



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

ALCOHOL

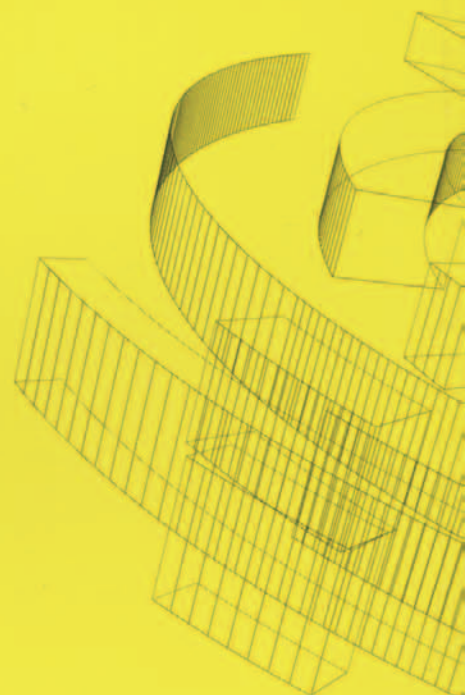
INSTITUTE FOR PUBLIC HEALTH
NATIONAL INSTITUTES OF HEALTH
MINISTRY OF HEALTH
MALAYSIA
2008

ISBN 978-983-3887-21-7



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INSTITUTE FOR PUBLIC HEALTH



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JANUARY 2008**

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ISBN: 978-983-3887-21-7

Suggested citation:

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

Produced and Distributed by:

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Published by Institute for Public Health, Ministry of Health, Malaysia

LIST OF RESEARCH TOPICS

Topic 1	Health Expenditure
Topic 2	Oral Health
Topic 3	Load of Illness
Topic 4	Health Utilization
Topic 5	Injury and Risk Reduction Practice
Topic 6	Physical Disability
Topic 7	Asthma
Topic 8	Dengue Prevention Practice
Topic 9	Health Information
Topic 10	Physical Activity
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Topic 13	Diabetes Mellitus
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Topic 16	Women's Health
Topic 17	Sexual Behaviour
Topic 18	Psychiatric Morbidity

**THE THIRD
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2006
(NHMS III)**

ALCOHOL

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*This research project was sponsored by Ministry of Health
[Project Code : (P42-251-170000-00500(005000099) 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 & 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**

We are indeed very pleased to be able to complete the difficult task of writing up this report on time after several months of collaborative effort despite of our own busy schedule. It is important to note that reliable data on alcohol consumption among Muslims in Malaysia is grossly lacking, but now, with the completion of this report, we are now able to provide the data needed. Apart from that, this report also provides information regarding alcohol consumption among young people aged 13 years to 18 years for all races in Malaysia.

Lastly we wish to caution the readers to be careful in interpreting the results of the survey because it seems that information bias among the respondents is rather high.

*A*CKNOWLEDGEMENT

The authors wish to thank the Sound National Health and Morbidity Survey (NHMSIII) Steering Committee and Advisory Group for their support in this study.

We would like to extend our utmost appreciation to the principal investigator, Dr. Hj. Ahmad Faudzi Hj. Yusof and Dr. Mohd Azahadi Omar for being pillar of strength, giving her full support throughout the study; for keeping us constantly motivated; to our programmers, who cheerfully obliged every request of a data output; to the kind respondents, persevering data collectors, and everyone else who had contributed to make this report materialise.

ABSTRACT

Alcohol use poses considerable public health problem and is ranked as the fifth leading risk factor for premature death and disability in the world. In order to determine the magnitude of the problem in Malaysia, a survey covering population aged 13 years and above using predesign self administered questionnaire was conducted. The response rate however was rather poor at only 52.5%. The prevalence of ever consume alcohol was 16.2% while current drinker was 7.4% and 29.1% of ever consume alcohol who had stopped drinking for the past one year. For the current drinker, the highest prevalence was in Sarawak state (15.0%), in urban area (8.9%), among males (11.8%), Chinese (23.8%), age group between 70 - 74 years old (10.4%), Christians (25.6%), senior officer / manager (24.8%), and those married (7.9%). The respondents with tertiary level of education reported the highest prevalence (13.7%). Generally it was noted that the prevalence was highest among those who earned RM 5000 and above per month with a prevalence of 16.3%, and it increased with household income. Similar trend was observed when the comparison was based on the personnel income. The reported mean age of starting to drink alcohol in Malaysia was 21.0 years old. Peer influenced was the main reason for initiation (53.4%) as well as continuing consumption of alcohol (37.1%). A group consists of Beer, Stout, Lager, Ale, Shandy was the most being consumed by the respondents with a prevalence of (93.3%) followed by a group of Red, White, Rose Wine/Champagne/Sherry/Vermouth and Tuak (55.8%) then by group of Whisky ,Rum, Toddy (29.9%). Prevalence of binge drinker was 30.6%. It was more common in rural (32.7%) and higher among males (31.8%). Majority of the current drinkers were light drinkers with a prevalence of 93.3%, 4.4% were the moderate drinkers and 2.3% were the heavy drinkers. Overall, 46.0% of the respondents claimed that they had attempted to stop drinking with an average of 3.4 quit attempts. Among the successful quitters, 51.2% cited negative health effects as the main reason for quitting. The prevalence of ever consumed alcohol and current drinker among the adolescent below 18 years old was 7.3% and 2.5% respectively. Among the adolescents who are the current drinker, the prevalence was higher among the male (3.3%), urban dweller (3.1%), among the Chinese (8.6%) and Christian (10.8%). The percentage of binge drinker among them was 24.6%. This survey was able to provide basic information on alcohol consumption pattern among the thirteen years age and above in Malaysia. Besides, this is the first survey which was able to demonstrate the prevalence of alcohol consumption among adolescence below the age 18 years old. Likewise, trend of consumption among the aged group of 18 years old and above was highlighted for formulation of policy and strategies in overcoming the alcohol related problems.

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ABBREVIATIONS

DE	Design Effect
EB	Enumeration Blocks
LQ	Living Quarters
MOH	Ministry Of Health
NHMS II	Second National Health And Morbidity Survey
RR	Response Rate
WHO	World Health Organization

1. INTRODUCTION

Consumption of alcohol beverages is a long-standing lifestyle, being consumed widely and varied human custom in which its use is deeply embedded in many societies. Nevertheless, alcohol cannot be considered an ordinary beverage since it is a substance that causes substantial medical, psychological and social harm by means of physical toxicity, intoxication and dependence. Alcohol problems exist on a continuum of severity ranging from occasional binge drinking to alcohol dependence or alcoholism. Harmful use of alcohol causes considerable public-health problem and is ranked as the fifth leading risk factor for premature death and disability in the world. According to the Sixtieth World Health Assembly (2007) report, harmful use of alcohol is the third leading contributor to disease burden in developed countries, the first for men in developing countries in which mortality rates are low, and eleventh in developing countries with high mortality rates.

Harmful use of alcohol is causally linked with many different disease conditions. Neuropsychiatric disorder account for more than a third (34%) of the burden of disease and disability attributable to alcohol followed by unintentional injuries like road traffic crashes, burns, drowning and falls (26%), intentional injuries including suicide (11%), cirrhosis of the liver (10%), cardiovascular diseases (10%) and cancer (9%). The harmful use of alcohol also leads to mortality in which unintentional injuries (25%), cardiovascular disease (22%) and cancer (20%) are the biggest categories recounted to alcohol-related deaths. Similar to tobacco, another widely consumed product, alcohol is heavily marketed, including to youth. The impact of alcohol consumption is greater in younger age groups of both sexes. Its accounts for 3.7% of all deaths in all age group (6.1% in men, 1.1% in women), but 5% of deaths under the age of 60 were attributable to alcohol-related harm (7.5% in men, 1.7% in women) (WHO 2007a).

The World Health Organization (WHO) estimates that there are about 2 billion people worldwide consuming alcohol beverages and 76.3 million with diagnosed alcohol use disorders (WHO 2004). Alcohol consumption varies enormously among countries and between different population groups. In addition, the consumption is also differing over time depending on the availability and accessibility. With growing awareness of alcohol-related harm as one of the major risk factors to public health, countries and communities, this survey was carried out to identify the prevalence and the pattern of alcohol consumed in Malaysia.

2. LITERATURE REVIEW

The harmful effect of alcohol accounts for significant disease burden worldwide and is related to many negative social consequences such as intentional and unintentional injuries and violence. It has been estimated to result in 3% of global deaths and 4% of the global burden of disease, almost half of which being the result of unintentional and intentional injuries (Ministry of Health Malaysia 2007). World Health Organization reported in 2000, alcohol - related death and disability accounted for 4.0% of the global burden disease, ranking as the fifth most detrimental risk factor of 26

examined. In developing countries, alcohol was the third most detrimental risk factors, accounting for 9.2% of all burden of disease. Whereas, in emerging economies such as China, alcohol was the most detrimental risk factor.

The national burden of alcohol consumption in Malaysia was first reported by National Health Morbidity Survey II in 1996 in which revealed the prevalence of ever consumed alcohol among the non-Muslim adult aged 18 years and older, was 29.2% (CI, 28.0% to 30.3%). Meanwhile the prevalence for the current drinker was 23.0% (CI, 22.0% to 24.0%). Ten years later, MyNCDs-1 survey reported the prevalence of the current drinker was 12.2%. However, My NCDs-1 survey was conducted to an adult population aged 24 - 65 years old irrespective of their race and religious. The trend of alcohol consumption in Malaysia cannot be established as both surveys targeted at different population.

2.1 Epidemiology Of Alcohol Consumption

Alcohol consumption has been increased globally in recent decades predominantly in developing countries (WHO 2002). Although it was reported that the levels of consumption have been falling in few developed countries for example in the European Union, but it remains the part of the world with highest proportion of drinkers and with highest levels of alcohol consumption per population (WHO 2005a). Developed countries in Western Pacific Region such as Australia, Japan and New Zealand, have relatively high per capita consumption which were 6-9 liters of pure alcohol per year for those 15 years of age and above. Meanwhile some developing countries in this Region, such as China, Viet Nam and most countries and area in the Pacific, initially reported low per capita consumption for those 15 years of age or above were 0.75 liters in 1970 and rose to 4.45 liters in 2001(WHO 2007b).

In 2000, throughout the world alcohol caused 1.8 million deaths which are equal to 4 percent of the global disease burden, slightly less than the damage caused to society by tobacco use and high blood pressure which was 4.1% and 4.4% respectively. It is estimated that worldwide, alcohol caused between 20 and 30 per cent of all esophageal cancer, liver disease, epilepsy, motor vehicle accidents and homicide and other intentional injuries (WHO 2005b).

2.1.1 Pattern of drinking

In recent years some constraints on production and trade and on consumption of alcohol have been weakened by increasing availability and accessibility of alcohol beverages, leading to changes in drinking patterns across the globe (WHO 2002).

Patterns and level of alcohol consumption, alcohol dependency and alcohol abuse are determined by many factors which are: availability, income per capita, retail process, individual factors (genetic and environmental) such as age at first use, family history, education, peer group pressure, psychosocial factors, cultural and historical context and government policies, such as taxation and restrictions on advertisement and promotion (World bank 2007).

There was marked variation between WHO sub regions on average volume of alcohol consumption and patterns of drinking. Average volume of drinking was highest in established market economies in Western Europe and the former Socialist economies in the Eastern part of Europe and in North America and lowest in the Eastern Mediterranean region and parts of Southeast Asia (Rehm & Gmel 2002; Rehm et al. 2003). Patterns were most detrimental in the former Socialist economies in the Eastern part of Europe, in Middle and South America and parts of Africa. Patterns were least detrimental in Western Europe and in developed countries in western Pacific region (Rehm et al. 2003).

Rates of alcohol consumption are highest in European countries especially in Russian Federation and Ukraine with 18.6% were the heavy drinkers. In Europe alone, alcohol consumption was responsible for over 55,000 deaths among young people aged 15 to 29 years in 1999 (Rehm & Gmel 2002). 90% of young people aged 12 to 25 years report having already consumed alcohol at least once in their lives (Reiner & Gudrun 2005).

In most regions around the world, spirits was the alcohol beverage type being mostly consumed. Spirits consumption has also grown fastest in the last quarter century, although beer particularly European-style lager beer has also been growing. Global wine production and consumption has decreased, primarily because of substantial decreases in Southern Europe, the leading area of wine production and consumption (Rehm et al. 2003).

Generally, globally, the percentage of men who consumed alcohol is higher than a female. In some part of the world there are very substantial gender differences in the proportion of drinkers. The drinkers are almost entirely confined to men in the mainly Islamic regions of the Eastern Mediterranean, and drinking by women is nearly as uncommon in Southeast Asia (Rehm et al. 2003). Men traditionally also drink more frequently and more heavily than women (WHO 2007b).

3. OBJECTIVE

The objectives of alcohol module are to determine the prevalence of alcohol use, the pattern of alcohol consumption in the general population, and to explore the determinants for starting and continuing alcohol use.

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 Designs 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 Sample frame

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

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

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

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

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

4.2.2 Sampling design

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

4.2.3 Sampling size

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

a) Expected prevalence rate

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

b) Response rate of the NHMS II

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

c) Margin of error and design effect

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

stages of the calculation of the sample size of each state.

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

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

4.3 Preparation of Field Areas and Logistic Support

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

4.4 Method of Data Collections

4.4.1 The questionnaire

A cross-sectional community household survey was conducted throughout Malaysia during April to July 2006. A bi-lingual (Bahasa Malaysia and English) pre-coded questionnaire was designed, pre-tested and piloted prior to the survey.

All research topics for the questionnaire were arranged into modules ranging from A to Z. Certain topics that cover a similar area were arranged into sub-modules under a particular module. Questions comprise of both close ended and open ended. The questions in each module are tailored for the target age group.

Respondents were given a self administered questionnaire according to respondent's age booklet for age group 13 - \leq 16 years (green) or $>$ 16 years (peach). Respondents were required to fill in the questionnaires themselves and submit the completed questionnaires back to the data enumerators in an envelope as it is deemed to be confidential. For respondents aged less than 16 years old, the parent or guardian was required to answer the questionnaire on behalf of the respondent. Additional copies purely in vernacular language such as Mandarin and Tamil were also made available. Translation into these languages was done by qualified teachers proficient in the language. In addition, a list of selected words / terminologies from the questionnaires was also made available in Mandarin and Tamil to assist the enumerators during their interviews with the respondents.

4.4.2 The interview

As far as possible, all adult members who qualify from the selected LQ's were interviewed by the data collection team members. Interviews commenced early in the morning and lasted till late in the evening. Where an interview had been unsuccessful due to the absence of the respondent at the selected LQ, repeat visits were conducted after leaving messages with neighbours or by other means for an appointment at a later date. A household member can only be classified as a non-responded after 3 unsuccessful visits.

4.5 Field Preparations

Two main survey implementation groups were 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 a continuous period of 4 months starting from April 2006. Teams were organized to move into 5 regions in Peninsular Malaysia, 2 regions in Sabah and 4 regions in Sarawak for data collection.

4.5.1 Pilot study

A pilot study was conducted on a sample of EB's (not included in the NHMS III) about 2 months prior to the 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 comprised of three distinct socio-demographic strata that are rural, semi-urban and urban respectively. The pilot study focused on the following aspects of the survey such as testing of the questionnaire, testing of the field logistic preparation, testing of the scouting activities and testing of the central monitoring and logistic support.

4.5.2 Training of data collection teams

A two weeks training course was held for field supervisors, team leaders, nurses and interviewers was to familiarize them with the questionnaire, develop their interpersonal communication skills and appreciate the need for 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. Detail description of quality control process has been described in NHMS III protocol.

4.7 Data Management

4.7.1 Data screening

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

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

4.7.2 Data entry

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

4.7.3 Data analysis

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

4.8 Definition of Terms / Variables

4.8.1 Alcohol beverages

Any drink containing ethanol irrespective of concentration and inclusive of those consumed for medical purposes such as alcoholic tonic

4.8.2 Current drinker

Respondent who still consumed alcohol for the past one month prior to the survey.

4.8.3 Ever drinker

Respondent who have history of consumed alcohol

4.8.4 Ex-drinker

Respondent who had stopped drinking for the past one year

4.8.5 Binge drinker

Respondent who consumed alcohol more than four units for female and more than five units for male at one drink.

4.8.6 Light drinker

Respondent who consumed alcohol less than 15 units per week for female and less than 21 units per week for male.

4.8.7 Moderate drinker

Respondent who consumed alcohol between 15 to 35 units per week for female and between 21 to 50 units per week for male.

4.8.8 Heavy drinker

Respondent who consumed alcohol more than 35 units per week for female and more than 35 units per week for male.

5. FINDINGS**5.1 Characteristic of Eligible Respondents**

The eligible respondents of NHMS III were all Malaysian above thirteen years old irrespective of their race and religious. A total of 39,922 were eligible and they represented 7,941,043 of the total estimated population. The characteristics of these respondents are shown in Table 1. The percentage of respondent rate was 52.5%. Majority of the respondents were urban (63.4%) population. There were more females (52.4%) than males (47.6%). Generally, the socio-demography characteristic of the respondents and non-respondents was almost similar except in the proportion of non-respondents was higher than the respondents among the Others Bumis and the Others and also among divorcee and widow/widower (Appendix 1: Table 2).

5.2 Prevalence of Alcohol Consumption

A total of 3,278 respondents which represented 1,278,554 of the total estimated population responded to the question on ever-consumed alcohol. Alcohol drink in this context encompassed any drink containing ethanol irrespective of concentration and inclusive of those consumed for medical purposes such as alcoholic tonic. It was estimated that the overall national prevalence of ever consumed alcohol was 16.2% (CI: 15.3 - 17.0), the current drinker was 7.4% (CI: 6.9 - 8.0) and the ex-drinker was 29.1% (CI: 27.3 - 30.8) among those who had history of consumed alcohol.

The data was further analyzed according to age group which was divided into below 18 years old and 18 years and above. The prevalence of ever drinker and current drinker for aged group below 18 years old was 7.3% (CI: 6.3 - 8.3) and 2.5% (1.9 - 3.1). Meanwhile the prevalence of ever drinker and current drinker for aged group 18 years and above was 17.9% (CI: 17.0 - 18.9).

5.2.1 Alcohol consumption by state and urban/rural locality

Sarawak reported the highest prevalence [32.0% (CI: 28.1 - 35.9)] of ever consumed alcohol followed by W.P Labuan [25.0% (CI: 19.2 - 30.8)] and W.P Kuala Lumpur [24.2% (CI: 20.3 - 28.1)]. The same goes to current drinker in which Sarawak reported the highest prevalence which was 15.0% (CI: 12.3 - 17.8) followed by W.P Labuan and W.P Wilayah with a prevalence of 12.4% (CI: 9.5 - 15.2) and 12.1% (CI: 7.8 - 16.4) respectively.

The prevalence of ever consumed alcohol in urban area was significantly higher [18.8% (CI: 17.6 - 19.9)] compared to rural areas [10.4% (CI: 9.2 - 11.6)]. Respondents from urban area also reported significantly higher prevalence [8.9 (CI: 8.2 - 9.7)] of current drinker compared to respondents from rural area [4.2% (CI: 3.5 - 4.9)]. (Appendix 2: Figure 1)

5.2.2 Alcohol consumption by gender

Male reported higher prevalence [24.4% (CI: 23.1 - 25.6)] of ever consumed alcohol compared to females [8.7% (CI: 8.0 - 9.5)]. The same goes to current drinker in which prevalence among the males is higher compared to females with a prevalence of 11.8% (CI: 10.9 - 12.7) and 3.6% (CI: 3.2 - 4.1) respectively. (Appendix 2: Figure 2)

5.2.3 Alcohol consumption by ethnic group

The Chinese reported the highest prevalence [44.0% (CI: 42.2 - 45.9)] of ever consumed alcohol followed by the Others Bumis and the Indian with a prevalence of 32.1% (CI: 28.6 - 35.7) and 23.0% (CI: 20.7 - 25.4) respectively. Meanwhile, the Malays reported the lowest prevalence of ever consumed alcohol [4.2% (CI: 3.8 - 4.6)] followed by the Others as the second lowest [18.0% (CI: 14.1 - 22.0)]. The trend was the same for current drinker in which the Chinese reported the highest prevalence [23.8% (CI: 22.2 - 25.4)] followed by the Other Bumis [16.0% (CI: 13.5 - 18.5)], the Indian [12.9% (CI: 11.1 - 14.7)], the Others [7.1% (CI: 4.2 - 9.9)] and the Malays [0.7% (CI: 0.6 - 0.9)]. (Appendix 2: Figure 3)

5.2.4 Alcohol consumption by religion

The respondents with Christianity as their religion reported the highest prevalence [45.7% (CI: 42.9 - 48.6)] of ever drinker followed by the Hindu [43.8% (CI: 41.8 - 45.7)] and the Others [40.4% (CI: 30.8 - 50.0)]. Meanwhile respondents who practice Islam reported the lowest prevalence [4.8% (CI: 4.4 - 5.3)] followed by the Buddhist [22.6% (CI: 19.9 - 25.3)] and the Unclassified [25.8% (CI: 9.6 - 41.9)].

The same trend goes for the current drinker in which the prevalence was highest among the Christianity [25.6% (CI: 23.0 - 28.2)] followed by the Hindu [23.5% (CI: 21.9 - 25.2)] and the Others [20.0% (CI: 13.2 - 26.9)]. Similar to the ever drinker, respondents with Islam as their religion reported the lowest prevalence of current drinker [0.9% (CI: 0.6 - 0.9)] followed by the Buddhist [12.9% (CI: 10.8 - 15.0)] and the Unclassified [16.5% (CI: 2.2 - 30.8)].

5.2.5 Alcohol consumption by age group

The prevalence of ever drinker was increasing as the respondents get older until for the group age eighty and above (+80) when it declines. The age group 75-79 years reported the highest prevalence of ever consumed the alcohol [27.9% (CI: 13.3 - 42.4)]. Meanwhile for the current drinker, the prevalence was highest among the respondents aged 70-74 years [10.4% (CI: 4.5 - 16.3)]. However, there was no specific trend to describe the relationship between the prevalence and the age group. (Appendix 2: Figure 4)

5.2.6 Alcohol consumption by educational level

The respondents with tertiary level of education reported the highest prevalence [24.1% (CI: 21.8 - 26.4)] of ever consumed alcohol followed by respondents who did not go for formal education [20.8% (CI: 13.5 - 28.1)] and respondents with secondary level of education [15.8% (CI: 14.9 - 16.8)]. Similarly, the respondents with tertiary level of education reported the highest prevalence of current drinker which was 13.7% (CI: 12.0 - 15.5). However, in this group, the second highest was among the respondents with secondary level of education [7.0% (CI: 6.4 - 7.6)] followed by respondents with primary level of education [5.7% (CI: 5.1 - 6.4)]. (Appendix 2: Figure 5)

5.2.7 Alcohol consumption by working and occupational group

Respondents who work as a senior officer or manager reported the highest prevalence [41.7% (CI: 36.6 - 46.7)] of ever consumed alcohol followed by the respondents work in the plant or machine or assembler [27.6% (CI: 24.6 - 30.6)] and the professionals [23.1% (CI: 20.7 - 25.5)]. Similarly the same trend reported for the current drinker with the highest was also among the senior officer or manager [24.8% (CI: 20.1 - 29.5)] followed by the plant or machine or assembler [13.6% (CI: 11.3 - 16.0)]. However, differ from group of ever consumed alcohol, the elementary occupations reported the third highest prevalence [10.6% (CI: 8.1 - 13.1)] then only followed by the professionals [11.9% (CI: 10.1 - 13.7)].

5.2.8 Alcohol consumption by household income

The prevalence of ever consumed alcohol and current drinker were highest among those who earned RM 5000 and above per month with a prevalence of 27.9% (CI: 25.1 - 30.8) and 16.3% (CI: 14.2 - 18.4) respectively. Generally it was noted that the prevalence increased with household income. Similar trend was observed when the comparison was based on the personnel income.

5.2.9 Alcohol consumption by marital status

Comparison by marital status revealed the prevalence of ever consumed alcohol and current drinkers were highest among those who married with a prevalence of 17.4% (CI: 16.4 - 18.4) and 7.9% (CI: 7.2 - 8.6) respectively.

5.2.10 Alcohol consumption among the adolescence (below 18 years old)

The prevalence of ever consumed alcohol and current drinker among the adolescent was 7.3% (CI: 6.3 - 8.3) and 2.5% (CI: 1.9 - 3.1) respectively. Among the ever consumed alcohol, the prevalence was higher among the males (9.3%), urban dweller (8.7%), among the Chinese (24.7%) and Buddhist (25.8%).

The prevalence of current drinker was higher among the male (3.3%), urban dweller (3.1%), among the Chinese (8.6%) and Christian (10.8%). The percentage of binge drinker among them was 24.6% (CI: 17.3 - 31.9).

5.3 Age Starting to Drink

The reported mean age of starting to drink alcohol in Malaysia was 21.0 years old (CI: 20.7 - 21.2 years old). The males started to drink alcohol early compare to females with a mean age starting to drink was 20.7 years old (CI: 20.5 - 21.0 years old) and 21.6 years old (CI: 21.1 - 22.1 years old) respectively. There was not much difference in the mean age started to drink alcohol between those living in urban 21.0 years (CI: 20.8 - 21.3 years old) and those in rural 20.8 years old (CI: 20.3 - 21.3 years old).

5.4 Reasons to Start Drinking

A total of 53.4% (CI: 51.5 - 55.4) of the respondents cited influenced by friends as the most important reason to start drinking followed by others which was 23.2% (CI: 21.5 - 24.9). Meanwhile, 10.6% (CI: 9.3 - 11.9) said they drink because of relatives influence and 10.0% (CI: 8.9 - 11.1) reported drinking can reduce stress. (Appendix 2: Figure 6)

5.5 Characteristics of The Drinking Habits

Information on alcohol consumption was available only among those who were current drinkers. The respondents were given the chance to report on the type of alcohol, pattern of alcohol consumption, estimated amount consumed per week and classification of current drinkers.

5.5.1 Type of alcohol consumed

A group consists of Beer, Stout, Lager, Ale, Shandy was the most being consumed by the respondents with a prevalence of 93.3% (CI: 92.1 - 94.4) followed by a group of Red, White, Rose

Wine/Champagne/Sherry/Vermouth And Tuak [55.8% (CI: 53.5 - 58.2)] then by group of Whisky ,Rum, Toddy [29.9% (CI: 27.6 - 32.1)] Other types of alcohol drink that has been consumed by the respondents were group of Brandy, Gin, Samsu / Langkau [29.1% (CI: 27.0 - 31.2)] and Vodka [21.2% (CI: 19.2 - 23.2)] and the others [13.9% (CI: 12.2 - 15.6)]. (Appendix 2: Figure 7)

5.5.2 Classification of current drinkers

Based on the amount and frequency of alcohol drinking per week, the current drinker could also be classified as low, medium and high drinker. Among the current drinkers, majority of them were light drinkers with a prevalence of 93.3% (CI: 91.9 - 94.6), followed by the moderate drinkers were 4.4% (CI: 3.3 - 5.6) and heavy drinkers were 2.3% (CI: 1.5 - 3.1). (Appendix 2: Figure 8)

5.5.3 Prevalence of binge drinker

Based on the amount of alcohol taken, the binge drinker can be defined as drinking more than 4 units for male and more than 5 units for female at one drink. The prevalence of binge drinker was 30.6% (CI: 28.4 - 32.9). It was more common in rural [32.7% (CI: 27.9 - 37.5)] compare to urban [30.2% (CI: 27.6 - 32.7)]. As expected, the prevalence of binge drinker was higher in male [31.8% (CI: 29.2 - 34.3)] than in female [27.5% (CI: 23.5 - 31.5)].

5.6 Attempt to Stop Drinking

Attempt to stop drinking was defined as an act of alcohol cessation for at least one day in the past one year before the survey was conducted. This question was directed only to ever consume alcohol group. Overall, 46.0% (CI: 43.4 - 48.7) of the respondents claimed that they had attempted to stop drinking in the past one year before the survey was conducted. The mean number of trying to quit drinking alcohol was 3.4 times (CI: 3.0 - 3.7 times).

5.7 Reasons Fail to Quit

Among the respondents who had attempted to quit, the commonest reason [37.1% (CI: 32.6 - 41.6)] why they have failed to quit was due to friends' influenced. The second most common reasons were due to cultural practice which was 14.3% (CI: 10.8 - 17.8) and 12.1% (CI: 8.9 - 15.2) said they always in stress so they need to consume alcohol. (Appendix 2: Figure 9)

5.8 Reasons Succeed to Quit

Among the successful quitters, [51.2% (CI: 48.4 - 54.0)] cited alcohol's negative effects on health as the main reason why they have stopped consuming the alcohol beverage. Meanwhile, 16.6% (CI: 14.6 - 18.6) of them said they quit after been advised by their family members and 8.2% (CI: 6.7 - 9.7) said because of exposure to health message via media. (Appendix 2: Figure 10)

6. DISCUSSION

The response rate for alcohol module was 52.5%. Though it was low, further analysis of the non-respondent data revealed a similar socio-demography characteristic of the respondents and non-respondents. However, the proportion of non-respondents was higher than the respondents among the Others Bumis and the Others ethnicity. The non-response rate for the Others Bumis was 66.3% and 61.5% for the Others ethnicity. The non-response rate was also high among the divorcee and widow/widower with a percentage of 65.2% and 80.9% respectively.

6.1 Prevalence of Alcohol Consumption

The second National Health Morbidity Survey (NHMS II) which was conducted in 1996 was targeted only to the non-Muslim population aged eighteen and above. Therefore, direct comparison cannot be done because of the methodological differences in the data collection as well as the target group. NHMS III is the first population survey to determine the burden and pattern of alcohol consumption in Malaysia, among those aged thirteen and above irrespective of their race and religion.

In order to identify the trend in alcohol consumption, further analysis was done by excluding the data for Muslim respondents and non-Muslim below eighteen years old, so that it will resemble the target population in NHMS II. There was an increasing trend in the prevalence of ever consumed alcohol, with a prevalence of 29.2% in NHMS II and 42.8% in NHMS III. The same trend was noted for the current drinkers with a prevalence of 23.0% in NHMS II and 24.1% in NHMS III. The increasing trend was also noted among the Chinese drinker with a prevalence of current drinker in NHMS II and NHMS III was 22.2% and 26.6% respectively. Another survey done in Malaysia in 2005, which looking at alcohol consumption among adult aged 24 to 65 years old revealed the prevalence of current drinker was 12.2% (MOH 2007).

NHMS II and NHMS III have demonstrated that the prevalence of ever consumed alcohol was highest in Sarawak, among males, the Chinese, among older adults, the Christians, those with tertiary level of education, among the senior officer/ manager and those married. The surveys also identified that the prevalence increased in correspond with household income. The only different was, in the prevalence of alcohol consumption by locality, in which NHMS II has reported the highest alcohol consumption was in the rural area, meanwhile in NHMS III, it was higher in the urban. Further analysis of the prevalence of current drinker among the non-Muslim aged eighteen years old and above in the urban area revealed an increasing trend in alcohol consumption with a prevalence of NHMS II and NHMS III was 21.1% to 24.2% respectively.

Rehm et al. in 2003 reported there was a substantial gender differences in the proportion of drinkers in some parts of the world. Drinking is estimated to be almost entirely confined to males in the mainly Islamic regions of the Eastern Mediterranean, and drinking by women is nearly as uncommon in Southeast Asia, whereas almost twice as many men as women drink in the African subregions. Europe A, Europe C, and Western Pacific A are the subregions which the rate of female drinkers within 10 percentage points of the rate of male drinkers. NHMS II and NHMS III showed male dominate the prevalence of alcohol consumption for ever consumed alcohol as well as the current

drinker group. Among the current drinkers, the ratio of male to female in NHMS II and NHMS III was 4.0 to 1 and a ratio of 3.4 to 1 respectively. This indicates the increasing trend of alcohol consumption among female. The finding was further upheld by the increasing prevalence of current drinker among the non-Muslim female above eighteen years old with a prevalence of 9.8% in NHMS II and 12.1% in NHMS III.

Various study have identify that there are significant variations in alcohol consumption and resulting harm for different population groups. This is particularly noticeable in minority populations at the lower end of the socioeconomic scale. In Australia for example, indigenous people are at least twice as likely to die from high-risk consumption of alcohol as are their non-indigenous counterparts (WHO 2007 b). In this survey, there was a reduction in the prevalence of current drinkers among the Others Bumi with a prevalence of NHMS II and NHMS III was 36.3% and 18.0 % respectively. The same trend was also observed among the Others ethnicity with a prevalence of 28.4% in NHMS II to 7.7% in NHMS III. However, this may be contributed by the high proportion of the non-respondent among them.

Rates of alcohol consumption in Germany are among the highest in the world with 90% of young people aged 12 to 25 years report having already consumed alcohol at least once in their lives (Reiner & Gudrun 2005). NHMS III has demonstrated that the prevalence of current drinker among respondents below 18 years old was 2.5%. As early as at the age of 13 years old, 4.7% had consumed alcohol beverages and 1.5% of them were still consuming the alcohol for the past one month before the survey was conducted.

6.2 Characteristic of Drinking Habits

NHMS II reported the mean age of starting to drink alcohol in Malaysia was 22.3 years old and 21.0 years in NHMS III. A group consists of Beer, Stout, Lager, Ale and Shandy was the most being consumed by the respondents in both surveys. These differ from the global pattern of consumption in which spirits was the largest contributor, in term of pure alcohol to total alcohol consumption (Rehm et al. 2003).

Rates of alcohol consumption are highest in European countries especially in the Russian Federation and Ukraine with 18.6% was the heavy drinkers (Rehm & Gmel 2002). Various study done in Germany revealed the high prevalence of binge drinking (Tomkins et al. 2006). In this survey, for the current drinker, though the prevalence of heavy drinker was only 2.3%, the prevalence rate for the binge drinker was 30.6%. Meanwhile, among adolescent who were the current drinker, 4.2% were heavy drinker and 24.6% were the binge drinker. This indicates that they seldom drink but when they start to drink, they practice hazardous patterns of alcohol drinking which will expose them to the harmful effect of alcohol consumption.

Most of the drinkers (53.4%) cited influenced by friends as the most important reason to start drinking. Among the drinkers, 46.0% claimed that they had attempted to stop drinking in the past one year before the survey was conducted with a mean number of trying to quit drinking alcohol was 3.4 times. Influence by friends (37.1%) was the main reasons cited by those who were not able to stop drinking. For those who had succeeded, they cited negative health effects of alcohol consumption (51.2%) as the main reasons why they had quit.

The adolescent drinker also reported they started to drink because of friend's influenced (38.1%) and influenced by relatives who drink (22.4%). 56.8% claimed that they had attempted to stop drinking in the past one year before the survey was conducted with a mean number of trying to quit drinking alcohol was 2.9 times. Similar to the national findings, influence by friends (38.1%) was the main reasons cited by those who were not able to stop drinking. For those who had succeeded, they cited negative health effects of alcohol consumption (49.3%) as the main reasons they quit.

7. CONCLUSION

The prevalence of ever consumed alcohol among the thirteen years age and above was 16.2% and the current drinker was 7.4%. The current drinker was more prevalent in Sarawak state, urban, among the men, the Chinese, those with tertiary level of education, those who are senior or manager and married. Beverages that were more commonly consumed were a group of beer, stout, lager, ale and shandy. Meanwhile, the prevalence of binge drinker was 30.6% and more common in the rural and among the men. Among the current drinkers, majority of them were the light drinkers with a prevalence of 93.3%.

The mean age of starting to consume alcohol was 21.0 years old with the male started slightly earlier than female. They started drinking and have failed to quit because of peer influenced. A total of 46.0% reported that they had attempted to stop drinking. Among the successful drinkers, they wanted to quit because of the negative health effects of alcohol consumption.

The prevalence of ever consumed alcohol and current drinker among the adolescent below 18 years old was 7.3% and 2.5% respectively. Among the adolescents who are the current drinker, the prevalence was higher among the male (3.3%), urban dweller (3.1%), among the Chinese (8.6%) and Christian (10.8%). The percentage of binge drinker among them was 24.6 %.

In conclusion, this survey was able to provide basic information on alcohol consumption pattern among the thirteen years age and above in Malaysia. Besides, this is the first survey which was able to demonstrate the prevalence of alcohol consumption among adolescence below the age 18 years old. Likewise, trend of consumption among the aged group of 18 years old and above was highlighted for formulation of policy and strategies in overcoming the alcohol related problems.

8. RECOMMENDATIONS

- 8.1 Intervention and Health Promotion need to focus more on the following target group:
- a) Senior officers and managers.
 - b) Plant and machine operator & Assembler.
 - c) Professionals.
 - d) Higher income group (>RM 5,000/ month).
 - e) Urban dwellers.
 - f) Long house, condos and apartment occupants.
 - g) Non-Muslims.
 - h) Adolescent.
- 8.2 Even though drinking prevalence is higher among males but there is an increasing trend among the females therefore efforts need to be re-inforced and strengthened to address the issues of increasing female drinkers.
- 8.3 Binge drinkers are another area of concern as the harmful effects are well recognised thus intervention and health promotion need to be built-up to address the issues of binge drinkers.
- 8.4 Since peer influenced was the main reason for initiation as well as continuing consumption of alcohol, healthier peer groups need to be established or activated.
- 8.5 Alcohol-free environment at work-place need to be re-inforced and taken to ensure compliance and adherence.
- 8.6 Interventions and more support groups for quitters need to be created or set-up.

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APPENDIX



APPENDIX 1

Table 1 : Frequency of respond

	Frequency	Percentage
State		
Johor	1,465	7.0
Kedah	2,017	9.6
Kelantan	1,579	7.5
Melaka	5,83	2.8
N.Sembilan	740	3.5
Pahang	1,424	6.8
Pulau Pinang	1,514	7.2
Perak	1,649	7.9
Perlis	262	1.3
Selangor	4,337	20.7
Terengganu	1,156	5.5
Sabah	1,421	6.8
Sarawak	1,072	5.1
KL	1,393	6.6
Labuan	346	1.7
Total	20,958	100.0
Residence		
Urban	13,291	63.4
Rural	7,667	36.6
Total	20,958	100.0
Gender		
Male	9,982	47.6
Female	10,976	52.4
Total	20,958	100.0
Age group		
13-14	1,563	7.5
15-19	3,180	15.2
20-24	2,465	11.8
25-29	2,353	11.2
30-34	2,140	10.2
35-39	2,072	9.9
40-44	2,144	10.2
45-49	1,748	8.3
50-54	1,364	6.5
55-59	980	4.7
60-64	500	2.4
65-69	281	1.3
70-74	111	0.5
75-79	43	0.2
80+	14	0.1
Total	20,958	100.0

Table 1 : Frequency of respond (continue)

	Frequency	Percentage
Race		
Malays	12,956	61.8
Chinese	3,911	18.7
Indian	1,800	8.6
Other bumis	1,568	7.5
Others	723	3.4
Total	20,958	100.0
Religion		
Islam	14,392	68.7
Christian	1,515	7.2
Buddha	3,403	16.2
Hindu	1,454	6.9
Others	166	0.8
Unclassified	28	0.1
Total	20,958	100.0
Citizenship		
Malaysian	20,137	96.1
Non-Malaysian	800	3.8
Unclassified	21	0.1
Total	20,958	100.0
Education		
None	140	0.7
Primary	6,283	30.0
Secondary	11,856	56.6
Tertiary	2,508	12.0
Unclassified	171	0.8
Total	20,958	100.0
Occupation		
Senior Official & Manager	431	2.1
Professionals	1,629	7.8
Technical & Associate	1,811	8.6
Clerical Workers	1,263	6.0
Service Workers & Shop	2,986	14.2
Skilled Agricultural & Fishery	946	4.5
Craft & Related Trade Workers	1,142	5.4
Plant & Machine Operator & Assembler	999	4.8
Elementary Occupations	679	3.2
Housewife	3,440	16.4
Unemployed	1,317	6.3
Unclassified	4,315	20.6
Total	20,958	100.0

Table 1 : Frequency of respond (continue)

	Frequency	Percentage
Marital Status		
Not married	8,108	38.7
Married	12,144	57.9
Divorcee	268	1.3
Widow/Widower	362	1.7
Unclassified	76	0.4
Total	20,958	100.0
Household Income		
Less than RM400	983	4.7
RM400 - RM699	2,672	12.7
RM700 - RM999	2,349	11.2
RM1000 - RM1999	5,754	27.5
RM2000 - RM2999	3,512	16.8
RM3000 - RM3999	1,870	8.9
RM4000 - RM4999	919	4.4
RM5000 & above	2,238	10.7
Unclassified	661	3.2
Total	20,958	100.0

Table 2 : Frequency of non respond

	Frequency	Percentage
State		
Johor	2,997	15.8
Kedah	983	5.2
Kelantan	924	4.9
Melaka	437	2.3
N.Sembilan	753	4.0
Pahang	707	3.7
Pulau Pinang	892	4.7
Perak	1,447	7.6
Perlis	117	0.6
Selangor	2,410	12.7
Terengganu	541	2.9
Sabah	3,294	17.4
Sarawak	2,399	12.7
KL	793	4.2
Labuan	270	1.4
Total	18,964	100.0
Residence		
Urban	10,150	53.5
Rural	8,814	46.5
Total	18,964	100.0
Gender		
Male	8,184	43.2
Female	10,780	56.8
Total	18,964	100.0
Age group		
13-14	748	3.9
15-19	1,605	8.5
20-24	1,409	7.4
25-29	1,395	7.4
30-34	1,445	7.6
35-39	1,573	8.3
40-44	1,741	9.2
45-49	1,789	9.4
50-54	1,717	9.1
55-59	1,537	8.1
60-64	1,180	6.2
65-69	1,164	6.1
70-74	806	4.3
75-79	458	2.4
>=80	397	2.1
Total	18,964	100.0

Table 2 : Frequency of non respond (continue)

	Frequency	Percentage
Race		
Malays	9,288	49.0
Chinese	3,981	21.0
Indian	1,460	7.7
Other bumis	3,081	16.2
Others	1,154	6.1
Total	18,964	100.0
Religion		
Islam	11,756	62.0
Christian	2,130	11.2
Buddha	3,387	17.9
Hindu	1,243	6.6
Others	405	2.1
Unclassified	43	0.2
Total	18,964	100.0
Citizenship		
Malaysian	17,459	92.1
Non-Malaysian	1,475	7.8
Unclassified	30	0.2
Total	18,964	100.0
Education		
None	3,658	19.3
Primary	7,453	39.3
Secondary	6,751	35.6
Tertiary	870	4.6
Unclassified	232	1.2
Total	18,964	100.0
Occupation		
Senior Offical & Manager	216	1.1
Profesionals	650	3.4
Technical & Associate	859	4.5
Clerical Workers	586	3.1
Service Workers & Shop	2,728	14.4
Skilled Agricultural & Fishery	1,752	9.2
Craft & Related Trade Workers	903	4.8
Plant & Machine Operator & Assembler	898	4.7
Elementary Occupations	951	5.0
Housewife	4,710	24.8
Unemployed	2,672	14.1
Unclassified	2,039	10.8
Total	18,964	100.0

Table 2 : Frequency of non respond (continue)

	Frequency	Percentage
Marital Status		
Not married	4,438	23.4
Married	12,408	65.4
Divorcee	483	2.5
Widow/Widower	1,532	8.1
Unclassified	103	0.5
Total	18,964	100.0
Household Income		
Less than RM400	2,424	12.8
RM400 - RM699	3,259	17.2
RM700 - RM999	2,217	11.7
RM1000 - RM1999	4,786	25.2
RM2000 - RM2999	2,523	13.3
RM3000 - RM3999	1,150	6.1
RM4000 - RM4999	580	3.1
RM5000 & above	1,103	5.8
Unclassified	922	4.9
Total	18,964	100.0

Table 3 : Prevalence of current drinker by socio-demographic characteristics (age 13 ≤ 18 years)

Sociodemography	Total Respondent	Estimated Population	Prevalence %	95% CI	
				Lower	Upper
National	86	33,066	2.5	1.9	3.1
State					
Johor	7	2,779	3.3	0.9	5.7
Kedah	4	1,404	1.1	-0.2	2.3
Kelantan	1	323	0.2	-0.2	0.7
Malacca	3	1,249	3.5	-0.6	7.6
N. Sembilan	4	1,448	3.2	0.2	6.2
Pahang	2	851	1.0	-0.4	2.3
Penang	11	4,001	6.2	2.9	9.4
Perak	5	2,222	1.6	-0.1	3.3
Perlis	0	0	0.0	0.0	0.0
Selangor	10	4,339	1.8	0.6	3.0
Terengganu	2	758	0.9	-0.3	2.0
Sabah	12	3,784	4.5	1.7	7.4
Sarawak	20	7,941	9.4	5.3	13.5
W.P. Kuala Lumpur	5	1,968	2.8	0.4	5.3
W.P. Labuan	0	0	0.0	0.0	0.0
Urban					
Johor	5	2,130	7.5	5.2	9.9
Kedah	1	400	5.9	4.0	7.9
Kelantan	0	0	0.0	0.0	0.0
Malacca	2	983	10.9	6.5	15.3
N. Sembilan	2	784	10.2	6.5	13.9
Pahang	2	851	7.6	3.9	11.3
Penang	10	3,696	11.3	8.9	13.7
Perak	4	1,861	8.5	6.2	10.8
Perlis	0	0	0.0	0.0	0.0
Selangor	10	4,339	8.7	7.2	10.3
Terengganu	2	758	1.5	0.5	2.5
Sabah	9	2,907	10.2	6.3	14.2
Sarawak	10	4,462	16.0	12.4	19.7
W.P. K.Lumpur	5	1,968	12.4	9.5	15.2
W.P. Labuan	0	0	0.0	0.0	0.0
Rural					
Johor	2	649	2.4	0.9	4.0
Kedah	3	1,004	2.9	1.4	4.4
Kelantan	1	323	0.7	-0.1	1.4
Malacca	1	266	4.2	1.0	7.4
N. Sembilan	2	664	4.6	1.5	7.7
Pahang	0	0	0.0	0.0	0.0
Penang	1	305	2.7	0.0	5.5
Perak	1	361	5.6	3.1	8.1
Perlis	0	0	0.0	0.0	0.0
Selangor	0	0	0.0	0.0	0.0
Terengganu	0	0	0.0	0.0	0.0

**Table 3 : Prevalence of current drinker by socio-demographic characteristics
(age 13 ≤ 18 years) (continue)**

Sociodemography	Total Respondent	Estimated Population	Prevalence %	95% CI	
				Lower	Upper
Sabah	3	877	10.9	7.1	14.8
Sarawak	10	3,479	13.5	9.3	17.8
W.P Labuan	0	0	0.0	0.0	0.0
Residence					
Urban	62	25,139	3.1	2.3	3.9
Rural	24	7,927	1.6	0.9	2.3
Ethnicity					
Malay	7	2,718	0.3	0.1	0.6
Chinese	50	19,772	8.6	6.2	11.0
Indian	8	3,045	2.6	0.8	4.5
Other Bumis	21	7,531	7.7	4.2	11.3
Others	0	0	0.0	0.0	0.0
Religion					
Islam	8	3,041	0.3	0.1	0.6
Christian	27	9,929	10.8	6.8	14.8
Buddhist	44	17,646	8.9	6.3	11.5
Hindu	5	1,733	1.8	0.2	3.4
Others	1	348	4.0	-3.7	11.8
Unclassified	1	370	23.3	-17.3	64.0
Gender					
Male	56	21,543	3.3	2.4	4.2
Female	30	11,523	1.7	1.1	2.4

Table 4 : Prevalence of current drinkers by socio-demographic characteristics (age ≥ 18 years)

Sociodemography	Total Respondent	Estimated Population	Prevalence %	95% CI	
				Lower	Upper
National	1,379	543,226	8.5	7.8	9.1
State					
Johor	76	31,360	6.6	4.6	8.5
Kedah	78	29,184	5.0	3.6	6.4
Kelantan	10	3,343	0.9	0.1	1.7
Malacca	46	21,030	10.5	6.4	14.5
N. Sembilan	52	19,667	9.0	6.0	12.0
Pahang	67	27,074	6.0	3.5	8.4
Penang	125	45,682	10.2	7.8	12.5
Perak	117	51,295	9.2	7.0	11.4
Perlis	6	2,324	3.3	0.8	5.7
Selangor	328	138,999	9.2	7.6	10.7
Terengganu	10	3,570	1.2	0.4	2.0
Sabah	132	40,489	12.1	8.9	15.2
Sarawak	133	54,038	16.5	13.4	19.6
W.P. Kuala Lumpur	160	62,974	13.8	10.7	16.9
W.P. Labuan	39	12,198	13.7	9.0	18.5
Urban					
Johor	66	28,115	8.1	5.5	10.5
Kedah	47	18,811	7.0	4.7	9.3
Kelantan	4	1,408	1.0	-0.4	2.4
Malacca	39	19,165	12.2	7.2	17.2
N. Sembilan	40	15,683	11.8	7.7	15.9
Pahang	47	19,994	8.4	4.2	12.6
Penang	117	43,246	12.0	9.3	14.6
Perak	87	40,478	10.0	7.2	12.8
Perlis	3	1,309	5.7	0.5	10.9
Selangor	305	132,330	9.7	8.0	11.4
Terengganu	7	2,652	1.5	0.3	2.7
Sabah	62	20,025	11.3	6.8	15.8
Sarawak	79	35,251	17.2	13.2	21.2
W.P. K.Lumpur	160	62,974	13.8	10.7	16.9
W.P. Labuan	26	8,397	17.3	10.1	24.6
Rural					
Johor	10	3,244	2.5	1.0	4.0
Kedah	31	10,373	3.3	1.7	4.9
Kelantan	6	1,936	0.8	-0.2	1.8
Malacca	7	1,865	4.3	1.2	7.5
N. Sembilan	12	3,984	4.7	1.3	8.1
Pahang	20	7,080	3.3	1.4	5.2
Penang	8	2,436	2.7	0.0	5.4
Perak	30	10,816	7.0	3.8	10.1
Perlis	3	1,015	2.1	-0.2	4.5
Selangor	23	6,668	4.3	1.9	6.7
Terengganu	3	918	0.7	-0.3	1.7

**Table 4 : Prevalence of current drinkers by socio-demographic characteristics
(age ≥ 18 years) (continue)**

Sociodemography	Total Respondent	Estimated Population	Prevalence %	95% CI	
				Lower	Upper
Sabah	70	20,464	12.9	8.4	17.4
Sarawak	54	18,788	15.3	10.4	20.2
W.P Labuan	13	3,801	9.4	4.1	14.8
Residence					
Urban	1,089	449,838	10.0	9.1	10.9
Rural	290	93,388	4.9	4.0	5.7
Ethnicity					
Malay	88	32,704	0.8	0.6	1.0
Chinese	814	330,637	26.6	24.8	28.4
Indian	216	87,403	14.9	12.8	17.0
Other Bumis	212	73,851	18.0	15.1	20.8
Others	49	18,631	7.7	4.7	10.8
Religion					
Islam	131	46,902	1.9	0.9	1.3
Christian	339	128,342	28.6	25.6	31.6
Buddhist	700	283,474	26.2	24.4	28.1
Hindu	176	71,317	15.1	12.7	17.5
Others	30	11,971	22.6	15.5	29.8
Unclassified	3	1,221	15.2	0.0	30.3
Gender					
Male	1,035	405,802	13.7	12.6	14.7
Female	344	137,424	4.0	3.5	4.5

Table 5 : Prevalence of alcohol consumption by state

State	Ever (%)	Current (%)
Johor	13.8	6.1
Kedah	10.7	4.3
Kelantan	2.6	0.7
Malacca	23.4	9.4
Negeri Sembilan	17.7	8.0
Pahang	11.0	5.2
Penang	20.3	9.6
Perak	15.4	7.7
Perlis	9.0	2.5
Selangor	17.1	8.2
Terengganu	2.7	1.1
Sabah	24.2	10.6
Sarawak	32.0	15.0
W.P. Kuala Lumpur	24.2	12.4
W.P Labuan	25.0	12.1

Table 6 : Prevalence of alcohol consumption by educational level

Type of Occupation	Ever (%)	Current (%)
Senior Official Manager	41.7	24.8
Professionals	23.1	11.9
Technical & Associates	18.7	8.2
Clerikal Workers	14.7	6.1
Service Workers & Shop	21.0	10.0
Skilled Agricultural & Fishery	19.6	8.9
Craft & Related Trade Workers	13.7	5.7
Plant & Machine Operator & Assembler	27.6	13.6
Elementary Occupations	21.2	10.6
Housewife	7.4	2.8
Unemployed	16.7	6.3
Unclassified	10.0	4.6

Table 7 : Prevalence of ever consumed alcohol consumption by religion

Religion	Ever (%)	Current (%)
Islam	4.8	0.9
Christian	45.7	25.6
Hindu	43.8	23.5
Buddhist	22.6	12.9
Others	40.4	20.0
Unclassified	25.8	16.5

Table 8 : Prevalence of alcohol consumption by household income

Household Income	Ever (%)	Current (%)
Less than RM 400	12.9	6.0
RM 400 - RM 699	10.6	4.1
RM 700 - RM 999	12.1	4.9
RM 1000 - RM 1999	13.4	5.4
RM 2000 - RM 2999	16.7	7.3
RM 3000- RM 3999	17.9	8.2
RM 4000 - RM 4999	24.5	12.0
RM 5000 & above	27.9	16.3
Unclassified	16.6	9.1

Table 9 : Prevalence of alcohol consumption by marital status

Marital Status	Ever (%)	Current (%)
Not Married	14.5	6.9
Married	17.4	7.9
Divorcee	11.8	4.7
Widow/widower	13.4	5.1
Unclassified	15.9	8.6

APPENDIX 2

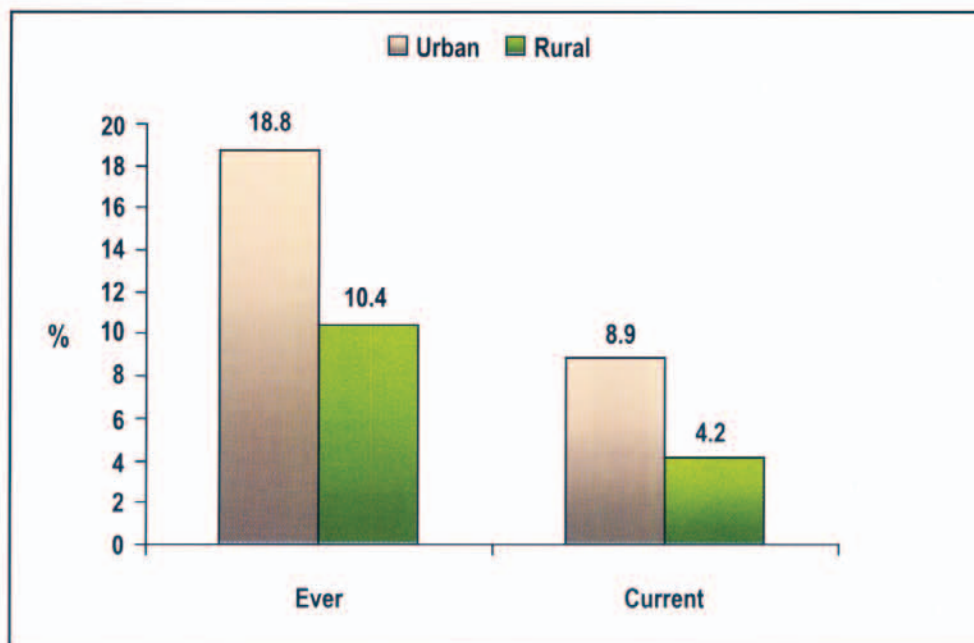


Figure 1: Prevalence of alcohol consumption by urban/rural locality

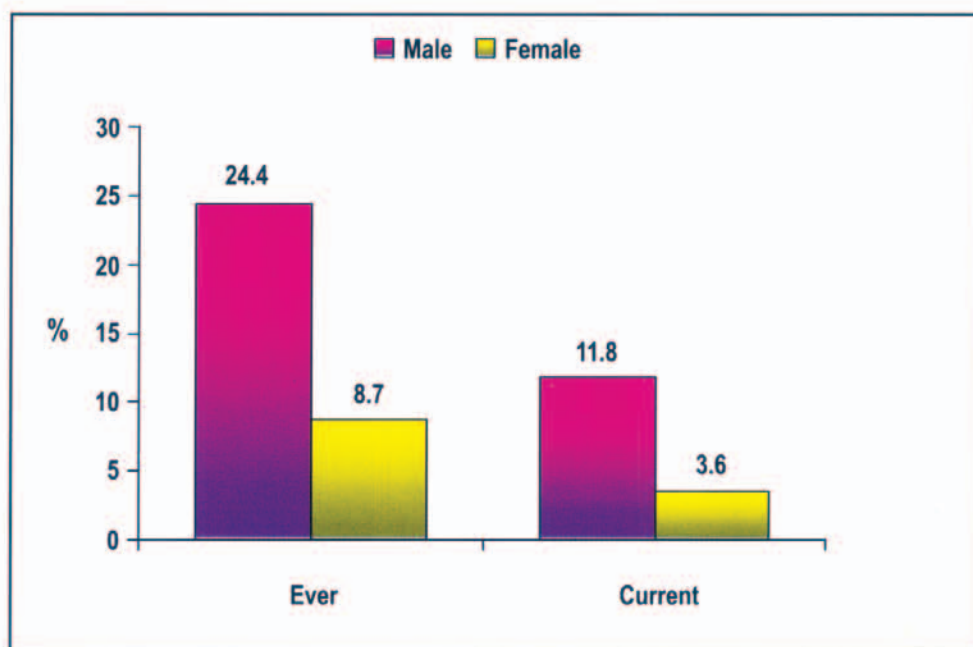


Figure 2: Prevalence of alcohol consumption by gender

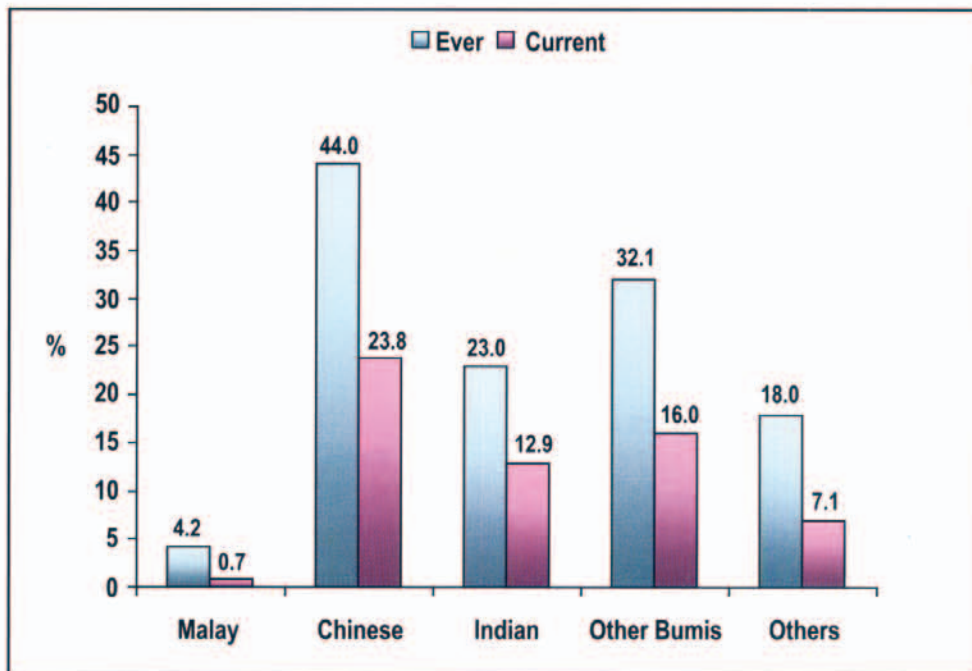


Figure 3: Prevalence of alcohol consumption by ethnic group

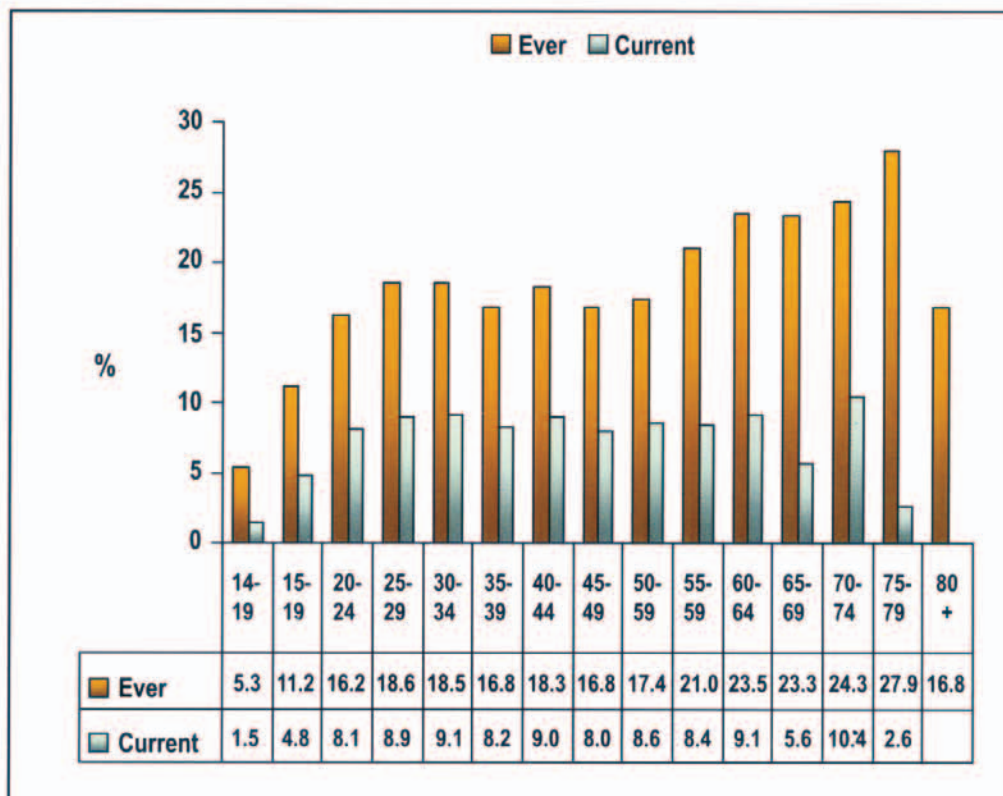


Figure 4: Prevalence of alcohol consumption by age group

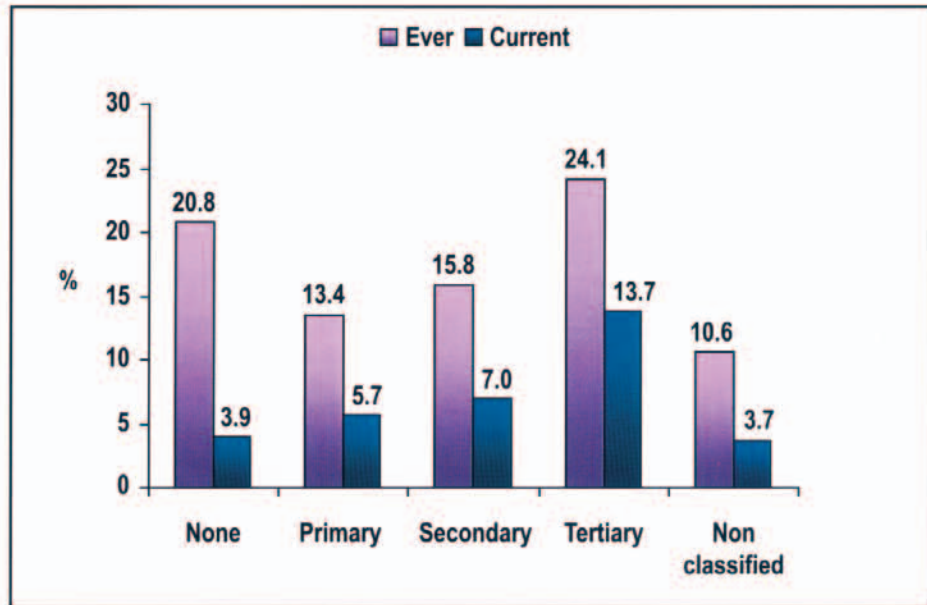


Figure 5: Prevalence of alcohol consumption by educational level

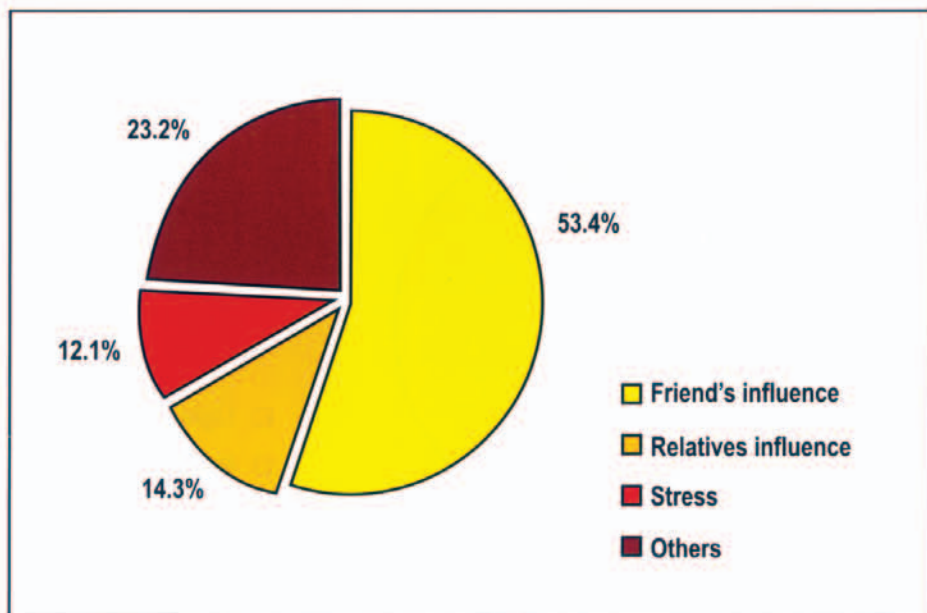


Figure 6: Reasons to start drinking

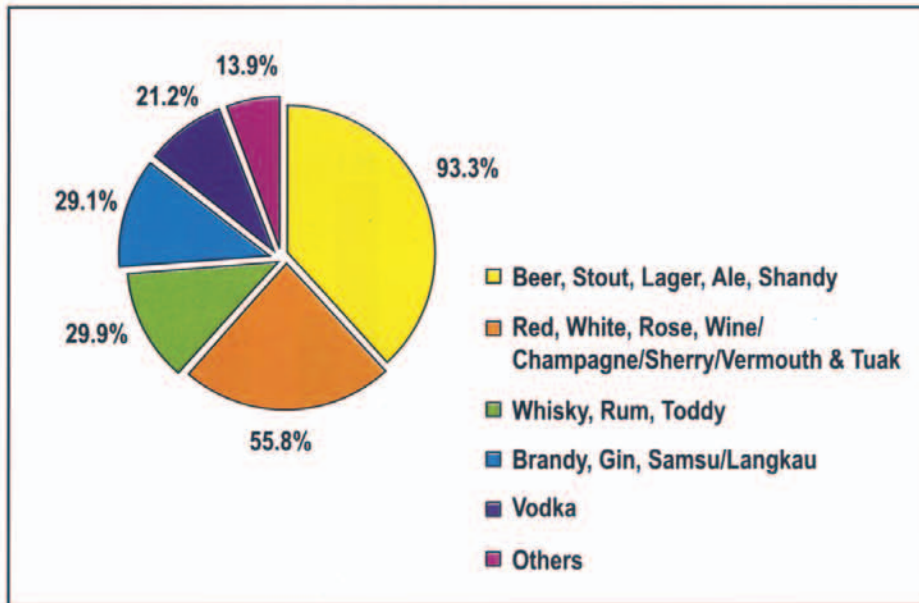


Figure 7: Type of alcohol consumed

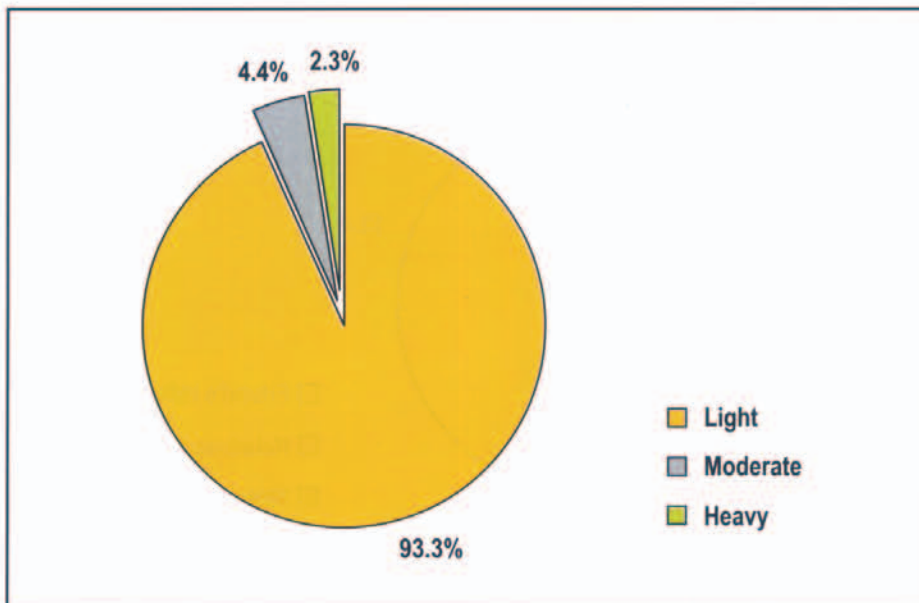


Figure 8: Classification of current drinkers

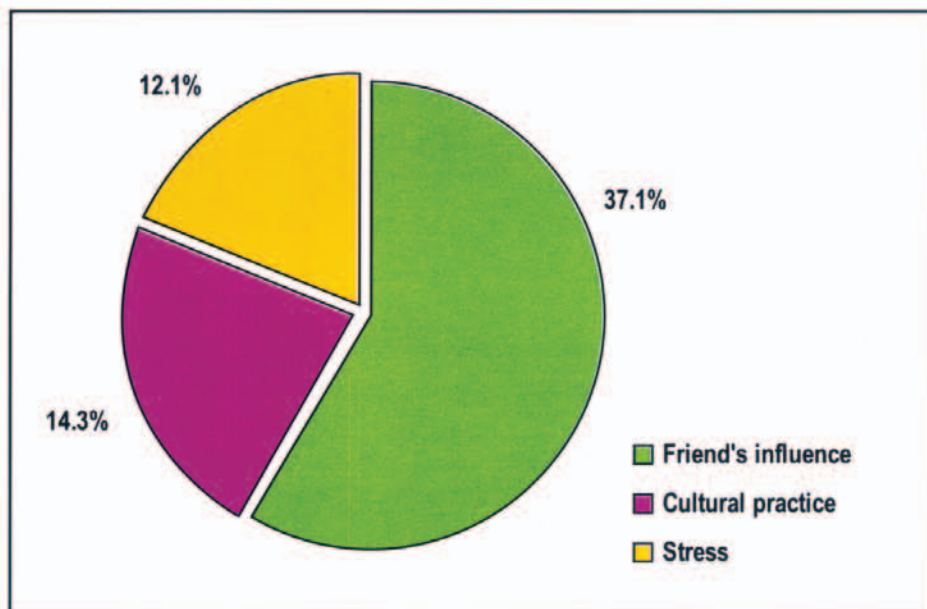


Figure 9: Reasons fail to quit

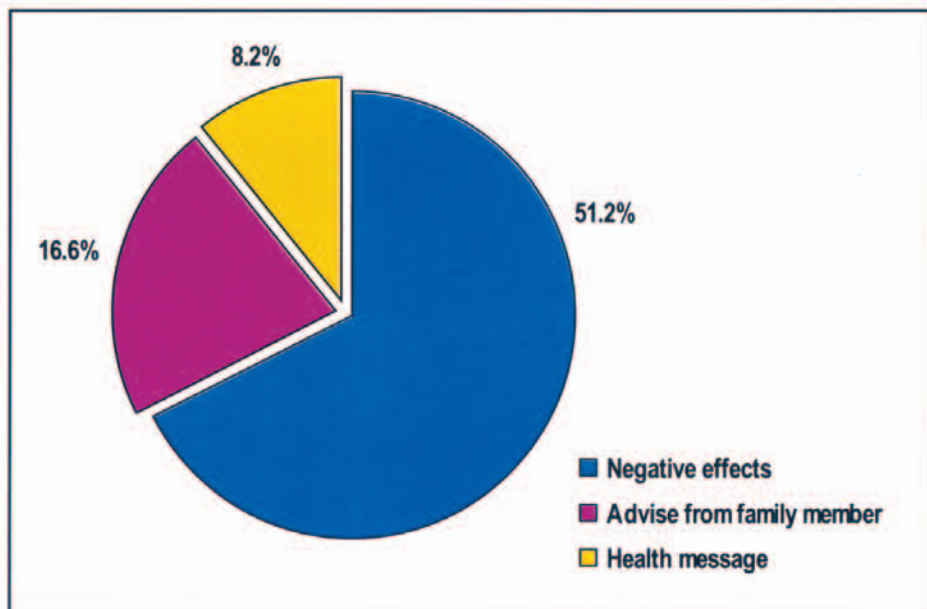


Figure 10: Reasons succeed to quit

