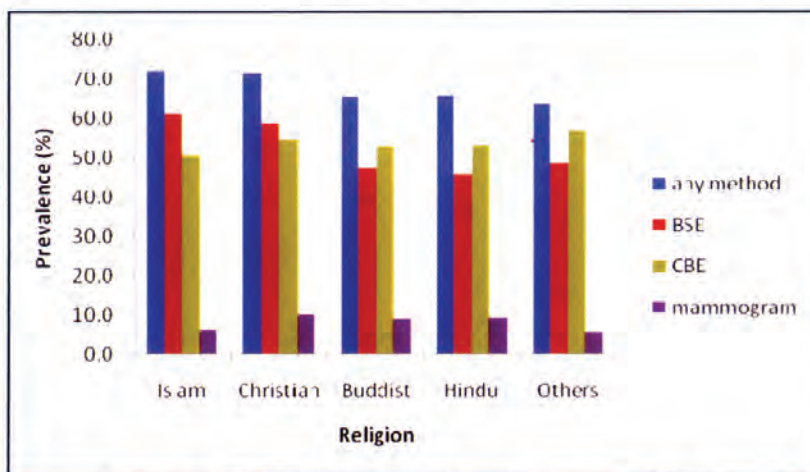


Figure 5.7 : Prevalence of breast examination by religion

5.4.6 Prevalence of breast examination by citizenship

The prevalence of breast examination among Malaysian were higher than Non-Malaysian for all breast examination methods. The pattern of the prevalence from highest to lowest among Malaysian was BSE, CBE and mammography whilst in Non-Malaysian was CBE, BSE and mammography (Figure 5.8).

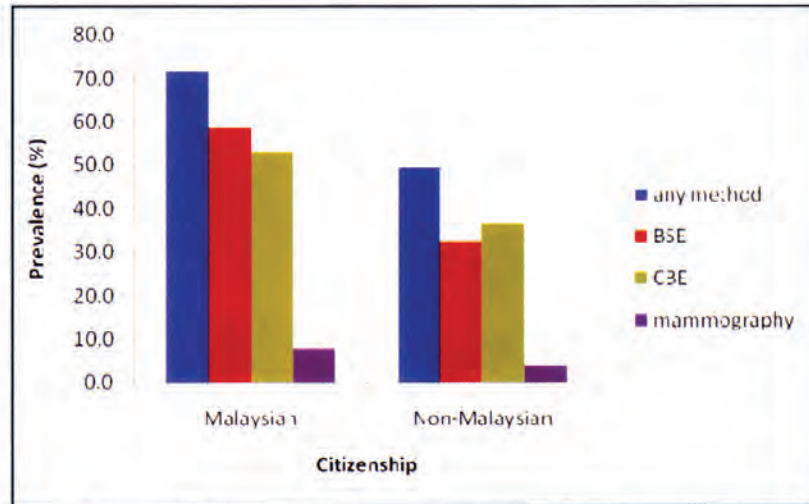


Figure 5.8 : Prevalence of breast examination by citizenship

5.4.7 Prevalence of breast examination by marital status

Married women did BSE and CBE higher than other group. The highest prevalence of mammography was among divorcee. The pattern of prevalence of breast examinations from the highest to lowest among not married and married respondents was BSE, followed by CBE and mammography. In divorcee and widower, the pattern was CBE, BSE and mammography (Figure 5.9).

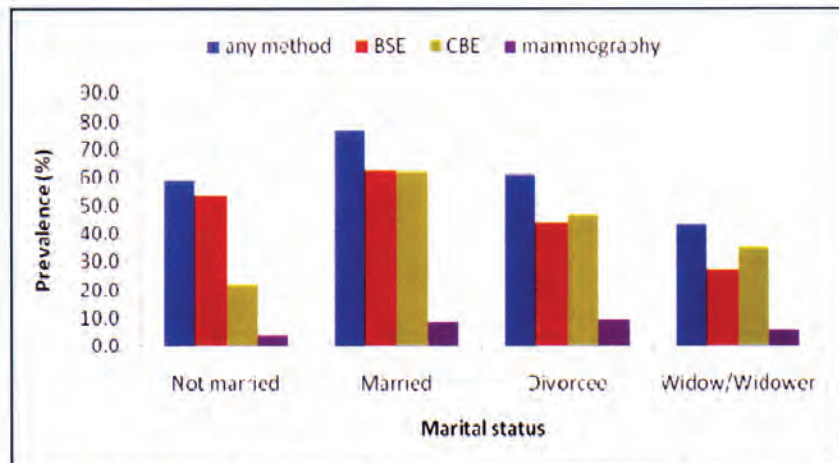


Figure 5.9 : Prevalence of breast examination by marital status

5.4.8 Prevalence of breast examination by education level

Prevalence of breast examinations (all methods) increased with increasing education level. The pattern of prevalence from highest to lowest among no education and primary education was CBE, BSE and mammography whilst among secondary and tertiary education was BSE, CBE and mammography (Figure 5.10).

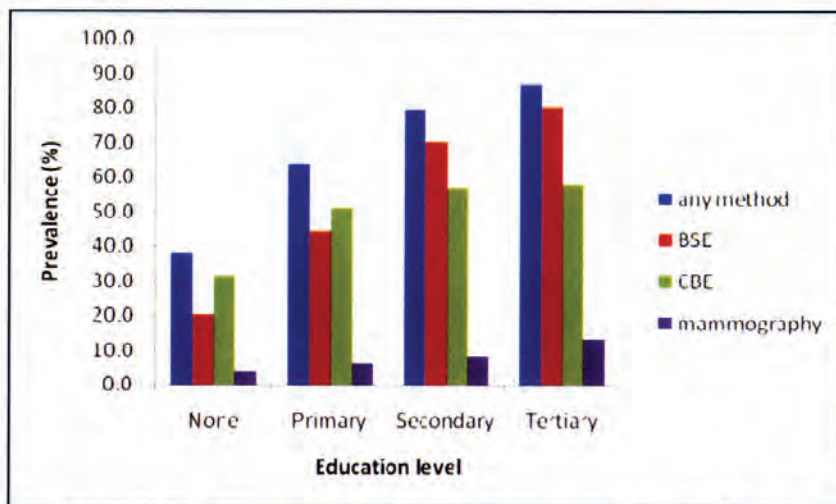
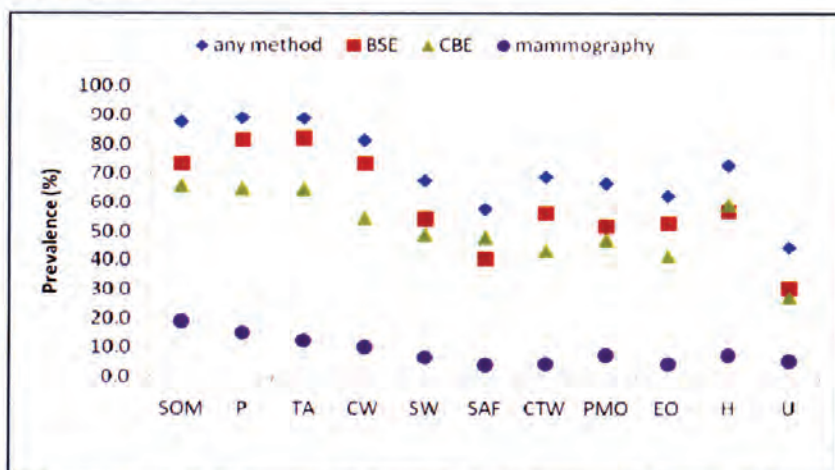


Figure 5.10 : Prevalence of breast examination by education level

5.4.9 Prevalence of breast examination by occupation

The highest prevalence of breast examination (any method) was among Professionals, Technicians & Associate Professionals and Senior Officials and Managers while the lowest were among unemployed group. The pattern of breast examination prevalence from highest to lowest was BSE, CBE and mammography except for Skilled Agricultural & Fishery and Housewife with the pattern of CBE, BSE and mammography (Figure 5.11).



SOM=Senior Officials & Managers, P=Professionals, TA=Technicians & Associate Professionals, CW=Clerical Workers, SW=Service Workers, SAF=Skilled Agricultural & Fishery, CTW=Craft & Trade Workers, PMO=Plant & Machine Operator, EO=Elementary Occupations, H=Housewife, U=Unemployed

Figure 5.11 : Prevalence of breast examination by occupation

5.4.10 Prevalence of breast examination by household income

Generally, the prevalence of breast examination increased with increasing household income with the pattern of prevalence from highest to lowest was BSE, CBE and mammography except for less than RM400 group (CBE,BSE and mammography) (Figure 5.12).

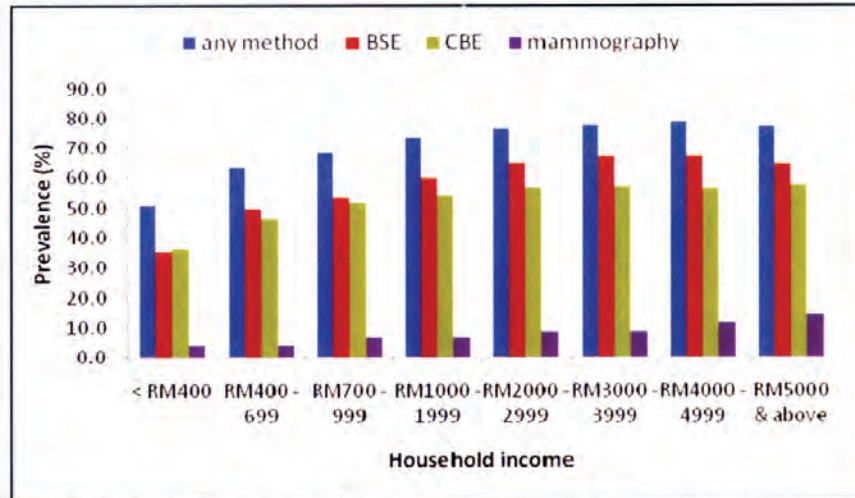


Figure 5.12 : Prevalence of breast examination by household income

5.4.11 Prevalence of breast examination by personal income

Generally, the prevalence of breast examination increased with increasing household with highest prevalence was the BSE followed by CBE and mammography (Figure 5.13).

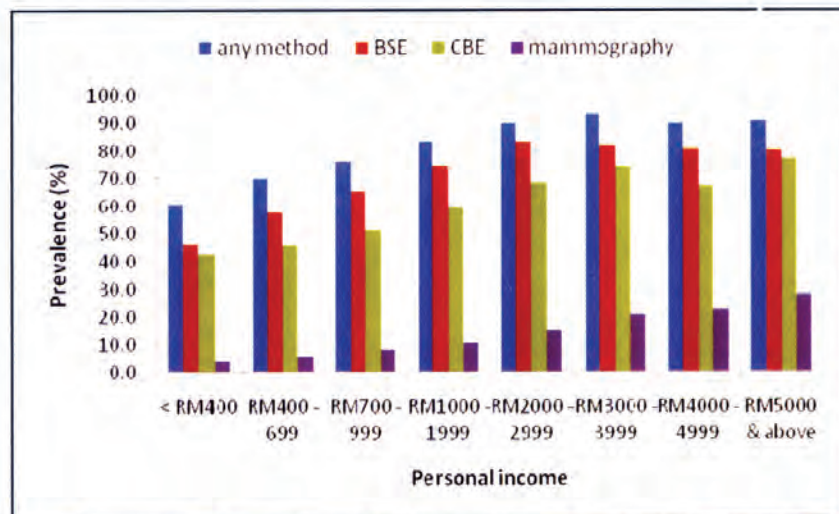


Figure 5.13 : Prevalence of breast examination by personal income

5.5 Comparison of Breast Examination with NHMS II

The prevalence of all method of breast examinations in NHMS III were higher than those in NHMS II (Figure 5.14).

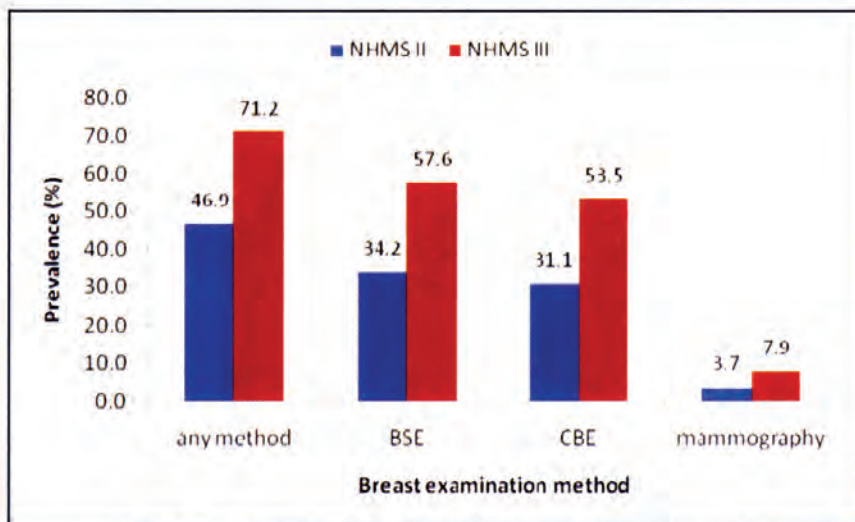


Figure 5.14: Comparison of breast examination with NHMS II

5.6 Breast Awareness and Practice

Figure 5.15 showed that among respondents who had awareness, 80.5% (CI: 79.8 – 81.2) did breast examination and among those who were not aware, 26.1% (CI: 24.6 – 27.6) of them did breast examination.

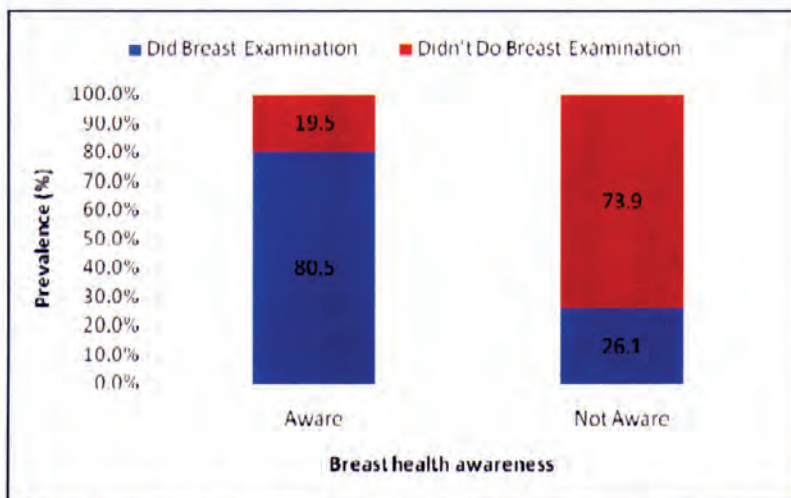


Figure 5.15 : Practice of breast examination by awareness

5.7 Source of Information on Breast Self Examination

Almost 60% of the source of information was from the medical personnel, followed by brochure (14.8%) and newspaper / magazine (11.2%) (Figure 5.16).

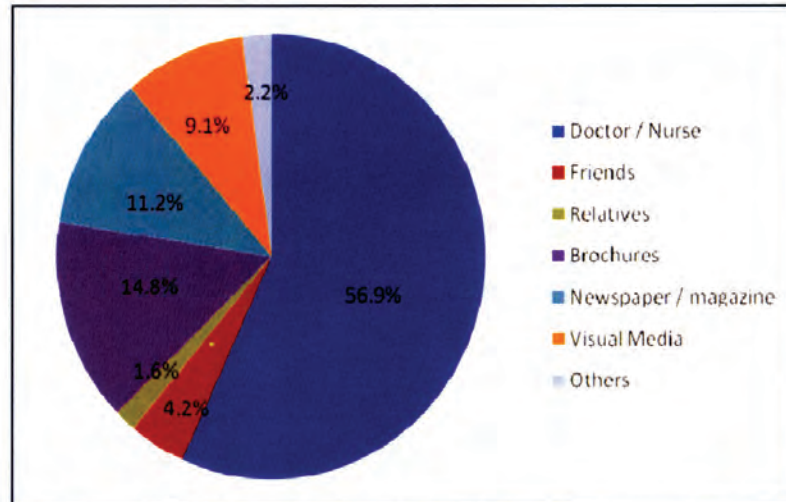


Figure 5.16 : Source of information on breast self examination

5.8 Frequency of Breast Self Examination

Almost 80% of the respondent who did BSE, done it at least once a month (Figure 5.17).

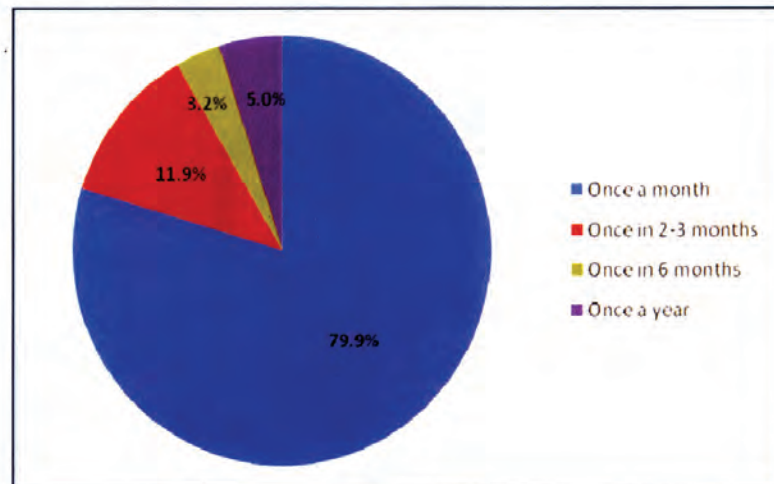


Figure 5.17 : Frequency of breast self examination

5.9 Prevalence of Mammography among Women 50-69 Years Old

Only 10 percent of women between the age of 50 and 69 had underwent mammography procedure (Figure 5.18).

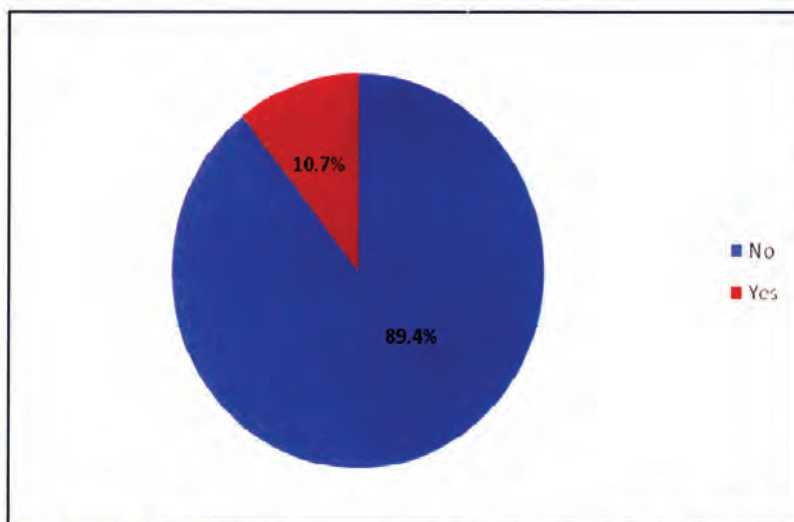


Figure 5.18 : Prevalence of mammography among women 50-69 years old

5.9.1 Prevalence of mammography among women 50-69 years old by state

The lowest prevalence was among women in Terengganu and Kelantan with the highest prevalence was in Kuala Lumpur and Selangor (Figure 5.19).

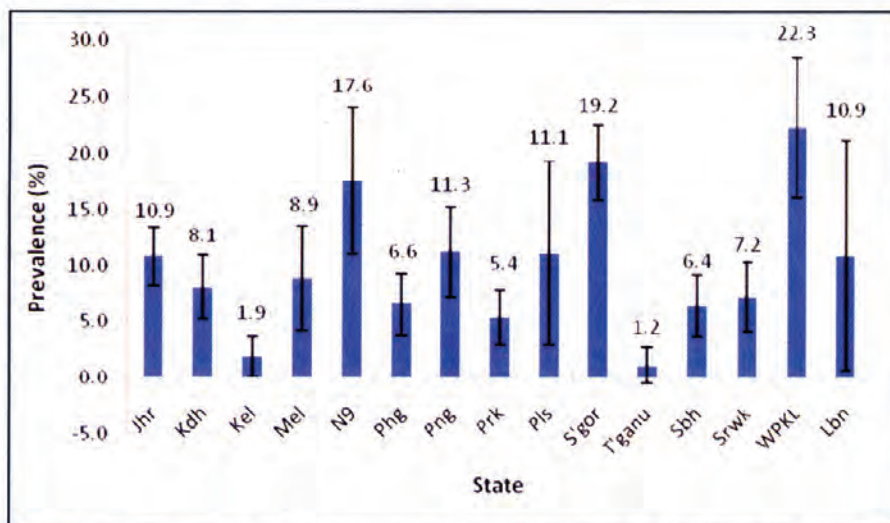


Figure 5.19 : Prevalence of mammography among women 50-69 years old by state

5.9.2 Prevalence of mammography among women 50-69 years old by strata

The prevalence was significantly higher among urban dwellers compared to rural (Figure 5.20).

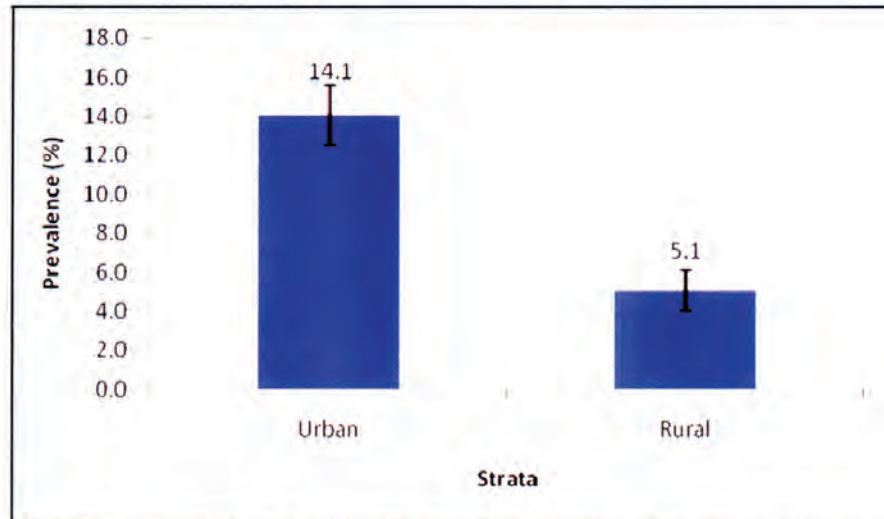


Figure 5.20 : Prevalence of mammography among women 50-69 years old by strata

5.9.3 Prevalence of mammography among women 50-69 years old by age group

The lowest prevalence was among the respondents in the age group between 65 to 69 years old (Figure 5.21).

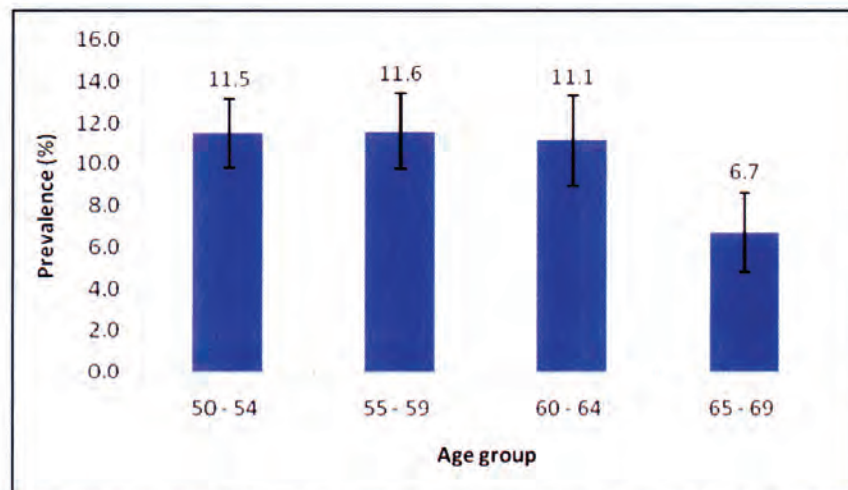


Figure 5.21 : Prevalence of mammography among women 50-69 years old by age group

5.9.4 Prevalence of mammography among women 50-69 years old by ethnic group

The highest prevalence was among the Indians and Chinese (Figure 5.22).

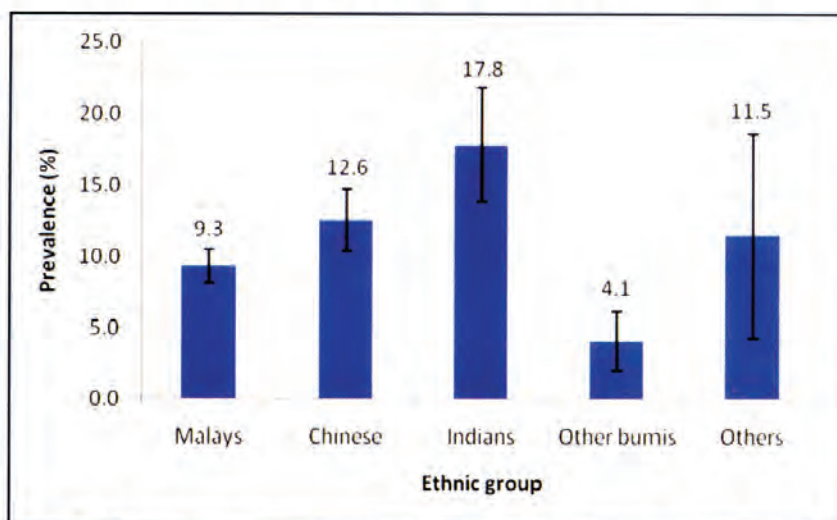


Figure 5.22 : Prevalence of mammography among women 50-69 years old by ethnic group

5.9.5 Prevalence of mammography among women 50-69 years old by religion

The highest prevalence was among the Christian and Hindu (Figure 5.23).

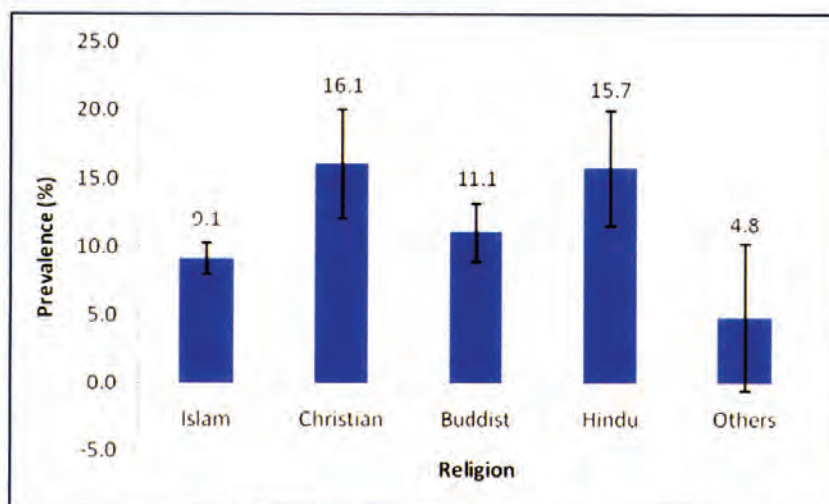


Figure 5.23: Prevalence of mammography among women 50-69 years old by religion

5.9.6 Prevalence of mammography among women 50-69 years old by citizenship

The prevalence was higher among Malaysian [10.7% (CI: 9.6 - 11.8)] than Non-Malaysian [5.4% (CI: -0.6 - 11.5)], but the difference was not significant (Figure 5.24)

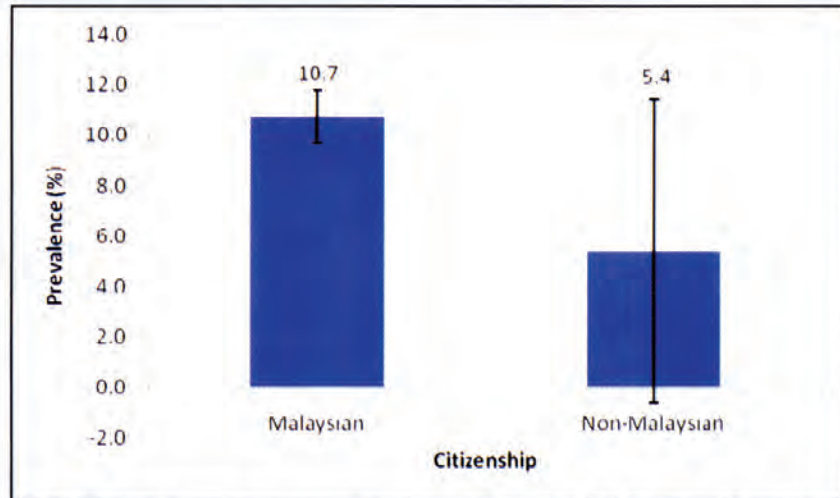


Figure 5.24 : Prevalence of mammography among women 50-69 years old by citizenship

5.9.7 Prevalence of mammography among women 50-69 years old by marital status

The lowest prevalence was among the widow/widower [7.9% (CI: 5.9 - 9.8)] (Figure 5.25).

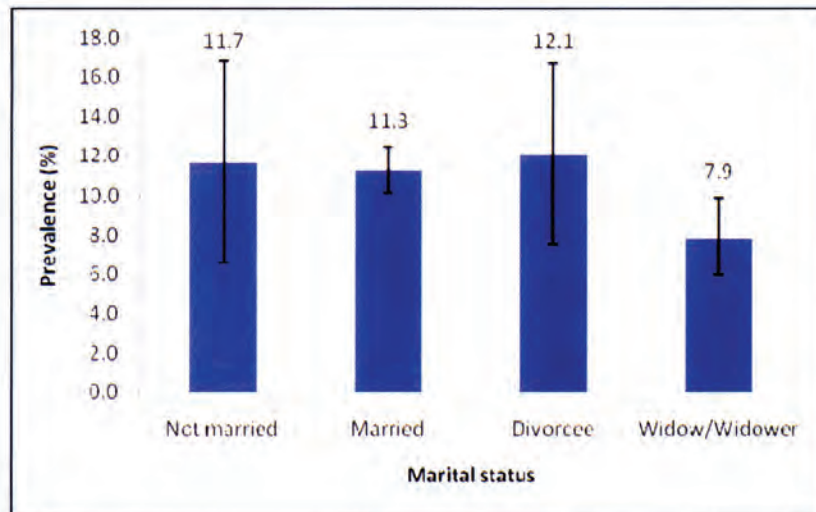


Figure 5.25 : Prevalence of mammography among women 50-69 years old by marital status

5.6.8 Prevalence of mammography among women 50-69 years old by education level

The prevalence of mammography increased with increasing level of education (Figure 5.26).

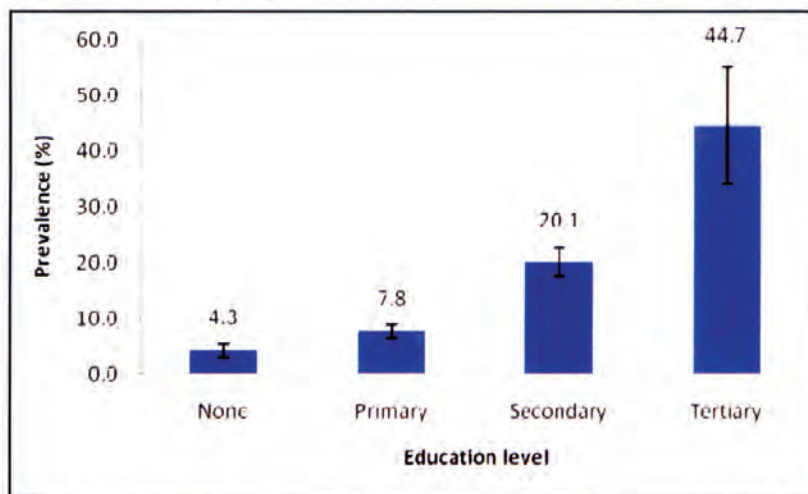


Figure 5.26 : Prevalence of mammography among women 50-69 years old by education level

5.9.9 Prevalence of mammography among women 50-69 years old by household income

Generally the prevalence increased with increasing household income (Figure 5.27).

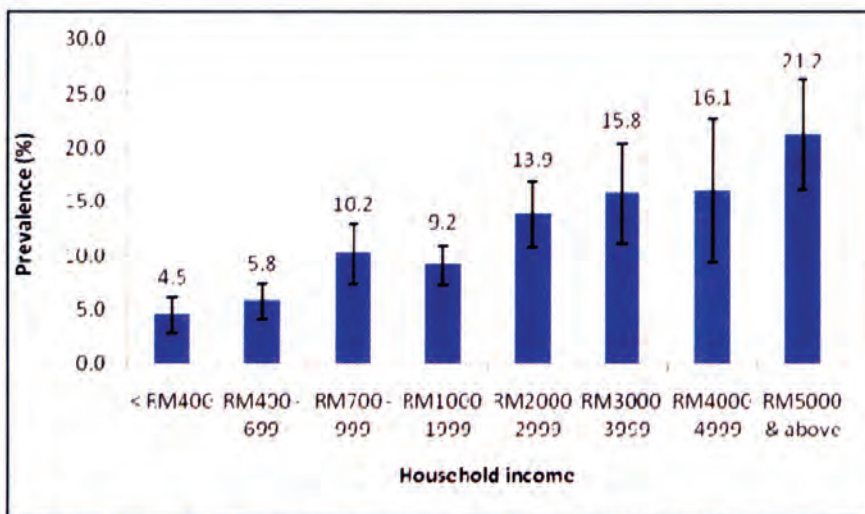


Figure 5.27 : Prevalence of mammography among women 50-69 years old by household income

5.10 Prevalence of Clinical Breast Examination among Women 35 Years old and Above

Almost fifty five percents of respondents aged 35 years and above had being examined by medical personel (ie: Clinical Breast Examination) (Figure 5.28).

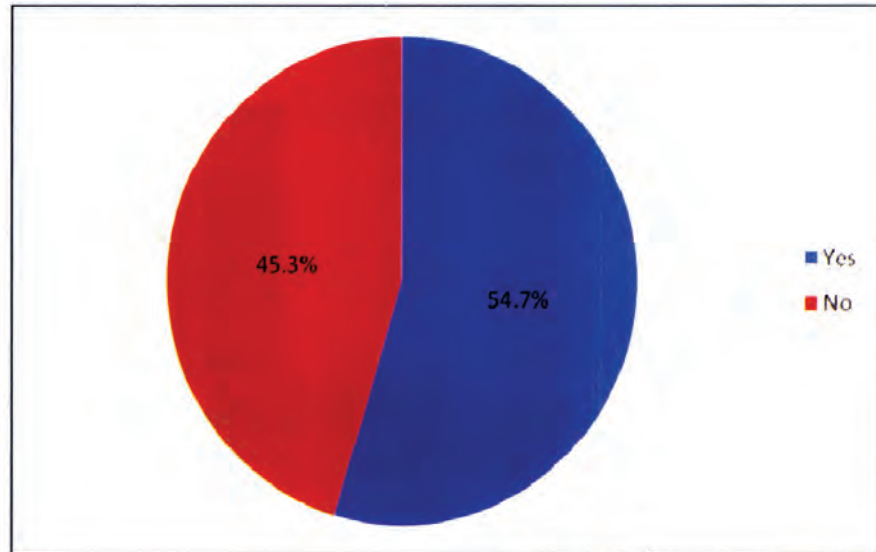


Figure 5.28 : Prevalence of CBE among women 35 years old and above

5.10.1 Prevalence of CBE among women 35 years old and above by state

Majority of the states had a prevalence of more than fifty percent except for Kelantan [41.7% (CI: 38.0 – 45.5)], Sabah [43.1% (CI: 39.2 – 46.5)] and Terengganu [44.2% (CI: 39.4 – 49.0)] (Figure 5.29).

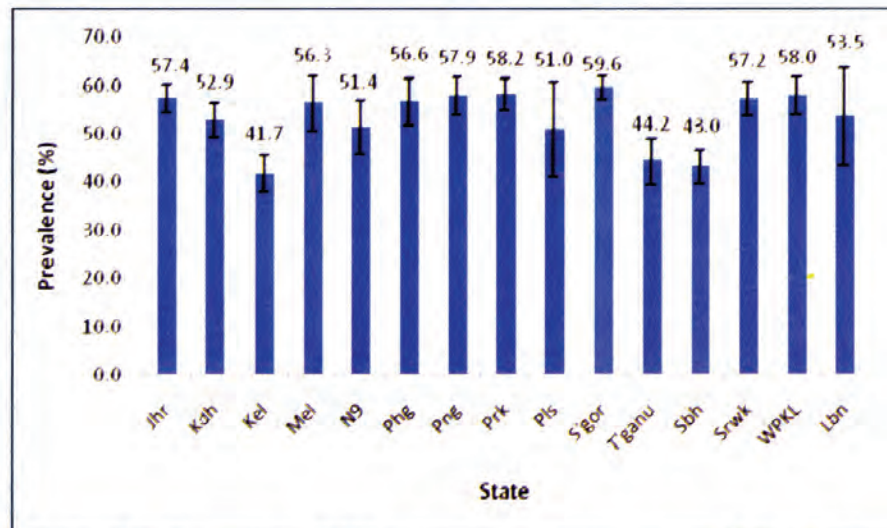


Figure 5.29 : Prevalence of CBE among women 35 years old and above by state

5.10.2 Prevalence of CBE among women 35 years old and above by strata

The prevalence was higher in the urban [57.8% (CI: 56.5 – 59.1)] than rural [49.2% (CI: 47.6 – 50.8)] and the difference was significant (Figure 5.30).

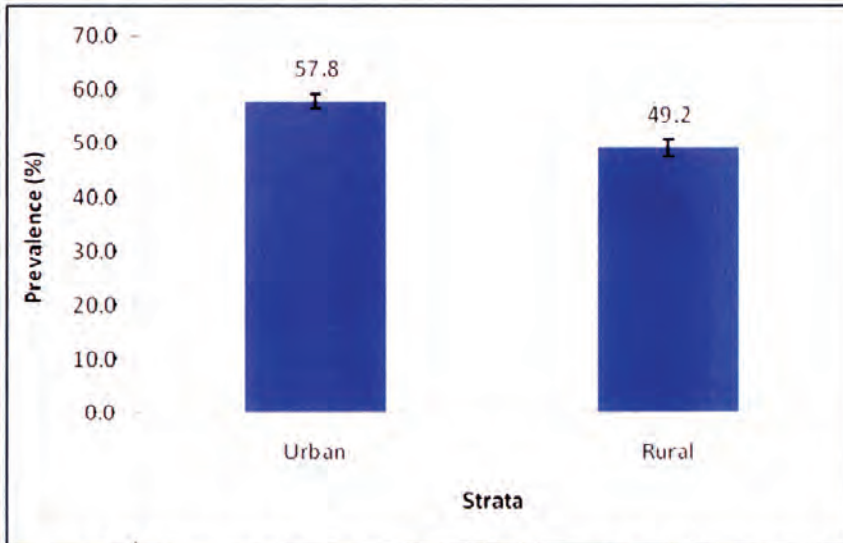


Figure 5.30 : Prevalence of CBE among women 35 years old and above by strata

5.10.3 Prevalence of CBE among women 35 years old and above by age group

The prevalence of CBE reduced with increasing age (Figure 5.31).

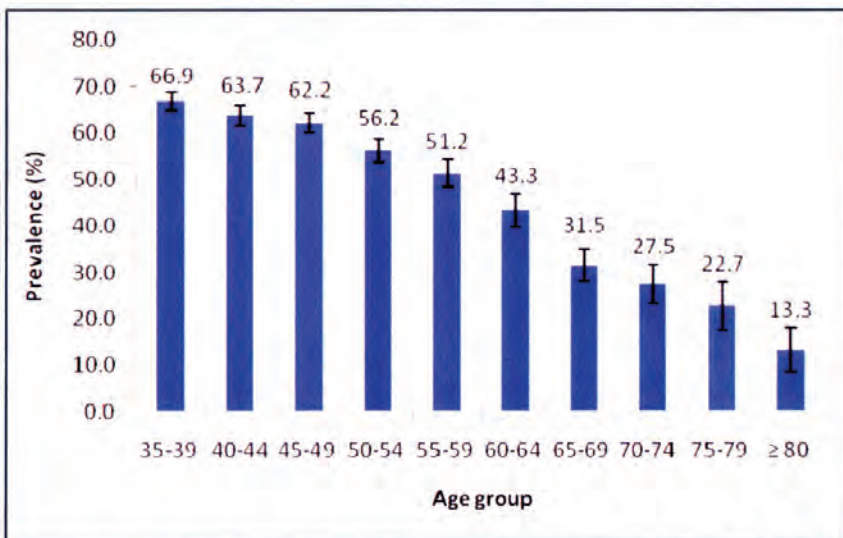


Figure 5.31 : Prevalence of CBE among women 35 years old and above by age group

5.10.4 Prevalence of CBE among women 35 years old and above by ethnic group

The prevalence was highest among Chinese [57.6% (CI: 55.6 – 59.1)], followed by the Indians [56.6% (CI: 53.5 – 59.8)] (Figure 5.32).

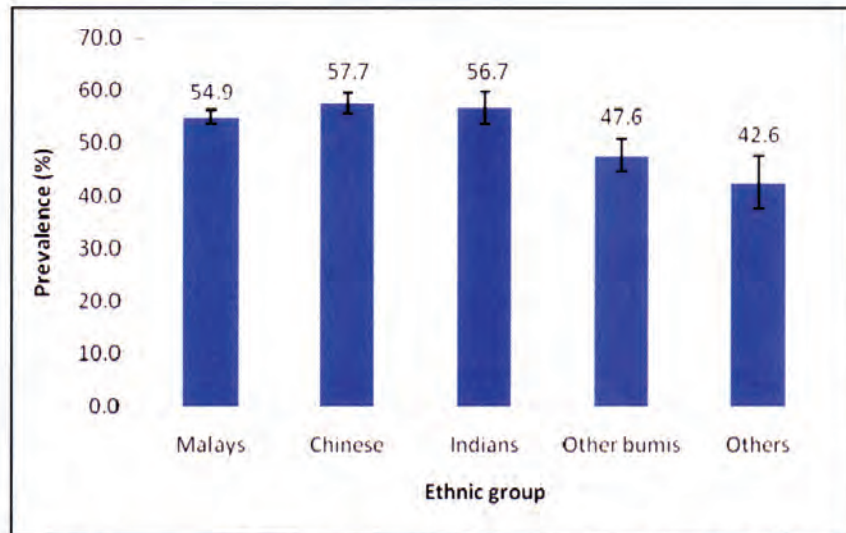


Figure 5.32 : Prevalence of CBE among women 35 years old and above by ethnic group

5.10.5 Prevalence of CBE among women 35 years old and above by religion

The prevalence was highest among the Christians [59.5% (CI: 56.3 – 62.7)] while the lowest was among the Muslims [53.4% (CI: 52.1 – 54.7)] (Figure 5.33).

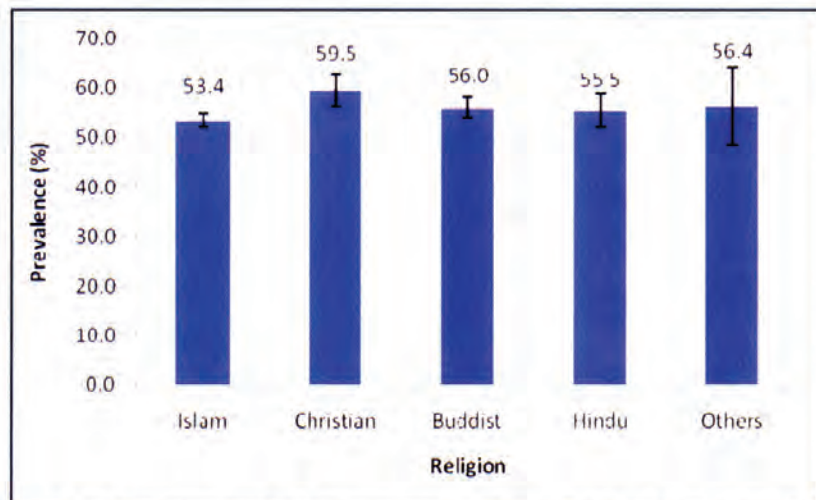


Figure 5.33 : Prevalence of CBE among women 35 years old and above by religion

5.10.6 Prevalence of CBE among women 35 years old and above by citizenship

There was a significant difference between the Malaysian [55.3% (CI: 54.3 – 56.3)] and Non-Malaysian [39.0% (CI: 34.3 – 43.7)] (Figure 5.34).

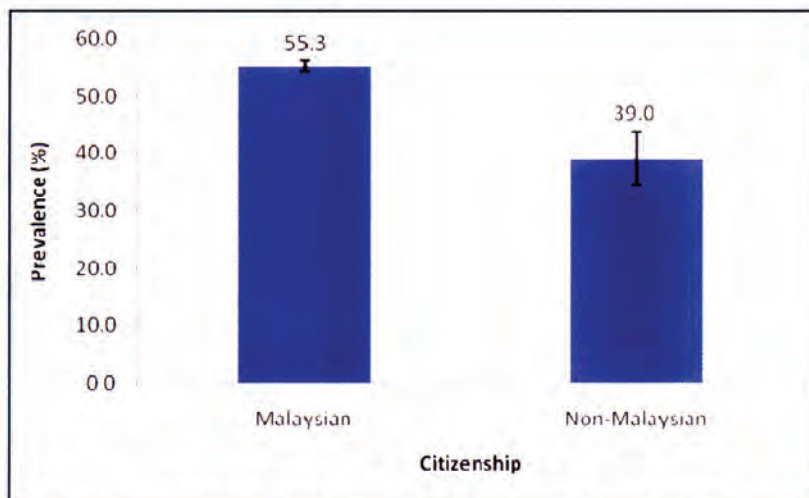


Figure 5.34 : Prevalence of CBE among women 35 years old and above by citizenship

5.10.7 Prevalence of CBE among women 35 years old and above by marital status

The highest prevalence was among the married women [59.8% (CI: 58.7 – 60.9)] while the lowest was among the non-married women [36.5% (CI: 32.1 – 40.9)] (Figure 5.35).

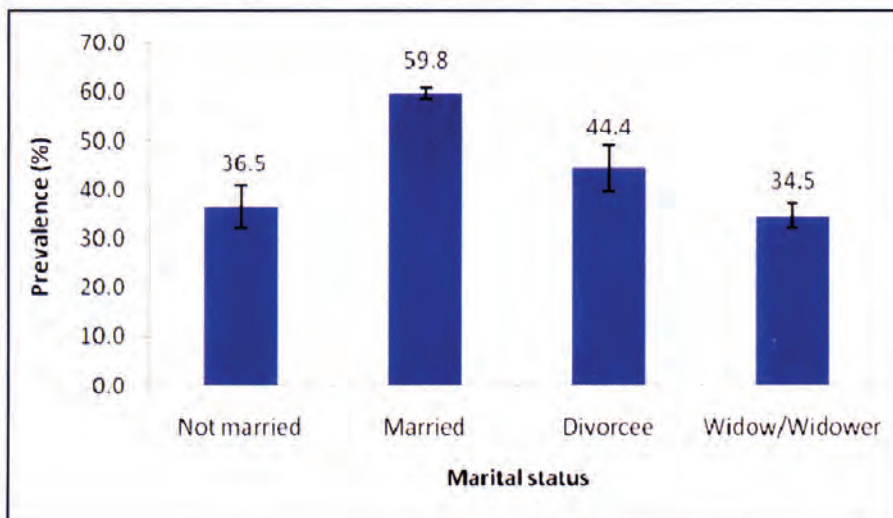


Figure 5.35 : Prevalence of CBE among women 35 years old and above by marital status

5.10.8 Prevalence of CBE among women 35 years old and above by education level

The prevalence of CBE increased with increasing education level (Figure 5.36).

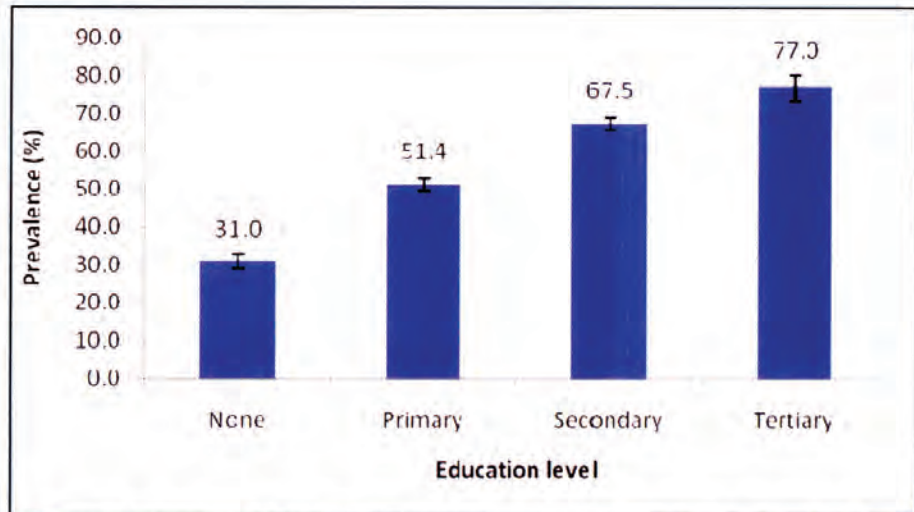
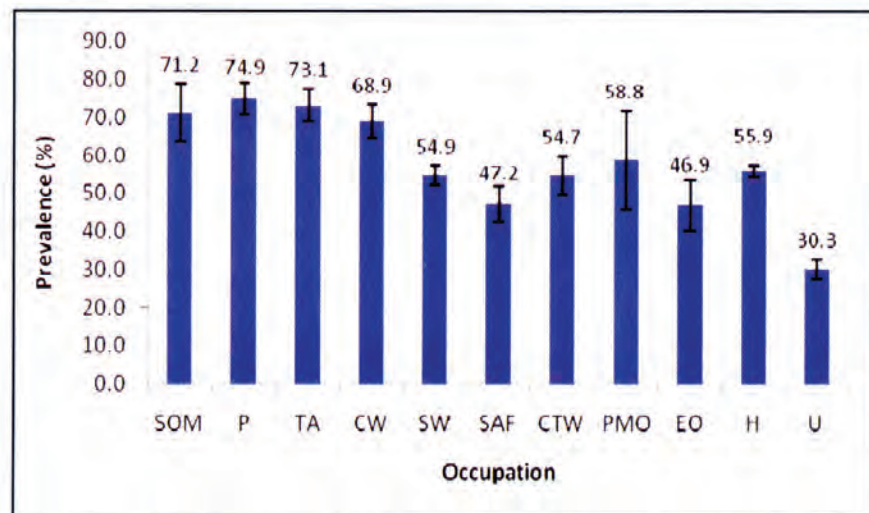


Figure 5.36 : Prevalence of CBE among women 35 years old and above by education level

5.10.9 Prevalence of CBE among women 35 years old and above by occupation

The prevalence was highest among the Professionals [74.9% (CI: 71.0 – 78.9)] while the lowest was among the Unemployed Group [30.3% (CI: 27.7 – 32.8)] (Figure 5.37).



SOM=Senior Officials & Managers, P=Professionals, TA=Technicians & Associate Professionals, CW=Clerical Workers, SW=Service Workers, SAF=Skilled Agricultural & Fishery, CTW=Craft & Trade Workers, PMO=Plant & Machine Operator, EO=Elementary Occupations, H=Housewife, U=Unemployed

Figure 5.37 : Prevalence of CBE among women 35 years old and above by occupation

5.10.10 Prevalence of CBE among women 35 years old and above by household income

The prevalence of CBE increased with increasing household income (Figure 5.38).

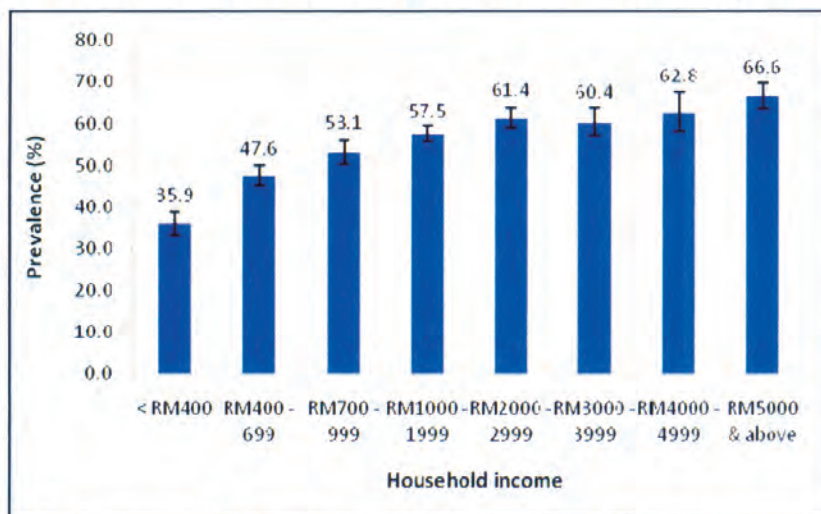


Figure 5.38 : Prevalence of CBE among women 35 years old and above by household income

5.10.11 Prevalence of CBE among women 35 years old and above by personal income

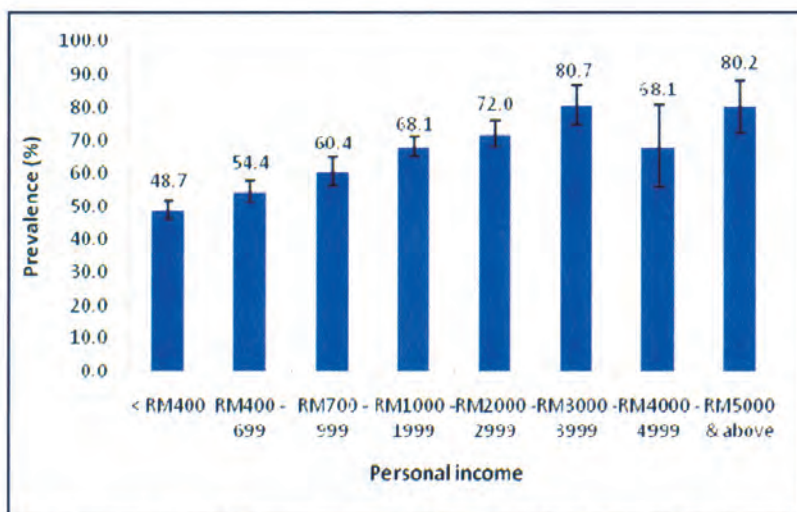


Figure 5.39 : Prevalence of CBE among women 35 years old and above by personal income

Generally the prevalence increased with increasing personal income (Figure 5.39).

6. DISCUSSION

The prevalence for the breast examination (any method) done by women in Malaysia was 70.4% and there was an increase of nearly 25% from the previous survey (Institute of Public Health 1999). The prevalence of breast examination was higher compared to cervical cancer screening during the same period of study, which was only 43.7%. This finding was expected since the procedures of breast examinations (especially self and clinical breast examinations) were relatively easy and non invasive compared to pap smear.

The most common method for the breast examination was breast-self examination followed by clinical breast examination and mammography. The low national prevalence for mammography was expected as limited facilities offering this procedure available in the country and there is no national policy yet for mass screening by this method.

The prevalence of breast examination increased with age until 50 years old and started to drop after that age. This is worrying since the data from the National Cancer Registry Malaysia (Lim & Halimah (eds) 2004) reported the peak age specific incidence rate was among women aged 50-59 years old and 64.1% of breast cancers were among women aged between 40 to 60 years old. Few studies also reported the risks for developing and dying of breast cancer are continuous variables that increase with age, and the greatest increase in incidence actually occurs before menopause (McPherson et al. 2000; Ries et al. 2000). However, the findings of this survey was similar with a study by Hiatt et al. (2002) where the older individuals were less likely to be screened for breast cancers.

An interesting finding seen in this survey was the prevalence of clinical breast examination among women above 50 years old exceeded that of self examination. Mammography examination was highest among those aged 40 to 65 years old. The ACS recommends women with moderate aged above 40 years old to have annual clinical breast examination. For women aged 50 to 69 year, it was recommended to have regular mammography and it shown to reduce 20 to 35% breast cancer mortality (Smith et al. 2003). The findings of this study were nearly in line with the recommendations by ACS, but the volume need to be increased (Smith et al. 2003).

This study found that there were differences in the prevalence of breast examination among different ethnic group. This was consistent with a study by Ramirez et al. (2000) who found that there was a large ethno-regional difference in breast cancer screening behaviours exists among Hispanic groups across the country. In this study, the prevalence of breast examination by any method and self examination was highest among Malays. However, mammography was higher among Chinese and Indians. This could be attributed to the health seeking behaviour among the Chinese compared to other ethnic groups. This differences maybe cultural and should be investigated in the future.

The prevalence of the breast examination increased with education level and was higher in urban community. This could be contributed by the higher percentage of awareness among these groups of women. This was consistent with a study by Hiatt et al. (2002) where higher levels of educational attainment and income were associated with a greater likelihood of being screened for breast cancer. However, a study by Velden et al. (1999) found that the rates for breast examination in women 40 to 69 years were similar regardless of educational attainment.

Prevalence of BSE and CBE were highest among married women. This could be due to opportunistic examination during antenatal and postnatal visits.

The benefit of screening mammography for women older than 50 years is incontrovertible and has been widely accepted for many years (Sussman 2000). However, in this study only 10 percent of women between the age of 50 and 69 had undergone mammography procedure. This was very low since few studies found that mammographic screening has been shown to decrease breast cancer deaths in the general population of women over 40 years old (Fletcher et al. 1993; Hendrick et al. 1997; Berry 1998; Humprey et al. 2002).

The prevalence of mammography was higher in urban than rural. Hiatt et al. (2002) found that women who live in rural areas were slightly less likely than women who live in urban areas to have reported mammography use in the 1994 NHIS survey.

Prevalence of mammography examination increased with increase in personal and household income. This was expected as the examinations in government health facilities are limited for diagnostic purposes and screening of high risk women. The other alternative for mammography screening is to do it in private facilities. Therefore, only those who could afford this examination will go for screening.

Medical personnel still the commonest source of information regarding breast self examination. A similar finding was found in NHMS II (Institute of Public Health 1999). This showed that the medical personnel need to equip themselves with the latest information on breast examinations, so that they can give the up to date information to the populations.

The frequency of Breast Self Examination in this survey showed that more than three quarter of the respondents did BSE at least once a month. It was higher than a study in Germany (Klug et al. 2005) where only 43.1% of their respondent did the BSE at least once a month or a study by Frank (2000) in which only 21% of the respondents reported performing monthly BSE. NHMS II (Institute of Public Health 1999) found that almost half of the respondents practise BSE monthly. Since there was an increase in the percentages of monthly BSE, there is a relatively good chance to detect the early stage of breast cancer. The assumption was these women did the examinations properly since this study did not include the observation on the technique of breast self examinations.

7. CONCLUSION

The overall prevalence of breast examination by three accepted methods showed an increase of about 25% compared to 10 years ago. However, there are still categories of women, mainly characterised by socio-demographic factors, whom are less likely to undergo breast examination, and are therefore at higher risk of late detection of breast cancer. Although the prevalence of mammography showed an increased rate compared to 10 years ago but it is still below the recommended level by other study. A more organized programme on breast examination particularly on mammography with clear direction, achievable targets, monitoring system and emphasis on quality assurance is required to improve the knowledge, attitude and participation of breast examinations.

8. RECOMMENDATIONS

8.1 Health Education

The study found that majority of the respondents cited health and medical personel as the main source of getting information on breast-self Examination. It is important for the medical personel to equip themselves with the latest information on breast health awareness such as the prevalence of breast cancer, different methods to detect breast cancer and the recommended interval to do breast examinations either breast-self examination, clinical breast examination or mammography. At the same time, others health education materials such as book, magazine, pamphlets and other also need to be improved to ensure more women will use those materials to look for information on breast examinations.

8.2 An Organized Breast Health Awareness Programme

An organized breast health awareness programme to increase the participations of the women as well as their partners needs to be planned. A national programme on clinical breast examination and mammography need to be formulated with clear direction, achievable targets, monitoring system and emphasis on quality assurance is required to improve the knowledge, attitude and participation of breast examinations among the women in Malaysia.

8.3 Improving Breast Examination in Certain Groups of Women

This study found that the prevalence of breast examination among women in the reproductive age is quite high. However, among the non-reproductive age women, the prevalence was low. The same scenario also could be seen among the lower socio-economic women and those in the rural areas. This require special and well organized efforts to reach them; such as community campaigns, screening at the workplace, opportunistic screening during wellness clinic, child health clinics etc. At the same time, the information regarding breast examination can be incorporate as a subject at the secondary school level, so they are exposed to the importance of breast screening.

8.4 Further Research

Further research regarding the knowledge, attitude and practice on breast examination need to be done especially among the socio-demographic group that had a low rate of breast examinations.

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APPENDIX



APPENDIX

Table 1: Socio-demographic of the respondents for breast health awareness

Socio-demography	Total respondent	%
National	18,902	99.1
State		
Johor	2,136	11.3
Kedah	1,428	7.6
Kelantan	1,080	5.1
Malacca	513	2.7
N. Sembilan	704	3.7
Pahang	924	4.9
Penang	1,202	6.4
Perak	1,395	7.4
Perlis	164	0.9
Selangor	3,373	17.8
Terengganu	754	4.0
Sabah	2,203	11.6
Sarawak	1,644	8.7
W.P. Kuala Lumpur	1,087	5.8
W.P. Labuan	295	1.6
Residence		
Urban	11,500	60.8
Rural	7,402	39.2
Age group		
18-19	871	4.6
20-24	2,095	11.1
25-29	2,118	11.2
30-34	2,006	10.6
35-39	2,067	10.9
40-44	2,151	11.4
45-49	1,989	10.5
50-54	1,673	8.9
55-59	1,299	6.9
60-64	843	4.5
65-69	775	4.1
70-74	477	2.5
75-79	284	1.5
80+	249	1.3

Table 1: Socio-demographic of the respondents for breast health awareness (continue)

Socio-demography	Total respondent	%
Ethnic group		
Malay	10,374	54.9
Chinese	3,757	19.9
Indian	1,632	8.6
Other Bumis	2,189	11.6
Others	950	5.0
Religion		
Islam	12,279	65.0
Christian	1,762	9.3
Buddhist	3,227	17.1
Hindu	1,342	7.1
Others	263	1.4
Unclassified	29	0.2
Citizenship		
Malaysian	17,693	93.6
Non-Malaysian	1,186	6.3
Unclassified	23	0.1
Education		
None	2,712	14.4
Primary	5,221	27.6
Secondary	9,071	48.0
Tertiary	1,719	9.1
Non Classified	179	1.0
Marital status		
Not married	3,406	18.0
married	13,197	69.8
Divorcee	545	2.9
Widow/widower	1,679	8.9
Unclassified	75	0.4

Table 1: Socio-demographic of the respondents for breast health awareness (continue)

Socio-demography	Total Respondent	%
Occupation		
Senior Official & Manager	205	1.1
Professionals	1,075	5.7
Technical & Associate	861	4.6
Clerical Workers	1,198	6.3
Service Workers & Shop	2,626	13.9
Skilled Agricultural & Fishery	636	3.4
Craft & Related Trade Workers	943	5.0
Plant & Machine Operator	92	0.5
Elementary Occupations	379	2.0
Housewife	8,046	42.6
Unemployed	1,976	10.5
Unclassified	860	4.6
Household income		
Less than RM 400	1,796	9.5
RM 400 - RM 699	2,758	14.6
RM 700 - RM 999	2,090	11.1
RM 1000 - RM 1999	4,852	25.7
RM 2000 - RM 2999	2,833	15.0
RM 3000 - RM 3999	1,423	7.5
RM 4000 - RM 4999	691	3.7
RM 5000 & above	1,605	8.5
Unclassified	854	4.5

Table 2: Prevalence of breast examinations (any method) by socio-demography

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
National	12,930	4,889,327	70.3	69.6	71.1
State					
Johor	1,544	600,748	74.5	72.3	76.6
Kedah	1,008	363,469	71.8	69.1	74.5
Kelantan	639	212,610	60.1	56.8	63.5
Melaka	356	146,821	71.1	65.8	76.4
N. Sembilan	470	172,980	70.2	65.9	74.4
Pahang	670	258,599	73.8	70.4	77.2
Penang	830	295,718	70.3	67.5	73.0
Perak	957	405,675	70.0	67.2	72.9
Perlis	118	43,548	74.6	69.4	79.8
Selangor	2,486	1,028,938	75.1	73.3	76.8
Terengganu	514	175,845	69.0	65.2	72.7
Sabah	1,288	396,456	59.9	57.0	62.7
Sarawak	1,079	423,863	68.0	65.6	70.3
WP Kuala Lumpur	753	296,373	70.7	67.4	74.0
Labuan	218	67,684	74.4	67.5	81.3
Residence					
Urban	8,113	3,330,875	72.4	71.4	73.4
Rural	4,817	1,558,452	66.4	65.1	67.7
Age group					
18-19	452	168,641	52.9	49.4	56.4
20-24	1,381	520,876	67.3	65.1	69.5
25-29	1,669	631,979	79.9	78.1	81.6
30-34	1,613	603,211	82.0	80.3	83.8
35-39	1,657	623,432	81.9	80.1	83.6
40-44	1,696	640,435	80.1	78.4	81.8
45-49	1,509	573,415	78.6	76.7	80.5
50-54	1,155	442,041	71.1	68.9	73.4
55-59	822	314,501	65.4	62.7	68.2
60-64	426	162,487	53.3	49.8	56.8
65-69	296	111,953	40.2	36.6	43.8
70-74	151	56,785	33.6	29.2	38.0
75-79	65	24,966	24.9	19.6	30.2
80+	33	12,625	15.1	10.2	20.0
Ethnic group					
Malays	7,526	2,822,842	74.4	73.4	75.4
Chinese	2,419	976,214	66.6	65.0	68.2
Indians	1,070	430,056	67.2	64.7	69.8
Other Bumiputras	1,420	478,250	66.7	64.4	69.1
Others	495	181,964	54.2	50.6	57.9

Table 2: Prevalence of breast examinations (any method) by socio-demography (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Religion					
Islam	8,629	3,198,908	72.3	71.3	73.3
Christian	1,222	454,802	71.3	69.1	73.5
Buddhist	2,043	822,559	65.7	63.9	67.4
Hindu	863	346,337	65.7	62.9	68.5
Others	162	62,163	63.9	57.1	70.7
Unclassified	11	4,557	57.2	35.5	79.0
Citizenship					
Malaysian	12,360	4,676,372	71.7	70.9	72.5
Non-Malaysian	561	209,660	49.6	46.3	52.9
Education					
None	989	356,235	38.1	36.2	40.0
Primary	3,261	1,211,971	63.9	62.5	65.3
Secondary	7,133	2,709,446	79.7	78.8	80.6
Tertiary	1,466	580,126	86.9	85.1	88.7
Unclassified	81	31,549	63.5	55.1	71.8
Marital status					
Single	1,962	748,634	59.1	57.3	60.9
Married	9,922	3,742,589	77.0	76.2	77.9
Divorcee	318	122,908	61.2	56.8	65.6
Widow / Widower	693	261,409	43.5	41.0	46.1
Unclassified	35	13,787	62.1	49.4	74.8
Occupation					
Senior Official & Managers	176	69,570	87.7	83.2	92.2
Professionals	950	370,464	89.2	87.2	91.2
Technical & Associate	749	287,091	89.0	86.8	91.1
Clerical Workers	962	374,665	81.5	79.3	83.7
Service Workers & Shop	1,742	661,620	67.5	65.6	69.4
Skilled Agricultural & Fishery	357	121,005	57.6	53.3	62.0
Craft & Related Trade Workers	645	247,686	68.7	65.5	72.0
Plant & Machine Operators	58	22,114	66.6	56.0	77.2
Elementary Occupations	231	82,452	62.3	56.8	67.8
Housewife	5,712	2,141,941	72.8	71.7	73.9
Unemployed	837	311,814	44.4	42.2	46.7
Unclassified	506	196,925	63.6	60.0	67.1

Table 2: Prevalence of breast examinations (any method) by socio-demography (continue)

	n	Estimated Population	Prevalence (%)	95% CI	
				Lower	Upper
Household income					
Less than RM 400	885	316,993	51.0	48.4	53.6
RM 400 – RM 699	1,700	602,671	63.5	61.5	65.5
RM 700 – RM 999	1,402	514,775	68.5	66.3	70.7
RM 1000 – RM 1999	3,492	1,315,433	73.5	72.2	74.9
RM 2000 – RM 2999	2,124	825,094	76.4	74.6	78.2
RM 3000 – RM 3999	1,074	424,149	77.4	75.1	79.8
RM 4000 – RM 4999	530	208,846	78.7	75.6	81.7
RM 5000 & above	1,223	488,780	77.3	74.8	79.7
Unclassified	500	192,585	61.4	57.9	64.8
Personal income					
Less than RM 400	1,261	450,029	60.0	57.8	62.3
RM 400 – RM 699	1,137	426,811	70.1	67.6	72.6
RM 700 – RM 999	874	339,879	76.2	73.6	78.7
RM 1000 – RM 1999	1,612	630,765	83.5	81.7	85.2
RM 2000 – RM 2999	635	250,699	90.0	87.7	92.3
RM 3000 – RM 3999	217	86,075	93.0	89.7	96.4
RM 4000 – RM 4999	72	28,508	89.6	82.2	97.1
RM 5000 & above	104	42,557	90.6	85.1	96.0

Table 3: Prevalence of breast self examination by socio-demography

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
National	10,563	3,993,145	57.1	56.3	58.0
State					
Johor	1,274	496,091	61.2	58.7	63.7
Kedah	833	301,303	59.3	56.3	62.4
Kelantan	539	179,472	50.5	46.9	54.1
Melaka	298	121,693	58.4	53.1	63.8
N. Sembilan	400	147,097	58.0	53.8	62.2
Pahang	555	214,962	61.0	57.3	64.7
Penang	625	222,615	52.8	49.5	56.0
Perak	722	307,229	52.8	49.6	56.1
Perlis	101	37,208	62.5	56.4	68.7
Selangor	2,007	830,615	60.5	58.4	62.5
Terengganu	430	147,813	57.7	53.2	62.2
Sabah	1,060	326,615	48.9	45.8	52.1
Sarawak	889	349,698	55.6	52.8	58.4
WP Kuala Lumpur	638	251,110	59.8	56.3	63.3
Labuan	192	59,623	65.5	58.3	72.8
Residence					
Urban	6,670	2,735,131	59.2	58.1	60.3
Rural	3,893	1,258,014	53.2	51.7	54.6
Age group					
18-19	405	151,359	47.1	43.6	50.7
20-24	1,230	462,751	59.5	57.2	61.7
25-29	1,441	545,173	68.7	66.6	70.8
30-34	1,368	511,674	69.1	67.0	71.3
35-39	1,423	534,665	69.8	67.7	71.9
40-44	1,448	546,843	68.1	66.0	70.2
45-49	1,253	477,733	65.1	62.9	67.3
50-54	874	333,121	53.2	50.7	55.7
55-59	598	229,628	47.6	44.7	50.4
60-64	273	105,148	34.2	30.8	37.6
65-69	167	63,453	22.6	19.6	25.7
70-74	53	19,902	11.8	8.8	14.7
75-79	19	7,310	7.3	4.1	10.4
80+	6	2,406	2.9	0.6	5.2
Ethnic group					
Malays	6,445	2,425,662	63.6	62.5	64.7
Chinese	1,798	724,727	49.2	47.4	51.0
Indians	767	308,785	48.2	45.3	51.0
Other Bumiputras	1,198	403,074	55.7	53.2	58.3
Others	355	130,898	38.8	35.0	42.5

Table 3: Prevalence of breast self examination by socio-demography (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Religion					
Islam	7,331	2,726,735	61.2	60.2	62.3
Christian	1,012	376,338	58.6	56.1	61.1
Buddhist	1,486	597,240	47.4	45.5	49.4
Hindu	603	242,534	45.9	42.9	49.0
Others	125	47,934	48.7	41.6	55.8
Unclassified	6	2,363	29.7	9.6	49.8
Citizenship					
Malaysian	10,193	3,853,797	58.8	57.9	59.7
Non-Malaysian	364	137,143	32.3	28.9	35.6
Education					
None	538	191,573	20.4	18.7	22.0
Primary	2,285	845,804	44.3	42.9	45.8
Secondary	6,313	2,392,215	70.0	68.9	71.1
Tertiary	1,364	539,010	80.3	78.3	82.3
Unclassified	63	24,542	49.4	40.5	58.2
Marital status					
Single	1,779	678,192	53.3	51.4	55.2
Married	8,099	3,054,404	62.5	61.5	63.5
Divorcee	229	88,552	43.9	39.6	48.3
Widow / Widower	430	161,663	26.7	24.5	29.0
Unclassified	26	10,334	45.8	32.6	59.1
Occupation					
Senior Official & Managers	149	58,523	73.1	66.9	79.3
Professionals	870	338,705	81.3	78.9	83.8
Technical & Associate	699	267,096	81.9	79.3	84.5
Clerical Workers	868	338,316	73.2	70.6	75.8
Service Workers & Shop	1,411	534,073	54.2	52.2	56.3
Skilled Agricultural & Fishery	251	84,944	40.3	36.1	44.4
Craft & Related Trade Workers	529	202,561	56.0	52.3	59.7
Plant & Machine Operators	45	17,166	51.7	40.9	62.5
Elementary Occupations	194	69,633	52.6	46.9	58.4
Housewife	4,492	1,682,849	56.8	55.6	58.1
Unemployed	579	214,106	30.4	28.2	32.5
Unclassified	471	183,193	58.8	55.2	62.4

Table 3: Prevalence of breast self examination by socio-demography (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Household income					
Less than RM 400	622	223,038	35.6	33.1	38.1
RM 400 – RM 699	1,340	474,763	49.7	47.6	51.7
RM 700 – RM 999	1,107	404,334	53.4	51.1	55.7
RM 1000 – RM 1999	2,869	1,079,105	60.1	58.6	61.5
RM 2000 – RM 2999	1,828	707,551	65.2	63.2	67.3
RM 3000 – RM 3999	940	370,327	67.2	64.5	70.0
RM 4000 – RM 4999	458	179,699	67.3	63.6	70.9
RM 5000 & above	1,025	410,030	64.6	61.9	67.3
Unclassified	374	144,298	46.0	42.3	49.6
Personal income					
Less than RM 400	982	349,699	46.3	43.9	48.6
RM 400 – RM 699	949	353,684	57.8	55.1	60.5
RM 700 – RM 999	754	292,643	65.4	62.5	68.2
RM 1000 – RM 1999	1,439	562,771	74.3	72.2	76.3
RM 2000 – RM 2999	595	234,471	83.4	80.5	86.3
RM 3000 – RM 3999	193	76,307	81.7	76.7	86.7
RM 4000 – RM 4999	65	25,869	80.4	71.3	89.4
RM 5000 & above	92	37,625	80.1	72.9	87.3

Table 4: Prevalence of clinical breast examination by socio-demography (18 years and above)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
National	9,557	3,621,585	51.8	50.9	52.6
State					
Johor	1,125	436,173	53.9	51.5	56.2
Kedah	737	266,162	52.4	49.4	55.3
Kelantan	437	145,425	40.8	37.6	44.1
Melaka	258	107,436	51.6	46.2	56.9
N. Sembilan	344	127,003	49.9	45.6	54.1
Pahang	490	188,168	53.4	49.1	57.7
Penang	663	236,139	56.0	52.7	59.3
Perak	774	327,024	56.1	53.1	59.2
Perlis	81	30,050	50.5	43.6	57.4
Selangor	1,818	752,932	54.7	52.8	56.7
Terengganu	353	119,808	46.8	42.8	50.9
Sabah	887	273,711	40.9	38.4	43.4
Sarawak	879	343,958	54.7	52.1	57.2
WP Kuala Lumpur	564	221,985	52.7	49.2	56.3
Labuan	147	45,610	50.1	42.2	58.1
Residence					
Urban	5,992	2,463,145	53.2	52.1	54.3
Rural	3,565	1,158,440	48.9	47.6	50.3
Age group					
18-19	135	49,596	15.4	13.1	17.8
20-24	660	249,633	32.0	29.9	34.2
25-29	1,184	449,420	56.6	54.4	58.9
30-34	1,309	488,583	66.0	63.8	68.2
35-39	1,359	512,019	66.9	64.8	68.9
40-44	1,351	512,334	63.7	61.6	65.8
45-49	1,207	457,539	62.2	59.9	64.4
50-54	914	351,861	56.2	53.7	58.7
55-59	643	247,856	51.2	48.3	54.1
60-64	348	132,944	43.3	39.8	46.8
65-69	233	88,310	31.5	28.0	35.0
70-74	124	46,805	27.5	23.4	31.6
75-79	59	22,755	22.7	17.5	27.9
80+	29	11,070	13.3	8.6	17.9
Ethnic group					
Malays	5,341	2,001,239	52.4	51.3	53.6
Chinese	1,974	795,949	53.9	52.2	55.7
Indians	863	347,021	54.1	51.6	56.6
Other Bumiputras	1,022	347,332	48.0	45.5	50.4
Others	357	130,044	38.5	34.8	42.2

Table 4: Prevalence of clinical breast examination by socio-demography (18 years and above) (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Religion					
Islam	6,098	2,259,276	50.7	49.6	51.8
Christian	940	352,143	54.7	52.3	57.2
Buddhist	1,665	669,920	53.1	51.2	55.0
Hindu	701	281,007	53.2	50.5	56.0
Others	146	56,172	56.8	50.1	63.5
Unclassified	7	3,066	38.5	16.7	60.4
Citizenship					
Malaysian	9,130	3,463,333	52.8	51.9	53.6
Non-Malaysian	419	155,232	36.5	33.2	39.7
Education					
None	820	296,406	31.5	29.6	33.3
Primary	2,622	976,990	51.1	49.7	52.6
Secondary	5,084	1,938,847	56.7	55.5	57.9
Tertiary	977	388,297	57.7	55.2	60.3
Unclassified	54	21,044	42.3	33.0	51.6
Marital status					
Single	709	274,763	21.5	20.1	23.0
Married	8,029	3,033,639	62.0	61.1	63.0
Divorcee	242	93,582	46.4	42.0	50.8
Widow / Widower	556	211,176	34.9	32.4	37.3
Unclassified	21	8,425	37.4	25.0	49.7
Occupation					
Senior Official & Managers	132	52,679	65.8	59.5	72.1
Professionals	691	270,287	64.8	61.8	67.9
Technical & Associate	547	210,787	64.7	61.4	68.1
Clerical Workers	641	251,524	54.4	51.4	57.3
Service Workers & Shop	1,257	481,303	48.8	46.8	50.8
Skilled Agricultural & Fishery	297	100,824	47.8	43.4	52.2
Craft & Related Trade Workers	410	156,814	43.2	39.5	47.0
Plant & Machine Operators	40	15,604	47.0	35.8	58.1
Elementary Occupations	151	54,615	41.3	35.9	46.7
Housewife	4,683	1,757,442	59.2	58.0	60.4
Unemployed	509	191,733	27.2	25.1	29.2
Unclassified	197	77,113	24.8	21.7	27.9

Table 4: Prevalence of clinical breast examination by socio-demography (18 years and above) (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Household income					
Less than RM 400	634	226,984	36.2	33.8	38.7
RM 400 – RM 699	1,245	441,826	46.1	44.1	48.1
RM 700 – RM 999	1,060	391,436	51.7	49.3	54.1
RM 1000 – RM 1999	2,564	969,522	53.9	52.4	55.3
RM 2000 – RM 2999		615,349	56.7	54.7	58.6
RM 3000 – RM 3999	795	314,424	57.0	54.3	59.7
RM 4000 – RM 4999	385	150,876	56.4	52.5	60.2
RM 5000 & above	913	365,537	57.6	54.8	60.4
Unclassified	379	145,632	46.3	42.5	50.1
Personal income					
Less than RM 400	898	322,929	42.6	40.4	44.9
RM 400 – RM 699	741	279,749	45.8	43.1	48.5
RM 700 – RM 999	586	229,754	51.3	48.3	54.2
RM 1000 – RM 1999	1,156	451,729	59.5	57.2	61.9
RM 2000 – RM 2999	485	192,372	68.5	65.0	72.0
RM 3000 – RM 3999	174	68,914	74.2	68.4	80.0
RM 4000 – RM 4999	55	21,639	67.2	56.6	77.8
RM 5000 & above	88	36,015	76.6	69.0	84.3

**Table 5: Prevalence of mammography by socio-demography
(18 years and above)**

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
National	1,341	527,017	7.6	7.1	8.1
State					
Johor	179	69,853	8.6	7.4	9.9
Kedah	64	23,909	4.7	3.5	5.9
Kelantan	17	5,660	1.6	0.9	2.3
Melaka	30	12,718	6.1	3.3	9.0
N. Sembilan	80	29,984	12.1	9.1	15.2
Pahang	42	16,296	4.6	3.2	6.1
Penang	65	23,505	5.6	4.1	7.0
Perak	48	21,181	3.7	2.6	4.7
Perlis	15	5,369	9.2	5.2	13.2
Selangor	394	167,346	12.2	10.8	13.6
Terengganu	20	6,848	2.7	1.5	3.9
Sabah	92	28,826	4.3	3.4	5.3
Sarawak	121	48,979	7.8	6.1	9.6
WP Kuala Lumpur	150	59,038	14.0	11.7	16.4
Labuan	24	7,506	8.3	4.9	11.6
Residence					
Urban	1,033	427,178	9.3	8.6	9.9
Rural	308	99,839	4.2	3.7	4.8
Age group					
18-19	12	4,503	1.4	0.6	2.2
20-24	75	29,100	3.8	2.9	4.6
25-29	114	44,862	5.7	4.6	6.8
30-34	108	41,975	5.7	4.6	6.8
35-39	132	51,798	6.8	5.6	7.9
40-44	211	82,997	10.4	8.9	11.8
45-49	201	79,211	10.8	9.3	12.3
50-54	179	71,418	11.5	9.8	13.2
55-59	142	55,953	11.6	9.7	13.5
60-64	86	33,935	11.1	8.9	13.4
65-69	49	18,739	6.7	4.8	8.6
70-74	15	6,047	3.6	1.8	5.3
75-79	11	4,155	4.1	1.7	6.5
80+	6	2,322	2.8	0.6	5.0
Ethnic group					
Malays	663	258,949	6.8	6.3	7.4
Chinese	362	146,941	10.0	8.8	11.2
Indians	173	70,173	11.0	9.2	12.7
Other Bumiputras	103	35,714	5.0	4.0	5.9
Others	40	15,239	4.5	3.0	6.0

Table 5: Prevalence of mammography by socio-demography (18 years and above) (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Religion					
Islam	745	287,786	6.5	6.0	7.0
Christian	166	65,728	10.3	8.6	11.9
Buddhist	289	116,836	9.3	8.1	10.5
Hindu	124	50,130	9.5	7.7	11.3
Others	15	5,678	5.8	2.6	9.0
Unclassified	2	860	10.8	-3.3	24.9
Citizenship					
Malaysian	1,298	510,126	7.8	7.3	8.3
Non-Malaysian	43	16,891	4.0	2.8	5.2
Education					
None	94	35,079	3.7	3.0	4.5
Primary	319	121,792	6.4	5.7	7.1
Secondary	700	277,035	8.1	7.5	8.8
Tertiary	218	89,247	13.4	11.5	15.2
Unclassified	10	3,864	7.8	3.1	12.5
Marital status					
Single	120	47,785	3.8	3.1	4.5
Married	1,077	422,888	8.7	8.1	9.3
Divorcee	51	19,346	9.6	6.9	12.3
Widow / Widower	90	35,700	5.9	4.7	7.2
Unclassified	3	1,298	5.8	-0.6	12.3
Occupation					
Senior Official & Managers	37	15,083	19.0	13.5	24.5
Professionals	155	62,650	15.1	12.8	17.4
Technical & Associate	99	39,735	12.3	9.9	14.6
Clerical Workers	114	46,335	10.0	8.3	11.8
Service Workers & Shop	164	63,955	6.5	5.5	7.5
Skilled Agricultural & Fishery	25	8,380	4.0	2.4	5.6
Craft & Related Trade Workers	39	15,423	4.3	2.9	5.6
Plant & Machine Operators	6	2,433	7.3	1.7	13.0
Elementary Occupations	15	5,694	4.3	2.1	6.5
Housewife	551	214,388	7.3	6.6	7.9
Unemployed	99	38,302	5.5	4.4	6.5
Unclassified	37	14,640	4.7	3.2	6.2

**Table 5: Prevalence of mammography by socio-demography
(18 years and above) (continue)**

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Household income					
Less than RM 400	68	24,880	4.0	3.1	4.9
RM 400 – RM 699	102	37,564	4.0	3.2	4.7
RM 700 – RM 999	131	50,292	6.7	5.5	7.9
RM 1000 – RM 1999	299	115,369	6.4	5.7	7.2
RM 2000 – RM 2999	239	95,888	8.9	7.7	10.0
RM 3000 – RM 3999	121	48,534	8.8	7.3	10.4
RM 4000 – RM 4999	78	31,262	11.8	9.3	14.2
RM 5000 & above	222	90,832	14.4	12.4	16.3
Unclassified	81	32,395	10.3	8.0	12.6
Personal income					
Less than RM 400	85	31,048	4.1	3.2	5.0
RM 400 – RM 699	90	34,914	5.7	4.6	6.9
RM 700 – RM 999	88	35,474	7.9	6.3	9.5
RM 1000 – RM 1999	197	79,583	10.5	9.1	12.0
RM 2000 – RM 2999	105	42,012	15.0	12.3	17.8
RM 3000 – RM 3999	49	19,813	21.3	16.0	26.6
RM 4000 – RM 4999	18	7,299	23.0	13.6	32.3
RM 5000 & above	32	13,265	28.2	19.4	37.1

Table 6: Prevalence of mammography by socio-demography (50 - 69 years old)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
National	456	180,046	10.7	9.6	11.7
State					
Johor	58	22,371	10.9	8.3	13.5
Kedah	31	11,488	8.1	5.2	11.0
Kelantan	6	1,994	1.9	0.2	3.7
Melaka	13	5,263	8.9	4.2	13.6
N. Sembilan	35	13,062	17.6	11.1	24.0
Pahang	16	6,164	6.6	3.9	9.4
Penang	35	12,767	11.3	7.3	15.3
Perak	22	9,817	5.4	2.9	7.9
Pertis	6	2,030	11.1	3.0	19.3
Selangor	135	57,565	19.2	15.8	22.5
Terengganu	2	685	1.2	-0.4	2.8
Sabah	21	6,660	6.5	3.7	9.2
Sarawak	24	10,218	7.2	4.1	10.4
WP Kuala Lumpur	47	18,499	22.3	16.1	28.5
Labuan	5	1,554	10.9	0.7	21.2
Residence					
Urban	357	147,920	14.1	12.5	15.6
Rural	99	32,126	5.1	4.0	6.1
Age group					
50-54	179	71,418	11.5	9.8	13.2
55-59	142	55,953	11.6	9.7	13.5
60-64	86	33,935	11.1	8.9	13.4
65-69	49	19,739	6.7	4.8	8.6
Ethnic group					
Malays	218	84,695	9.3	8.1	10.5
Chinese	142	57,762	12.6	10.4	14.7
Indians	72	28,832	17.8	13.8	21.8
Other Bumiputras	15	5,294	4.1	2.1	6.2
Others	9	3,462	11.5	4.4	18.7
Religion					
Islam	234	90,417	9.1	8.0	10.3
Christian	59	23,931	16.1	12.1	20.0
Buddhist	107	43,558	11.1	8.9	13.2
Hindu	52	20,603	15.7	11.5	20.0
Others	3	1,110	4.8	-0.6	10.2
Citizenship					
Malaysian	453	178,863	10.7	9.7	11.8
Non-Malaysian	3	1,183	5.4	-0.6	11.5

Table 6: Prevalence of mammography by socio-demography (50 - 69 years old) (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Education					
None	52	19,397	4.3	3.2	5.5
Primary	162	62,328	7.8	6.6	9.0
Secondary	190	77,742	20.1	17.5	22.7
Tertiary	47	18,741	44.7	34.1	55.2
Marital status					
Single	17	7,133	11.7	6.5	16.8
Married	349	137,453	11.3	10.1	12.5
Divorcee	25	9,603	12.1	7.5	16.7
Widow / Widower	64	25,410	7.9	5.9	9.8
Household income					
Less than RM 400	28	10,265	4.5	2.9	6.2
RM 400 – RM 699	44	16,286	5.8	4.2	7.5
RM 700 – RM 999	52	20,211	10.2	7.5	13.0
RM 1000 – RM 1999	95	37,444	9.2	7.4	10.9
RM 2000 – RM 2999	71	28,814	13.9	10.9	16.9
RM 3000 – RM 3999	39	15,929	15.8	11.2	20.4
RM 4000 – RM 4999	21	8,264	16.1	9.4	22.7
RM 5000 & above	62	25,223	21.2	16.2	26.3

**Table 7: Prevalence of clinical breast examination by socio-demography
(35 years and above)**

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
National	6,267	2,383,494	54.7	53.7	55.7
State					
Johor	754	290,624	57.4	54.5	60.2
Kedah	505	182,758	52.9	49.4	56.4
Kelantan	302	100,440	41.7	38.0	45.5
Melaka	167	69,917	56.3	50.6	62.1
N. Sembilan	240	88,570	51.4	45.9	56.9
Pahang	326	124,400	56.6	51.8	61.5
Penang	437	156,316	57.9	54.1	61.8
Perak	579	243,837	58.2	54.9	61.6
Perlis	55	20,470	51.0	41.2	60.7
Selangor	1,190	494,281	59.6	57.2	62.0
Terengganu	207	69,746	44.2	39.5	49.0
Sabah	491	151,232	43.1	39.7	46.5
Sarawak	573	224,029	57.3	53.8	60.8
WP Kuala Lumpur	360	141,692	58.0	54.1	61.8
Labuan	81	25,181	53.5	43.4	63.6
Residence					
Urban	3,900	1,610,382	57.8	56.5	59.1
Rural	2,367	773,112	49.2	47.6	50.8
Age group					
35-39	1,359	512,019	66.9	64.8	68.9
40-44	1,351	512,334	63.7	61.6	65.8
45-49	1,207	457,539	62.2	59.9	64.4
50-54	914	351,861	56.2	53.7	58.7
55-59	643	247,856	51.2	48.3	54.1
60-64	348	132,944	43.3	39.8	46.8
65-69	233	88,310	31.5	28.0	35.0
70-74	124	46,805	27.5	23.4	31.6
75-79	59	22,755	22.7	17.5	27.9
80+	29	11,070	13.3	8.6	17.9
Ethnic group					
Malays	3,456	1,293,506	54.9	53.6	56.3
Chinese	1,525	615,245	57.7	55.6	59.7
Indians	560	225,688	56.7	53.5	59.8
Other Bumiputras	565	190,432	47.6	44.5	50.7
Others	161	58,623	42.6	37.5	47.7

Table 7: Prevalence of clinical breast examination by socio-demography (35 years and above) (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Religion					
Islam	3,827	1,419,300	53.4	52.1	54.7
Christian	638	239,519	59.5	56.4	62.7
Buddhist	1,263	509,061	56.0	53.8	58.2
Hindu	442	177,884	55.5	52.1	59.0
Others	94	36,404	56.4	48.6	64.2
Citizenship					
Malaysian	6,093	2,319,300	55.3	54.3	56.3
Non-Malaysian	169	62,389	39.0	34.3	43.7
Education					
None	760	275,506	31.0	29.1	32.9
Primary	2,153	805,756	51.4	49.9	53.0
Secondary	2,885	1,113,488	67.5	66.0	69.0
Tertiary	446	179,939	77.0	73.5	80.5
Marital status					
Single	175	68,831	36.5	32.1	40.9
Married	5,343	2,027,546	59.8	58.7	60.9
Divorcee	196	7,622	44.4	39.7	49.1
Widow / Widower	538	204,947	34.5	32.0	37.0
Occupation					
Senior Official & Managers	90	36,760	71.2	63.6	78.7
Professionals	366	143,756	74.9	71.0	78.9
Technical & Associate	360	139,354	73.1	68.9	77.3
Clerical Workers	311	122,927	68.9	64.6	73.3
Service Workers & Shop	857	327,412	54.9	52.4	57.4
Skilled Agricultural & Fishery	252	85,417	47.2	42.6	51.9
Craft & Related Trade Workers	202	77,880	54.7	49.6	59.8
Plant & Machine Operators	33	12,807	58.8	45.9	71.6
Elementary Occupations	109	39,512	46.9	40.4	53.5
Housewife	3,237	1,225,054	55.9	54.5	57.2
Unemployed	380	144,649	30.3	27.7	32.8

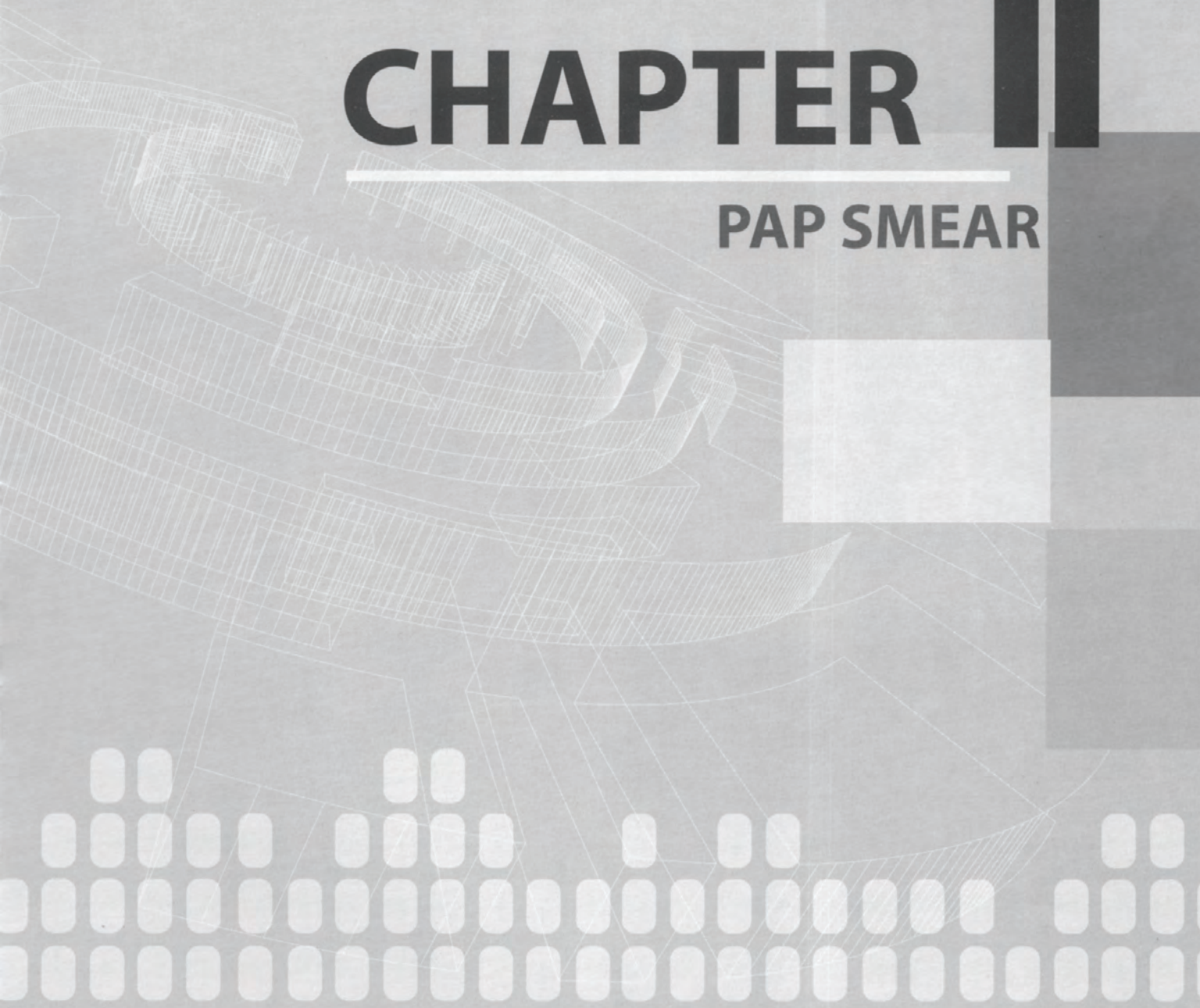
**Table 7: Prevalence of clinical breast examination by socio-demography
(35 years and above) (continue)**

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Household income					
Less than RM 400	466	167,759	35.9	33.0	38.7
RM 400 – RM 699	829	296,478	47.6	45.2	49.9
RM 700 – RM 999	691	256,147	53.1	50.2	56.0
RM 1000 – RM 1999	1,637	620,190	57.5	55.6	59.3
RM 2000 – RM 2999	991	387,638	61.4	58.9	63.9
RM 3000 – RM 3999	484	191,371	60.4	57.0	63.8
RM 4000 – RM 4999	264	103,771	62.8	58.1	67.5
RM 5000 & above	626	252,134	66.6	63.5	69.8
Personal income					
Less than RM 400	635	227,972	48.7	45.9	51.6
RM 400 – RM 699	433	162,437	54.4	50.9	57.9
RM 700 – RM 999	311	123,269	60.4	56.1	64.8
RM 1000 – RM 1999	631	246,469	68.1	65.0	71.3
RM 2000 – RM 2999	324	128,416	72.0	67.8	76.2
RM 3000 – RM 3999	127	50,409	80.7	74.5	86.9
RM 4000 – RM 4999	40	15,828	68.2	55.6	80.8
RM 5000 & above	75	30,981	80.3	72.5	88.1

CHAPTER



PAP SMEAR



ABSTRACT

The objectives of pap smear module is to determine the prevalence of pap smear examination among women 18 years and above by socio demographic characteristics. This is a population-based cross-sectional study covering a two-stage stratified sampling design of 18898 female aged 18 year and above using pre-design questionnaire. The response rate for this module was 99.0%. Almost 70% of the respondents knew the reasons of doing pap smear (i.e.: to detect cancer). The prevalence rate for doing pap smear among the respondents was 43.7%. The prevalence was higher in Perlis (57.7%), rural locality (45.0%), age group between 40 – 44 years old (65.2%), Chinese (50.5%), married (56.4%), secondary level of education (48.1%), and household income between RM4000 – RM4999 (49.9%). Almost seventy percents (68.8%) of the respondents who underwent screening obtained it from government facilities, 30.3% from private facilities and 0.9% from Non-governmental organization (NGOs). The study also showed that among respondent who had undergone pap smear examination, 42.8% are due to self awareness and 59.8% done it less than 3 years ago. No further information regarding pap smear, fear of pain, busy and shy is the commonest reasons for not doing pap smear.

1. INTRODUCTION

Cervical cancer comprises approximately 12% of all cancers in women worldwide. It is the second most common cancer in women worldwide and among the commonest in many developing countries. Annual global estimates around the year 2000 were 470,600 new cases and 233,400 deaths from cervical cancer annually (Ferlay et al. 2001). Eighty percent of these cases occur in developing countries. In most countries in North America and Western Europe, the incidence of cervical cancer has been falling although recently at a much slower rate (Beral et al. 1994). However, in many developing countries cervical cancer has showed a small change in the incidence, except for those countries that have achieved the demographic (epidemiological) transition with increasing affluence from industrialization.

The National Cancer Registry (Lim & Halimah (Eds) 2004) reported that cervical cancer is the second most common cancer among Malaysian women. In 2003, there were 1,557 cervical cancer cases reported accounting for 12.9% of the total female cancers. The overall age-standardized incidence rate (ASR) of cervical cancer in Malaysia was 19.7 per 100,000 population (Lim & Halimah (eds) 2004).

Cervical cancer incidence rate increased with age after 30 years. The age pattern showed a peak age specific incidence rate at 60 – 69 years in Malay, Chinese and Indian ethnicity, and declined thereafter. Of the cases diagnosed, only 2.1% cases involved women below the age of 30 (Table 1.1). Chinese women had the highest ASR of 28.8 per 100,000 populations, followed by Indians with ASR of 22.4 per 100,000 population and Malays with ASR of 10.5 per 100,000 populations (Lim & Halimah (eds) 2004). Penang Cancer Registry from 1999 – 2003 showed 29.3% of cases presented at stage 1, 40.0% at stage 2, 23.9% at stage 3 and 6.8% at stage 4 (Penang Cancer Registry 2004).

Table 1.1: Cervical cancer age specific cancer incidence per 100,000 population, Female, Peninsular Malaysia 2003

Age, years	No.	%	Crude Incidence Rate
0 – 9	1	0.1	0
10 – 19	4	0.3	0.2
20 – 29	27	1.7	1.7
30 – 39	195	12.5	14.6
40 – 49	439	28.2	39.1
50 – 59	413	26.5	57.8
60 – 69	297	19.1	71.6
≥ 70	181	11.6	66.1

Source: 2nd Report of National Cancer Registry 2003

Pap smear as a screening tool for early detection of cervical cancer was introduced in Malaysia since the late sixties following the integration of family planning services into Maternal and Child Health Programme of Ministry of Health Malaysia. The importance of pap smear screening was further emphasized through the Healthy Life Style Campaign in 1995 with the theme 'Cancer'. Since then, pap smear screening was made available for all women and aged between 20 and 65 years. The recommended screening interval is three years following two initial consecutive negative smears one year apart (Ministry of Health 2004). There are various agencies that provide Pap smear service such

as National Population and Family Development Board, Federation of Family Planning Association of Malaysia, private clinics and hospitals, university hospitals and army hospitals. The programme approach is opportunistic screening which refers to services provided to women who request it or who are in a health facility for any other services.

The pap smear activity reports are generated through Health Management Information Systems (HMIS) which collect the number of slides taken and the results reported according to state, age groups and service providers on monthly basis. It does not indicate the number of women having pap smear examination, therefore, it is justified to include the topic on pap smear examination in this NHMS III. This will be able to facilitate the evaluation of national pap smear screening program and addressing its barriers.

2. LITERATURE REVIEW

The vast majority of cervical cancer cases are caused by infection with certain subtypes of human papillomavirus (HPV), a sexually transmitted virus that infects cells and may result in precancerous lesions and invasive cancer. The causal role of HPV in cervical cancers has been firmly established biologically and epidemiologically (Nubia 2006). The most common cancer-causing types are 16 and 18, which are found in 70% of all cervical cancers reported. Other oncogenic types (e.g. 31, 33, 45, and 58) are found less commonly and may have different prevalence in different geographical areas (World Health Organization 2006a). Other cofactors are necessary for the progression from cervical HPV infection to cancer such as high parity, tobacco smoking, long term use of hormonal contraceptives and co-infections with other sexually transmitted virus (Nubia 2006)

Cervical cancer is preventable through screening to detect precancerous lesions and appropriate treatment before the lesions develop into cancer. Cervical cancer screening programme is justified based on few criteria of disease nature and treatment options which fit to the general principles of public health screening. It is an important public health problem and offers various effective and acceptable screening tests. There is a recognized precursor stage that can be treated in a safe, effective and acceptable way. Furthermore, the time between the appearance of precancerous lesions and the occurrence of cancer is long, giving ample time for the detection and treatment. Treatment of early lesions is also cheaper as compared to the management of invasive cancer (Alliance for Cervical Cancer Prevention 2004)

Currently, three tests to screen for cervical cancer are cervical cytology : Conventional (Pap smear) and liquid-based; HPV DNA test and visual inspection: with acetic acid (VIA) or Lugol's iodine (VILI). These tests meet the criteria for good screening test: accurate, reproducible, inexpensive, easy to perform and follow up, acceptable and safe (WHO 2006b). Out of these, there is general agreement that high quality of cervical cytology is a highly specific screening test, with estimates of the order of 95-99% (WHO 2002).

In the Pap smear test, a sample of cells is taken from the transformation zone of the cervix using an extended-tip wooden spatula or brush. The entire transformation zone should be sampled since this is where almost all high-grade lesions develop. The sample is then smeared onto a glass slide and immediately fixed with a solution to preserve the cells. The slide is sent to a cytology laboratory where it is stained and examined using a microscope to determine whether the cells are normal and to classify them appropriately, using the Bethesda classification. Its accuracy depends on the quality of the services, including sampling practices (taking and fixing the smears), preparation and interpretation of smears in the laboratory. Under the best conditions in developed countries or research settings, conventional cytology can detect up to 84% of precancer and cancer. However, under poor conditions its sensitivity can be as low as 38%. The specificity of the test is usually over 90%. Liquid-based cytology (LBC) is the refinement of conventional cytology which was introduced in the mid-1990s and is increasingly used in high-resource settings. Instead of smearing cervical cells on a slide, the provider transfers the specimen from a brush to a preservative solution. The specimen is sent to a laboratory where the slide is prepared. LBC is more expensive than conventional cytology however; it appears to have a number of advantages over conventional methods (WHO 2006a).

HPV DNA testing is a new screening procedure, based on the detection of high-risk HPV DNA in vaginal or cervical smears. A sample of cells is collected from the cervix or vagina using a swab or small brush, and placed in a small container with a preservative solution. The test currently requires sophisticated and expensive laboratory equipment. Detection of high-risk HPV does not necessarily mean that pre cancer or cancer is present; it indicates simply that there is an HPV infection. When detection of HPV is used as a primary screening test, the sensitivity for detection of pre cancer and cancer varies from 50% to 95%, with most studies reporting high sensitivity of 85% or more. The specificity ranges from 50% to 95%, with an average of 84% (WHO 2006b).

Visual inspection with acetic acid (VIA) is an examination using naked-eye to visualize the uterine cervix (without magnification) after the application of diluted acetic acid, to screen for cervical abnormalities. A solution of 3% to 5% acetic acid is used and the cervix illuminated with a bright light source. A positive test is the detection of well-defined acetowhite lesions on the cervix. The objective of VIA is to detect acetowhite lesions leading to the early diagnosis of high-grade cervical intraepithelium neoplasia and early preclinical asymptomatic invasive cancer. The test is simple, non-invasive, a low technology screening test requiring minimal equipment, staff and does not involve the laboratory. Therefore it is an inexpensive screening test for cervical cancer. VIA is a real-time screening test as the outcome is known immediately after the administration of the test, so that further investigations/ treatments can be planned and carried out during the same visit (WHO 2002). The sensitivity ranges between 67-79% and specificity between 49-86% (Sankaranarayanan et al. 2005).

A primary consideration in the implementation of any screening program is to ensure that large proportions of the targeted population are covered and screened within the program guidelines. However, obtaining high levels of participation is of great challenge to both developed and developing countries. In Europe, coverage ranges between and within countries. England, Iceland and rural areas of Sweden and Denmark have coverage rates more than 80%, but it is below 60% in Austria, France and Spain. In developing countries, variation is also wide. The coverage is quite high in Costa Rica (77%) and Chile (68%) but very low in most Asian and African countries (IARC Handbook of Cancer Prevention, 2004). A recent study in Malaysia by National Population and Family Development Board (NPFDB) reported that about 55% of ever-married women aged 20-65 years had ever done pap smear (National Population and Family Development Board 2007). In most part, screening coverage in developing countries is still low, resulting high morbidity and mortality due to cervical cancer.

Barriers to cervical cancer screening uptake include lack of knowledge about the disease and test, the perception of their risk for cervical cancer, emotional factors, lack of familiarity with the concept of preventive health care, inaccessibility of services and lack of support from the family and community.

Women need to have a basic knowledge of pap tests, and some understanding of the function of the test, before they initiate screening. About 20.9% of women in a study by NPFDB gave the reason never heard of pap smear for not doing pap smear examination (National Population and Family Development Board 2007). Several studies have shown that a lack of awareness about cervical cancer and how to prevent it is an important obstacle to improving screening coverage. A significant proportion of women fail to recognise their need to have regular Pap tests in the absence of symptoms. Some studies have observed that some women believe that in the absence of symptoms, there is no need to seek any treatment or health check up. These beliefs contribute to the misunderstanding that screening is not necessary in the absence of symptoms, and are contrary to participation in regular screening programs (McMullin et al. 2005; Savage & Clarke 1998; Stancombe Research & Planning 1996).

Women's perception that they are susceptible to cervical cancer is an important determinant of cervical screening behaviour. A lack of knowledge regarding the range of risk factors associated with cervical cancer can lead some women to falsely assume a low level of personal risk, which in turn, influences their screening behaviour. This factor was the main reason given for not doing pap smear examination (23%) among ever married women in NPFDB study. (National Population and Family Development Board 2007). Many women felt that only those who engaged in 'unwise' sexual behaviors, in particular, should receive regular Pap smear examinations. (McMullin et al. 2005). Some women who have experienced menopause may believe that they are no longer at risk of diseases of the reproductive organs, and believe that they are no longer eligible for a regular screening program (Chingang et al. 2005).

The expectation of emotional and physical discomfort can prevent women from having a pap test. Under screened women are more likely to report fear, anxiety and/or embarrassment in relation to the pap smear procedure (National Population and Family Development Board 2007; Moreira et al. 2006)

This could be due to lack of knowledge about the procedure of pap smear examination among them. Fear of cancer influences screening behaviour among women who view the pap test as a tool for the detection, rather than the prevention of cancer. Highest fear was shown during the time after the pap smear until the result is known. This suggests that some women refuse to participate in the future test because of fear of an abnormal result. It was suggested to reduce the waiting time for the result to minimize fear (Park et al. 2002).

Few studies on barriers and benefits in Latin American countries found that the main barriers to service delivery were the lack of accessible and available high-quality services, the lack of comfort and privacy in facilities, discourtesy on the part of facility staff and the prohibitive cost of services. (Agurto et al. 2004). The beliefs and attitudes of significant others may influence women's attitudes towards cervical screening. A study of Latino males concluded that the health-related knowledge and attitudes held by men towards their wives' health significantly influenced their wives' health-seeking behaviour (Flores & Mata 1995). This is observed in Malaysia, given the strong influence by the spouse in most of the local communities. It is important to consider the perspectives of women and men in the community, their knowledge about cervical cancer, and their service needs in order to develop services that will meet their needs. Furthermore, these perspectives are important for developing promotional campaigns that address their knowledge gaps and concerns.

3. OBJECTIVE

3.1 General Objective

To determine the prevalence of pap smear examination among women aged 18 years and above by socio-demographic characteristics.

3.2 Specific Objectives

- 3.2.1 To determine prevalence of pap smear among women 18 years and above
- 3.2.2 To describe the characteristics of women who undergo pap smear examination
- 3.2.3 To determine prevalence of women who did pap smear within the last 3 years
- 3.2.4 To determine the health facility chosen for pap smear
- 3.2.5 To determine reasons for not doing pap smear
- 3.2.6 To describe the characteristics of ever married women who did not undergo pap smear examination
- 3.2.7 To compare the trend of pap smear examination with NHMS II

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 was updated until 2004; 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 were 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 were also classified by urban and rural areas. The classification into these strata was made up 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 II (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 stage of the calculation of the sample size of each state.

The survey findings answering to 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 that the data is 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 become 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 informed to 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

4.4.1 The questionnaire

A bi-lingual (Bahasa Malaysia and English) pre-coded questionnaire had been designed, pre-tested and piloted prior to the survey. Women's Health module of the NHMS III questionnaire was dedicated to questions on Breast Health Awareness and Pap Smear. The module was subjected to all female respondents aged 18 years and above in the households of selected LQs. Questions comprise of both close ended and open ended.

All the FI questionnaires had a consent form to be read and signed by the respondent. The outside cover of all questionnaires had to be filled with a unique individual identification (ID) number by the enumerator. The enumerator also had to fill his or her ID as well as the code for the outcome of the interview as part of the quality assurance process.

4.4.2 The interview

As far as possible, all females who qualify from the selected LQ's had been face-to-face interviewed by the relevant teams members. Interview was commenced beginning in the morning till late evening. Where an interview had been unsuccessful due to the absence of the respondent at the selected LQ, repeat visits was conducted after leaving messages with neighbours or by other means for an interview at a later date. A household member was classified as a non-respondent if at least 3 visits were unsuccessful.

4.5 Field Preparations

Two main survey implementation groups had been formed: the Central Coordinating Team (CCT) and the field team. The CCT'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.

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

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 & testing of central monitoring and logistics support.

4.5.2 Training of data collection teams

A training period of 2 weeks for field supervisors, team leaders, nurses and interviewers were held to familiarize them with the questionnaire, developed their interpersonal communication skills and appreciate the need for a good teamwork. Briefing on the questionnaire, mock interview in the classroom and individual practice under supervision was conducted during the training.

4.6 Quality Control

Quality control procedures for the data collection were done at two stages, field and central. 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 had been conducted at field and central levels prior to data entry;

- a) Field data screen by each interviewers at the end of his/her interview
- b) Field data screen of each question by peer interviewers through exchanging questionnaire booklets
- c) Field data screen 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 analysis 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 analysis process were monitored and advised by the NHMS III Statistics Consultant.

5. FINDINGS

Total number of eligible respondents (ie: women aged 18 years old and above) for Pap Smear module was 19,081. However only 18,898 respondents responded to this module, giving a response rate of 99.0%.

5.1 Description of the Respondents by Socio-demographic Characteristics

The description of the respondents by socio-demographic was shown in Appendix: Table 1. The distribution by state reflects the country population with the highest number of the respondents was from Selangor (17.8%), Sabah (11.7%) and Johor (11.3%) with the lowest from Perlis (0.9%) and Labuan (1.6%). Sixty percents of the respondents were urban dwellers and almost 40% of them were in rural areas. Almost two third of the respondents were below 50 years old.

More than half of the respondents (54.9%) were Malays. Chinese constituted about 20% while the Indians and the Other Bumis accounted for another 20% of the respondents. This generally reflects the ethnic distribution of Malaysian population. More than sixty percents (65.0%) were Muslims and slightly less than twenty percent (17.1%) were Buddhists. Christians and Hindus make up 9.3% and 7.1% of the respondents, respectively. Majority of respondents (93.6%) were Malaysians.

Almost three quarters of the respondents (69.8%) were married, 18.0% were single and 8.9% were widowed. By education level, the highest number of the respondents was in the secondary education level, accounting for 48.0%, followed by primary education, 27.6% and no formal education of 14.6%. About 9% had gone to tertiary level of education.

The largest category for occupation was housewife (42.6%), followed by service workers (13.96%) and unemployed group (10.46%). Almost two third of the respondents were from the household earning less than RM2,000 per month and one quarter of the respondents had household income of between RM1,000 – RM1,999.

5.2 Prevalence of Pap Smear Examination

The national prevalence for pap smear examination was 43.7% (CI: 42.9 – 44.6) (Figure 5.1).

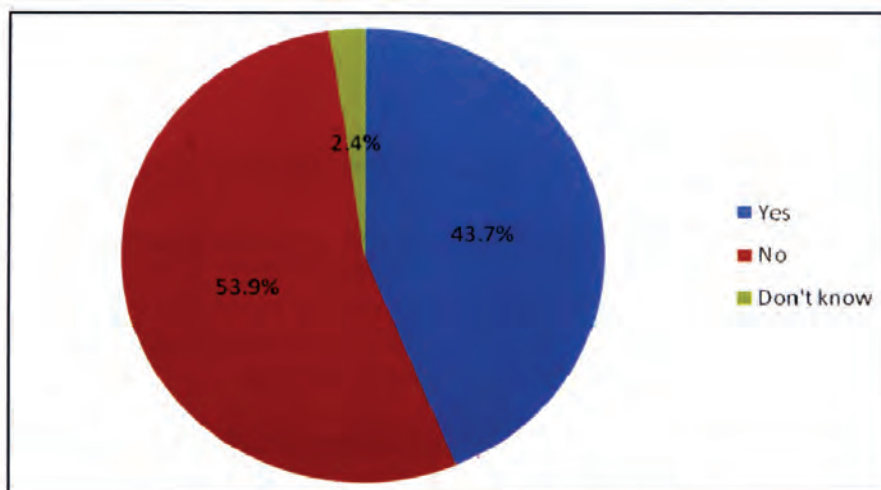


Figure 5.1: Prevalence of pap smear examination

5.3 Prevalence of Pap Smear Examination by Socio-demographic Characteristic

5.3.1 Prevalence of pap smear examination by state

The highest prevalence for pap smear examination was among respondents in Perlis [57.7% (CI: 48.7 – 66.6)] and the lowest was in Sabah [35.3% (CI: 32.5 – 38.1)] (Figure 5.2).

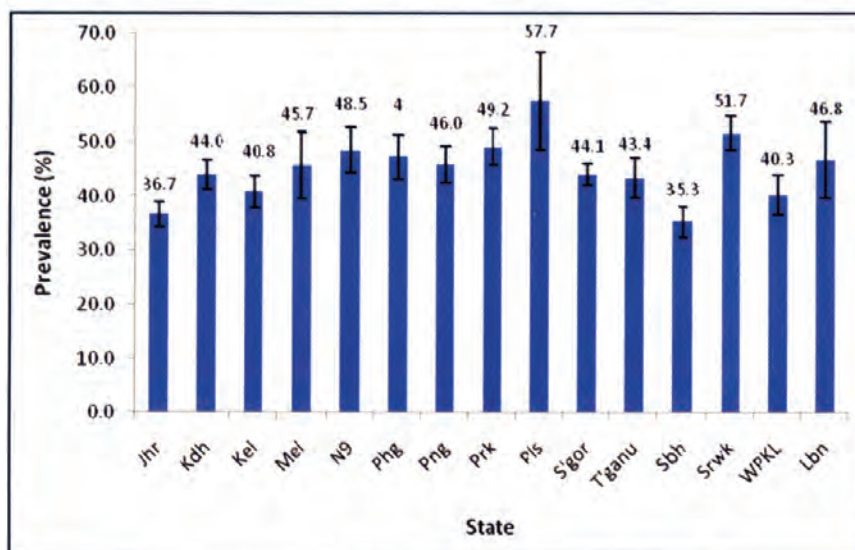


Figure 5.2: Prevalence of pap smear examination by state

5.3.2 Prevalence of pap smear examination by strata

The prevalence of Pap smear examination was higher in rural [45.0% (CI: 43.5 – 46.4)] than urban [43.1% (CI: 42.0 – 44.2)] area (Figure 5.3).

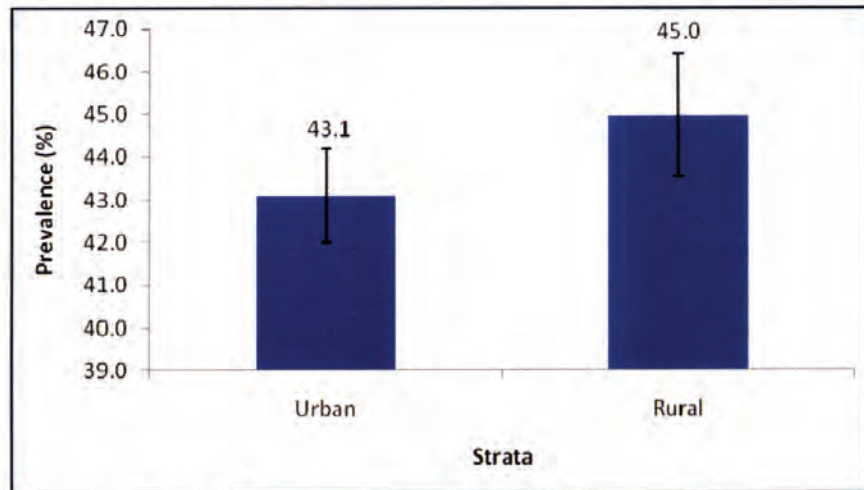


Figure 5.3: Prevalence of pap smear examination by strata

5.3.3 Prevalence of pap smear examination by age group

The prevalence increased with increasing age until the age of 40 – 44 years old where it started to decrease with age (Figure 5.4).

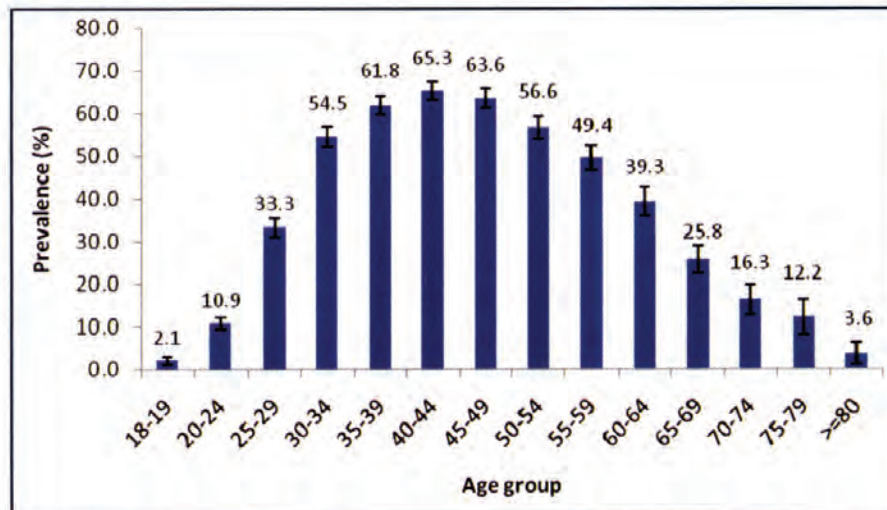


Figure 5.4: Prevalence of pap smear examination by age group

5.3.4 Prevalence of pap smear examination by ethnic group

The prevalence was highest among Chinese [50.5% (CI: 48.6 – 52.3)] and lowest among Indians [37.2% (CI: 34.6 – 39.8)] (Figure 5.5).

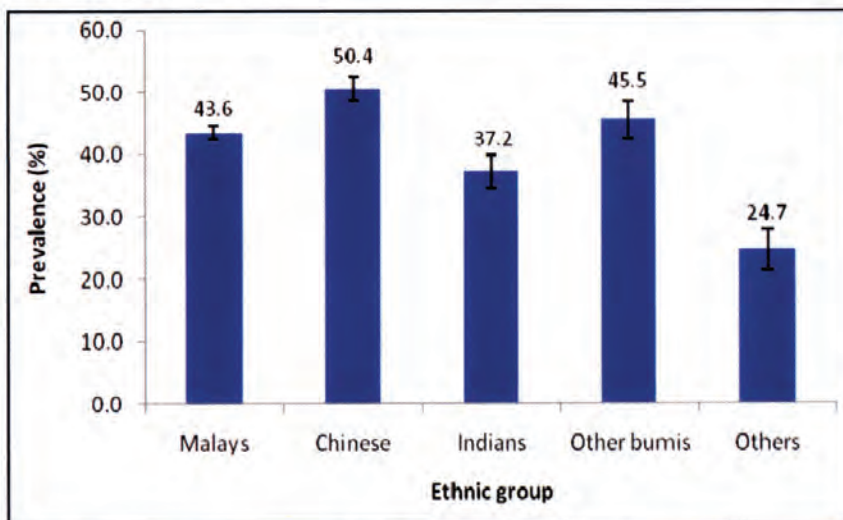


Figure 5.5: Prevalence of pap smear examination by ethnic group

5.3.5 Prevalence of pap smears examination by religion

The prevalence was highest among other religious groups [54.7% (CI: 48.3 – 61.1)] and lowest among Hindu [35.6% (CI: 33.0 – 38.5)] (Figure 5.6).

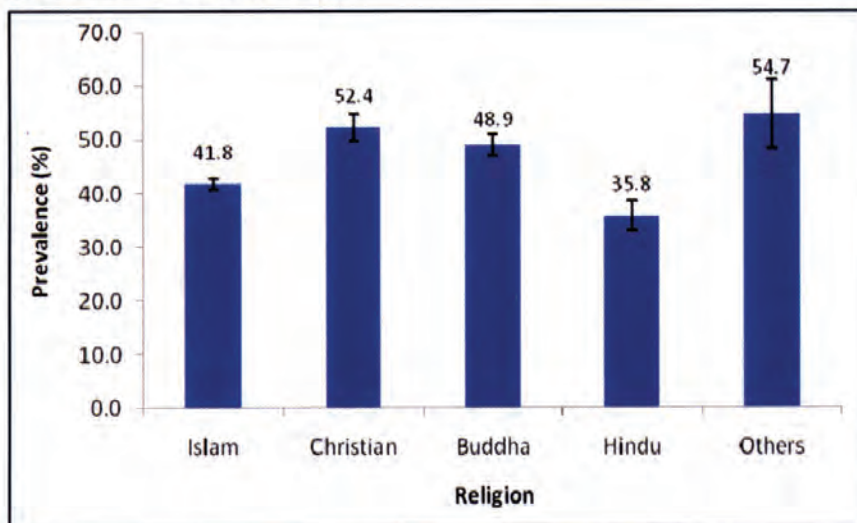


Figure 5.6: Prevalence of pap smear examination by religion

5.3.6 Prevalence of pap smear examination by marital status

The highest prevalence was among married respondent (Figure 5.7).

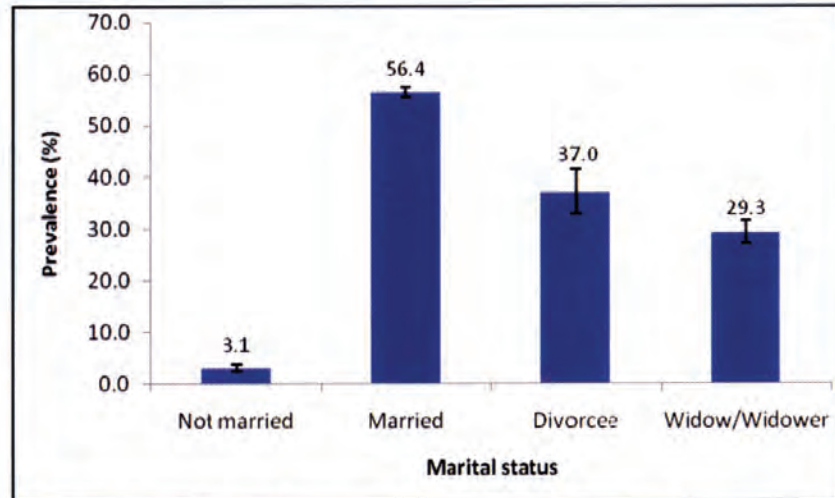


Figure 5.7: Prevalence of pap smear examination by marital status

5.3.7 Prevalence of pap smear examination by state

Malaysian had higher prevalence of pap smear examination than Non-Malaysian (Figure 5.8).

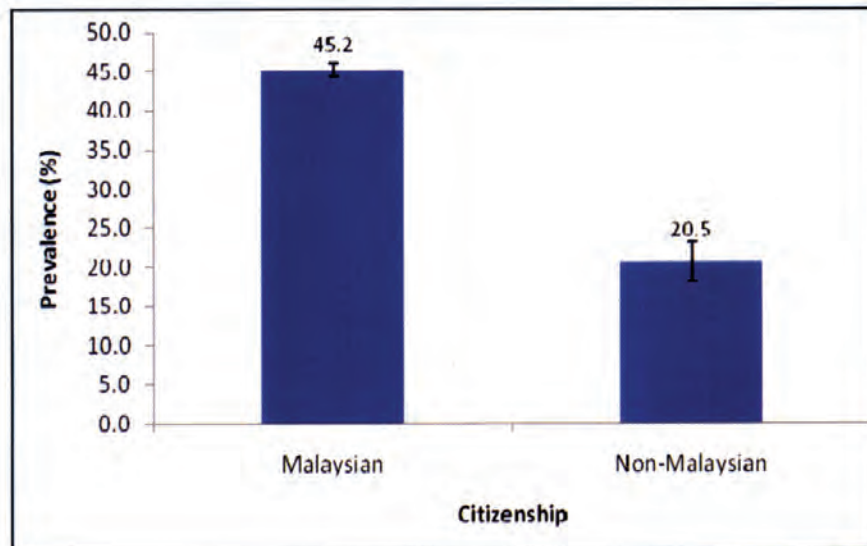


Figure 5.8 : Prevalence of pap smear examination by citizenship

5.3.8 Prevalence of pap smear examination by education level

The prevalence was highest in secondary education followed by primary education (Figure 5.9).

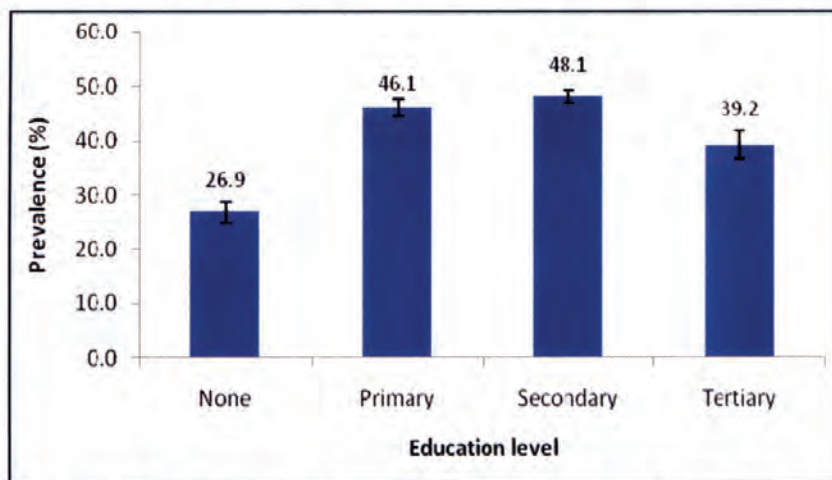
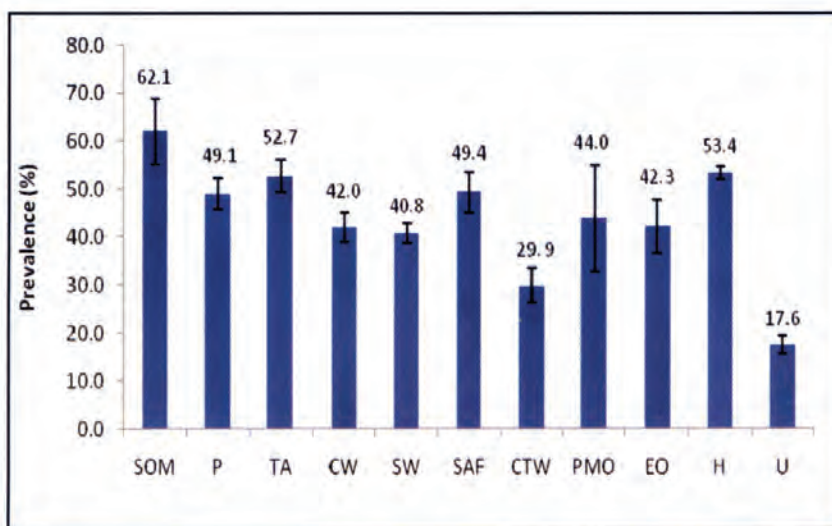


Figure 5.9 : Prevalence of pap smear examination by education level

5.3.9 Prevalence of pap smear examination by occupation

The highest prevalence was among Senior Officials & Managers [62.1% (CI: 55.3 – 69.0)] with the lowest among unemployed group [17.6% (CI: 15.8 – 19.5)] (Figure 5.10).



SOM=Senior Officials & Managers, P=Professionals, TA=Technicians & Associate Professionals, CW=Clerical Workers, SW=Service Workers, SAF=Skilled Agricultural & Fishery, CTW=Craft & Trade Workers, PMO=Plant & Machine Operator, EO=Elementary Occupations, H=Housewife, U=Unemployed

Figure 5.10: Prevalence of pap smear examination by occupation

5.3.10 Prevalence of pap smear examination by household income

Generally, the prevalence of pap smear examination increased with increasing household income (Figure 5.11).

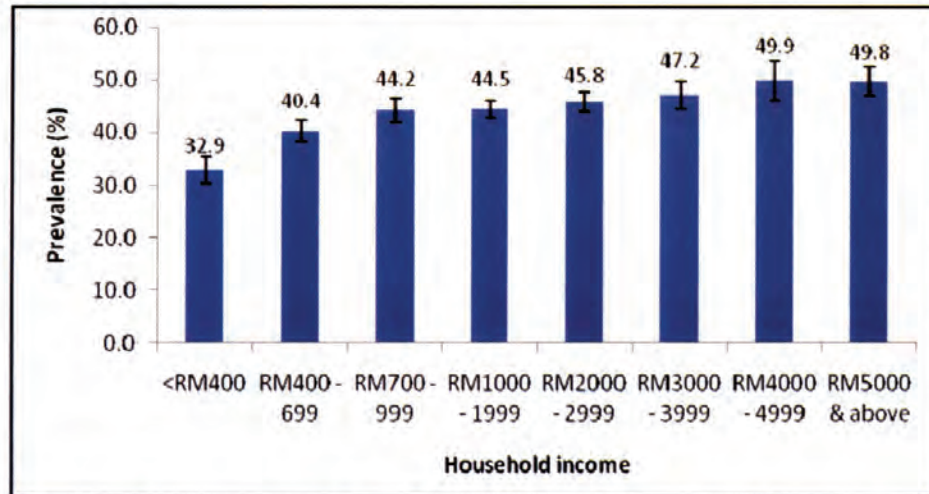


Figure 5.11: Prevalence of pap smear examination by household income

5.3.11 Prevalence of pap smear examination by personal income

The highest prevalence was among income of RM5000 and more [75.4% (CI: 66.8 – 84.1)] with the lowest among income group of RM700 – RM999 [35.9% (CI: 32.9 – 38.8)] (Figure 5.12).

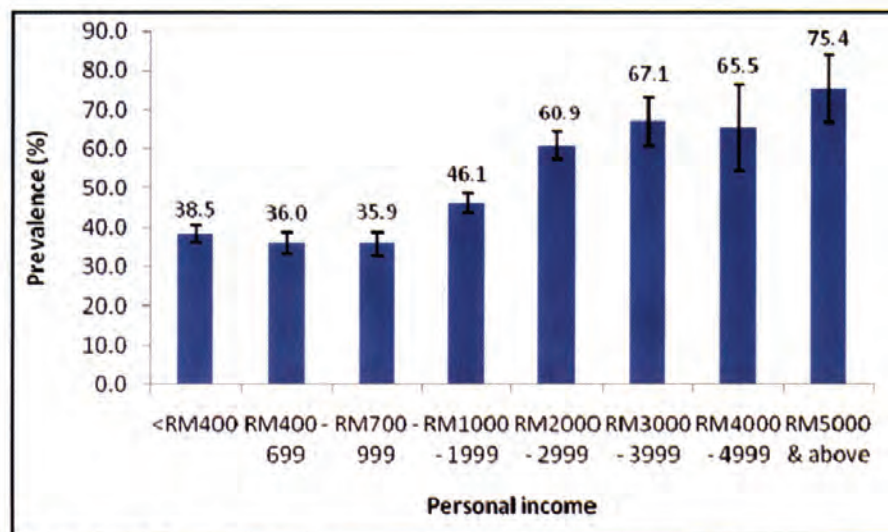


Figure 5.12: Prevalence of pap smear examination by personal income

5.4 Comparison of Pap Smear Examination with NHMS II (20 years and above)

The prevalence of pap smear examination in NHMS III showed increased trend compared to NHMS II in all socio-demographic characteristics (Figure 5.13 – Figure 5.21).

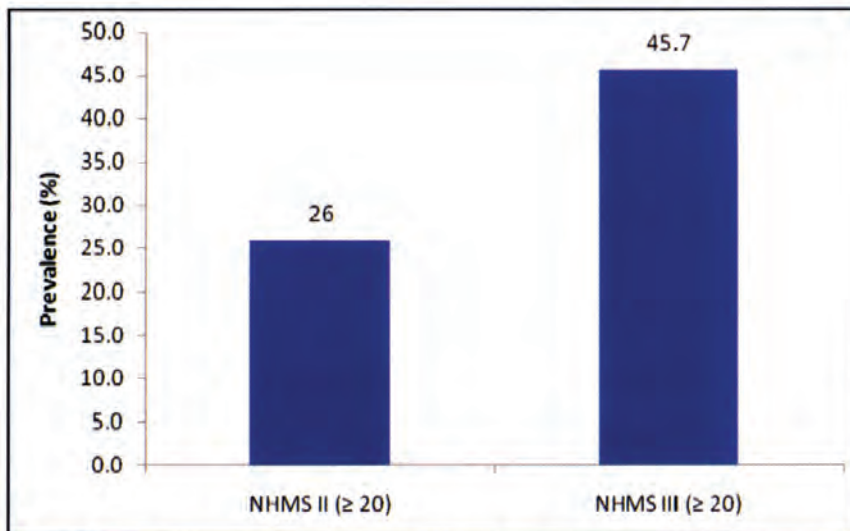


Figure 5.13: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II

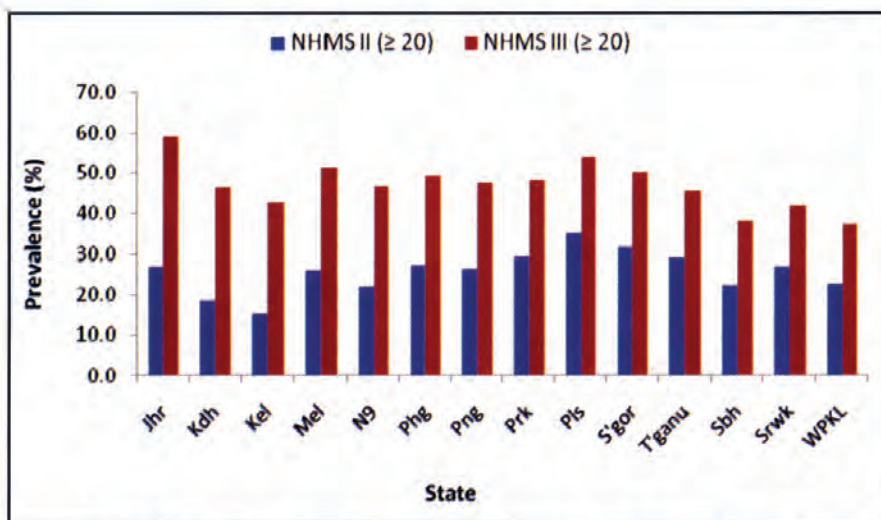


Figure 5.14: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by state

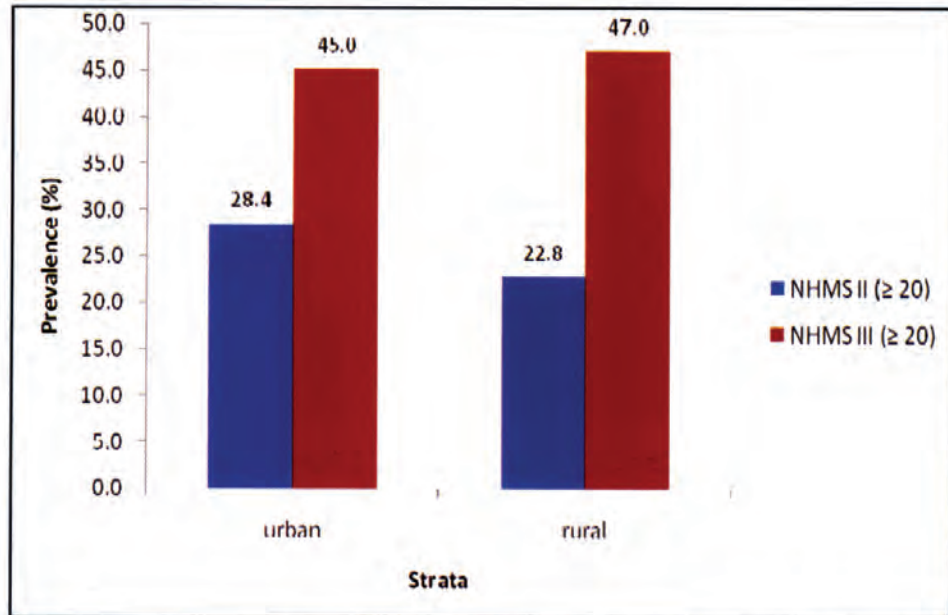


Figure 5.15: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by strata

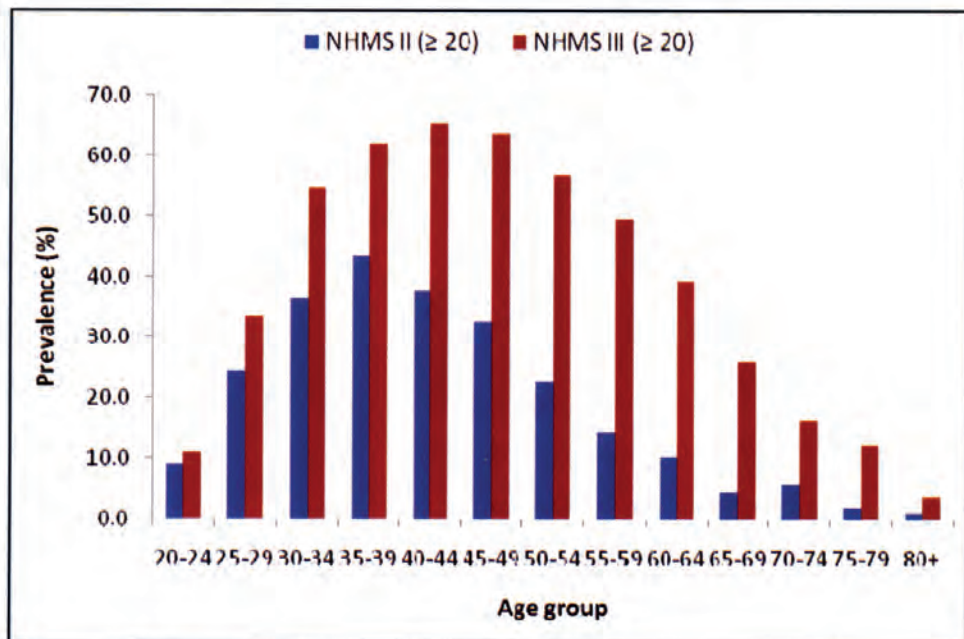


Figure 5.16: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by age group

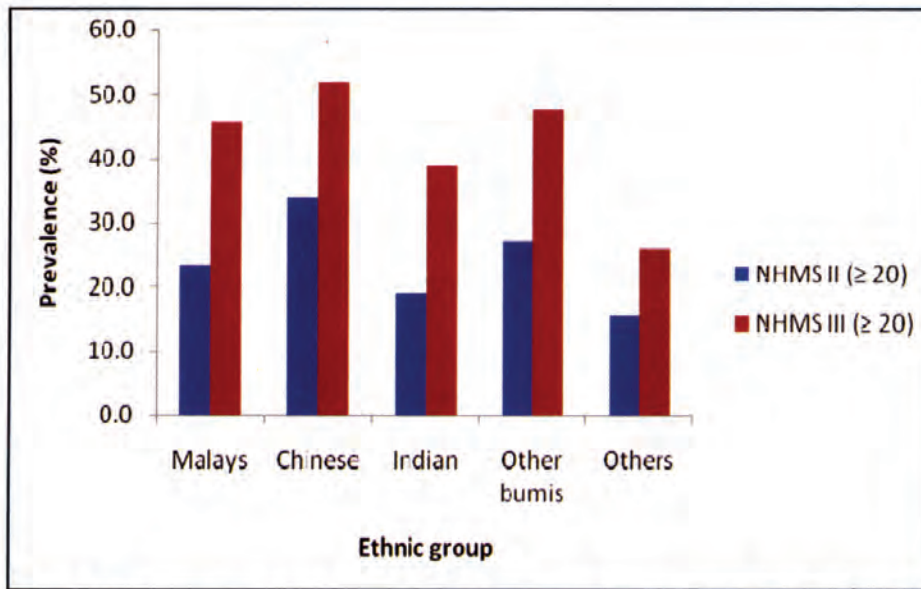


Figure 5.17: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by ethnic group

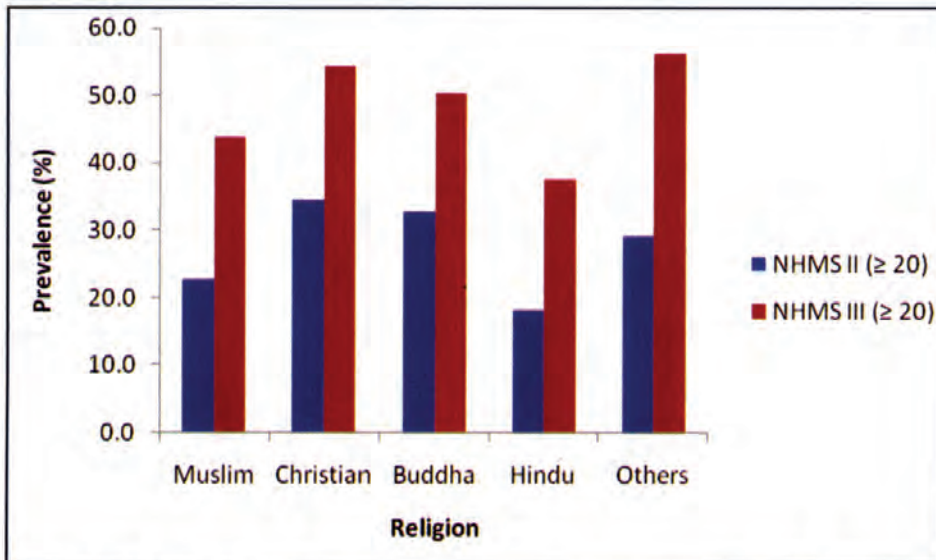


Figure 5.18: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by religion

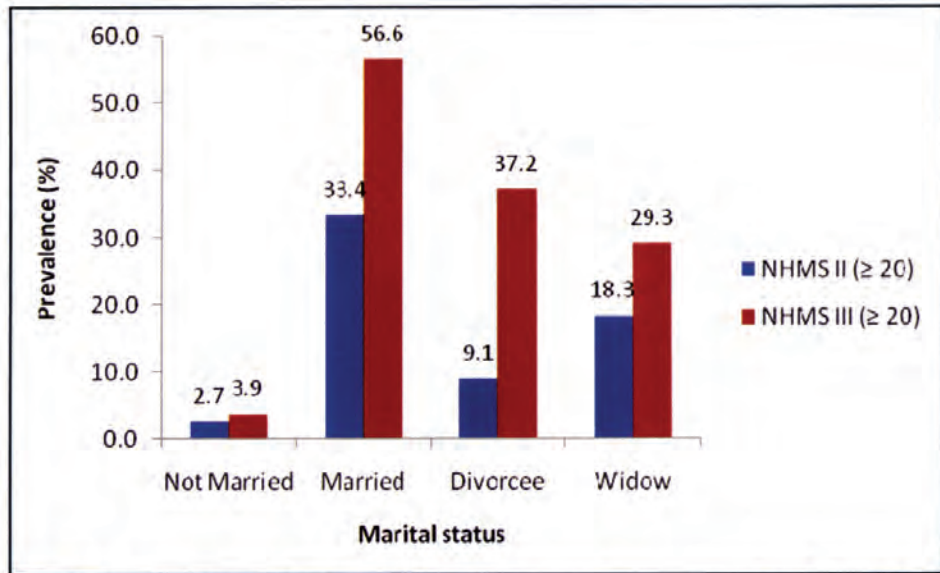


Figure 5.19: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by marital status

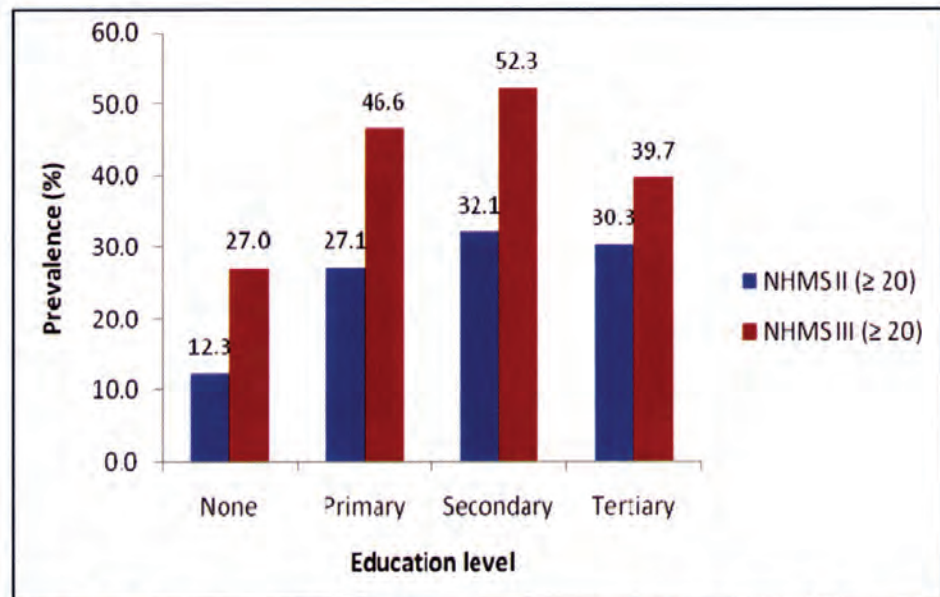


Figure 5.20: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by education level

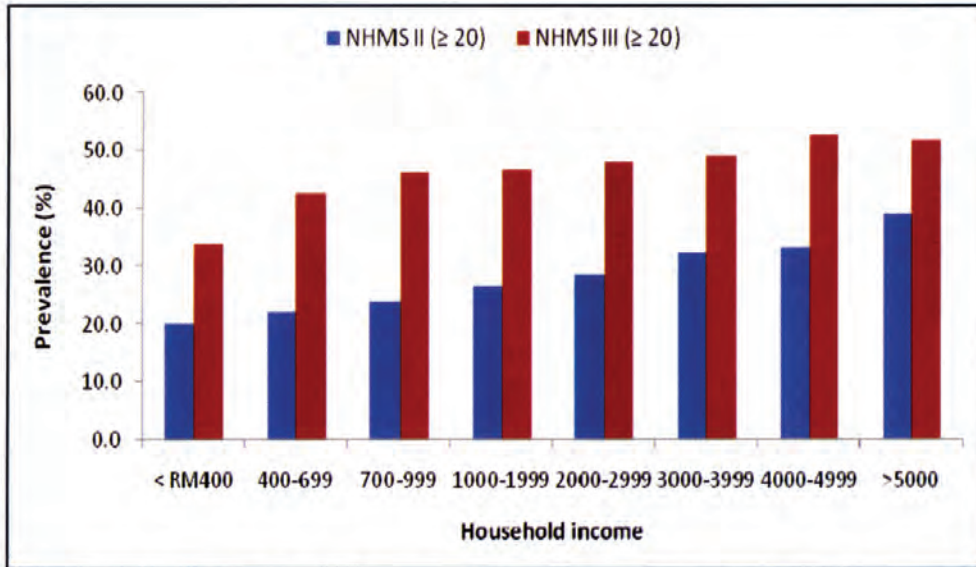


Figure 5.21: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by household income

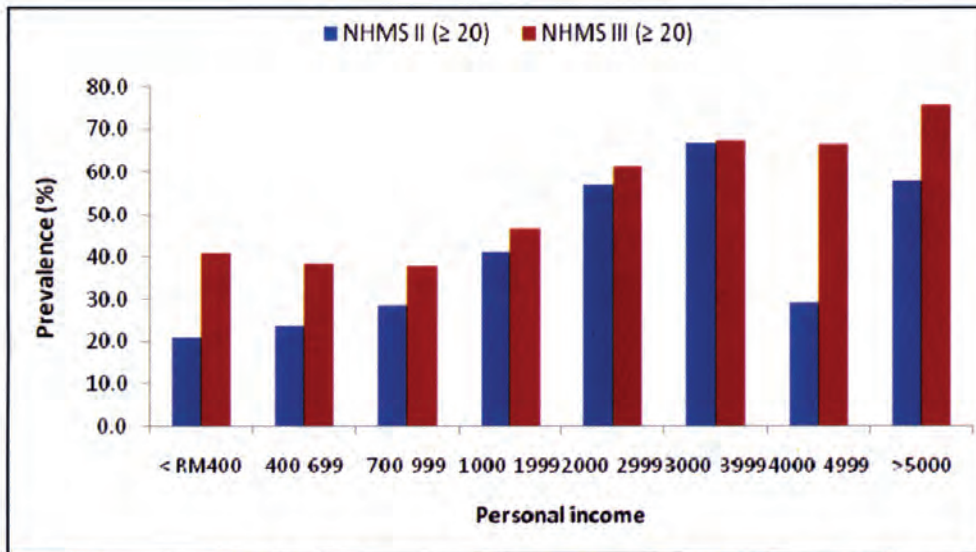


Figure 5.22: Comparison of the prevalence of pap smear among women age 20 years and above in NHMS III with NHMS II by personal income

5.5 Duration of Last Pap Smear Examination

Almost sixty percents of the respondents who did pap smear examination done it within the last 3 years (Figure 5.23). However, when we compared it with NHMS II (i.e: among respondents 20 years or more), the prevalence was reduced (Figure 5.24).

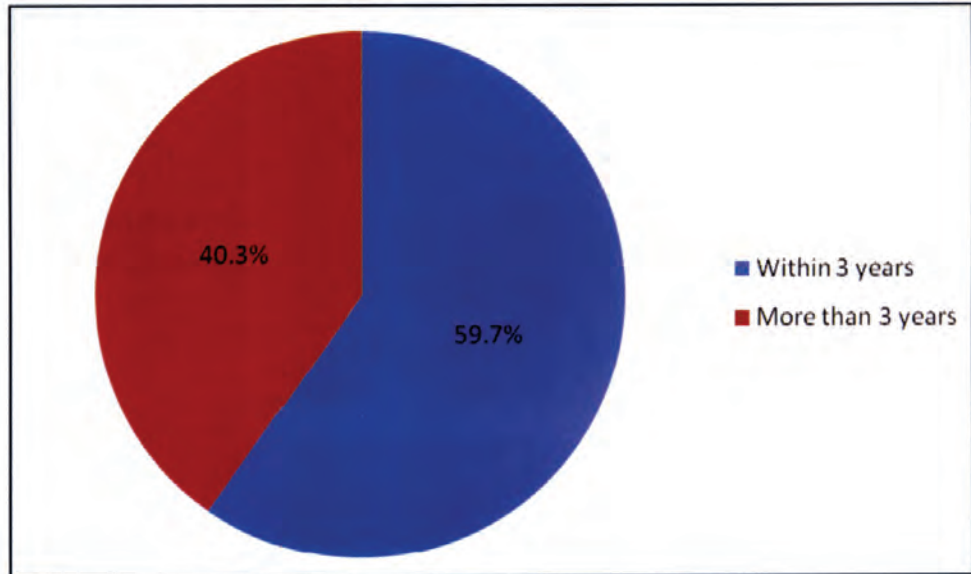


Figure 5.23: Duration of last pap smear examination

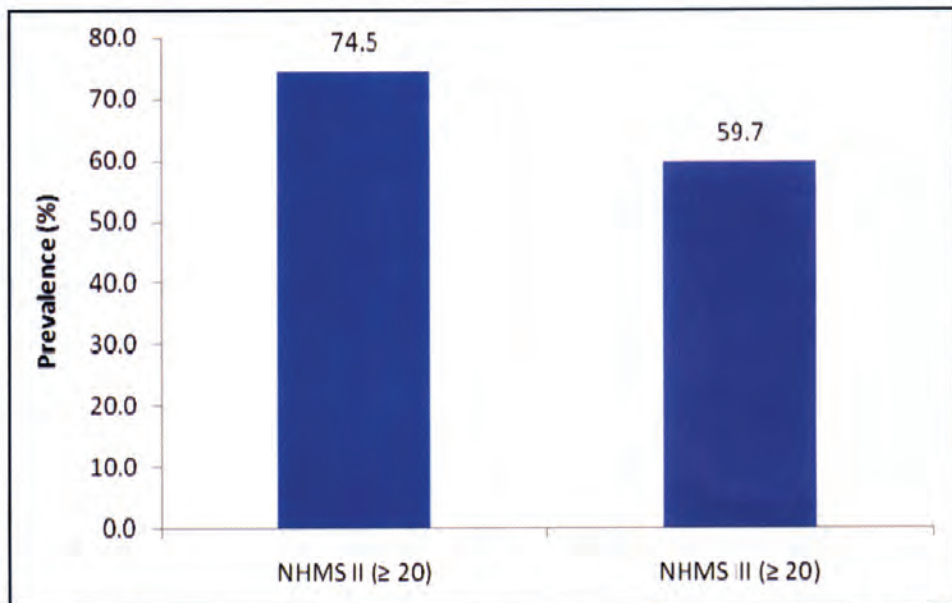


Figure 5.24: Comparison of the duration of last pap smear done among women aged 20 years and above in NHMS III with NHMS II

5.6 Place of Pap Smear Examination

Majority of respondents did pap smear examination at the government facilities and the percentages increased compared with NHMS II (Figure 5.25).

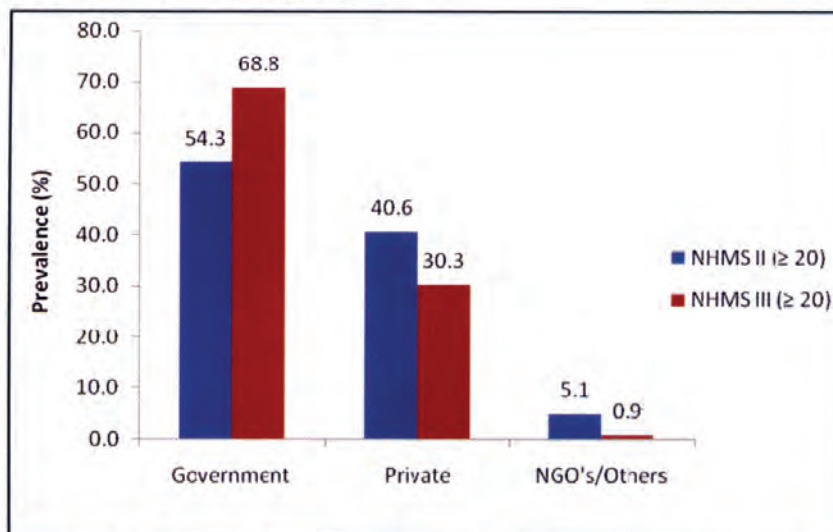


Figure 5.25: Place of pap smear examination in women aged 20 years and above in NHMS III compared with NHMS II

5.7 Reasons for Doing Pap Smear

Among respondent who did pap smear, 42.8% did it due to self awareness (Figure 5.26).

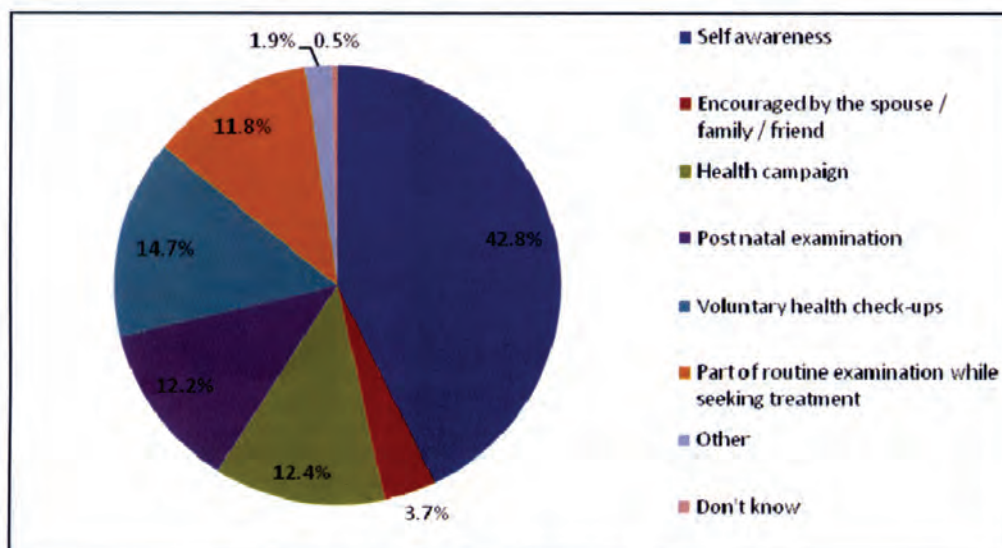


Figure 5.26: Reasons for doing pap smear

5.8 Prevalence of Ever Married Women Who Never Did Pap Smear by Socio-demographic

5.8.1 Prevalence of ever married women who never did pap smear by state

The highest prevalence was in Sabah [54.4% (CI: 51.1 – 57.8)], Johor [52.9%, (CI: 50.0 – 55.7)] and Kelantan [50.7%, (47.3 – 54.1)] (Figure 5.27).

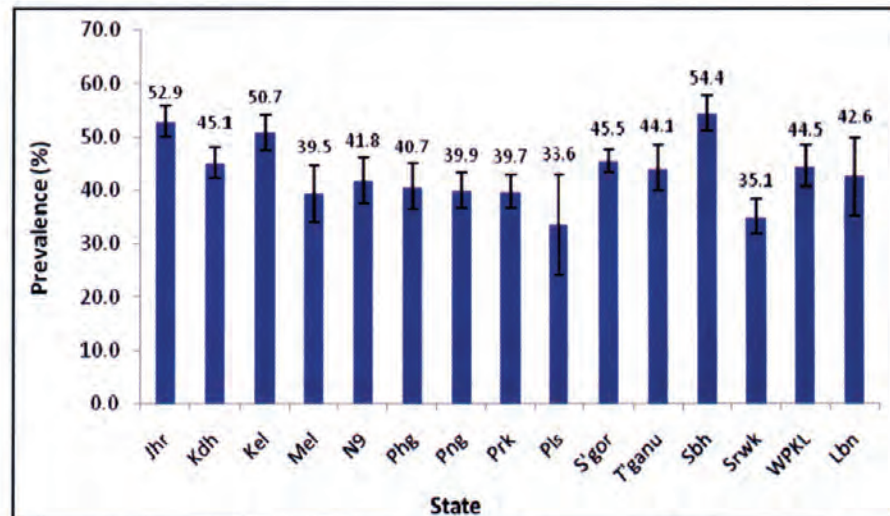


Figure 5.27: Prevalence of ever married women who never did pap smear by state

5.8.2 Prevalence of ever married women who never did pap smear by strata

There was no significant difference between urban residence [44.8% (CI: 43.6 – 46.0)] and rural [45.1% (CI: 43.5 – 46.6)] (Figure 5.28).

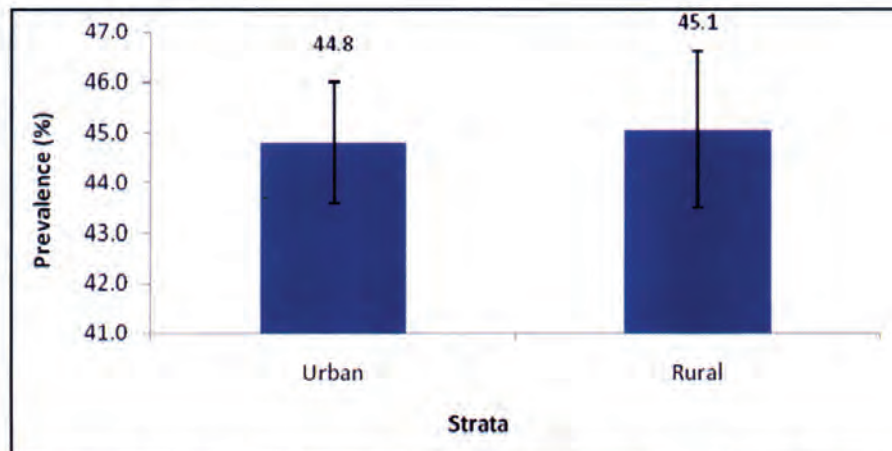


Figure 5.28: Prevalence of ever married women who never did pap smear by strata

5.8.3 Prevalence of ever married women who never did pap smear by age group

There was an 'U-shape' pattern of prevalence by age group (Figure 5.29) with the highest was among the age of 18 – 19 [81.3% (CI: 73.2 – 89.3)] and 80 years old and above [77.3% (CI : 71. 6 – 83.1)] with the lowest among age group of 40 – 44 years old [31.2% (CI : 29.1 – 33.4)].

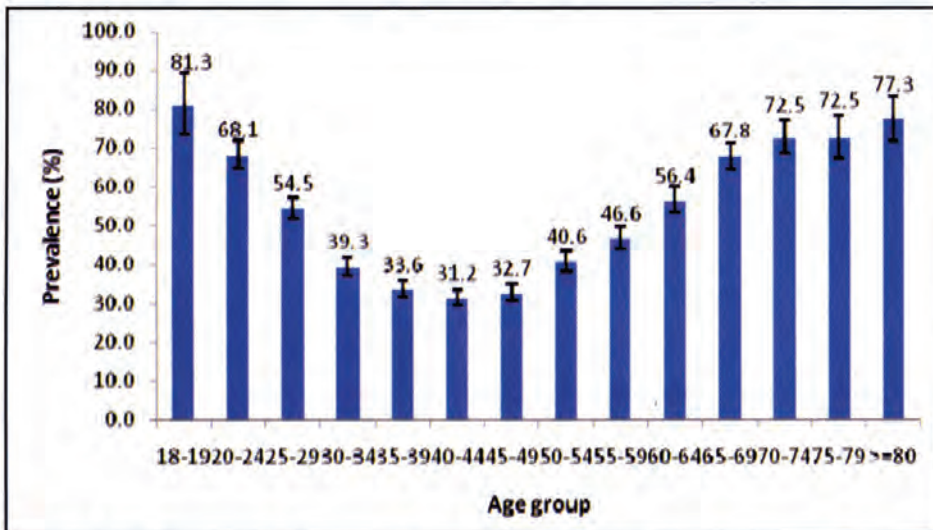


Figure 5.29: Prevalence of ever married women who never did pap smear by age group

5.8.4 Prevalence of ever married women who never did pap smear by ethnic group

The highest prevalence was among other ethnic group [66. 8% (CI: 63. 6 – 70.3)] with the lowest among the Chinese [35.9% (CI: 34.0 – 37.9)] (Figure 5.30).

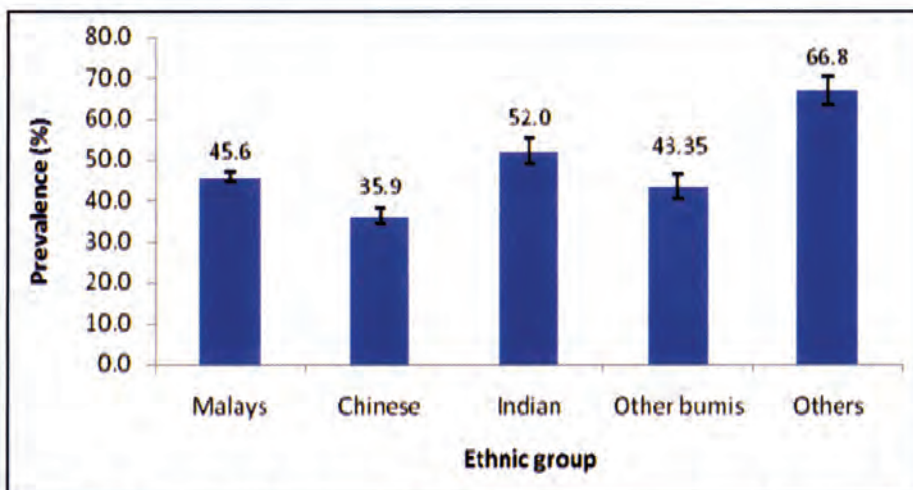


Figure 5.30: Prevalence of ever married women who never did pap smear by ethnic group

5.8.5 Prevalence of ever married women who never did pap smear by religion

The highest was among the Hindu [53.6% (CI: 50.3 – 56.8)] and Muslim [47.5% (CI: 46.3 – 48.7)] (Figure 5.31).

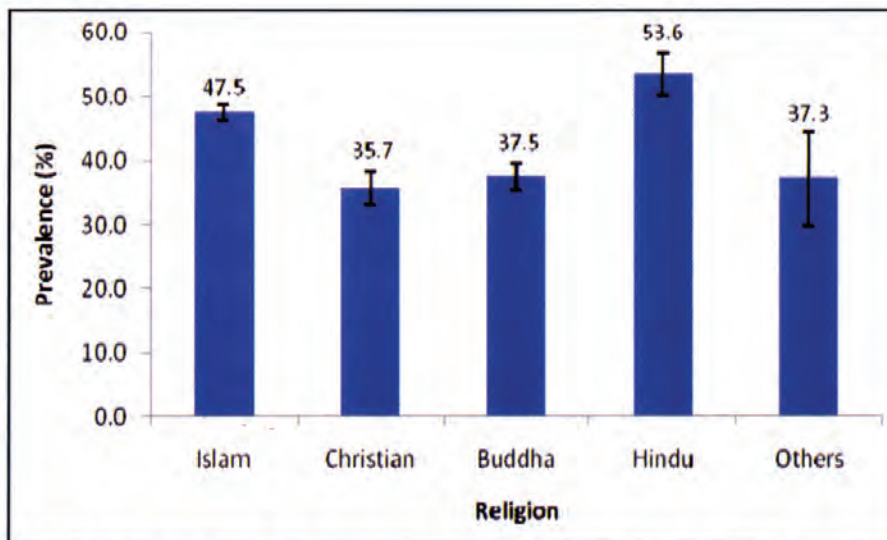


Figure 5.31: Prevalence of ever married women who never did pap smear by religion

5.8.6 Prevalence of ever married women who never did pap smear by citizenship

The prevalence was higher among the non-Malaysian [71.5% (CI: 68.5 – 74.5)] compared to Malaysian [43.2% (CI: 42.2 – 44.2)] and it was significant statistically (Figure 5.32).

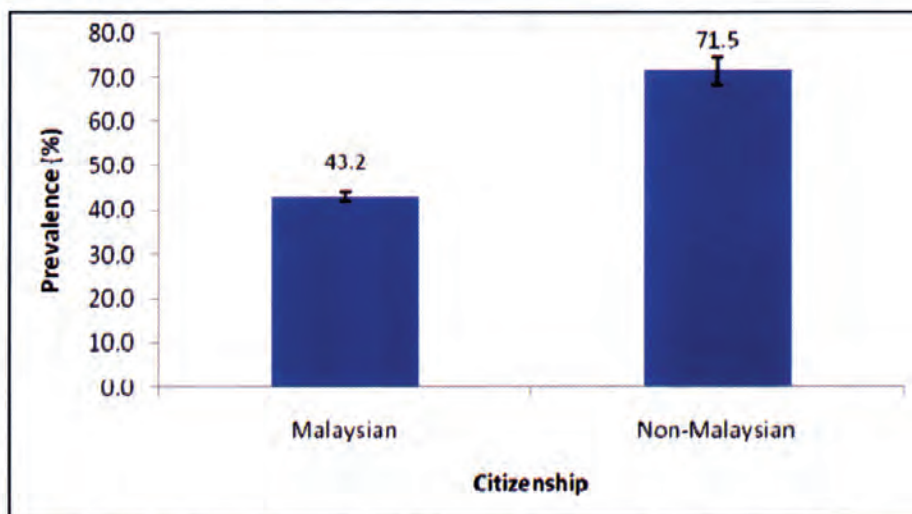


Figure 5.32: Prevalence of ever married women who never did pap smear by citizenship

5.8.7 Prevalence of ever married women who never did pap smear by education level

Generally, the prevalence reduced with increased education level (Figure 5.33).

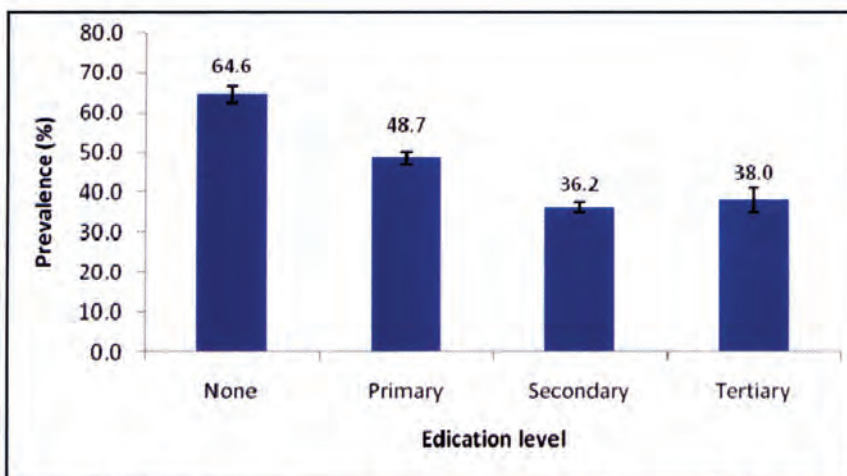
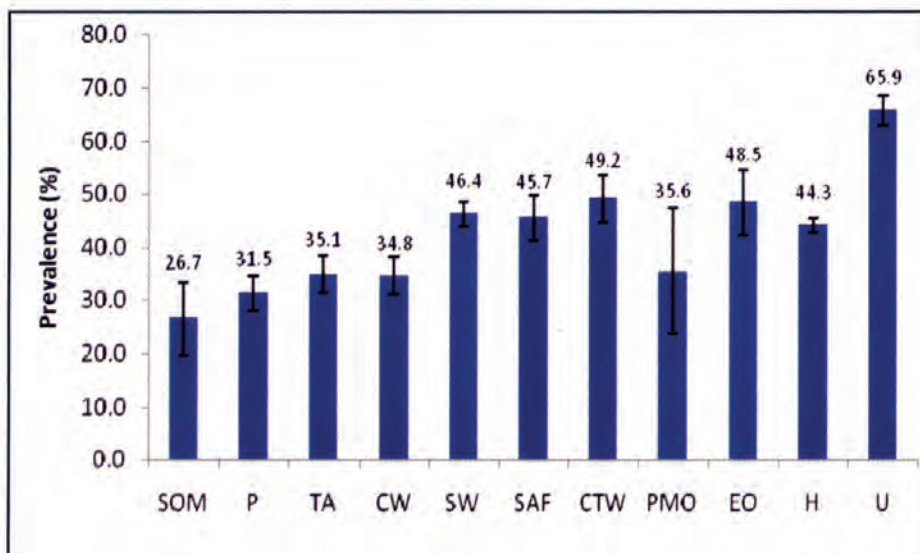


Figure 5.33: Prevalence of ever married women who never did pap smear by education level

5.8.8 Prevalence of ever married women who never did pap smear by occupation

The highest was among the Unemployed group [65.9% (CI: 63.2 – 68.6)] and the lowest was among the Senior Officials and Managers [26.7% (CI: 19.9 – 33.5)] (Figure 5.34).



SOM=Senior Officials & Managers, P=Professionals, TA=Technicians & Associate Professionals, CW=Clerical Workers, SW=Service Workers, SAF=Skilled Agricultural & Fishery, CTW=Craft & Trade Workers, PMO=Plant & Machine Operator, EO=Elementary Occupations, H=Housewife, U=Unemployed

Figure 5.34: Prevalence of ever married women who never did pap smear by occupation

5.8.9 Prevalence of ever married women who never did pap smear by income group

The prevalence reduced with increased household income (Figure 5.35) and personal income (Figure 5.36).

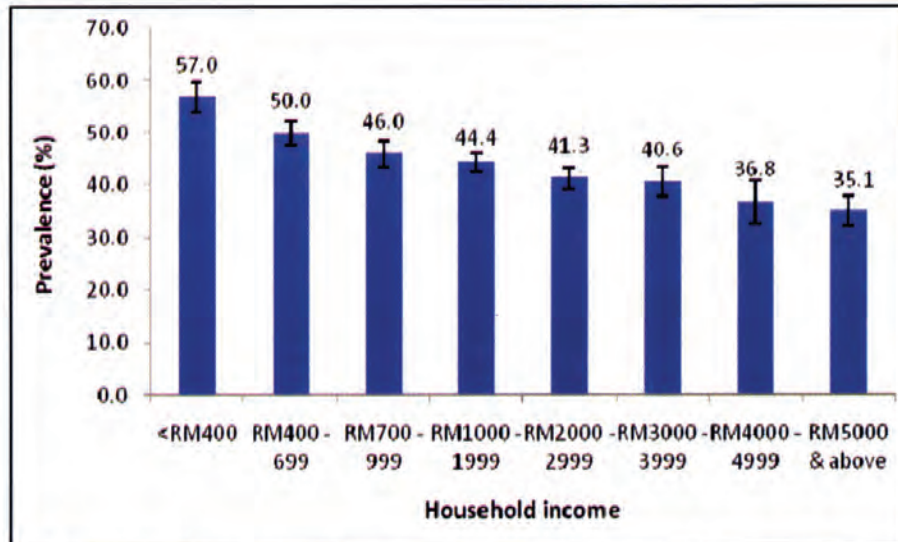


Figure 5.35: Prevalence of ever married women who never did pap smear by household income

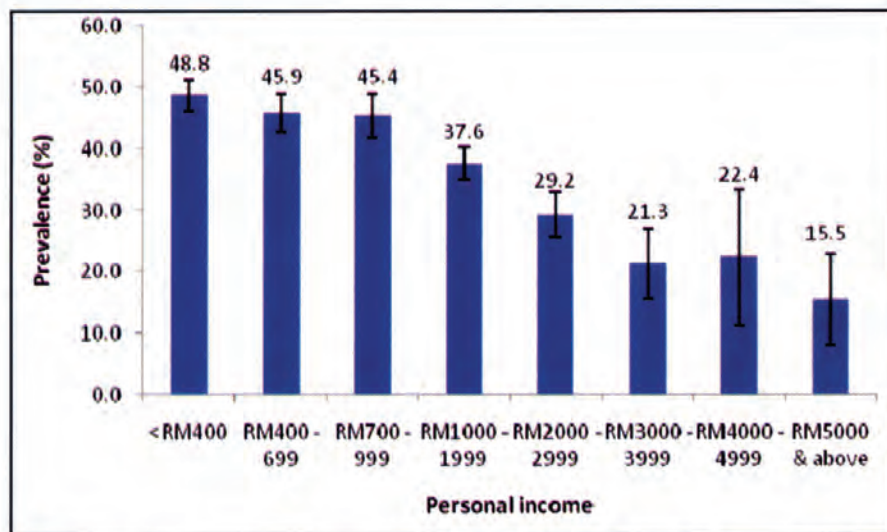


Figure 5.36: Prevalence of ever married women who never did pap smear by personal income

5.9 Reasons for Not Doing Pap Smear Among Married Respondents

The commonest reasons given by married respondents who didn't do the pap smear examination was no further information on pap smear examination (Figure 5.37).

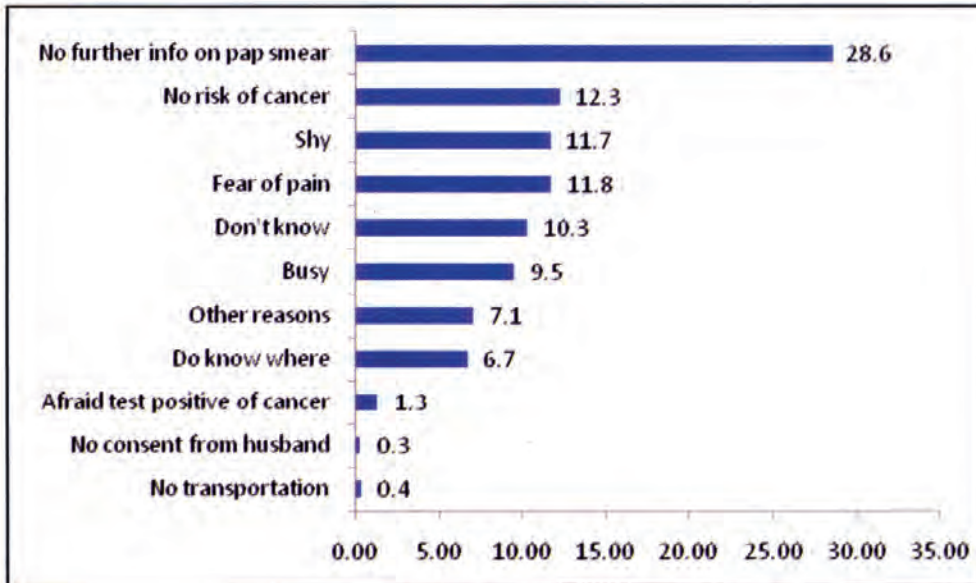


Figure 5.37: Reasons for not doing pap smear

6. DISCUSSION

6.1 Overall Prevalence

The overall prevalence of ever doing pap smear examination among women 18 years and above was 43.7% and among ever married women was 52.8%. The prevalence among ever married women would be a better estimate of the prevalence in Malaysia since most of the sexually active women are married.

In the NHMS II, the prevalence of ever doing pap smear examination among those aged 20 years and above was 26% (Institute of Public Health 1999) and this study showed an increase of about 20% (45.7%). The increase can be attributed by the availability of pap smear examination services to women in all government health clinics through the Healthy Lifestyle Campaign with the theme 'Cancer' in 1995.

A study conducted by the National Population and Family Development Board of Malaysia (NPFDB) in 2003, among ever married women aged 20 – 65 years old reported a prevalence of 55.2% and this was comparable in NHMS III which was 56.9%. In comparison with neighbouring country, Singapore, a national survey conducted in 2004 revealed a prevalence of 70.1% among females aged 25- 69

years old (Ministry of Health Singapore 2005). This was higher than our survey of the same age group which was 53.0%. Even though there has been an increase in the prevalence of women undergoing pap smear in Malaysia in the last ten year, this is still below the recommended figure for successful screening programme by WHO which is 80% (WHO 2006a).

The findings showed there was an increase of about 14.6% to 32.1% of the pap smear examination in all states since 10 years ago. The states with the highest increment were Perlis, Kedah and Kelantan. This could be contributed by the higher prevalence of pap smear examination among women in rural areas and these states.

The pattern of pap smear examination by strata showed slightly higher prevalence among respondent from rural areas compared to urban respondent. This scenario is differing from NHMS II where the prevalence was slightly higher among urban respondents. The finding in NHMS III was similar with a recent study done by National Population and Family Development Board of Malaysia (2003). The higher prevalence of the pap smear among the rural respondents was probably due to the opportunistic screening during numerous health campaign and usually there is a better attendance among people living in the rural areas compared to those in urban areas. This was supported by the reasons given for doing pap smear examination, there was a much higher proportion of rural respondents (22.5%) who did pap smear during health campaigns compared to the urban respondents (10.9%).

The prevalence of ever doing pap smear was more than 50% among those aged 30 -49 years old and 60.6% had done it within the last 3 years. This good practice should cover more women as cancer of the cervix is a slow growing tumour and usually takes 10-20 years to progress from mild dysplasia to carcinoma. By doing the examination early, precancerous lesions can be detected and early treatment can be initiated.

Among women aged more than 50 years old, only 40.4% had ever done pap smear and 51.2% of them had the examination done more than 3 years ago. This is worrying as only about 20% of women aged more than 50 years old did the examination as recommended. This trend of older women being screened less frequently after menopause poses a challenge for the control of cervical cancer, as the National Cancer Registry Malaysia (2004) reported the highest incidence of cervical cancer among women aged more than 50.

The prevalence of ever doing pap smear was highest among Chinese, followed by Malays and Indians. This finding was similar to the Singapore (Ministry of Health Singapore 2005) and National Population and Family Development Board of Malaysia study (National Population and Family Development Board 2007). This could be attributed to the health seeking behaviour among the Chinese compared to other ethnic groups.

The pap smear examination among divorcees and widows were lower than the married respondents. This could be contributed to the perception that pap smear examination should only be done among women who are still engaged in sexual activity.

The finding in NHMS III, showed increase prevalence of ever doing pap smear with increase level of education. Similar findings were also reported in NHMS II (Institute of Public Health 1999) and study done in Turin, Italy (Ronco et al. 1991). Higher education is associated with increased level of

awareness of the importance of cervical cancer screening. However, the prevalence among women with tertiary education was lower than those with primary and secondary education. When asked about the reasons for not doing pap smear, a higher proportion of those with tertiary education gave a reason of being busy.

This survey found that almost 70% of female respondents 18 years and above was aware of the purpose of Pap smear examination. A study conducted in Singapore in 2004 among females between the age of 25 and 69 years old (Ministry of Health Singapore 2005) reported 80.8% of them were aware of the examination. This was quite comparable with our findings in the same age group, which was 76.2%.

Among the ever married respondents, who were aware of the purpose for pap smear examination, 32.6% of them had never done the examination. Out of these, 68.4% were from the urban areas and 70.2% were less than 50 years old. The main reasons that they gave for not doing pap smear were because they had no further information on pap smear (17.8%), they were ashamed to undergo the test (17.0%), they perceived that they were not at risk for cervical cancer (15.8%), they feared the examination would be painful (15.5%) and they were too busy (13.6%).

Even though the overall prevalence of pap smear in NHMS III was higher than NHMS II, when compared with the duration of the last pap smear, the prevalence in NHMS III was lower than in NHMS II (Institute of Public Health 1999). The higher prevalence of pap smear done within the last 3 years in NHMS II was probably because the data collection was just one year after pap smear examination services were made available to women in all government health clinics through the Healthy Lifestyle Campaign in 1995.

The prevalence of those who underwent pap smear examination within the last 3 years decreased with increasing age and lower education level. This finding was similar with the findings by (Rohlfis et al. 1999).

The prevalence of pap smear examination within the last 3 years was highest among the married women (60.9%), followed by the divorced women (47.9%) and widows (42.2%). Among those who had ever done pap smear examination, nearly 40% to 60% of ever married women had not done the examination within the recommended period. More studies need to be undertaken to look into the barriers in doing pap smear.

Government health facilities were the most frequented place for doing pap smear examination among women in this study. The pattern of facility visited for doing pap smear was similar with NHMS II (Institute of Public Health 1999), however there was a decrease in the percentage of women who did pap smear examination at private and NGO facilities. The increase in percentage of women who did pap smear in government facilities was because of the availability of the services to women in all government health clinics through the Healthy Lifestyle Campaign with the theme 'Cancer' in 1995 and this service is provided for free. Women who did pap smear examination at private and NGO facilities were more among those with higher personal income.

As expected higher percentage of women in rural areas did their pap smear in government facilities, whilst those who did at private facilities were from the urban areas. This could be related to their socioeconomic status.

The most common reasons given for doing pap smear was because of self awareness (43.0%), followed by voluntary health check-up (14.5%), part of post natal examination (12.6%) and opportunistic screening (visit to the facility for treatment of other conditions (11.9%) and during health campaign (11.9%). Only 0.2% of the respondents did not know the reason why they did pap smear examination. Among the respondents who did pap smear examination, 36.5% of them did not do the examination because of self awareness or during health check-ups. With proper knowledge of cancer of the cervix and the availability of screening and early intervention, it will empower women to care for their health in this regard.

As expected, the percentage of women who gave the reason of self awareness as a reason for doing pap smear examination increased with level of education. None of the respondent with tertiary education gave the reason that they did not know why they did pap smear education. With lower level of education, the percentage of women who did pap smear because of encouragement from spouse, family members and friends and during health campaigns increased.

6.2 Socio-demographics of Ever Married Respondents Who Never Underwent Pap Smear Examination

Ever married women who never underwent pap smear examination was slightly higher among those living in rural areas. The prevalence of not doing pap smear examination decreased with level of education, personal and household income. This was expected as practice of pap smear examination would be influenced by knowledge of the importance of pap smear examination. This was evident by the reasons given for not doing pap smear, where the highest percentage was because they had no further information regarding the examination and the wrong perception that they were not at risk.

The prevalence of never doing pap smear was highest among those aged 18 - 29 years old and it also increased with age among those aged above 55. This finding is alarming as those at high risk for HPV infection is the younger age group. The ACS guideline for prevention of cervical cancer; recommends women less than 30 years old to have annual pap smear examination and it should be done approximately 3 years after initiation of vaginal intercourse. Even though the higher prevalence of never undergoing pap smear examination among those above 60 years old, if they have had 3 consecutive normal pap smear, after the age of 70, they may opt to cease doing pap smear.

The commonest reason for not doing pap smear among ever married women was because they did not have no further information regarding pap smear (28.7%), followed by did not perceive they were at risk for developing cancer of the cervix (12.6%) and 12% gave no reasons. These findings enforced further that more health education on the pap smear and cancer of cervix need to be emphasize in the pap smear programme.

7. CONCLUSION

There was an increase in the prevalence of ever doing pap smear among women in Malaysia. However the prevalence of doing the examination within the recommended interval had decreased. The main reasons given for not doing pap smear were not having sufficient information regarding the examination and the wrong perception that they are not at risk. A more organized programme with clear direction, achievable targets, monitoring system and emphasis on quality assurance is required to improve the knowledge, attitude and participation of cervical screening.

8. RECOMMENDATIONS

8.1 Knowledge and Awareness

Strategies need to be developed to impart knowledge and create awareness among women on the importance of doing pap smear examination focusing on the specific groups identified from the study. One of the greatest challenges is to reach women who do not normally access health services particularly those who are over their reproductive years. Options for reaching this group of women are to coordinate with communication agents, collaborate with community women's groups or community advisory groups to conduct special programmes to invite them to clinic or having health camps near to their places. The health information should address the misconception about pap smear examination and cervical cancer.

8.2 An Organised Cervical Cancer Screening Program

In the national cervical cancer control programme, screening should be organised to ensure that a large proportion of the target group is screened and individuals with abnormalities receive appropriate diagnosis and therapy. According to Hakama (1982) - a population based and well organised screening programme with a valid target age range and the right frequency is more successful than opportunistic screening. Cervical cancer incidence and mortality have steadily declined within countries e.g. Norway and United Kingdom that have introduced organised pap smear screening programs. Their programmes define the ages and the frequencies of screening, use personal invitations with times and place for screening and give personal information about the results of screening. They also found that personal letters of invitation improve attendance and is a way to regulate the target group. An information system need to be developed that can send out invitations for initial screening and repeat screening, follow up those with abnormalities and monitor and evaluate the programme.

8.3 Male Participation

In the current activities, campaigns on pap smear screening program were mainly targeted on women. Involving men in cervical cancer prevention activities is essential because it allows them to understand cervical cancer screening so that they can be supportive in their communities and to the women in their lives who decide to participate in screening. Men can play a key role in the prevention of cervical cancer in women by not smoking, reducing the number of their sexual partners and encouraging their partners to do pap smear examination. These messages can be disseminated through health campaigns, reach out activities and health education materials e.g. posters, pamphlets.

8.4 Improve the Service Deliveries and Accessibility

Quality of service deliveries can be improved by addressing the barriers revealed in this study or using a client-feedback process. The health clinic can have conveniently scheduled service hours to cater for busy women. In some countries, mobile services were more heavily utilized than static services, which suggest mobile services are more accessible and acceptable to women.

8.5 Futher Research

Detail study on the current policy of taking pap smear among women aged 20-65 years.

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APPENDIX



APPENDIX

Table 1: Socio-demographic characteristic of respondents for pap smear module

Socio-demography	Total respondent	%
National	18,902	99.1
State		
Johor	2,136	11.3
Kedah	1,428	7.6
Kelantan	1,080	5.7
Malacca	513	2.7
N. Sembilan	704	3.7
Pahang	924	4.9
Penang	1,202	6.4
Perak	1,395	7.4
Perlis	164	0.9
Selangor	3,373	17.8
Terengganu	754	4.0
Sabah	2,203	11.7
Sarawak	1,644	8.7
W.P. Kuala Lumpur	1,087	5.8
W.P. Labuan	295	1.6
Residence		
Urban	11,500	60.8
Rural	7,402	39.2
Age group		
18-19	871	4.6
20-24	2,095	11.1
25-29	2,118	11.2
30-34	2,006	10.6
35-39	2,067	10.9
40-44	2,151	11.4
45-49	1,989	10.5
50-54	1,673	8.9
55-59	1,299	6.9
60-64	843	4.5
65-69	775	4.1
70-74	477	2.5
75-79	284	1.5
80+	249	1.3

Table 1: Socio-demographic characteristic of respondents for pap smear module

Sociodemography	Total respondent	%
Ethnic group		
Malay	10,374	54.9
Chinese	3,757	19.9
Indian	1,632	8.6
Other Bumis	2,189	11.6
Others	950	5.0
Religion		
Islam	12,279	65.0
Christian	1,762	9.3
Buddhist	3,227	17.1
Hindu	1,342	7.1
Others	263	1.4
Unclassified	29	0.2
Citizenship		
Malaysian	17,693	93.6
Non-Malaysian	1,186	6.3
Unclassified	23	0.1
Education		
None	2,712	14.4
Primary	5,221	27.6
Secondary	9,071	48.0
Tertiary	1,719	9.1
Non Classified	179	1.0
Marital status		
Not married	3,406	18.0
married	13,197	69.8
Divorcee	545	2.9
Widow/widower	1,679	8.9
Unclassified	75	0.4

Table 1: Socio-demographic characteristic of respondents for pap smear module (continue)

Sociodemography	Total respondent	%
Occupation		
Senior Official & Manager	205	1.1
Professionals	1,075	5.7
Technical & Associate	861	4.6
Clerical Workers	1,198	6.3
Service Workers & Shop	2,626	13.9
Skilled Agricultural & Fishery	636	3.4
Craft & Related Trade Workers	943	5.0
Plant & Machine Operator	92	0.5
Elementary Occupations	379	2.0
Housewife	8,046	42.6
Unemployed	1,976	10.5
Unclassified	860	4.6
Household income		
Less than RM 400	1,796	9.5
RM 400 - RM 699	2,758	14.6
RM 700 - RM 999	2,090	11.1
RM 1000 - RM 1999	4,852	25.7
RM 2000 - RM 2999	2,833	15.0
RM 3000 - RM 3999	1,423	7.5
RM 4000 - RM 4999	691	3.7
RM 5000 & above	1,605	8.5
Unclassified	854	4.5

Table 2: Prevalence of pap smear examination

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
National	8,128	3,057,953	43.7	42.9	44.6
State					
Johor	771	296,545	36.7	34.3	39.0
Kedah	622	223,679	44.0	41.3	46.7
Kelantan	440	145,719	40.8	37.9	43.8
Melaka	237	95,542	45.7	39.7	51.7
N. Sembilan	338	123,329	48.5	44.4	52.6
Pahang	437	166,335	47.4	43.3	51.5
Penang	545	194,477	46.0	42.6	49.3
Perak	679	286,384	49.2	45.9	52.5
Perlis	93	34,306	57.7	48.7	66.6
Selangor	1,473	606,270	44.1	42.1	46.2
Terengganu	327	111,271	43.4	39.7	47.1
Sabah	767	236,454	35.3	32.5	38.2
Sarawak	833	326,381	51.7	48.8	54.7
WP Kuala Lumpur	429	168,850	40.3	36.6	43.9
Labuan	137	42,410	46.8	39.8	53.7
Residence					
Urban	4,855	1,993,914	43.1	42.0	44.2
Rural	3,273	1,064,040	45.0	43.5	46.4
Age group					
18-19	19	6,748	2.1	1.2	3.1
20-24	232	84,835	10.9	9.5	12.3
25-29	707	264,104	33.3	31.1	35.6
30-34	1,090	403,498	54.5	52.2	56.8
35-39	1,265	474,542	61.8	59.6	64.0
40-44	1,394	525,112	65.3	63.2	67.4
45-49	1,242	469,003	63.6	61.4	65.9
50-54	926	353,986	56.6	54.1	59.1
55-59	629	239,642	49.4	46.4	52.4
60-64	319	120,825	39.3	35.9	42.7
65-69	192	72,410	25.8	22.6	29.0
70-74	72	27,547	16.3	12.8	19.8
75-79	32	12,271	12.2	8.2	16.1
80+	8	2,997	3.6	1.1	6.1
Ethnic group					
Malays	4,484	1,661,823	43.6	42.5	44.7
Chinese	1,849	744,454	50.5	48.6	52.3
Indians	590	238,489	37.2	34.6	39.8
Other Bumiputras	973	329,683	45.5	42.6	48.4
Others	232	83,504	24.7	21.5	27.9

Table 2: Prevalence of pap smear examination (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Religion					
Islam	5,074	1,859,487	41.8	40.7	42.8
Christian	906	337,333	52.4	49.8	55.0
Buddhist	1,536	616,493	48.9	46.9	50.9
Hindu	467	188,808	35.8	33.0	38.5
Others	141	54,053	54.7	48.3	61.1
Unclassified	4	1,779	22.3	3.3	41.4
Citizenship					
Malaysian	7,880	2,967,597	45.2	44.3	46.1
Non-Malaysian	241	87,575	20.5	18.0	23.1
Education					
None	708	253,652	26.9	25.0	28.9
Primary	2,394	882,684	46.1	44.6	47.7
Secondary	4,330	1,643,327	48.1	46.9	49.3
Tertiary	657	263,311	39.2	36.6	41.8
Unclassified	39	14,979	31.4	22.6	40.1
Marital status					
Single	101	39,138	3.1	2.5	3.7
Married	7,347	2,759,604	56.4	55.4	57.4
Divorcee	193	74,947	37.0	32.8	41.3
Widow / Widower	469	177,017	29.3	27.0	31.5
Unclassified	18	7,247	33.6	21.3	46.0
Occupation					
Senior Official & Managers	124	49,731	62.1	55.3	69.0
Professionals	521	204,076	49.1	45.8	52.4
Technical & Associate	448	172,086	52.7	49.4	56.1
Clerical Workers	498	194,561	42.0	39.1	45.0
Service Workers & Shop	1,064	403,360	40.8	38.8	42.9
Skilled Agricultural & Fishery	310	104,161	49.4	45.2	53.6
Craft & Related Trade Workers	286	108,157	29.9	26.3	33.5
Plant & Machine Operators	39	14,821	44.0	33.0	55.0
Elementary Occupations	155	55,899	42.3	36.8	47.8
Housewife	4,248	1,584,283	53.4	52.1	54.7
Unemployed	326	123,837	17.6	15.8	19.5
Unclassified	108	42,548	13.8	11.2	16.3

Table 2: Prevalence of pap smear examination (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Household income					
Less than RM 400	579	205,944	32.9	30.4	35.4
RM 400 – RM 699	1,106	386,254	40.4	38.3	42.5
RM 700 – RM 999	913	334,691	44.2	42.0	46.5
RM 1000 – RM 1999	2,136	800,970	44.5	43.0	46.1
RM 2000 – RM 2999	1,288	498,490	45.8	43.9	47.8
RM 3000 – RM 3999	658	260,046	47.2	44.6	49.9
RM 4000 – RM 4999	342	133,624	49.9	46.1	53.8
RM 5000 & above	787	315,387	49.8	47.1	52.5
Unclassified	319	122,547	38.9	35.2	42.6
Personal income					
Less than RM 400	820	291,576	38.5	36.2	40.7
RM 400 – RM 699	596	220,639	36.0	33.4	38.7
RM 700 – RM 999	414	160,584	35.9	32.9	38.8
RM 1000 – RM 1999	898	349,195	46.1	43.7	48.6
RM 2000 – RM 2999	432	171,752	60.9	57.3	64.5
RM 3000 – RM 3999	158	62,867	67.1	60.9	73.2
RM 4000 – RM 4999	53	21,076	65.5	54.4	76.5
RM 5000 & above	86	35,423	75.4	66.8	84.1

Table 3: Prevalence of ever married women who did not undergo pap smear examination

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
State					
Johor	902	352,452	52.9	50.0	55.7
Kedah	540	192,632	45.1	42.2	48.0
Kelantan	464	154,604	50.7	47.3	54.1
Melaka	152	63,446	39.5	34.1	44.8
N. Sembilan	247	89,753	41.8	37.4	46.1
Pahang	298	115,059	40.7	36.3	45.2
Penang	373	133,116	39.9	36.6	43.2
Perak	471	194,950	39.7	36.5	42.8
Perlis	47	17,273	33.6	24.2	42.9
Selangor	1,233	510,346	45.5	43.3	47.7
Terengganu	270	91,499	44.1	39.8	48.4
Sabah	951	291,441	54.4	51.1	57.8
Sarawak	468	178,258	35.1	31.7	38.4
WP Kuala Lumpur	362	142,480	44.5	40.6	48.4
Labuan	100	31,165	42.6	35.2	49.9
Residence					
Urban	4,062	1,650,570	44.8	43.6	46.0
Rural	2,816	907,902	45.1	43.5	46.6
Age group					
18-19	72	25,533	81.3	73.2	89.3
20-24	479	177,849	68.1	64.5	71.7
25-29	848	320,088	54.5	51.9	57.2
30-34	689	260,477	39.3	36.9	41.7
35-39	639	239,608	33.6	31.4	35.8
40-44	640	238,644	31.2	29.1	33.4
45-49	619	229,725	32.7	30.5	34.9
50-54	656	244,385	40.6	38.1	43.2
55-59	581	215,294	46.6	43.6	49.6
60-64	455	167,231	56.4	52.9	59.9
65-69	505	185,324	67.8	64.3	71.3
70-74	328	119,853	72.5	68.3	76.7
75-79	196	72,163	72.5	67.0	77.9
80+	171	62,298	77.3	71.6	83.1
Ethnic group					
Malays	3,846	1,419,037	45.6	44.4	46.9
Chinese	1,084	434,886	35.9	34.0	37.9
Indians	680	269,347	52.0	48.9	55.1
Other Bumiputras	779	259,461	43.3	40.2	46.3
Others	489	175,743	66.8	63.3	70.3

Table 3: Prevalence of ever married women who did not undergo pap smear examination (continue)

	n	Estimated population	Prevalence (%)	95% CI	
				Lower	Upper
Religion					
Islam	4,721	1,717,549	47.5	46.3	48.7
Christian	519	189,051	35.7	33.0	38.3
Buddhist	971	389,563	37.5	35.4	39.5
Hindu	574	227,802	53.6	50.3	56.8
Others	87	32,256	37.3	29.9	44.6
Citizenship					
Malaysian	6,194	2,312,245	43.2	42.2	44.2
Non-Malaysian	680	244,690	71.5	68.5	74.5
Education					
None	1,655	586,512	64.6	62.5	66.7
Primary	2,342	870,152	48.7	47.1	50.3
Secondary	2,426	925,605	36.2	34.9	37.5
Tertiary	401	155,754	38.0	34.9	41.1
Occupation					
Senior Official & Managers	45	17,546	26.7	19.9	33.5
Professionals	238	91,391	31.5	28.1	34.9
Technical & Associate	242	91,642	35.1	31.5	38.7
Clerical Workers	260	101,123	34.8	31.3	38.4
Service Workers & Shop	940	357,322	46.4	44.1	48.7
Skilled Agricultural & Fishery	272	90,959	45.7	41.5	49.9
Craft & Related Trade Workers	274	105,086	49.2	44.9	53.6
Plant & Machine Operators	23	8,444	35.6	23.8	47.4
Elementary Occupations	152	52,792	48.5	42.4	54.6
Housewife	3,499	1,299,623	44.3	43.0	45.6
Unemployed	854	311,947	65.9	63.2	68.6
Household income					
Less than RM 400	876	304,818	57.0	54.1	59.9
RM 400 – RM 699	1,136	400,521	50.0	47.7	52.2
RM 700 – RM 999	811	295,626	46.0	43.6	48.5
RM 1000 – RM 1999	1,731	651,907	44.4	42.7	46.1
RM 2000 – RM 2999	917	355,012	41.3	39.3	43.4
RM 3000 – RM 3999	455	178,910	40.6	37.8	43.4
RM 4000 – RM 4999	197	77,545	36.8	32.6	41.0
RM 5000 & above	431	171,607	35.1	32.3	37.9
Personal income					
Less than RM 400	811	284,564	48.8	46.2	51.3
RM 400 – RM 699	501	191,421	45.9	42.9	48.9
RM 700 – RM 999	345	134,312	45.4	41.8	49.0
RM 1000 – RM 1999	531	206,881	37.6	35.0	40.2
RM 2000 – RM 2999	178	68,715	29.2	25.5	32.9
RM 3000 – RM 3999	42	16,585	21.3	15.7	26.9
RM 4000 – RM 4999	14	5,741	22.4	11.3	33.4
RM 5000 & above	16	6,293	15.5	8.3	22.8