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

EXECUTIVE SUMMARY

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For further improvement of this report, the authors welcome any comments, suggestions and enquiries.

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ABBREVIATIONS

ADI	Acute Diarrhoeal Illness
AIA	Asthma in America
AIRE	Asthma Insights and Reality in Europe
AIRIAP	Asthma Insights and Reality in Asia-Pacific
AIRJ	Asthma Insights and Reality in Japan
ARI	Acute Respiratory Infection
BMI	Body Mass Index
BSE	Breast Self Examination
CBE	Clinical Breast Examination
CBR	Community-based Rehabilitation
CC	Calf Circumference
CDC	Center for Disease Control and Prevention, Atlanta, USA
CI	95% Confidence Interval
CPR	Cardio Pulmonary Resuscitation
DALY	Disability Adjusted Life Years
DBP	Diastolic Blood Pressure
e.g	Example
ECRHS	European Community Respiratory Health Survey
EQA1Y	Ever Quit Attempts for Past One Year
FT	Federal Territory
GHQ	General Health Questionnaire

HAZ	Height for Age
HH	Household
HIV	Human Immunodeficiency Virus
i.e.	that is
IFG	Impaired Fasting Glucose
IQ6M	Intentions to Quit Within Next Six Months
ISAAC	International Survey of Asthma and Allergy in Children
km	Kilometer
LRI	Lower Respiratory Tract Infection
MANS	Malaysian Adults Nutrition Survey
MIA	Mean Initiation Age
mmol/L	Milimol per Liter
MNC	Mean Number of Cigarettes
MNQA	Mean Number of Quit Attempts
MOH	Ministry of Health
n	Population
NCHS	National Center for Health Statistics
NGO	Non-Government Organization
NHANES	National Health and Nutrition Examination Survey
NHMS II	The Second National Health and Morbidity Survey
NHMS III	The Third National Health and Morbidity Survey
NHMS	National Health and Morbidity Survey
OOP	Out-of-Pocket

OR	Odds Ratio
OSH	Occupational Safety and Health
OTC	Over the Counter
PPE	Personal Protective Equipments
RM	Ringgit Malaysia
SBP	Systolic Blood Pressure
SD	Standard Deviation
STD	Sexual Transmitted Diseases
STI	Sexual Transmitted Infection
T/CM	Traditional / Complementary Medicine
TC	Total Cholesterol
URI	Upper Respiratory Tract Infection
vs.	versus
WAZ	Weight for Age
WC	Waist Circumference
WHO	World Health Organization
WHZ	Weight for Height

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HEALTH EXPENDITURE

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The main objective of this survey is to estimate the total household out-of-pocket (OOP) health expenditure and its distribution by socio demography, economic factors and by providers and functions of health services. The OOP health expenditure is an important component to be studied due to the lack of data available for this component although it is one of the major components that contribute to health expenditure in this country. In this study, the total number of respondents who answered to questions from module B was 34,539, comprising of 18,064 males (52.3%) and 16,475 females (47.7%).

For the year 2006 the total OOP health expenditure for ages above 18 years, excluding oral health totaled to RM 3.76 billion. The mean OOP health expenditure amongst those who were paying was RM 880 per person giving the per capita amount of RM 179. The OOP health expenditure by gender showed that the males spent a total of RM 1.58 billion (42%) with a mean of RM 926 and a median of RM 420, whilst the females spent RM 2.17 billion (58%) with a mean of RM 849 and a median of RM 396. By age group, the mean OOP health expenditure was lowest amongst young adults and these increases as the age group increases. However there was a decline amongst the 65 years age group and above.

The distribution of OOP health expenditure by ethnic group showed that the total OOP expenditure for Malays was RM 1.98 billion with a mean of RM 790 and a median of RM 360, for Chinese RM 1.13 billion with a mean of RM 1,264 and a median of RM 360, for Indians RM 0.37 billion with a mean of RM 941 and a median of RM 480. For Other Bumis, the OOP health expenditure was 0.19 billion with a mean of RM 550 and a median of RM 240 while for other ethnic groups the total OOP health expenditure was RM 0.1 billion with a mean of RM 675 and a median of RM 360. In general the Chinese were paying more from OOP followed by the Indians and the Malays. The least OOP health expenditure was from Other Bumis.

The survey also found that the mean OOP health expenditure increased as the household income increased. Further, by occupation the professional and skilled workers were paying more from OOP for health compared to the manual workers and the unemployed. In terms of strata, the urban group was paying more for health from OOP compared to the rural group whereby the total OOP health expenditure for this group was RM 2.93 billion with a mean of RM 1019 and a median of RM 600. The rural group paid RM 0.83 billion with a mean of RM 594 and a median of RM 240. The distribution by state showed that people living in Kuala Lumpur, Selangor, Malacca, Sarawak and Penang were paying highest from their OOP compared to those in Pahang, Perlis, Kedah, Sabah and Kelantan who were paying least from OOP respectively.

The OOP health expenditure included the amount spent for several types of functions of namely hospitalization, ambulatory care excluding dental, self care, health promotion and training on health. These services were provided by both public and private organizations. In terms of functions of care the highest amount spent for health from OOP was for health promotion that amounted to RM 2.97 billion (79.1%). This was followed by ambulatory care excluding dental RM 0.54 billion (14.4%), hospitalization RM 0.17 billion (4.5%), training on health RM 0.04 billion (1.2%) and self care RM 0.03 billion (0.9%).

The survey also found that only 18.8% of the Malaysian population had private insurance either for health, life or other types of insurance related to health with a total premium of RM 2.99 billion. From this amount, it was estimated that the premium paid specifically for the medical and health component amounted to RM 1.21 billion.

ORAL HEALTH

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The National Health and Morbidity Survey III (NHMS III) provided an opportunity to investigate and understand oral health within the context of general health. This is appropriate and important as oral health is integral to general health, and oral conditions are important co-morbidities. To better understand and manage oral health in the country, information gathered from the community are vital to complement information from other sources.

The oral health module enquired into toothbrush ownership, reading of food labels for sugar content (for respondents ≥18 years only), impact of oral discomfort/pain on quality-of-life dimensions in the past 4 weeks, and oral healthcare utilisation and consumption costs. Willingness to pay specific quantum for dental check-ups and/or treatment was also explored among respondents aged 18 years and above.

The module is one of 18 modules of the NHMS III study, and utilised a bi-lingual questionnaire to interview all members of selected households. The survey involved more than 15,500 households (HH) and more than 56,700 HH members. The sample was weighted to give a reference population of 21.1 million people (79.2% of the population of Malaysia in 2006). Parents/guardians responded for those aged ≤12 years. Major parameters included gender, location, age group, ethnicity, education and income levels. In the main, data were analysed and reported at the level of individuals.

Majority of Malaysians (94%) own their own toothbrushes, ownership being lower for the youngest (0-4) and the oldest (80+) populations at 70.2% and 68.5% respectively. However, 1.2% shared and 4.2% do not own toothbrushes.

Overall, very few Malaysian adults (≥18 years) read food labels for sugar (10.8%), with proportions decreasing with age. There is positive association with education and income levels for proportions reading food labels for sugar.

About 10% had pain of teeth/mouth in the past 4 weeks. There was no gender bias but reports were more frequent among the rural population (11.9%) than the urban (9.0%). Again, proportions were lower among the youngest (0-4) and the elderly group (65+). Chewing was most affected (50.2%), then sleep (23.6%). Impacts on appearance, speech, work, doing daily chores, socialising and study affected 3.8 - 13.1%. Of those who had experienced pain of teeth/mouth in the past 4 weeks, and had experienced an impact, 48% had at least one impact, averaging 3 days.

In the last year, 9,076 episodes of injuries were reported either singly or in combination. Of these injuries, 1.5% involved the oral and facial structures; occurring mainly on the road (14.9%) or at home (11.0%). Injuries were less common at school, workplaces or recreational places.

Overall, 22.9% of the population reported having dental episodes in the past 1 year (dental problems or check-up). Of these episodes, 53.2% were associated with pain. Care was sought in 71.3% of dental episodes. Although the rural population was more likely to have dental episodes, these were less likely to be associated with pain or seeking care.

The average number of dental episodes experienced per year was 29.4 episodes per 100 individuals - 29.1 in males and 29.6 in females. The average for the urban population was 27.4 episodes/100 individuals and 32.8 episodes/100 individuals for the rural.

There was a mean of 1.35 episodes in the past 1 year, being slightly but significantly higher in females (1.37) than in males (1.34), and in the rural population (1.42) than the urban (1.31).

The majority of first dental episodes (71.3%) were associated with either seeking dental check-ups/treatment and/or the purchase of medicine, proportions of those with pain being slightly higher (75.9%) than those with no pain (66.0%).

For those who sought care for the first dental episode, the majority were in public sector dental clinics (53.7%), followed by private (39.8%), self-care (5.2%) and traditional care (0.3%). However, sources of care differed slightly with pain experience. The majority with no pain for their first dental episode sought care at public sector dental clinics (63.5%) compared to private (29.7%), while for those with painful first dental episode almost equal proportions sought care at public (44.8%) and private (45.7%) sector facilities.

About 40% had made dental visits in the last two years - 19.5% in the last 1 year, 12.8% within 1-2 years ago, and 7.5% in the last two years in the school dental programme; while about 32% reported their last dental visit as more than 2 years ago. A substantial proportion (28.3%) claimed never to have visited a dental clinic.

The five most common reasons for not making a dental visit within the last two years were 'no problems (80.0%)', 'no teeth/false teeth (8.8%)', 'problems were not serious enough (6.5%)', 'too busy (1.1%)' and 'fear of dentists (1.0%)'.

Malaysians spent an estimated RM156.91 million out-of-pocket (OOP) to seek oral healthcare. The OOP expenditure for oral healthcare of adults 18 years and more accounted for 3.1% of the total healthcare expenditure estimated at RM3.88 billion. A high proportion of OOP expenditure came from

urban residents (75.2%), adults aged 18-64 years (73.1%), Malays (57.3%), and females (54.6%). Percentage contributions from more developed states were generally higher than from less developed states. Income was proportionately associated with percentage contribution.

Per capita expenditure for oral healthcare was estimated at RM5.89. The per capita expenditure for adults aged 18-64 years (RM7.76) was about 2-3 times that for children (RM 2.55 for 0-6 years; RM 4.33 for 7-17 years) and almost twice that of the elderly of 65+ years (RM 3.14). The Chinese had the highest per capita contribution (RM8.12) with the lowest from the "Other Bumiputera" group (RM2.76). Per capita expenditure was higher for females (females RM6.07; males RM5.68); for Malaysians (Malaysians RM5.99, Non-Malaysians RM3.92); and for urban residents (urban RM7.00; rural RM3.98). Overall, per capita expenditure increased with education level, being highest among tertiary-educated individuals (RM17.94) compared to other levels (range RM3.97 - 7.30). Per capita expenditure was also proportionate to income level, from RM3.51 for the first income quartile to RM15.67 for the richest one-quarter. The Federal Territory of Kuala Lumpur (FTKL) had the highest per capita expenditure of RM16.30.

For Malaysians who had sought/received dental care, the mean OOP oral healthcare expenditure in the past 1 year per individual was RM38.07 (CI: 37.81 - 38.32). Females spent slightly more OOP (mean RM39.20) than males (mean RM36.79), and the urban population (mean RM45.58) more than rural (mean RM25.39). Mean OOP expenditure for dental care per individual was highest among the Chinese (RM66.11). Overall, children in pre-schools and in schools paid less OOP for oral healthcare (range RM20.01 - 23.56). Mean OOP expenditure for dental care was high among the toddler group (RM40.63) but was highest among the elderly of age 75+ (RM85.03).

Non-Malaysians who constitute 4.7% of the weighted sample paid significantly more for oral healthcare [mean RM42.59 (CI: 41.39 - 43.79)] than Malaysians [mean RM37.95 (CI: 37.69 - 38.21)]. Mean OOP oral healthcare expenditure increased proportionately with education level, with tertiary-educated individuals (RM84.12) paying about 3.5 times more than those with no formal education (RM26.00). Overall, mean oral healthcare OOP expenditure also increased proportionately by income quartile with the richest one-quarter of the population (RM79.44) paying on average more than 3 times that of the poorest one-quarter (RM24.96).

Mean OOP expenditure at private sector clinics (RM79.73) was about 8 times that of public sector facilities (RM9.11). Pain-related dental episodes cost more (RM41.81) than those with no pain experience (RM33.17). However, findings were opposite for adults aged 18 years and more, with pain-related episodes costing less (RM45.48) than those with no pain (RM57.35).

Of the estimated total household OOP oral healthcare expenditure, 63% was for treatment charges (including registration), 25.3% for purchase of medicines and 11.7% for 'other' costs.

Third party payments for dental care are rare, with only three individuals citing it. More than 60% of those $\geq$18 years were willing to pay RM30-50 for dental treatment; a smaller proportion (51.8%) was willing to pay RM10-20 for a dental check-up.

Of those who sought care, 99.9% had one episode with care, with almost the entire household OOP expenditure for oral healthcare (99.97%) reported for the first, and for the large majority, the only episode.

Hence, the cost OOP per dental episode with care is almost the same as that reported per individual. Mean cost OOP per dental episode reported for the total population was RM38.06 (CI: 37.80 - 38.32) compared to RM38.07 (CI: 37.81 - 38.82) per individual. For adults aged 18 years and more, mean OOP expenditure was RM49.41 (CI: 49.04 - 49.78) per episode per individual.

In conclusion, majority of Malaysians own toothbrushes, but very few read food labels for sugar. Chewing and sleep were most affected among those with orofacial pain. Dental episodes can be distressing, yet majority delay dental visits until there is a problem. Utilisation is low at 22.9% overall. Utilisation and OOP expenditure for oral healthcare is associated with demographic and socio-economic factors. Generally, less privileged communities have lower per capita expenditure for oral healthcare. However, those in the less privileged to modest monthly income brackets seem to pay substantial amounts OOP for dental care. Adults were more willing to pay for dental treatment when in need rather than for preventive check-ups. Private sector dental care can incur substantial OOP expenditures. More time and effort must be invested to encourage preventive-oriented visits and to explore further avenues to ease OOP expenses for dental care among the less privileged. Private employers and those in higher income brackets should contribute more towards payment for oral healthcare. The issues of pervasive lack of perceived need for dental care, ownership of toothbrush, orofacial safety and injuries all call for greater efforts by the dental fraternity to encourage preventive dental visits, oral hygiene practices, toothbrush ownership as well as home and road safety.

LOAD OF ILLNESS

ACUTE RESPIRATORY TRACT INFECTION

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The prevalence of acute respiratory infection (ARI) occurring in all age groups is 18.0 % (CI: 17.5 - 18.5) with significant difference between rural and urban [rural - 20.0% (CI: 19.2 - 20.8); urban - 16.9% (CI: 16.3 - 17.5)]. The prevalence of upper respiratory tract infection (URI) was higher than lower respiratory tract infection (LRI), 18.0% (CI: 17.5 - 18.5) and 0.5% (CI: 0.4 - 0.5) respectively. The commonest illness reported was common cold with the prevalence 16.9% (CI: 16.4 - 17.4).

The highest prevalence of ARI was among age group 0 to 4 years old [28.8% (CI: 27.4 - 30.2)], followed by age group 10 to 19 years old [25.7% (CI: 24.3 - 27.1)] which were significantly different from other age groups. The Indians showed highest prevalence of ARI [22.9% (CI: 21.2 - 24.54)] and the Chinese had the lowest prevalence of ARI [10.5% (CI: 9.7 - 11.3)].

There was no difference in prevalence of ARI among various educational levels, occupational groups, household incomes and type of house they lived. Those aged 16 years old and not married had the highest prevalence of ARI [22.8% (CI: 21.9 - 23.7)]. Single house and household of five or less had the lowest prevalence of ARI [12.3% (CI: 10.3 - 14.3) and 17.3% (CI: 16.7 - 17.9)] respectively compared to others.

The median for duration of sickness was 3 days with pneumonia having the longest sickness duration of 7 days. Only 1.1% of ARI population were hospitalized (CI: 0.8 - 1.4) with median duration of hospitalization of 3 days. A total of 30.8% (CI: 29.7 - 31.8) of population reported that their daily activities were affected by ARI. The median duration of sickness leave because of the illness and duration of sickness leave taken by caretaker to take care of their child having ARI were 0 day respectively.

Most of Malaysian having ARI seeks treatment when they had the illness [60.55% (CI: 59.4 - 61.7)]. They took minimum of 2 days after onset of illness to seek treatment (94.7%). Majority went to private hospitals and clinics for ARI treatment 45.8% and 38.4% went to government hospitals and clinics.

A total of 58.9% of population who did not seek treatment for ARI perceived that their illness was mild or not serious. Meanwhile 19.2% (CI: 17.7 - 20.7) of the population self-medicate. The median cost spent from own pocket for paying the ARI treatment was RM 3.00.

LOAD OF ILLNESS

ACUTE DIARRHOEAL ILLNESS (ADI)

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A nationwide cross-sectional survey was conducted via face-to-face interview among eligible respondents of all ages. An acute diarrhoeal episode was defined as having 3 or more episodes of loose stools in any 24 hour period within the two weeks prior to the interview. The definition excludes any type of chronic diarrhoeal already experienced by the respondent as a result of underlying Illness such as cancer of the bowel, ulcerative colitis or Crohn's illness.

The incidence of ADI was 5.0% (CI: 4.8 - 5.2) in the Malaysian population. The incidence of ADI among males and females was also 5.0% each. The incidence of ADI among the rural population [5.5% (CI: 5.1 - 5.8)] was only slightly higher than in the urban population [4.7% (CI: 4.5 - 5.0)]. Among major ethnic groups in Malaysia, the highest incidence of 5.8% (CI: 5.2 - 6.6) was among the Other Bumis while the lowest incidence of 3.6% (CI: 3.2 - 4.0) was among the Chinese. Compared to other age groups, young adults aged 20-29 years had the highest incidence [6.7% (CI: 6.1 - 7.3)] of ADI followed by teenagers 10-19 years old [6.3% (CI: 5.8 - 6.8)]. Those with tertiary education had the highest incidence of ADI [6.4% (CI: 5.5 - 7.3)], while those with no formal education at all had the lowest incidence of ADI [4.1% (CI: 3.7 - 4.5)].

The duration of acute diarrhea ranges from 1 to 7 days. The mean duration of ADI was 2.0 days, with a SD of 1.3 days. Majority of the population with ADI also reported having stomach cramps [45.8% (CI: 43.8 - 47.9)]. Only 3.6% (CI: 2.9 - 4.3) reported having blood in the stools. Less than 20% reported having diarrhea alone without any other associated symptoms such as fever, vomiting or blood in the stools.

About 412,969 persons or 40.3% of those reporting diarrhea also experienced limitation of functioning in their daily activities. A total of 25.6% (CI: 23.8 - 27.4) of the population with ADI or 262,307 people reported taking time off from work or school as a result of the illness. The number of days taken time off as a result of the illness ranged from 1 to 7 days with a mean of 1.8 days (SD 1.3 days).

Less than half of those with ADI, [43.3% (CI: 41.3 - 45.4)] sought treatment for the illness. Majority or 71.8% (CI: 69.0 - 74.4) of those seeking treatment, did so within 12 hours of the onset of the symptoms. Most people with ADI sought treatment at private clinics [41.9% (CI: 38.6 - 45.2)], followed by government health centers [20.9% (CI: 18.4 - 23.7)].

Of the 575,976 with ADI who did not seek treatment, the main reason given for not doing so was that the illness was mild and did not warrant treatment [53.6% (CI: 50.7 - 56.6)].

LOAD OF ILLNESS

RECENT ILLNESS AND CHRONIC ILLNESS

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A total of 56,710 subjects who represented 26 million estimated populations were interviewed in this national survey with all of them being eligible for this section. Of this 98.2% responded to this module on recent illness and injury. The estimated prevalence of reported combined recent illness and / or injury in this study for Malaysia was 23.6% (CI: 22.9 - 24.3).

The estimated prevalence of reported combined recent illness/injury among rural and urban populations was 25.5% (CI: 24.3 - 26.7) and 22.4% (CI: 21.6 - 23.3) respectively. The prevalence of combined recent illness/injury for males and females was 24.3% (CI: 23.5 - 25.2) and 22.9% (CI: 22.1 - 23.7) respectively.

The highest prevalence of reported combined recent illness/injury was reported among the 0-5 age group [32.0% (CI: 30.2 - 30.8)] followed by 11-20 age group [27.6% (CI: 26.4 - 29.0)]. The lowest prevalence was reported among the 41-60 age group [19.2% (CI: 18.3 - 20.1)]. Among the ethnic groups Indian reported the highest prevalence of combined recent illness/injury [26.9% (CI: 24.8 - 29.1)]. Indian females reported the highest prevalence of combined recent illness/injury [27.1% (CI: 24.7 - 29.7)] while Chinese females reported the lowest prevalence of 15.7% (CI: 14.4 - 17.1).

Males with secondary education reported highest prevalence [31.1% (CI: 29.4 - 32.8)] while the lowest among the females with primary education [19.8% (CI: 17.7 - 21.9)]. Unemployed reported the highest prevalence [25.0% (CI: 23.5 - 26.6)] while the lowest was among senior official and manager [19.0% (CI: 16.0 - 22.4)].

The lowest income group reported the higher prevalence [26.6% (CI: 24.8 - 28.6)] while the lowest among the highest income group with prevalence of 22.5% (CI: 20.7 - 24.3).

Chronic illness is defined as any illness which is of long duration, slow progress and long continuance. For this module, it includes Illness already diagnosed by the doctor and present within the past one year, e.g. Diabetes.

The estimated prevalence of the reported chronic illness in this study for Malaysia was 15.5% (CI: 15.1 - 15.9). The estimated prevalence of reported chronic illness among rural and urban populations was 15.4% (CI: 14.7 - 16.0) and 15.6% (CI: 15.1 - 16.2) respectively.

The lowest prevalence of reported chronic illness was reported among the 0-5 age group [4.4% (CI: 3.9 - 4.9)] followed by 6-10 age group [5.2% (CI: 4.7 - 5.8)]. The highest prevalence was reported among the 61 and above age group [48.8% (CI: 47.2 - 50.3)]. Among the ethnic groups Indian reported the highest prevalence of chronic illness [26.9% (CI: 24.8 - 29.1)].

Indian females reported the highest prevalence of chronic illness [20.9% (CI: 19.3 - 22.6)] while Malay males reported the lowest prevalence of 14.2% (CI: 13.6 - 14.9). Females with primary education reported highest prevalence [23.6% (CI: 22.6 - 24.6)] while the lowest among the males with no education [9.8% (CI: 8.9 - 10.7)].

Unemployed reported the highest prevalence [31.6% (CI: 30.0 - 33.3)] while the lowest was among the craft and related trade [13.1% (CI: 11.6 - 14.8)]. The lowest income group reported the highest prevalence [19.4% (CI: 17.9 - 20.9)] while the lowest among the highest income group with prevalence of 14.0% (CI: 12.9 - 15.2).

LOAD OF ILLNESS

CHRONIC PAIN

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This study found that 7.1% (CI: 6.7 - 7.4) of Malaysians aged 18 years and above had chronic pain, defined as "persistent pain lasting for 3 months or more". The prevalence was higher in females compared to males, and increased with increasing age to a maximum of 21.5% (CI: 18.8 - 24.4) in those over 75 years. These two trends are similar to that found in the studies done in Europe and Australia. Among ethnic groups, the highest prevalence was among Indians and the lowest among Chinese with the prevalence among Malays and other Bumis being close to the national prevalence. The prevalence of chronic pain was also higher in those with lower household income and lower education level.

In those respondents with chronic pain, 16% reported that the level of interference with work, study and daily activities was "extreme" or "quite a lot", while 19% reported that their pain did not interfere with their activities at all. 40% reported "a little bit" of interference while 25% said that the pain interfered with their activities "moderately". Those from the elderly age group (>65 years), who already had a higher prevalence of chronic pain than the younger population, also reported higher levels of interference with their activities.

Looking at other risk factors for chronic pain, it was found that those having other illnesses, including cancer, hypertension, diabetes, stroke, heart ILLNESS and SLE all had a higher prevalence of chronic pain compared to the population prevalence. As expected, those diagnosed to have arthritis, migraine and backache also had a higher prevalence of chronic pain as these conditions are associated with pain; interestingly, however, only about a third of respondents with these conditions had persistent pain lasting for 3 months or more.

Overall, this study shows that there are significant numbers of Malaysians suffering from pain persisting for 3 months or more. Of particular concern are the much higher prevalence rates in the elderly population over 75 years, and in those with lower household incomes and educational level. These are the groups with the least resources of their own and those who depend most on the government for their health care needs.

HEALTH UTILIZATION

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HEALTH SEEKING BEHAVIOUR FOR RECENT ILLNESS

Health seeking behaviour refers to the pursuit of health care from a health facility, which may be either modern or traditional/complementary. In the context of illness, it pertains to all respondents who reported recent illness / injury in the 2-week recall period, and does not include self-medication.

Prevalence of seeking care

The data to describe health seeking behaviour is based on the recent illness for a period of 2 weeks prior. Among those who reported recent illness or injury, 58.1% (CI: 57.1 - 59.1) seek health care.

By age groups, those below 10 years old have the highest proportion seeking health care i.e. 0 to 4 years old was 75.9% (CI: 73.7 - 78.2) and 5 to 9 years old was 69.2% (CI: 66.7 - 71.8). The lowest proportion seeking health care was among those aged 15 to 19 years old [38.1% (CI: 35.6 - 40.7)]. They are significantly different from the others. The proportion of female seeking health care was higher compared to the male however there was no significant difference between them. Among the ethnic group, the Indians [67.7% (CI: 64.8 - 70.6)] have the highest proportion of seeking health care compared to the other ethnic groups and there are significant differences from the other groups. Those with secondary education [51.2% (CI: 49.7 - 52.7)] has the lowest proportion of seeking health care compared to others. The proportion of those in urban area seeking health care was 58.8% (CI: 57.5 - 60.1) while the proportion for those from the rural area was 57.0% (CI: 55.5 - 58.5). There was no significant difference between them. The not married group has significantly lower proportion [42.7% (CI: 41.1 - 44.6)] for seeking health care compared to the others. There was no significant difference among income groups for seeking health care.

In general, Perak with 63.8% (CI: 59.5 - 68.2) and Kedah [62.6% (CI: 59.9 - 65.4)] has the highest proportion seeking health care and was significantly higher than Sabah; 52.8% (CI: 50.1 - 55.5), Sarawak; 54.1% (CI: 50.6 - 57.6) and Malacca; 51.9% (CI: 45.8 - 57.9). Peninsular Malaysia with 59.3% (CI: 58.3 - 60.4) has significantly higher proportion seeking health care compared to Sabah, Labuan and Sarawak.

58.4% (CI: 57.4 - 59.4) Malaysian seek care while the proportion of non Malaysian seeking care is 50.1% (CI: 45.2 - 55.0) and they are significantly different. Among those who seek care, 97% are Malaysian and 3.0% are Non Malaysian.

Pattern of utilization of facilities by recent illness / injury

Among those who seek treatment for recent illness, 18.3% (CI: 17.1 - 19.5) went to hospital facilities, 68.9% (CI: 67.4 - 70.4) attended ambulatory facilities, 0.7% (CI: 0.5 - 0.9) chose self care, 0.9% (CI: 0.7 - 1.2) used T/CM care facilities and 11.9% (CI: 10.9 - 12.0) used other type of facilities.

Among those who sought treatment from the hospital facilities for recent illness, 88.3% (CI: 86.3 - 90.8) seek treatment from the government hospital and 11.7% (CI: 9.7 - 13.7) went to private hospital.

For the ambulatory facilities, 37.9% (CI: 36.0 - 39.8) attended government clinics and 62.1% (CI: 60.2 - 64.0) went to private clinics.

Type of services

Among those who sought care and treatment for recent illness, 85.3% (CI: 84.3 - 86.3) used ambulatory care services and 14.7% (CI: 13.7 - 15.7) used non ambulatory services such as hospital, in-patient nursing care, in-patient rehabilitation care, self care, traditional and complementary care and others.

Time lag

Overall, for recent illness, 72.9% (CI: 71.6 - 74.2) seek health care within less than 24 hours while 26.0% (CI: 24.7 - 27.3) seek healthcare after 24 hours of onset of illness but not exceeding 5 days. Only 1.2% seek healthcare after 5 days of onset of illness.

Distance taken to seek health care and treatment

The mean reported distance taken to seek health care and treatment was 5.7km (CI: 5.4 - 6.0) and the median was 3.0 km. About 47.7% (CI: 45.6 - 49.7) reported that it was within 3km, 25.5% (CI: 23.8 - 27.1) was within 3 to 5km and 26.9% (CI: 25.2 - 28.6) was more than 5km.

The mean distance taken to seek treatment and health care in Peninsular Malaysia was 5.1km (CI: 4.8 - 5.4) and is significantly nearer compared to the Sabah and Labuan, 6.9km (CI: 6.1 - 7.8) and Sarawak, 10.4km (CI: 8.2 - 12.7). The median distance for Peninsular Malaysia was 2.5km, Sabah and Labuan, 5.0km and for Sarawak, 6.0km.

The mean distance for urban was 4.3km (CI: 4.0 - 4.6) and for rural, it was 7.6km (CI: 7.0 - 8.2).

Mode of transport used to seek health care and treatment

The proportion of transport used to seek health care and treatment for recent illness/injury was 83.5% (CI: 82.0 - 85.0) using own transport, 8.5% (CI: 7.3 - 9.7) using public transport, 5.6% (CI: 4.7 - 6.4) walked to the facility 0.4% (CI: 0.2 - 0.5) used ambulance service and 2.1% (CI: 1.7 - 2.6) used other mode of transport.

About 35.4% (CI: 29.8 - 41.1) population of Sabah used public transport to seek health care and treatment. This is significantly different than Sarawak at 12.4% (CI: 7.9 - 17.0) and Peninsular Malaysia, 4.1% (CI: 3.4 - 4.8). In Peninsular Malaysia, the use of own transport was reported at 88.1% (CI: 86.8 - 89.5).

Time taken to seek health care and treatment

The mean time taken to seek health care and treatment was 14.4 minutes (CI: 13.9 - 14.9) and the median was 10.0 minutes. In Peninsular Malaysia, the mean time was 13.2 minutes (CI: 12.8 - 13.7) and the median time taken was 10.0 minutes. The mean was 18.1 minutes (CI: 16.3 - 19.9) for Sabah and Labuan, and for Sarawak the mean was 20.9 minutes (CI: 18.1 - 23.7). The median for both states was 15.0 minutes.

Overall 58% (CI: 56.1 - 59.9) took less than 15 minutes to seek health care, 27.4% (CI: 25.9 - 28.9) require within 15 to less than 30 minutes, 14.5% (CI: 13.2 - 15.8) took 30 to 120 minutes and only 0.1% (CI: <0.1 - 0.2) took more than 120 minutes.

Bypassing

Bypassing is defined to have occurred when the distance of the health facilities visited by the respondent for their recent illness is further than the distance of the nearest formal (hospital or clinic) facility identified by the household.

The prevalence of bypassing was 13.5% (CI: 12.4 - 14.7). Sabah and Labuan has the highest prevalence of bypassing with 14.8% (CI: 11.8 - 17.7) but there was no significant difference from Peninsular Malaysia and Sarawak. Rural area, 15.2% (CI: 13.4 - 16.9) has higher prevalence for bypassing compared to urban 12.4% (CI: 11.0 - 13.9). Males has higher prevalence for bypassing, 14.2% (CI: 12.6 - 15.7) compared to females, 13.0% (CI: 11.6 - 14.4). Chinese has the highest prevalence [17.4% (CI: 13.9 - 20.9)] and was not significantly different from others.

The most frequent reason for bypassing the nearest static health facility regardless of public or private was due to perceived poor quality of care, followed by inaccessibility (e.g.: no transport, high cost of treatment).

Facility of choice

Among respondents with recent illness/injury, their preferred choice of facility was government clinic (30.3%) followed by private clinic (27.4%), government general hospital (17.8%), government district hospital (16.4%), private hospital (3.3%) and medicine hall/Chinese medicine shop/pharmacy (1.6%).

However, the place they actually visited was private clinic (39.3%), followed by government clinic (27.2%), medicine hall/pharmacy (11.4%), government district hospital (11.1%), government general hospital (4.6%) and private hospital (1.8%).

When cross tab between the preferred facilities and the place of facility actually visited, 53.6% of the respondents reported that they were able to visit their preferred facility.

Reasons for not seeking care for recent illness / injury

Perceived barriers are defined as 'reason for not seeking care'. The most frequent reported by respondents for not seeking care for recent illness/injury was perceived mild illness [66.2% (CI: 64.6 - 67.9)], followed by ability to self medicate [24.7% (CI: 23.2 - 26.3)] and perceived no necessity to seek care [4.4% (CI: 3.7 - 5.1)].

UTILIZATION OF HEALTH SERVICES: HOSPITALIZATION

Hospitalization is defined as, "admission to the hospital if the individual was ill and stay in the hospital not less than 24 hours or staying in a minimum of one night".

The overall prevalence of hospitalization for one year was 5.0% (CI: 4.8 - 5.2). Mean frequency of hospitalization was 1.4 times (CI: 1.3 - 1.4). NHMS I reported the prevalence of hospitalization in the past two weeks was 2.8% in Peninsular Malaysia while the NHMS II reported 7.2% (CI: 7.0 - 7.5) for the past one year. The highest prevalence of hospitalization was among those 60 years old and above and the lowest prevalence was among the school going age group from 5-19 years old. The graph was a J shaped with anomaly at the 25 to 29 years old age group. Females have a higher prevalence compared to the males but there was no significant difference. Indians with 7.1% (CI: 6.4 - 7.9) has the highest prevalence of hospitalization and is significantly different compared to all the groups. Chinese [3.8% (CI: 3.4 - 4.2)] was significantly lower hospitalization than the Malays [5.3% (CI: 5.0 - 5.5)] and Other Bumis [4.7% (CI: 4.1 - 5.2)]. Those who are not married [3.8% (CI: 3.5 - 4.2)] have the lowest prevalence being hospitalized and significantly different from the rest of the group. The widow/ widower group [7.5% (CI: 6.2 - 8.7)] has higher prevalence of hospitalization but the value was not statistically significant compared to the married and divorcee. Those without education [6.4% (CI: 5.6 - 7.2)] has a higher prevalence of hospitalization and is significantly different from those receiving primary education [4.4% (CI: 4.1 - 4.7)]. There is no difference with those receiving secondary and tertiary education. The unemployed group has highest prevalence of hospitalization. There are no differences in the prevalence of hospitalization among the income groups. The prevalence of hospitalization was lower in Sabah and Labuan [3.7% (CI: 3.2 - 4.2)] and Sarawak [3.6% (CI: 3.0 - 4.2)] and significantly different from Peninsular Malaysia [5.4% (CI: 5.1 - 5.6)].

Place of hospitalization

Overall, the most common place of hospitalization was to the government hospital. Government hospital account for 82.6% (CI: 80.9 - 84.3), private hospital, 16.9% (CI: 15.2 - 18.6) while the combination of both government and private was 0.5% (CI: 0.2 - 0.8) of the hospitalization. NHMS reported that 84.9% of all admissions were to the government hospital (Ministry of Health) and NHMS II reported 78.4% hospitalization to the government hospital (Ministry of Health).

The proportion of hospitalization to private hospital was higher among the productive age group and early age group. There was no significant difference for gender in regard to place of hospitalization. There was a higher proportion of Chinese [44.8% (CI: 39.1 - 50.4)] admitted to the private hospital compared to the other ethnic groups. The highest proportion being hospitalized in public hospital was the other Bumis group with 96.9% (CI: 96.1 - 99.6) and Malay, 88.3% (CI: 86.5 - 90.2). Among Non Malaysian, 78.9% (CI: 69.4 - 88.5) of them were hospitalized in public hospital and 21.1% (CI: 11.5 - 30.6) in the private hospital. This is not significantly different from Malaysian citizen. There was no significant difference for status of marriage in regard to place of hospitalization. The tertiary education group with 36.2% (CI: 28.1 - 44.2) has higher proportion of admission to private hospital while the group with no education has the lowest proportion at 9.0% (CI: 5.3 - 12.8). The higher the income group, the higher the proportion of being hospitalized in a private hospital. The urban population, 22.6% (CI: 20.1 - 25.1), has a higher proportion of hospitalization to the private facilities compared to the rural population with 6.6% (CI: 4.8 - 8.4). Penang [42.5% (CI: 32.7 - 52.4)], Federal Territory of Kuala Lumpur [38.7% (CI: 29.7 - 47.8)], and Selangor [27.2% (CI: 22.4 - 32.1)] reported the highest proportion of hospitalization to the private facilities.

Type of care during hospitalization

About 75.6% (CI: 73.5 - 77.6) of those hospitalized reported receiving in-patient curative care, 19.2% (CI: 17.5 - 21.2) for in-patient rehabilitation care, 4.9% (CI: 4.0 - 5.8) for long term nursing care and 0.3% (CI: 0.1 - 0.5) for any combination of the above care.

AMBULATORY CARE SERVICE

Ambulatory care is health care provided to persons in physicians' offices, hospital outpatient departments and hospital emergency departments without their admission to a health facility *(NCHS)*. The overall prevalence of ambulatory care services utilization among those reported seeking care for recent illness was 85.3% (CI: 84.3 - 86.3).

The highest prevalence of ambulatory care use was among youngest age group 0 to 4 years old. Females [87.4% (CI: 86.2 - 88.6)] have a higher prevalence of ambulatory care use compared to the males [83.0% (CI: 81.5 - 84.4)] and it was significantly different. Indians with 91.7% (CI: 89.7 - 93.9) has the highest prevalence of ambulatory care use and is significantly different compared to the Malay, Chinese and others. Those who are not married [76.4% (CI: 74.0 - 78.7)] have the lowest prevalence using ambulatory care and significantly different from the married and widower. The divorcee group with 85.5% (CI: 78.5 - 92.5) has the highest prevalence of ambulatory care use but the value was not statistically significant compared to other groups. The secondary level education

was the lowest prevalence of ambulatory care use with 80.1% (CI: 78.3 - 81.9) and significantly different from those without education [85.2% (CI: 82.2 - 88.3)] and primary level education [85.1% (CI: 83.5- 86.6)]. There are no differences in the prevalence of ambulatory care use among the income groups. Sabah and Labuan, 86.6% (CI: 84.3 - 88.8) has the highest prevalence of ambulatory care use but it was not significantly different from Peninsular Malaysia and Sarawak. The Federal Territory of Kuala Lumpur with 92.6% (CI: 89.5 - 95.8) has the highest prevalence of ambulatory care use and is significantly different from some states. Negeri Sembilan, 91.3% (CI: 87.3 - 95.2) also has a high prevalence of ambulatory care use. Kedah, 75.3 (CI: 71.8 - 78.7) is the state with lowest prevalence of ambulatory care use.

Type of facilities

Among those who used ambulatory care facilities, 62.1% (CI: 60.2 - 64.0) used private clinic compared to 37.9% (CI: 36.0 - 39.8) who used government clinic.

Sarawak, 33.0% (CI: 26.6 - 39.5) has the lowest percentage of utilising private clinic for ambulatory care which is significantly different compared to the other states. Urban population used more private clinic, 73.6% (CI: 71.4 - 75.7) as compared to rural [43.7% (CI: 40.6 - 46.8)]. Males used more private clinic compared to females but this was not significantly different. Chinese, 80.6% (CI: 77.0 - 84.2) used more private clinic compared to the other ethnic groups, followed by others, 71.3% (CI: 63.2 - 79.5). Non Malaysian used more private clinics, 80.9% (CI: 74.3 - 87.4) compared to Malaysian, 61.6% (CI: 59.7 - 63.5). The higher the income group, the higher the proportion of being hospitalized in a private hospital.

TRADITIONAL AND COMPLEMENTARY MEDICINE (T/CM) FACILITIES

The overall prevalence of T/CM facility use is 0.9% (CI: 0.7 - 1.2). The highest prevalence of T/CM facilities use was in Malacca, 1.5% (CI: -0.5 - 3.6), followed by Kedah with 1.5% (CI: 0.5 - 2.4) but was not significantly different from others. Rural area has higher prevalence of T/CM facilities use at 1.1% (CI: 0.7 - 1.5) compared to urban but was not significantly different. Males have higher prevalence of T/CM facilities use with 1.1% (CI: 0.8 - 1.5) compared to females [0.7% (CI: 0.4 - 1.0)]. Chinese, 1.2% (CI: 0.4 - 2.0) has a high prevalence of T/CM facilities use followed by Malay, 1.0% (CI: 0.7 - 1.3). Indian, 0.4% (CI: -0.1 - 0.9) has the lowest prevalence but there was no significant difference. Secondary level of education, 0.9% (CI: 0.5 - 1.3) has the highest prevalence of self care and was not significantly different from other levels of education.

AMBULANCE SERVICE

In the last 12 months, 2.5% (CI: 2.3 - 2.8) of the total respondents reported that they have ever used the ambulance service or other equivalent vehicle for emergency situation. The proportion of ambulance use in the urban area was 2.0% (CI: 1.2 - 2.2) and in rural area was 2.9%. Among those who used the ambulance service 90.8% reported using MOH's ambulance, 4.1% ambulance provided by private sector and 1.2% used Red Crescent's ambulance service.

11.4% of those who have used the ambulance service encountered problems, where more than half (53.5%) of those problems reported late arrival of ambulance, 12.9% reported unfriendly service, 10.9% faced difficulty to contact the service, 7.9% complained of poor ambulance service coverage and 4.0% was due to telephone number of facilities.

INJURY AND RISK REDUCTION PRACTICE

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INJURIES AT HOME

The overall prevalence of home injury was 6.5% [n=3,742 (CI: 6.2 - 6.8)]. Of these home injuries, 16.7% affected their ability to go to school, work or play and 4.9% needed hospital admission for at least one night. The injury prevalence rate was significantly higher among those living in rural areas (7.4%) as compared to those in urban areas (5.9%). The prevalence rate among females was higher (6.8%) than males (6.1%). The prevalence rate was highest in the 0-4 years group (11.8%), then declined with age and was lowest at 45-54 (3.7%) and then increased with age to 6.0% among those 85 years and above. The highest prevalence rate by ethnicity was among Other Bumis (10.7%) and Indians (6.9%). The Chinese had significantly lower prevalence rate (4.2%) as compared to all other ethnic groups. Malaysians had significantly higher injury prevalence rate (6.6%) compared to non-Malaysians (4.7%). Injury prevalence rate declined with education level. Married individuals had significantly lower prevalence rate of injuries than those who were single. The prevalence rate of injuries was highest (7.2%) in the highest income group ($\geq$ RM 5000). More than 80% of home injuries occurred in these five locations; garden (28.0%), kitchen (24.9%), living room (14.7%), bathroom (7.5%) and stairs (7.2%). Majority of injuries at home was due to fall (63.4%).

INJURIES ON THE ROAD

The overall prevalence rate for injuries on the road was 4.4% [n=2,432 (CI: 4.2 - 4.6)]. Of these injuries on the road, 39.7% affected their ability to go to school, work or play and 16.6% needed hospital admission for at least one night. The injury prevalence rate was significantly higher among those living in the rural areas (4.8%) compared to urban dwellers (4.1%) and males (6.4%) compared to females (2.5%). The prevalence rate was significantly higher among those aged between 15 to 24 years old (11.1%) as compared to other age groups. Among the ethnic groups, higher prevalence rates were among Indians (6.1%) and Malays (5.0%). Malaysians had significantly higher prevalence rate of injuries on the road (4.5%) compared to non Malaysians (1.2%). In reference to education level, prevalence rate of injuries on the road was significantly higher among those with secondary education (5.9%). The prevalence rate was also significantly higher among those who were not married (10.1%) compared to those who were ever married. Generally, the prevalence rate of injuries on the road declined with increasing personal and household income. The common injuries among those injured on the road are cuts (50.7%) and bruises (29.2%). Injuries on the road occurred commonest among motorcycle users (61.1%), out of which 81.1% involved the riders.

INJURIES AT THE WORKPLACE

The overall prevalence rate for injuries at the workplace was 4.8% [n=998 (CI: 4.5 -5.1)]. Of these injuries 7.9% needed hospital admission for at least one night. The prevalence rate was significantly higher among respondents living in the rural areas (5.8%) as compared to those in urban areas (4.3%) and among males (5.9%) compared to females (3.1%). The prevalence rate of injury declined with age, and was significantly higher among those aged between 15 to 24 years of age (8.1%) compared to all other age groups. The highest prevalence rates were among the Other Bumis and other races (both at 7.4%), followed by the Indians (5.1%) and lowest among the Chinese (3.8%). Non-Malaysians had a significantly higher injury prevalence rate (7.2%) than Malaysians (4.6%). Prevalence rate of injuries at the workplace was highest among those without formal education (5.5%) and it was significantly lower among those with tertiary education (3.0%). The prevalence rate was significantly higher among those who were not married (7.4%) compared to those who were ever married. By occupation, the highest prevalence rate of injury was among plant and machine operators and assemblers (8.6%), followed by elementary occupations (6.8%) and craft and related trade workers (6.7%). Those working as senior official and managers (2.1%), clerical workers (2.4%) and professionals (2.6%) had the lowest prevalence rate of injury. The prevalence rate of injuries at the workplace declined with increasing personal and household income. More than 75% of the injuries sustained at the workplace were injuries classified as others (30.0%), superficial injuries (25.9%), sprain (10.9%) and multiple injuries (10.6%). Majority of the injuries at the workplace (76%) were attributed to these common causes; injuries while handling, lifting or carrying (36.2%), fall or slip on the same level (16.6%), struck against object (13.3%), and other causes (10.5%).

INJURIES AT RECREATIONAL AREAS

The overall prevalence rate for injuries at recreational areas was 1.7% [n=960 (CI: 1.6 -1.8)]. Of these injuries 21.0% affected their ability to go to school, work or play and 5.8% needed hospital admission for at least one night. The prevalence rate was nearly similar between those living in the urban (1.7%) and rural areas (1.7%). However, it was significantly higher among males (2.9%) as compared to females (0.7%). By age group, the prevalence rate was significantly higher among those aged 15 to 24 years. Injury prevalence rate increased with age until those aged 15 to 24 years, after which the prevalence rate decreased with age. Malaysians (1.8%) was found to have significantly higher injury prevalence compared to non Malaysians. The prevalence rate of injuries was also significantly higher among individuals who were never married (4.0%) compared to those who had ever married. Among the ethnic groups, the highest prevalence rate was among Other Bumis (2.3%), followed by Indians (2.1%) and Malays (1.9%). Injury prevalence rate increased with level of education. Nearly 90% of injuries at recreational areas occurred in these three locations; playground (61.7%), sports facilities (16.9%) and recreational parks (10.6%). The commonest cause of injuries was due to falls (91.3%).

INJURIES AT SCHOOLS

The national prevalence rate for injuries at schools was 7.0% [n=900 (CI: 6.5 - 7.5)]. The prevalence rate was significantly higher among those residing in urban areas (7.7%) compared to rural areas (5.9%). Males (8.0%) also had significantly higher prevalence rate of injuries at schools compared to females (6.0%). By age group, those aged 15 to 17 years old (8.5%) had a significantly higher injury prevalence rate compared to those aged 7 to 14 years (6.6%). Malaysians (7.1%) had a significantly higher prevalence rate of injuries compared non Malaysians (1.5%). The prevalence rate of injuries at schools was higher among Other Bumis (9.1%), followed by Indians (8.7%) and Chinese (6.6%). It was also higher among secondary students (8.1%) as compared to primary students (7.0%). The prevalence rate of injuries increased with increasing household income. Nearly 80% of injuries at schools were due to accidents/unintentional (79.8%) and 16.2% were due to injuries caused by others.

RISK REDUCTION PRACTICES

First aid

Exposure to first aid was found among 25.6% of respondents. The exposure was significantly higher among those living in urban areas (28.6%), males (29.9%), Malaysians (26.6%), Malays (30.5%) and those with tertiary education (57.0%). It was also found that exposure to first aid increased significantly with level of education. Other notable findings were the increase of exposure to first aid among younger age group and higher personal and household income.

Cardio pulmonary resuscitation (CPR)

Exposure to CPR was found among 19.0% of respondents. The exposure was significantly higher among those living in urban areas (21.4%) compared to rural residents (14.7%) and also among males (23.1%) as compared to females (15.7%). The proportion of exposure to CPR was also significantly highest among Malays (23.5%) compared to all other ethnics. Malaysians (19.9%) compared to Non-Malaysians (6.0%) and those with tertiary education (47.6%). It was also noted that exposure to CPR increased significantly with level of education. However, exposure to CPR decreased significantly with age with the highest proportion of exposure among those aged 18 to 24 years old (29.3%) and lowest among those aged 65 years old and more (4.3%). Exposure to CPR was also highest among those with personal income of RM 5000 and more.

Occupational safety and health (OSH) training

The overall proportion of workers who had received OSH training prior to or within 1 month of starting work was 33.6%. The proportion was significantly higher among those residing in urban areas (37.3%), males (35.5%) and those with tertiary education (42.2%). The proportion of those who received training increased significantly with level of education. It was also found that the proportion of those who had received training increased with age until those aged 25 to 34 years old, after which the proportion decreased with age. Proportion of OSH training was higher among Indians, non Malaysians and technicians and allied professionals.

Provision and use of personal protective equipments (PPE)

The proportion of workers who were provided with PPE amongst those who required it was 38.9%. The proportion who were provided with PPE was significantly higher among those living in the urban area (41.0%), males (44.6%), non Malaysians (45.7%), those with secondary education (43.6%) and craft and related trade workers (60.7%). Amongst those provided with PPE 85.1% stated they used it all the time.

Seatbelt usage

The proportion of front car seat users who used seatbelt all the time in the last one month was 71.3%. It was significantly higher among those living in the urban areas (74.7%), Malaysians (72.6%), those with tertiary education (83.1%) and married individuals (74.7%). It was also found to be higher among males (72.9%) and Chinese (79.2%). The proportion of those who used this seat belt all the time increased with age until those aged 45 to 54, it then reduces with increase in age. This proportion was also found to increase with increase in household income. The proportion of those who never used the front seat belt was significantly higher among those living in rural areas (13.3%), female (11.4%), those aged 65 years and above (21.5%), other ethnic groups (28.5%), non Malaysians (33.1%), those without formal education (28.8%), divorced or widowed individuals (22.1%) and personal and household income of less than RM 1,000.

Correct helmet usage

The proportion of motorcycle users who always wore helmet correctly in the last one month was 56.5%. It was significantly higher among male (62.7%), Malaysians (57.6%) and those with secondary education (61.1%). It was also higher among those living in rural area (57.5%), Indians (62.4%), and those with personal income of RM 1,000 - RM 1,999. The proportion of those who never wore helmet correctly was significantly higher among those living in urban areas (25.4%), female (30.4%), those aged 65 years and above (43.4%), other ethnic groups (47.4%), non Malaysians (47.4%), those without formal education (40.4%) and divorced or widowed individuals (42.8%). The proportion of those who never wore helmets correctly increased with increase in personal income.

PHYSICAL DISABILITY

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Overall prevalence of physical disability among the population is 6.3 per thousand. It increases with age. Proportion of male (7.5 per 1000) is more than female (5.3 per 1000). In terms of monthly household income, 45.9% fall below RM 1000. There is no significant difference in terms of rural urban distribution and ethnicity. More than half (66.8 percent) attained up to primary school education.

Majority (59 percent) are due to acquired causes. Distribution of types of disabilities are as follows: head, face and neck only (19.1%), one upper limb only (12.3%), one lower limb only (18.8%), both lower limbs only (13.5%), one upper and one lower limb only (16.2%), all four limbs (7.9%) and other combinations (12.2%).

With regards to the impact of physical disability on the functional independence among children, majority of them are independent with slightly more than a third being partially dependent in areas of self care. The more severe the disability (e.g. those with all four limbs involvement), the more dependent the individual is on others for their self care and mobility. The disabled children are more housebound compared to those without disability. Those with both lower limbs and all four limbs involvement are most affected. The main reasons given include no transport (34.4%) and no need (38.4%).

In the adult group, between nine to 31 percent are partially or totally dependent on others for core functional activities i.e. self care (eating, bathing, dressing, use of toilet), mobility and domestic activities. They find it increasingly difficult to perform these functional activities in the following order: eating, bathing, dressing, use of toilet, mobility and doing housework.

The proportion of highest education level attained for adults with disabilities are as follows: tertiary (9.0%), secondary (43.7%) and primary (32.7%). Thirteen percent of adults with disability had never attended school.

Unemployment among adults with disabilities is more common in those with more than one limb involvement. None of the adults with disabilities involving all four limbs hold a paid job. However, 42 percent of them were self employed, i.e. highest among all the type of disabilities. The percentage of those who hold a paid job is highest (i.e. 43.7%) among those adults with disabilities involving only the head, face or neck.

Types of disabilities in adults do not seem to influence personal monthly income. However majority (57.6%) of the adults with physical disabilities earned less than RM 1000. Majority of adults with physical disabilities are not housebound. However in terms access to internet, only 10.9% of adults with physical disabilities surfed the internet within the past 3 months.

The percentage of injury sustained by adults with physical disability is comparable to their counterpart without physical disabilities at home, on the road, in recreational areas and at work place.

Among the older persons, the greatest impacts on functional independence are on mobility and housework and this increases with the increase of severity of physical disability. It is seen that the impact of functional independence in all areas of self care, mobility and housework, increases with age. Similarly, the impact on access to public places increases with increase severity of physical disability.

With regards to registration with Department of Social Welfare, only 32.4 percent are registered, mainly comprising of children. Among those not registered (67.7%), majority are in the older person group. Among the reasons given for not registering are no necessity (53.8%), no information (25.9%) and do not want to register at all (11.89%). A minor proportion (1.4%) said that they felt embarrassed to register.

Majority (59.1%) do not attend any rehabilitation programmes. Among those who attend, majority go to public rehabilitation places which are hospital-based (38.4%), health clinic (8.6%), Community-based Rehabilitation (CBR) (8.6%), special classes at school (3.3%), special schools (8.0%) and special institutions (2.0%). Other facilities visited are centers run by NGO (2.7%) and private rehabilitation centre (8.0%).

From this study, the main caregivers identified are spouses (29.5%), daughters (27.6%), sons (12.5%) and mothers (8.1%).

ASTHMA

ASTHMA - ADULTS (AGED 18 YEARS AND ABOVE)

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Asthma is a chronic inflammatory lung disease affecting all age groups. It has experienced a sharp increase in the global prevalence, morbidity, mortality and economic burden over the last 40 years, particularly in children. The increase in prevalence of asthma has been reported in the United Kingdom, New Zealand, United States and Australia.

Compared to the West and Asia Pacific Region, the prevalence of asthma in South-East Asian populations is lower, but an increasing trend has also been reported in Taiwan and Japan. Recent surveys as reported by Asthma in America (AIA), Asthma Insights and Reality in Europe (AIRE), Asthma Insights and Reality in Asia-Pacific (AIRIAP) and Asthma Insights and Reality in Japan (AIRJ) highlighted the fact that asthma is underdiagnosed and undertreated.

The National Health and Morbidity Survey III (NHMS III) 2006 was conducted with the main objective of determining the prevalence of asthma among children and adults in Malaysia. The specific objectives were to determine the impact of disease due to asthma among adults and children, the correlation between asthma and obesity, to determine the pattern of health utilization and to determine the percentage of asthmatics on preventive medications.

Data on Adult Asthma were obtained using Module G of the pre-coded questionnaire booklets by trained interviewers through interviews. All household members in those selected households were interviewed. Those who answered positively having asthmatic symptoms such as recurrent episodes of wheezing, breathlessness, chest tightness, and coughing were asked on their episodes of exacerbation (severity of illness), follow up treatment, visit to the emergency department and any admission to the hospital. Information of place seeking treatment, days loss from work or school also inquired.

In this study, for the purpose of analysis, an asthmatic was defined as any eligible respondents who has any of these symptoms for the past 12 months - breathlessness, wheezing or ever been awakened from sleep due to chest tightness, breathlessness or continuous cough. Patient currently on any type of asthma medication is also included and also patient with any skin, eyes or nose allergy. This definition was based on the European Community Respiratory Health Survey (ECRHS).

Adult asthma was defined as those who were aged 18 years and above with asthmatic symptoms as mentioned above.The data was collected using pre-coded questionnaires by trained interviewers through interviewing all household members in the selected living quarters.

The NHMS III showed that the prevalence of adult asthma was 4.5% (CI: 4.3 - 4.8). The definition of asthma in adults was based on symptoms such as breathlessness, wheezing, awakened from sleep due to continuous cough, chest tightness or breathlessness in the last 12 months. Compared to the previous National Health Morbidity Survey II (NHMS II) in 1996, the self-reported doctor-diagnosed asthma was found to be 4.2% (CI: 3.9 - 4.4). It is difficult to compare the prevalence between the two surveys since the questionnaire used was different. The disease was more prevalent among Malays (67.0%) followed by Indians (12.9%) and other Bumis (10.0%). Chinese had the lowest prevalence (7.3%). By states, Malacca (6.7%), Selangor (22.0%), Johor (11.1%) and Kedah (9.9%) had the highest prevalence of asthma.

The results showed that in adults, asthma was more prevalent among the lower income group, lower education level and among the unemployed, which was comparable with the previous NHMS II. However there was no statistical significant difference in prevalence between gender and between those living in rural or in the urban area. The prevalence of asthma among adults seems to increase with age. This was probably due to other diagnosis being included particularly chronic obstructive airway disease (COPD). The questionnaire in this survey would not be able to discriminate between these two diseases distinctively. The confirmation between the two conditions can only be made with a proper lung function test and histamine challenge test.

In terms of asthma morbidity among adults, a total of 67.8% of asthmatics visited the doctor due to an asthma attack or acute breathlessness in the last 12 months. For unscheduled visits to the doctors 50.3% visited the doctors 1-3 times, 11.9 % visited the doctor 4-12 times and 5.5% visited the doctor >12 times for acute asthma exacerbation. This was three times higher than the AIRIAP survey which showed that 22% of asthmatics had unscheduled visits to the doctor.

In this survey, 20.0% of asthmatics visited the emergency department for acute asthma exacerbation in the last 12 months out of which 55.8% visited the emergency department once, 22.8% twice and 22.0% visited more than three times. This was higher than the AIRIAP results where 12.0% of asthmatics visited the emergency department due to acute asthma exacerbation.

A total of 10.0% of adult asthmatics was admitted to the ward due to acute asthma exacerbation out of which 6.64% was admitted once, 2.12% was admitted twice and 1.23% was admitted three times. This was lower than the AIRIAP survey where 15% of asthmatics were admitted.

With regards to seeking treatment majority (75.4%) of the respondents reported going to doctors for treatment, while 10.3% went to traditional and complementary medicine (TCM) for treatment; 7.6%

went to the pharmacy to refill old prescriptions and 6.6% obtained their medication treatment through the over the counter (OTC).

This summary showed that there was 21.0% limitation in sleeping, 16.9% had normal physical exertion limitation while 15.6% had housekeeping chores limitation. Thus asthmatic symptoms do affect the quality of life of adult asthmatics.

ASTHMA

ASTHMA - CHILDREN (AGED BELOW THAN 18 YEARS)

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Asthma is a chronic inflammatory lung disease affecting all age groups. It has experienced a sharp increase in the global prevalence, morbidity, mortality and economic burden over the last 40 years, particularly in children. The increase in prevalence of asthma has been reported in the United Kingdom, New Zealand, United States and Australia.

Compared to the West and Asia Pacific Region, the prevalence of asthma in South-East Asian populations is lower, but an increasing trend has also been reported in Taiwan and Japan. Recent surveys as reported by Asthma in America (AIA), Asthma Insights and Reality in Europe (AIRE), Asthma Insights and Reality in Asia-Pacific (AIRIAP) and Asthma Insights and Reality in Japan (AIRJ) highlighted the fact that asthma is underdiagnosed and undertreated.

AIRIAP study conducted in eight areas including China, Hong Kong, Korea, Malaysia, Philippines, Singapore, Taiwan, and Vietnam reported daytime symptoms of 51.4%. About 43.6% of asthmatics had been hospitalized, attended a hospital emergency department, or made unscheduled emergency visits to other health care facilities for treatment of asthma during the previous 12 months. Current use of an inhaled corticosteroid was reported by only 13.6% of asthmatics and 56.3% used quick-relief bronchodilators. Absence from school and work in the past year was reported by 36.5% of children and 26.5% of the adults.

The National Health and Morbidity Survey III (NHMS III) 2006 was conducted with the main objective of determining the prevalence of asthma among children and adults in Malaysia. The specific objectives were to determine the impact of disease due to asthma among adults and children, the correlation between asthma and obesity, to determine the pattern of health utilization and to determine the percentage of asthmatics on preventive medications.

The data was collected using pre-coded questionnaires by trained interviewers through interviewing all household members in the selected living quarters. The prevalence of asthma in children was based on part of the International Survey of Asthma and Allergy In Children (ISAAC) questionnaire, which was previously used in 1995 and 2001 in an international survey involving school children 6-7 years old and 13-14 years old in Kuala Lumpur.

The impacts of asthma in children were determined by using the Asthma Insight and Reality in Asia Pacific (AIRIAP) questionnaire. This questionnaire was previously used in an international survey involving countries in the Asia-Pacific including Malaysia in 2000.

The NHMS III showed that the overall prevalence of asthma was 7.1% (CI: 6.7 - 7.6). The prevalence of ever asthma was 6.4% (CI: 6.1 - 6.9), current asthma 5.4% (CI: 5.1 - 5.9) and the prevalence of exercised -induced asthma was 2.8% (CI: 2.6 - 3.2). It is difficult to compare the prevalence between the two surveys since the questionnaire used was different. The overall prevalence of asthma was more prevalent among Malays [8.1% (CI: 7.5 - 8.7)], Indians [7.4% (CI: 6.1 - 8.9)]. Chinese had the lowest asthma prevalence. By states, Johor [9.2% (CI: 7.9 - 10.6)], Kedah [8.6% (CI: 7.1 - 10.5)], Malacca [8.4% (CI: 5.8 - 12.0)] and Kuala Lumpur [8.3% (CI: 6.5 - 10.6)] had the highest prevalence of asthma.

The results showed that males reported significantly higher prevalence of asthma [7.7% (CI: 7.1 - 8.3)] with a male to female ratio of 1.16:1. The prevalence of asthma is highest in children aged 10-14 years old was 7.3 % (CI: 6.6 - 7.9) and 15-18 yrs old [8.3% (CI: 7.3 - 9.4)]. The prevalence of asthma was highest in the urban population although not significant. There was no significant difference in the prevalence between education levels and parental income.

Based on the background asthma severity the prevalence of intermittent asthma was 40.2% (CI: 36.7 - 43.8) and 59.8% (CI: 56.2 - 63.3) was classified as persistent asthma. This was based on sleep disturbances due to cough or breathlessness. Another criteria used in assessing underlying asthma severity was based on the frequency of breathlessness in the past 12 months. The results showed that 76.2% (CI: 73.0 - 79.2) was classified as intermittent defined as 1-3 episodes of breathlessness in the past 12 months and 23.6% (CI: 20.6 - 26.9) as persistent group defined as having episodes of breathlessness 4-12 times or > 12 times in the past 12 month. Persistent asthma was highest in the Indian community [36.7% (CI: 25.9 - 48.9)] and in the age group 10-14 years old [19.3% (CI: 14.7 - 25.0)]. 81.7% of the current asthmatics had at least one to a maximum of 12 episodes of asthma exacerbations in the past 12 months. The asthma exacerbations were highest among the Indian population the highest exacerbations occurred in the age group 0-4 years old (89.8%). The survey showed that 69.0% (CI: 65.0 - 72.0) of asthmatics did not have any long term asthma follow-up .The asthmatic from the rural area had the highest percentage of non follow-ups [71.3% (CI: 66.1 - 76.0)]. 32.2% of asthmatics had visited the emergency department for asthma exacerbation, 14.3% was hospitalized and 82.1% of them had unscheduled visit to the doctor's due to asthma exacerbation. The Indians had the highest utilization of acute care services. The children in the age group 0-4 years olds was the highest user of acute care services.

In terms of morbidity, 52.8% (CI: 48.3 - 57.3) of children missed schools due to asthma with and average day loss of 3.61 days. 57.2% of the children were affected by the physical activities, 50.8% are affected in terms of social activities, 78.8% were affected during sleep and 67.7% were affected

in the sport and recreational activities. The majority of the children (85.4%) were treated by doctors and paramedics. 5.2% goes to the pharmacy using old prescriptions. 5.4% seek traditional treatment and 4.2% went to pharmacy without prescription.

The percentage of asthmatics not on any medications was 66.7% of which 13.3% was only on short acting B2 agonist, 16.2% was on inhaled corticosteroids, 4.7% was on combination therapy, 3.5% was on anti-leukotrienes and 5.2% was only on long acting B2 agonist. The highest user of inhaled cortcicosteroids was in the 5-9 years old (35.2%).

Conclusion, this survey showed that the prevalence of asthma in children is comparable to other countries in Singapore, Thailand and Hong Kong. The morbidity of asthma is still significant as in the previous AIRIAP survey. Underutilization of preventer medications is still high although the one third of asthmatics had persistent asthma.

DENGUE PREVENTION PRACTICE

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KNOWLEDGE ON DENGUE TRANSMISSION

A total of 81.5% of the respondents answered correctly (CI: 80.9 - 82.2) and only 0.8% answered incorrectly (CI: 0.7 - 0.9) while 17.6% did not know the answer (CI: 17.0 - 18.3). Most of the states had a rate of more than 80% with the exception of Sabah and Sarawak with less than 75%. Urban respondents seemed to have higher knowledge than rural (83.5% compared to 78.0%). Most of the age group had a rating of more than 80% with the exception of those aged 65 and above. Among the ethnic group, Malays topped with the rating of 88.1% of correct answers. The lowest rating is among the Chinese (75.1%). Malaysians, Non-Married and the higher socio economic status had better knowledge than those who are married and in the lower socio economic status.

A total of 88.6% respondents know that aedes mosquito transmits dengue fever while 9.4% do not know the type of mosquito that transmits the disease.

A total of 78.7% of the respondents can identify at least one indoor mosquito breeding site while the other 15.2% could not identify even one indoor breeding site.

A total of 88.2% of the respondents can identify at least one outdoor mosquito breeding site while the other 10.9% could not identify even one outdoor breeding site.

70.4% of the respondents know that a fine can be imposed on them if mosquito larva were found in their premises (CI: 69.6 - 71.2) while another 6.5% did not know (CI: 6.1 - 6.8).

ATTITUDE TOWARDS FOGGING AND OTHER CONTROL ACTIVITIES

A total of 95.6% reported that they would allow health authority to inspect their houses for mosquito larvae (CI: 95.3 - 95.9) while 4.0% said they would not allow it (CI: 3.7 - 4.3). 95.4% agreed the idea of health authority doing larviciding inside their premises (CI: 95.1 - 95.7) while 4.20% did not agree (CI: 3.9 - 4.5). An average of 92.5% respondents allowed fogging to be done in their houses (CI: 92.1 - 93.0). About 7.1% of respondents did not allow fogging (CI: 6.6 - 7.5). Malacca (83.4%) and Federal Territory Kuala Lumpur (84.9%) have the lowest percentage of respondents who would allow fogging to be done in their houses. Among the races, the lowest percentage of respondents who would allow fogging in the house is the Chinese with 84.6%. The Muslims (94.9%) have the highest percentage of respondents who would allow fogging to be done. The lowest is among the Buddhist (84.7%). The highest income group (RM5000 and above - 10.8%) and senior official and manager group have the highest percentage of not allowing fogging in their houses (10.3%).

ATTITUDE TOWARDS COMMUNITY PARTICIPATION

The majority (42.1%) answered there was no community clean up projects in their area (CI: 41.1 - 43.2). Another 13.9% said they participate in community clean up projects every time (CI: 13.3 - 14.5), 13.8% said sometimes (CI: 13.3 - 14.4), 8.8% seldom (CI: 8.4 - 9.2) and the remaining 21.4% said they were never involved in such activity (CI: 20.7 - 22.0). Communities in Federal Territory Kuala Lumpur were the least involved in organizing community clean-up projects (54.6%), followed by Kedah (52.6%), and Selangor (46.8%).

DENGUE PREVENTIVE PRACTICES

The response rate for self-reported dengue preventive practices was 34,990/ 36,146 (96.8%). Fifteen questions on dengue preventive practices were asked among persons aged 13 years and older. Two categories of questions were enquired, that included questions on environmental sanitation and self protective practices. Overall, 70.5% (CI: 69.7 - 71.3) self reported to have taken some form of preventive practices.

33.0 % said they covered water containers in their home (CI: 31.9 - 34.1) while 17.0% did not do so (CI: 16.1 - 17.9). The remaining 50.0% did not have water containers in their houses (CI: 48.8 - 51.3).

36.1% of the respondents claimed that they kept their drains free from blockage (CI: 34.9 - 37.3) while 14.0% said they did not do so (CI: 13.2 - 14.8). The other 50.0% did not have drains (CI: 48.6 - 51.3).

9.2% said they changed water in plant container every week (CI: 8.7 - 9.8) but 10.1% did not do so (CI: 9.3 - 11.0) while another 80.6% did not have plant container (CI: 79.6 - 81.6).

6.8% of the respondents said that they removed stagnant water from flower pot trays (CI: 6.3 - 7.2) while the other 8.7% did not do so (CI: 7.9 - 9.6). The remaining 84.5% did not have flower pot trays (CI: 83.6 - 85.5).

33.5% of the respondents claimed that they put refuse which can hold water into covered bins (CI: 32.3 - 34.6) while the other 15.4% did not do so (CI: 14.5 - 16.3). The remaining 51.2% said they did not have covered bins (CI: 49.9 - 52.5).

Only 7.8% of the respondents put larvicide into their water containers (CI: 7.3 - 8.4) while the other 32.0% did not do so (CI: 31.0 - 33.1). The remaining 60.2% more did not have water containers in their home (CI: 58.9 - 61.4).

The common preventive practices observed by respondents were using aerosol spray (43.7%), burning mosquito coils (22.1%), using electric mosquito coils (9.4%), burn rubbish outside the house (8.7%) and sleeping under mosquito net (7.8%).

Preventive practices taken by the urban community were reported to be higher (74.3%) than the rural community (63.6%). Communities living in Penang reported to observe the highest preventive practices (88.4%), followed by Selangor (79.5%) and Federal Territory Kuala Lumpur (79.8%).

Preventive practices were less reported among communities living in Kelantan (59.1%), followed by Terengganu (62.1%) and Perak (63.3%). Indians were found to have the highest preventive practices (76.4%), followed by Chinese (72.3%) and Malays (70.6%).

Residents in the 20-29 age groups reported to have the higher preventive practices as compared to the other age group. In terms of education, those with tertiary education reported to observe the highest preventive practices (83.2%), in contrast to those with no formal education (50.3%). Preventive measures among our community also correlate with the average individual income; the higher income group showed they had taken better preventive practices as compared to those in the lower income group.

HEALTH INFORMATION

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GENERAL HEALTH INFORMATION

Within a period of one month the percentage of respondents who received health information was found to be 46.0% (CI: 44.9 - 46.9). The most popular type of health information was on hypertension (18.1%), diabetes (15.8%), cancer (14.2%), healthy eating (11.8%) and dengue (10.8%). The most popular channels of receiving this information were television (36.3%), newspaper (16.2%), radio (11.4%), magazine (3.5%) and pamphlet (2.4%). Different target groups of respondents preferred different channels of communication in receiving health information. A total of 60.2% (CI: 59.2 - 61.2) of respondents said that the health information that they received had always convinced them to take action, while 35.4% (CI: 34.4 - 36.3) convinced them to take action sometimes. For the remaining 4.4% (CI: 4.1 - 4.8) of the respondents the health information received did not have any effect on them.

NUTRITION LABELLING

In Malaysia diet-related health problems have increased dramatically over the last few years. Consequently, nutritional labelling has emerged as an important aspect of consumer's food purchase decisions. Nutritional content in food products is considered to be necessary to selection of choice of healthy diet.

To practice healthy eating, public awareness and knowledge on nutritional information of the food content is very important. In fact, healthy eating is one of the components of the healthy life style campaign constructed by the Ministry of Health.

This study was carried to assess the practices of seeking information on nutritional labelling among the community. The total number of respondents who responded to questions on nutritional labelling was 39,506. In general, the percentage of respondent who stated that they always read the nutrition label was 54.5%, sometimes read the nutrition label was 23.7% and never read the nutrition label was

19.3%. The educational status of respondents who read the nutrition label was in the following order, tertiary [74.5% (CI: 72.8 - 76.1)], secondary [65.0% (CI: 64.1 - 65.9)], and followed by primary [46.9% (CI: 45.9 - 47.9)]. By vocation the professional, technical and associate, and senior managerial position showed the highest percentage of always reading nutrition label, attributing to 73.6%, 73.2% and 70.5% respectively. More than two-thirds (68.1%) of the respondents who always read nutrition label are internet users. The most popular information on food that respondent read was the expiry date, which is not nutritional labelling. Responses positive for expiry date was over 70% while less than 15% of the responses were actually reading nutritional information such as energy (4.7%), fat (9.7%), carbohydrate (7.5%), vitamin (8.2%), salt (5.3%), mineral contents (4.3%), food additives (6.2%) and others (6.2%).

In conclusion, very few people really read nutritional information in nutritional labelling and about 60% always understand the labelling. Most of them only read the expiry date which is actually food labelling. Thus, more health promotion effort on encouraging people to read nutritional information should be emphasized. Governments, international partners, civil society, non-governmental organizations and the private sector have vital roles to play in shaping healthy environment and making healthier diet options affordable and easily accessible. Initiatives by the food industry to reduce the fat, sugar and salt content of processed foods and portion sizes, to increase introduction of innovative, healthy, and nutritious choices, and to review current marketing practices could accelerate health gains worldwide.

MEDICATION LABELLING

Labelling of medication is one of the requirements under the law. Furthermore, understanding of medication labels is important to avoid medication errors and related adverse events. Generally, it was found that the percentage of respondents who always or sometimes read medication labels was 61.1% (CI: 60.3 - 61.9) and 19.0% (CI: 18.5 - 19.6) respectively. There were 16.0% (CI: 15.5 - 16.5) who did not read their medication labels at all. Those with tertiary [79.9% (CI: 78.3 - 81.5)] followed by secondary education [71.4% (CI: 70.6 - 72.3)] also read medication labels the most. Among those who always read medication labels, the technical and associates, (79.5%), followed by the professional (79.0%) and senior official and manager (74.4%) groups are the top three groups. The information that respondents found most important to read was the dose of the medicine [47.7% (CI: 47.1 - 48.7)], followed by the method of administration [43.2% (CI: 42.4 - 44.0)] and frequency to take [40.8% (CI: 42.4 - 44.0)]. The respondents claimed to have understood the labels on their medication with 64.1% (CI: 63.3 - 65.0) stating that they always understand the labels while 32.8% (CI: 32.0 - 33.6) understood the labels sometimes. Although most respondents can understand their medication labels always or sometimes, a high percentage [60.0% (CI: 59.1 - 60.8)] still sought for clarification about their medicines. In conclusion, whilst the majority (61.1%) of the respondents claimed that they read medicines labels, reading medicines labels is not a common practice amongst a sizable number of respondents (16%). About two-thirds of the respondents could only understand their medicines labels some of the time only. Those with higher education levels and holding higher positions could understand better and has a tendency to know more about their medicines. The findings showed that effort should be made towards improving medicine label literacy among the community and to educate patients and consumers on the importance of understanding more about their medicines. There is a need to study about patients' understanding of medicines labels and whether poor knowledge can contribute to medication errors.

ORGAN DONATION

Overall 15.6% (CI: 15.0 - 16.2) received information on organ donation less than 3 months before this study was conducted. In general, 54.0% (CI: 53.0 - 54.9) had received information on organ donation within a period of more than three months. Only 1.5% respondents agreed to pledge as an organ donor. When asked for the reasons of not to pledge, majority of the respondents gave the reasons as scared (39.3%), followed by uncertainty due to religion (10.9%), against religious practice (10.5%), suffering of the corpse (6.3%), objection from family members (2.9%) and did not know where to register (2.6%). The study also showed (20.5%) respondents agreed that the organ donation information could influence them to pledge as organ donors.

CHILD HEALTH HOME-BASED CARD

The Ministry of Health planned to advocate a life long child home-based card to the community from current used card system which is meant for children 2 years old and below. The proposed home-based card requires more pages and subsequently additional funds. To ease the burden, they proposed the cost could be paid by the community. This study was carried out to assess the practices of keeping the child home-based card and the willingness of the community to pay for the proposed life long child home-based card. Overall, 97.0% of respondents were given the child health home-based card were mostly from government hospitals (88.1%) and private clinics (11.8%). Among those who had the card, about 87.5% (CI: 86.8 - 88.3) still retain the card with them. In terms of willingness to pay for the card, only 55% agreed to pay with the majority of them only agreeing to pay for less than RM5. More non-Malaysians and rural residents were willing to pay as compared to Malaysians and urban residents. However, among those non-Malaysians and rural residents, the percentage that is willing to pay is very low. In conclusion, most of the people in Malaysia were given the child home-based card and they still retain them. The majority of them received the card from government hospitals. More than 70% of the respondents could show the card and above 80% bring along every time they visit the clinic. Thus the government should consider the strategy of advocating life long home-based card to the community.

PHYSICAL ACTIVITY

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This report represents results from a National Health and Morbidity Survey III 2006, conducted in 2006. It covers current (2006) activity patterns. This represents physical activity information using recognized measures and methods to ensure comparable information on trends in physical activity.

The overall response rate for physical activity module was 98.2% (33,933 respondents) from 34,539 eligible respondents which represented 12,923,504 adults aged 18 years and above.

Overall prevalence of physical inactivity was 43.7% (5,545,891) of which [35.3% (CI: 34.3 - 36.3)] were males and [50.5% (CI: 49.5 - 51.5)] were females.

By strata, [45.6% (CI: 44.6 - 46.7)] urban adults were not active physically compared to [40.1% (CI: 38.9 - 41.4)] rural adults.

For ethnicity, the Chinese was the highest for inactive [47.1% (CI: 45.6 - 48.7)], followed by Indians [44. 5% (CI: 42.2 - 46.7)], others bumis [44.1% (CI: 41. 9 - 46.2)] and Malays [42.4% (CI: 41.3 - 43.4)].

The physical inactivity increased by age. However, there was no significant difference in physical inactivity pattern for age group.

The highest prevalence of inactivity were in group unemployed [60.8% (CI: 59.0 - 62.5)], followed by housewife [54.4% (CI: 53.16 - 55.7)]. The least of inactivity was skilled agricultural and fishery [25.3% (CI: 23.21 - 27.35)] and elementary occupations [27.02% (CI: 24.48 - 29.57)].

The prevalence of physical inactivity increased with the higher income. However, there was no significant difference in physical inactivity pattern by personal income group.

Selangor had the highest prevalence of physical inactivity (52.1%), followed by Kuala Lumpur (51.8%) and the least were Pahang (31.4%) and Terengganu (32.3%).

85.7% of Malaysian adults reported inactive physically during leisure time, 72.6% inactive during working and 72.1% during traveling.

Mean minutes of total physical activity was 894 minute per week. Mean minute for the domains of working, travel and leisure were 518, 288 and 135 respectively.

SMOKING

SMOKING AMONG ADOLESCENCE (AGED 13 TO < 18 YEARS)

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This summary is based on 3,321 responses (61.7%) of 5,383 eligible respondents.

Ever smokers: Of estimated 180,328 [14.7% (CI: 13.4 - 16.1)] most were in Sarawak [22.2% (CI: 14.7 - 29.8)], Malacca [19.6% (CI: 10.0 - 29.2)] and Sabah [18.5% (CI: 13.1 - 23.9)], and least in Penang [6.1% (CI: 2.7 - 9.5)]. More in rural [18.4% (16.2 - 20.6)] vs. urban [12.3% (CI: 10.7 - 14.0)], mostly were others [20.4% (CI: 9.0 - 31.8)], Other Bumis [18.6% (CI: 12.7 - 24.5)] and Malays [18.6% (CI: 16.0 - 19.4)]. 26.2% (CI: 23.8 - 28.5) males vs. 3.0% (CI: 2.1 - 3.8) females. Prevalence increased with age, from 7.0% (CI: 5.1 - 8.9) in 13 to 22.5% (CI: 19.1 - 25.8) in 17 years old.

Current smokers (CDC definition): Of estimated 107,154 [8.7% (CI: 7.7 - 9.8)] most were in Sarawak [13.0% (CI: 6.9 - 19.1)], Pahang [12.9% (CI: 7.7 - 18.2)] and Johore [12.1% (CI: 7.2 - 17.0)], and least in Penang [2.3% (CI: 0.1 - 4.4)]. More in rural [11.5% (CI: 9.7 - 13.3)] vs. urban [6.9% (CI: 5.6 - 8.2)], mainly among Malays [10.9% (CI: 9.5 - 12.3)] and Other Bumis [10.5% (CI: 6.0 - 14.9)]. Males [16.6% (CI: 14.6 - 18.5)] vs. females [0.7% (CI: 0.3 - 1.0)]. Prevalence increased with age, from 3.5% (CI: 2.2 - 4.8) in 13 to 15.5% (CI: 12.5 - 18.5) in 17 years old.

Frequent/established smokers: Of 40,172 [3.3% (CI: 2.7 - 4.0)] most was in Pahang [5.3% (CI: 1.9 - 8.7)], Johore [5.3% (CI: 1.9 - 8.7)], and Sarawak [5.1% (CI: 1.4 - 8.9)]. More in rural [4.9% (CI: 3.7 - 6.2)] vs. urban [2.3% (CI: 1.5 - 3.0)], mainly among Malays [4.3% (CI: 3.4 - 5.2)] and Other Bumis [4.8% (CI: 1.8 - 7.7)], 6.4% (CI: 5.1 - 7.6) males vs. 0.2% females (n=3). Prevalence increased with age, from 1.1% (CI: 0.3 - 1.8) in 13 to 6.9% (CI: 4.8 - 8.9) in 17 years old.

Experimental smokers: Of 12,780 [1.1% (CI: 0.7 - 1.4)] more in rural [1.2% (CI: 0.6 - 1.8)] vs. urban [0.9% (CI: 0.5 - 1.4)], and mainly among Other Bumis [1.4% (CI: 0.1 - 2.8)] and Malays [1.1% (CI:

0.7 - 1.6)]. 1.9% (CI: 1.2 - 2.6) males and 0.2% (CI: 0 - 0.4) of females. Highest prevalence was among 15 years old [1.6% (CI: 0.5 - 2.6)] and lowest was among 13 years old [0.6% (CI: 0.1 - 1.1)].

Triers: Of 62,782 [5.2% (CI: 4.4 - 6.0)] mostly were in FT Labuan [12.5% (CI: 0.9 - 24.1)], Sarawak [8.1% (CI: 3.8 - 12.4)] and Sabah [7.2% (CI: 3.8 - 10.6)]. In the Peninsular, the highest was from Terengganu [6.9% (CI: 3.7 - 10.2)] and Kelantan [6.4% (CI: 3.7 - 9.1)]. 5.6% (CI: 4.4 - 6.9) triers in rural vs. [4.9% (CI: 3.9 - 5.9)] urban, mostly were Other Bumis [8.1% (CI: 4.8 - 11.4)] and Malays [5.8% (CI: 4.8 - 6.8)]. 8.2% (CI: 6.9 - 9.6) males vs. 2.0% (CI: 1.3 - 2.7) females, higher among 14 and 15 years old [6.5% (CI: 4.7 - 8.4) and 6.3% CI: 4.5 - 8.0)] respectively, and lowest among 13 years old [3.4% (CI: 2.1 - 4.7)].

Passive smokers: Of 305,932 [26.8% (CI: 25.1 - 28.4)] most were in Terengganu [34.0% (CI: 27.5 - 40.5)], Perlis (33.9% (CI: 22.1 - 45.7)] and FT Labuan [32.8% (CI: 13.9 - 51.8)], higher in rural [28.5% (CI: 26.0 - 31.0)] than urban [25.6% (CI: 23.4 - 27.9)]. 30.3% (CI: 28.2 - 32.4) Malays, 29.3% (CI: 23.1 - 35.5) Other Bumis, 18.4% (CI: 14.5 - 22.3) Chinese and 12.7% (CI: 8.1 - 17.3) Indian. 24.7% (CI: 22.5 - 26.9) males vs. 29.0% (CI: 26.6 - 31.3) females. 28.9% (CI: 25.4 - 32.3) were 15 years old and lowest among 13 years old [24.6% (CI: 21.3 - 27.9)].

Mean initiation age (MIA) among current and frequent smokers was 13.6 years, similar between urban and rural respondents. Males started smoking earlier (13.6 years) vs. females (14.1 for current vs. 14.4 years for frequent smokers). However, MIA of experimental smokers was 12.9 years, earlier among rural (12.8 years) vs. urban (13.1 years) respondents. Males started smoking even earlier (12.8 years) than females (14.3 years).

Mean number of cigarettes (MNC) smoked per day among frequent smokers was 10.1 (CI: 7.9 - 12.3) sticks, highest in Federal Territory Kuala Lumpur [18.3 sticks (CI: 6.4 - 30.3)] followed by Penang [16.7 (CI: 12.5 - 20.9)] and Kelantan [16.1 (CI: 6.1 - 26.2)]. Higher MNC in rural [10.3 (CI: 7.3 - 13.3)] sticks vs. urban [9.8 (CI: 6.7 -12.9)] sticks, [10.0 (CI: 7.8 - 12.2)] for males vs. [12.9 (CI: 5.8 -20.0)] sticks for females (n=3). Higher MNC was among Malays [10.0 (CI: 7.7 - 12.3] vs. Other Bumis [8.2 (CI: 4.2 - 12.2)] sticks. Higher MNC was among 15 years old [11.5 (CI: 6.4 - 16.5)] and 17 years old [11.1 (CI: 7.2 - 14.9)] sticks. Among frequent smokers, 74.3% (CI: 66.1 - 82.5) were in light, 18.1% (CI: 10.8 - 25.3) heavy and 7.7% (CI: 2.7 - 12.7) moderate category. 74.2% CI: 65.3 - 83.1) respondents smoked white cigarettes, 7.0% (CI: 2.3 - 11.8) self-rolled and 6.7% CI: 1.9 - 11.6) light cigarettes. Among white cigarette smokers, 75.9% (CI: 65.2 - 86.6) were in rural vs. 71.7% (CI: 56.5 - 86.8) in urban, 85.0% (CI: 68.5 - 101.5) of 15 years old, 79.0% (CI: 65.6 - 92.3) of 17 years old and 72.8% (CI: 51.7 - 93.7) of 14 years old vs. only 35.8% (CI: 2.4 - 69.3) of 13 years old. 75.5% (CI: 66.2 - 84.9) Malays, vs. 75.8% (CI: 33.7 - 118.0) Chinese (n=4) consumed white cigarettes.

Mean number of quit attempts (MNQA) among frequent smokers was 3.6 (CI: 2.9 - 4.2) times. Higher quit attempts were in Terengganu [5.9 (CI: 3.2 - 8.6)], Perak [4.6 (CI: 1.4 - 7.7)] and Kelantan [4.4 (CI: 1.8 - 7.0)] times. MNQA was 3.8 (CI: 2.9 - 4.7) for rural vs. 3.2 (CI: 2.2 - 4.2) times for urban respondents and 3.6 (CI: 3.0 - 4.3) times among males. Higher MNQA was among Malays [3.8 (CI: 3.1 - 4.5)] vs. Other Bumis [2.3 (CI: 1.4 - 3.2)] and Chinese [1.3 (CI: 0.8 - 1.8)] times, mainly among 17 years old [4.4 (CI: 3.0 - 5.7)] and 14 years old [4.1 (CI: 2.4 - 5.8)] times.

Intentions to quit within next six months (IQ6M): 80.3% (CI: 72.2 - 88.4) of frequent smokers reported IQ6M, mostly in Perak (100.0%), Kedah [92.9% (CI: 78.8 - 106.9)] and Sarawak [88.7% (CI: 67.0 - 110.4)], with 80.9% (CI: 70.6 - 91.1) rural vs. 79.4% (CI: 66.3 - 92.6) urban. 80.6% (CI: 72.4 - 88.8) male frequent smokers reported IQ6M vs. 69.5% (CI: 18.0 - 121.0) for females (n=2). 83.2% (CI: 63.5 - 103.0) Other Bumis reported IQ6M, 81.2% CI: 72.4 - 90.0) Malays and 52.6% (CI: 3.4 - 101.8) Chinese (n=2). IQ6M were more than 70.0% among all the 13 to 17 years old, and higher among 14 years old [94.7% (CI: 84.3 - 105.0)], 17 years old [83.2% CI: 70.3 - 96.0)] and 13 years old [75.6% (CI: 45.6 - 105.7)].

Ever quit attempts for past one year (EQA1Y): 79.4% (CI: 71.6 - 87.1) frequent smokers reported EQA1Y, mostly were in Kedah [92.2% CI: 77.0 - 107.4)], Selangor and Johore [90.6% (CI: 76.1 - 105.0)]. EQA1Y were 81.2% (CI: 72.3 - 90.1) for rural vs. 76.6% (CI: 62.6 - 90.6) urban, 79.7% (CI: 71.9 - 87.5) among male vs. 69.5% (CI: 18.0 - 121.0) (n=2) female frequent smokers, and 79.9% (CI: 71.6 - 88.1) among Malays vs. 76.8% (CI: 51.5 - 102.0) Other Bumis (n=10) and 75.8% (CI: 33.6 - 118.0) Chinese (n=3). EQA1Y were mostly among 14 years old (100%) and 16 years old [82.3% (CI: 66.2 - 98.4)], and lowest [61.2% CI: 26.2 - 96.2)] among 13 years old (n=5).

Awareness of quit smoking clinic availability: Of only 29 respondents, 28.6% (CI: 19.2 - 38.0) were aware, 29.4% (CI: 13.7 - 45.1) urban vs. 28.1% (CI: 16.4 - 39.8) rural. 28.6% (CI: 19.0 - 38.1) male smokers were aware of quit smoking clinic availability, 30.6% (CI: 20.2 - 40.9) were Malays, mostly among 15 years old [31.6% (CI: 9.8 - 53.4)], 17 years old [30.6% (CI: 15.5 - 45.7)] and 16 years old [29.8% (CI: 9.3 - 50.3)].

SMOKING

SMOKING AMONG ADULTS (AGED 18 YEARS AND ABOVE)

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In this study smokers are defined based on two definitions, i.e., CDC definition and NHMS II definition. The CDC definition is a globally accepted measure of established smokers where only those who have smoked 100 or more sticks of cigarettes in their lifetime are considered. Smoking prevalence using this definition provides comparison between countries. The NHMS II definition does not strictly confine to established smokers where anyone who has smoked once in his or her lifetime is considered a smoker. Use of this definition in NHMS III allows for comparison with results from NHMS II hence providing an assessment of change over a ten year period.

The overall response rate for this module was 99.3%. A total of 34,305 adults aged 18 and above responded to this module and provided national estimates for this study. There were 44.8% males and 55.2% females respondents where 59.3% were from urban while 40.7% were from rural areas.

Ever smoker (CDC definition)

There were 27.0% (CI: 26.4 - 27.5) ever smokers among the total respondents. This included those who had experimented, former smokers, occasional smokers as well as current smokers.

The prevalence of ever smokers was significantly higher in the states of Perlis [39.1% CI: 35.0 - 43.2)], Kelantan [35.2% (CI: 33.2 - 37.2)], Pahang [34.7% (CI: 31.8 - 37.7)]. The lowest rate is in Kuala Lumpur [19.7% CI: 17.6 - 21.7)]. Prevalence of ever smoker was higher in rural areas [32.3% (CI: 31.5 - 33.1)] compared to urban [24.1% CI: 23.4 - 24.7)]. The proportion of males who have ever smoked was significantly higher [57.6% (CI: 56.6 - 58.6)] than females [2.5% (CI: 2.3 - 2.8)]. A comparison of ever smoking rates across ethnic groups showed that Malays [30.1% (CI: 29.4 - 30.7)], Other Bumis [30.8% (CI: 29.3 - 32.3)] and Others [28.4% (CI: 25.62 - 31.3] recorded higher rates than Chinese [21.1% (CI: 20.0 - 22.2)] and Indian [16.8% (CI: 15.5 - 18.1)].

Current smoker (CDC definition)

The national prevalence of current smokers was 21.5% (CI: 21.0 - 22.0). Urban areas recorded a lower rate [19.0% (CI: 18.3 - 19.6)] compared to that for rural areas [26.2% (CI: 25.4 - 27.4)]. The prevalence of current smokers was highest in Perlis [33.1% (CI: 27.6 - 38.6)] followed by Pahang [27.4% (CI: 24.3 - 30.5)] and Kelantan [27.3% (CI: 25.3 - 29.4)]. The lowest rate was in Kuala Lumpur [15.7% (CI: 13.8 - 17.6)]. Higher prevalence of current smokers is found in the rural areas [26.2% (CI: 25.4 - 27.4)] compared with urban [19.0% (CI: 18.3 - 19.6)] and there is significant difference between the 2 gender where prevalence among males was 46.4% (CI: 45.5 - 47.4) and that for female was only 1.6% (CI: 1.4 - 1.3). The pattern of current smoker prevalence between the various ethnic groups is similar to that of ever smokers. Malays [24.0% (CI: 23.4 - 24.7)], Other Bumis [24.8% (CI: 23.4 - 26.2)] and Others [23.8% (CI: 21.1 - 26.6)] were reported to have higher smoking rates compared to Chinese [16.2% (CI: 15.3 - 17.2)] and Indian [13.7% (CI: 12.4 - 15.0)]. Prevalence of current smoker was highest among respondents who were in their twenties and early thirties.

Ex-smoker (CDC definition)

The national ex-smoker prevalence was 5.4% (CI: 5.1 - 5.6), where there is minimal difference between rural [6% (CI: 5.6 - 6.4)] and urban [5% (CI: 4.7 - 5.4)]. The leading states for ex-smokers were Kelantan [7.8% (CI: 6.8 - 8.9)] followed by Pahang [7.26% (CI: 6.1 - 8.5)], Terengganu [6.6% (CI: 5.4 - 7.8)] and Malacca [6.6% (CI: 4.9 - 8.3)]. Malays and Other Bumis each with ex-smokers prevalence of 6% are ahead of other ethnic groups. Prevalence of ex-smokers progressively increase with age where the lowest rate is among 18-19 years [1.3% (CI: 0.8 - 11.5)] while prevalence for 75 years and above is about 14%.

Passive smoker (CDC definition)

Over 2.7 million (21.5%) of the national population are passive smokers, where prevalence is higher amongst urban residents [22.4% (CI: 21.7 - 23.2)] than rural. States with high prevalence were in Perlis [26.6% (CI: 22. 7 - 31.4)], Selangor [26.4% (CI: 25.0 - 27.8)] and Kuala Lumpur [26.3% (CI: 23.7 - 29.0)].

There are more female passive smokers [23.8% (CI: 23.1 - 24.6)] compared to males [18.7% (CI: 17.9 - 19.4)]. Highest prevalence of passive smokers is among people aged 18-19 years [29.1% (CI: 26.7 - 31.5)] followed by 20-24 years old [27.0% (CI: 25.5 - 28.6)] and 25-29 years old [24.8% (CI: 23.4 - 26.3)].

Mean age of initiation (CDC definition)

The National Mean Initiation Age is 18.6 years, where males start to smoke at age 18.3 years while on average females start smoking at age 22.6 years. The urban mean age of initiation is 18.5 years and for rural areas it is 18.7 years.

Changes in smoking patterns (based on NHMS II definitions)

These findings reported in this section are that of prevalence for ever smokers based on the NHMS II definitions where figures are compared with results derived from the second National Health and Morbidity Survey (NHMS II) done in 1996.

Ever smokers (NHMS II definition)

The National Adult Smoking Prevalence for ever smokers had increased from 30.6% in NHMS II to 33.4% in NHMS III (CDC definition - 27.0%).

Smoking by urban folks had raised from 26.7% in NHMS II to 30.0% in NHMS III (CDC definition - 24.1%), while for rural areas the present prevalence is 39.8% (CDC definition - 32.3%) compared with NHMS II i.e. 35.4%.

Male ever smokers had increased to 67.3% (CDC definition - 57.6%) from 59.7% in NHMS II, whereas female prevalence was 6.2% (CDC definition - 2.5%) compared with 5.1% for NHMS II. Malays still ranked high with 36.6% (CDC definition - 30.1%) ever smokers compared with 34.4% in NHMS II. Chinese prevalence had also increased from 23.4% in NHMS II to 26.6% in NHMS III (CDC definition - 21.1%), while for Indians ever smokers raised from 19.6% in NHMS II to 21.7% in NHMS III (CDC definition - 16.8%). When using the NHMS II definitions it is shown that ever smoking prevalence for all people aged 44 years and less had increased.

Current smokers (NHMS II definition)

The National Adult Current Smoking Prevalence for ever smokers had reduced from 24.8% in NHMS II to 22.8% in NHMS III (CDC definition - 21.5%).

Smoking by urban folks had dropped from 21.7% in NHMS II to 20.2% in NHMS III (CDC definition - 18.9%), while for rural areas the present prevalence is 27.6% (CDC definition - 26.2%) compared with NHMS II i.e. 28.6%. Male ever smokers had decreased to 48.8% (CDC definition - 46.4%) from 49.7% in NHMS II, whereas female prevalence was 1.9% (CDC definition - 1.6%) compared with 3.5% for NHMS II. Malays still ranked high with 25.4% (CDC definition - 24.0%) of current smokers compared with 27.9% in NHMS II. Prevalence of current smokers among Chinese had also decreased from 19.2% in NHMS II to 17.4% in NHMS III (CDC definition - 16.2%), while for Indian current smokers there is reduction from 16.2% in NHMS II to 14.5% in NHMS III (CDC definition - 13.7%).

When using the NHMS II definitions, unlike to general national figures, prevalence of current smokers for people aged 18 - 19 years is seen to have increased from 17.6% in NHMS II to 22.1% in NHMS III (CDC definition - 20.2%). For ages 20 - 24 years prevalence among current smokers raised from 23.0% in NHMS II to 27.0% in NHMS III (CDC definition - 24.7%), while in ages 25 - 29 years, 30 - 34 years and so on the rate of current smokers between the 2 surveys appeared similar or reduced.

Mean initiation age (NHMS II definition)

National mean initiation age had reduced from 19.9 years in NHMS II to 18.6 years in NHMS III. Currently on average males start to smoke at 18.3 years (NHMS III) whereas in NHMS II mean age of initiation was 19.5. Amongst females, mean age of initiation also reduced from 24.7 years in NHMS II to 22.6 years in NHMS III.

Measures of smoking prevalence are defined below:

Ever smoker (CDC definition) - Respondent who reported to have smoked 100 or more cigarettes in lifetime.

Ever smoker (NHMS II definition) - Respondent who reported to have smoked at least once in his/her lifetime.

Current smoker (CDC definition) - Respondent who reported to have smoked 100 or more cigarettes in lifetime and smoked daily or some days in the past one month.

Current smoker (NHMS II definition) - Respondent who reported to be smoking at the time of the survey.

Ex-smoker (CDC definition) - Respondent who reported to have smoked 100 or more cigarettes in lifetime but not smoking in the past one month preceding the survey.

Ex-smoker (NHMS II definition) - Respondent who reported to have stopped smoking.

Initiation age - The age at which smoking was first attempted.

Light smoker - Current smoker who smoked less than 10 sticks of cigarettes per day.

Moderate smoker - Current smoker who smoked between 10 and 20 sticks of cigarettes per day.

Heavy smoker - Current smoker who smoked more than 20 sticks of cigarettes per day.

Passive smoker - Non smoker who was exposed to someone else cigarette smoke for at least 15 minutes each exposure for at least 3 days in the last week.

ALCOHOL

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PREVALENCE OF ALCOHOL CONSUMPTION

It was estimated that the overall national prevalence of ever consume alcohol was 16.2% (CI: 15.3 - 17.0), the current drinker was 7.4% (CI: 6.9 - 8.0), the ex-drinker was 29.1% (CI: 27.3 - 30.8).

Prevalence of 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 FT Labuan [25.0% (CI: 19.2 - 30.8)] and FT 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 FT Labuan and FT Kuala Lumpur 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)].

Prevalence of 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.

Prevalence of 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 23.03% (CI: 20.7 - 25.4) respectively. Meanwhile, the Malay 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)].

Prevalence of 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)].

Prevalence of 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.

Prevalence of 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)].

Prevalence of 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)].

Prevalence of 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.

Prevalence of 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.

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). 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) and 21.6 years old (CI: 21.1 - 22.1) respectively. There was not much difference in the mean age started to drink alcohol between those living in urban [21.0 years old (CI: 20.8 - 21.3)] and those in rural [20.8 years old (CI: 20.3 - 21.3)].

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.

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)].

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.

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)].

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 times [3.4 times (CI: 3.0 - 3.7 times)].

HYPERTENSION AND HYPERCHOLESTEROLEMIA

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HYPERTENSION

Findings are based on the standard definition of hypertension as elevated blood pressure during examination (Either SBP $\geq$ 140 or DBP $\geq$ 90) using an average of two automated blood pressure measurements, or a self reported hypertensive on current anti hypertensive medication.

From the 34,539 respondents aged 18 years and above in the NHMS III survey, a total of 33,976 subjects had their blood pressure examined; giving a response rate of 98.6%.

Prevalence of hypertension among Malaysian residents aged 18 years and above in 2006

This study reports an estimated overall prevalence of 32.2% (CI 31.6 - 32.8) among Malaysian residents aged 18 years and above in 2006.

The prevalence of hypertension in males [33.3% (CI: 32.5 - 34.2)] was not significantly different from the prevalence of hypertension in females [31.0% (CI: 30.3 - 31.7)].

Among the main races, the overall prevalence of hypertension for Malays [33.9% (CI: 33.1 - 34.7)] was similar to that of the Chinese [32.4% (CI: 31.1 - 33.8)]. The prevalence of hypertension for Malays and Chinese were significantly higher than the Indian estimates [29.4% (CI: 27.5 - 31.2)]. As the group "Other Bumis" is a very heterogenous group, no inter ethnic comparisons was performed with this group.

Among the male respondents, the prevalence of hypertension in the Chinese [35.0% (CI: 33.2 - 36.8)] is significantly higher than the Malays [33.7% (CI: 32.5 - 34.8)] and Indians [30.9% (CI: 28.2 - 33.8)].

Whereas amongst the females, the prevalence of hypertension in the Malays [34.1% (CI: 33.1 - 35.1)] is significantly higher than the Chinese [29.8% (CI: 28.2 - 31.4)] and Indians [27.8% (CI: 25.6 - 30.1)].

Based on the complex survey analysis conducted, it is estimated that there are 4.8 million (CI: 4.6 - 4.9 million) Malaysian residents who have hypertension. This represents 2.2 million males and 2.6 million females.

Prevalence of hypertension among Malaysian residents aged 30 years and above in 2006

A total of 24,796 Malaysian residents aged 30 years old and above had their blood pressure examined in this survey. The overall estimated prevalence of hypertension for this group is 42.6% (CI: 41.8 - 43.3).

The prevalence of hypertension in males [41.7% (CI: 40.7 - 42.8)] was not significantly different from the prevalence of hypertension in females [43.4% (CI: 42.5 - 44.4)].

Among the main races, the overall prevalence of hypertension for Malays [45.4% (CI: 44.3 - 46.4)] was significantly higher than that of the Chinese [40.6% (CI: 39.0 - 42.1)] and Indians [40.0% (CI: 37.7 - 42.3)]. No inter racial comparisons was performed with the "Other Bumis" group due to its heterogeneity.

Among the male respondents, the prevalence of hypertension among the Malays, Chinese and Indians are similar and no statistical significant difference was seen.

Whereas amongst the females, the prevalence of hypertension in the Malays [48.4% (CI: 47.1 - 49.6)] is significantly higher than the Chinese [38.7% (CI: 36.8 - 40.7)] and Indians [39.5% (CI: 36.7 - 42.5)].

The results show that it is plausible that the differences in overall prevalence of hypertension seen between the different ethnic groups can be attributed to the differences seen among the female subjects.

Awareness, treatment and control of hypertension

For the purpose of comparing with NHMS II results, these analyses are for those Malaysian residents aged $\geq$ 30 years old.

Among the 11,709 diagnosed hypertensives, the overall prevalence of awareness was 35.8 % (CI: 34.8 - 36.8). A significantly higher proportion of female hypertensives were aware of their diagnosis [40.0% (CI: 38.7 - 41.2)] compared with their male counterparts [31.5% (CI: 30.1 - 32.9)]. The prevalence of hypertensive population under current treatment is 31.4% (CI: 30.4 - 32.3). Likewise there were significantly more female hypertensive subjects who were under current treatment [34.2% (CI: 32.7 - 36.7)] compared with the male hypertensive subjects [27.3% (CI: 26.0 - 28.6)].

Though only about 8.2% (CI: 7.7 - 8.8) of hypertensive population had their blood pressure under control, but an estimated one quarter [26.3% (CI: 24.8 - 27.0)] of the hypertensive population under current treatment had their blood pressure under control. There were no differences of blood pressure control between males and females.

HYPERCHOLESTEROLEMIA

Findings were based on self perceived reporting and by measuring cholesterol level by finger prick for capillary blood samples. A total of 31,716 subjects from the 34,539 respondents aged ≥18 years had their cholesterol level measured. This provides a response rate of 91.8%. The overall prevalence of hypercholesterolemia (TC> 5.2mmol/L) was 20.7%. The prevalence of hypercholesterolemia to be higher in females compared to males (55.4% vs 44.6% in males). The prevalence of hypercholesterolemia is highest among the Malays as compared to the ethnic groups (53.4%, 7.7%, 19.2% in Malays, Indians, Chinese respectively). The mean total cholesterol was 4.5mmol/L.

The survey results revealed that the prevalence and mean total cholesterol of the Malaysian adults is much lower than that of the Western adults. The overall prevalence is 20.7% and the mean total cholesterol level is 4.5mmol/L. In Mainland Chinese, the mean total cholesterol is 4.2mmol/L and in NHANES it was reported as 5.3mmol/L. This could reflect the local genetic, cultural and dietary differences compared to the western Caucasian population. There is a slight increase in the mean total cholesterol level compared to the data from NHMS II. The mean total cholesterol level in NHMS II was 4.5mmol/L as compared to 4.5mmol/L found in this study. This is worrying as most data in the developed world had showed a decreasing trend in blood cholesterol level. Several factors may have contributed to this increasing trend. Among them are, poor nutrition, inadequate physical activity, poor awareness of hypercholesterolemia and the exponential increase in the incidence of obesity. Unprecedented rapid development and urbanization has resulted in changing lifestyle favouring the increase in the prevalence of coronary heart disease and mortality from it.

In conclusion, the overall prevalence of hypercholesterolemia as defined as total cholesterol >5.2mmol/L was 4.5% and was significantly higher in females compared to males. Among ethnic groups, Malays had the highest prevalence of hypercholesterolemia (53.4%). Based on the findings of this population-based survey hypercholesterolemia is still prevalent in Malaysia and continue to contribute as a major risk factor for coronary heart disease and stroke. Better epidemiological data will assist in the development of appropriate strategies and the monitoring of hypercholesterolemia.

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NATIONAL PREVALENCE

The diabetes survey was carried out on all subjects of 18 years old and above either by self-reporting or by measuring whole blood finger-pricked glucose following at least 8 hours of fasting. All of 34,539 study subjects responded to the diabetes questionnaire. Out of 31,943 who claimed that they are not diabetic underwent the finger-pricked test. A subject was classified as having diabetes when the glucose level was equal or above 6.1mmol/L.

The overall prevalence of diabetes mellitus (known and newly diagnosed) among adults of 18 years old and above in this study was 11.5% (CI: 11.2 - 12.0) There was a general increasing trend in prevalence with age; from 2% in the 18-19 years old age group to an alarming prevalence ranging between 20.8% to 26.2% among the 50-64 years olds. The prevalence was higher in the urban at 12.2% (CI: 11.6 - 12.7) compared to the rural areas at 10.6% (CI: 9.9 - 11.1). This difference is significant. There was a large difference when comparing the States with the highest prevalence of 15.3% (Negeri Sembilan), 15.2% (Malacca) and 14.9% (Penang) respectively as compared to Sabah (4.9%).

No gender difference in the prevalence was observed. In terms of race, the Indians lead with a prevalence of 19.9% (CI: 18.3 - 21.5) followed by 11.9% (CI: 11.4 - 12.5) in the Malays and 11.4% (CI: 10.6 - 12.2) in the Chinese. The disparity between the Indians and the other two races is great, but between the Chinese and the Malays there is no significant difference. Based on the education level, those with primary education or less, have a higher prevalence. In terms of job category, those

involved with craft and related trader showed the lowest prevalence 6.4% (CI: 5.2 - 7.5) in comparison to Senior Officials and Managers (from a presumably educated and informed group), housewives and unemployed whose prevalence are more than 14%. The widowers stand out (at 22.0%) when compared with other marital status. Income status did not show any difference in prevalence reported.

PEOPLE WITH KNOWN DIABETES

From this survey, the prevalence of people with known diabetes in adults of 18 years old and above was found to be 7.0% (CI: 6.7 - 7.3). Except for race and household income the rest of the trend was similar to that of the overall diabetes.

NEWLY DIAGNOSED DIABETES

From this survey the National prevalence of newly diagnosed diabetes (defined as a fasting plasma glucose level of equal to or more than 6.1 mmol/L and those who did not report themselves as persons with people with known diabetes) was 4.5% (CI: 4.3 - 4.8). One important finding is that by gender, there is a significant difference in prevalence with males recorded higher prevalence [5.1% (CI: 4.7 - 5.4)] than females [4.1% (CI: 3.8 - 4.4)]. There is no significant difference with regards to ethnic groups. The Senior Officials and Managers again showed the highest incidence at 8.3% (CI: 6.1 - 10.5), followed by the Professionals at 5.2% (CI: 4.2 - 6.1) in comparison to the other lower job categories with incidence ranging from 3.7% to 5.0%.

IMPAIRED FASTING GLUCOSE

The national prevalence of impaired fasting glucose (IFG), defined as whole blood capillary glucose level of 5.6 and more to less than 6.1mmol/l, amongst the Malaysian population was 4.2% (CI: 4.0 - 4.5).

In comparison, Indians [5.2% (CI: 4.3 - 6.1)] and Chinese [5.1% (CI: 4.5 - 5.7)] had high prevalence of IFG whereas Malays was significantly lower [4.0% (CI: 3.6 - 4.3). There was significant gender difference and urban rural difference.

COMPARING NHMS II AND III; 10 YEAR TREND

The national prevalence of known diabetes for adults 30 years and above in NHMS II is 5.7% (CI: 5.4 - 6.1) whereas in NHMS III was 9.5% (CI: 9.1 - 9.9).

The prevalence of newly diagnosed diabetes in the same age group as above increased from 2.5% (CI: 2.3 - 2.7) in NHMS II to 5.5% (CI: 5.2 - 5.8) in NHMS III. Even after taking into account the methodological differences (fasting glucose versus 2 hours post glucose), there was a definite rising trend in this newly diagnosed prevalence.

When these two categories were combined the prevalence of known and newly diagnosed diabetes among adults above 30 years, rose from 8.3% (CI: 7.8 - 8.7) to 14.9% (CI: 14.4 - 15.5).

EYE EXAMINATION

It was noted that 45.0% of the people with known diabetes had their eyes checked by doctors. Out of this, 32.9% had their eyes checked less than 1 year ago, 49.7% had their eyes checked between 1-2 years while 17.4% had their last eye examined more than 2 years ago.

COMPLICATION

The survey showed that 4.3% of people with diabetics had lower limb amputation, 3.4% had stroke and 1.6% had dialysis or kidney transplant.

INFANT FEEDING

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INFANT FEEDING PATTERN

The general objective of the survey was to determine the infant feeding practices in Malaysia. A household interview survey was conducted in 17,200 living quarters and the respondents were mothers or guardians of children below the age of 24 months in the household. Questions on breastfeeding practices, pacifier use and complementary feeding were asked using a structured questionnaire. The questions on breastfeeding practices were based on the WHO Sample Questions For Use In Household Surveys which uses a recall of 24 hours breastfeeding practice (WHO 1991).Total number of eligible respondents for this module was 2303. The number of respondents who answered the module was 2167 (94.1%) representing 804,480 of the estimated population of children aged below 2 years in Malaysia. The overall prevalence of ever breastfed among children aged less than 2 years was 94.7% (CI: 93.0 - 95.9). The overall prevalence of exclusive breastfeeding below 4 months was 19.3% (CI: 15.5 - 23.9) and below 6 months was 14.5% (CI: 11.7 - 17.9). In the case of predominant breast feeding below 4 months and 6 months were 19.7% (CI: 15.6 - 24.7) and 16.9% (CI: 13.7 - 20.6) respectively. As to complementary breastfeeding, the prevalence was 46.7% (CI: 41.2 - 52.2) amongst infants below 4 months and below 6 months was 48.2% (CI: 43.8 - 52.7). Breast feeding was initiated within one hour of birth in 63.7% (CI: 61.4 - 65.9) infants and 67.9% (CI: 64.9 - 70.7) of children below 12 months received any food or drink from a bottle. The prevalence of pacifier use was 32.9% (CI: 30.9 - 35.1). In terms of complementary feeding, 41.5% (CI: 36.4 - 46.9) of infants had received timely complementary feeding (that is between 6-<9 months of age). Compared to the findings in the National Health and Morbidity Survey II (1996), there were a significant increase in the prevalence of ever breastfeeding, predominant breastfeeding below four months and timely first suckling. However, there was a significant decrease of 9.7% in the prevalence of exclusive breastfeeding among children below four months. With regards to the use of feeding bottles, there was a significant reduction of its usage.

NUTRITIONAL STATUS

NUTRITIONAL STATUS OF ADULTS (AGED 18 YEARS AND ABOVE)

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Nutritional status is an important component of the health of a population. The Third National Health and Morbidity Survey (NHMS III) conducted in 2006 included nutritional status assessment as one of the components in the investigation into the health of the Malaysian population. As part of the nutritional status assessment, Body mass index (BMI) of 33,465 eligible individuals 18 years and above was determined. In addition, waist circumference (WC) was measured in 32,900 individuals. As for 4,309 individuals aged 60 years and above, calf circumference (CC) was measured.

Among adults aged 18 years and above, the proportion having normal BMI (BMI 18.5 -24.9kg/m^2) was 48.4% (CI: 47.7 - 49.0), with 52.0% (CI: 51.2 - 52.9) in men and 45.3% (CI: 44.5 - 46.1) in women. The prevalence of underweight (BMI <18.5kg/m^2) was 8.5% (CI: 8.2 - 8.9), the level being similar in both men [8.25% (CI: 7.8 - 8.8)] and women [8.7% (CI: 8.3 - 9.20)]. Underweight prevalence among adults was higher in the rural [9.8% (CI: 9.2 - 10.4)] than the urban areas [7.8% (CI: 7.4 - 8.3)].

Meanwhile, 29.1% (CI: 28.6 - 29.6) of the adult population was found to be overweight (BMI 25.0-29.9 kg/m^2). Overweight prevalence increases with age, particularly after 35-39 years until 60-64 years after which the prevalence declines. Among the ethnic groups, Indians had the highest prevalence of overweight [33.2% (CI: 31.4 - 35.1)], followed by Malays [29.8% (CI: 29.1 - 30.5)] and Chinese [28.5% (CI: 27.3 - 29.6)]. Within the job category, the senior officers and managers group as well as the technical and associate categories had the highest overweight prevalence.

This study also identified 14.0% (CI: 13.6 - 14.5) of the adults as obese (BMI ≥30.0kg/m^2). Out of this, 10.5% (CI: 10.1 - 10.8) was in the obese I (BMI 30-34.9 kg/m^2) category, 2.6% (CI: 2.4 - 2.8) in obese II (BMI 35-39.9 kg/m^2) and 1.0% (CI: 0.9 - 1.1) in obese III (BMI ≥40 kg/m^2) categories. Women had higher obesity prevalence at 17.4% (16.7-18.0) than men at 10.0% (CI: 9.5 - 10.5). Obesity prevalence increases with age, particularly at 45-49 years until 50-54 years after which the prevalence declines. Ethnicity-wise, Indians and Malays had higher obesity prevalence [17.7% (CI: 16.3 - 19.3) and 16.6% (CI: 16.0 - 17.3)] respectively than other ethnic groups. According to the job category, housewives had the highest prevalence of obesity at 20.3% (CI: 19.4 - 21.3).

The prevalence of abdominal obesity (waist circumference for women > 88cm and men > 102cm) was 17.4% (16.9 - 17.9), with women showing a higher prevalence [26.0% (CI: 25.2 - 26.8)] than men [7.3% (CI: 6.7 - 7.6)].

Among older persons (aged 60 years and above), the prevalence of those with peripheral muscle wasting (calf circumference for women < 27.3cm and men ≤ 30.1cm) was 19.9% (CI: 18.5 - 21.6). A higher proportion of men [23.7% (21.7 - 25.9) than women [16.8% (CI: 15.1 - 18.5] was at risk of malnutrition according to this indicator.

There are key differences in the nutritional status of Malaysian adults when compared with those reported in the Second National Health and Morbidity Survey (NHMS II) undertaken in 1996. Firstly, the prevalence of underweight of 8.5 % was three times lower than the finding of 25.2% in the NHMS II. In contrast, the prevalence of overweight has increased from 16.6% in the NMHS II to 28.6% in the present study. The latter is comparable with the finding of 27.4% reported in another nationally representative sample involving over 5,000 adults namely, the Malaysian Adults Nutrition Survey (MANS) conducted in 2002/2003. It is noted that obesity prevalence has increased rapidly over the decade, from 4.4% in 1996 (NHMS II) to 12.7% in 2002/2003 (MANS) and 14.2% in this study. This alarming trend calls for immediate revision of public health policies and for effective programmes in prevention and intervention strategies.

NUTRITIONAL STATUS

NUTRITIONAL STATUS OF CHILDREN (AGED BELOW 18 YEARS)

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Children constitute a vulnerable group and their nutritional status is a sensitive indicator of community health and nutrition. Therefore, the Third National Health and Morbidity Survey (NHMS III) included the determination of the nutritional status of children below 18 years for the first time.

A total of 22,032 eligible children were included in the NHMS III. Weight for age was measured in 21,249 children and height for age was measured in 21,078 children using NutStat (CDC 2000) software. Meanwhile, weight for height was also computed for children below 13 years. Nutritional status was defined according to z scores for weight for age (WAZ), height for age (HAZ) and weight for height (WHZ).

The national prevalence of normal weight for age (WAZ $\geq$-2SD to $\leq$+2SD) was 81.4% (CI: 80.8 - 82.0), height for age (HAZ $\geq$-2SD to $\leq$+2SD) was 80.5% (CI: 79.7 - 81.2) and weight for height (WHZ $\geq$-2SD to $\leq$+2SD) was 81.6% (CI: 80.8 - 82.3). Meanwhile, the prevalence of underweight (WAZ <-2SD) was 13.2% (CI: 12.6 - 13.9), the level being higher in boys 14.5 (CI: 13.7 - 15.3) compared to girls at 12.0% (CI: 11.3 - 12.7). It is found that children aged 1-3 years had the highest prevalence of underweight at 19.8% (CI: 18.4 - 21.3) as compared to other age groups. The prevalence of underweight in the rural areas was higher at 16.0% (CI: 15.1 - 17.1) compared in the urban areas at 11.4% (CI: 10.7 - 12.2). Compared to the national prevalence of underweight, high prevalence was found in Sabah at 19.1% (CI: 17.0 - 21.5) and Perlis at 19.0% (CI: 13.4 - 26.3) while low prevalence was observed in WP Kuala Lumpur at 8.1% (CI: 6.3 - 10.4) and Pulau Pinang at 9.0% (CI: 6.8 - 11.7). Among the ethnic groups, other Bumis had the highest prevalence at 18.4% (CI: 16.6

- 20.5) followed by others at 18.9% (CI: 14.7 - 24.0). The prevalence of underweight tends to be higher in households with monthly income less than RM2000.

On the other hand, 5.4% (CI: 5.0 - 5.7) of the children was overweight (WAZ >+2SD), with slightly higher prevalence among boys at 6.0% (CI: 5.6 - 6.5) than girls at 4.7% (CI: 4.3 - 5.1). Overweight prevalence increased with age until 10-13 years after which the level declines. Compared to the national prevalence, high prevalence was found in WP Kuala Lumpur at 9.1% (CI: 7.2 - 11.4) while low prevalence was found in Sabah at 2.3% (CI: 1.7 - 3.0) and Kelantan at 2.9% (CI: 2.2 - 3.9). Among the ethnic groups, Indians had the highest prevalence of overweight [8.1% (CI: 6.7 - 9.8)], followed by Chinese [7.1% (CI: 6.1 - 8.1)] and Malays [5.0% (CI: 4.6 - 5.5)].

The prevalence of stunting (HAZ <-2SD) was found in 15.8% (CI: 15.1 - 16.6) of the children, with slightly higher prevalence among boys [16.6% (CI: 15.7 - 17.5)] than girls [15.4% (CI: 14.2 - 15.9)]. The prevalence of stunting in the rural areas was higher at 19.4% (CI: 18.2 - 20.6) compared to the urban areas at 13.5% (CI: 12.7 - 14.5). Compared to the national prevalence, high prevalence was found in Sabah at 26.9% (CI: 24.6 - 29.4) and Kelantan at 18.6% (CI: 15.9 - 21.7) while low prevalence was found in Pulau Pinang at 9.8% (CI: 7.4 - 12.9) and Negeri Sembilan at 10.6% (CI: 8.4 - 13.5). Among the ethnic groups, other Bumis childrens had the highest prevalence of stunting at 25.1% (CI: 22.8 - 27.5) followed by others at 23.9% (CI: 19.6 - 28.9). Monthly household income of less than RM3000 had higher prevalence of stunting children.

Meanwhile, the prevalence of wasting (WHZ <-2SD) was observed in 10.4% (CI: 9.8 - 11.1) of the children, with slightly higher prevalence among boys [10.6% (CI: 9.8 - 11.5)] than girls [10.2% (CI: 9.4 - 11.1)]. It is observed that children aged less one year had the highest prevalence of wasting at 15.2% (CI: 13.1 - 17.6) as compared to age groups. The prevalence of wasting in the urban area was higher at 11.0% (CI: 10.2 - 11.9) compared to rural at 9.5% (CI: 8.7 - 10.5). Compared to the national prevalence, high prevalence was found in Pulau Pinang at 13.2% (CI: 10.3 - 16.8) and Johor at 12.9% (CI: 10.9 - 15.1) while low prevalence was found in Pahang at 7.4% (CI: 5.9 - 10.1). Among the ethnic groups, Indians children had the highest prevalence of wasting at 16.8% (CI: 14.2 - 19.8). Monthly household income of less than RM3000 had higher prevalence of stunting children.

The present national prevalence of underweight is 13.2% is almost two times lower than the rate of 25.5% among girls and 29.8% among boys in a study among children in rural areas by Khor et al in 1998. However, the prevalence of overweight is higher in the present study (5.4%) compared to 2.0% reported earlier.

In conclusion, although majority of Malaysian children were found to have adequate nutritional status, it is important to note that the dual problem of underweight and overweight in children persists throughout the country. These findings point to the urgency of improving the socio-economic status of vulnerable groups, and strengthening the public health policies and programmes for children.

WOMEN'S HEALTH

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BREAST HEALTH AWARENESS

This report represents results from a National Health and Morbidity Survey III, conducted in 2006. It describes the prevalence of breast and pap smear examinations among women aged 18 years and above by socio-demographic characteristics.

The overall response rate for breast health awareness module was 99.1% (18,902 respondents) from 19,081 eligible respondents which represented 7,092,827 women aged 18 years and above.

The overall prevalence of breast examination by any method was 70.4%. Among the respondents who had breast examination, majority of them practiced Breast Self Examination (BSE) 57.1%, followed by Clinical Breast Examination (CBE) 51.8% and mammogram 7.6%. Selangor reported the highest prevalence of women who had breast examination (75.1%), whilst the least was Sabah (59.9%).

There was a higher prevalence of breast examination by all methods among respondents living in the urban area, as compared to respondents living in the rural area. Among the urban respondents, 72.4% (CI: 71.4 - 73.4) have had breast examination by any method, 53.2% did BSE, 58.1% have had CBE and 9.3% had mammogram done before.

The prevalence of all types of breast examination, except for mammogram, increases with age up to 44 years old. The prevalence of breast examination declined after age 45 and above. However, among the respondents who had mammogram done, the prevalence of examination increased until age 64 before it declined.

Among the various ethnic groups, Malay women reported the highest rate of breast examination by any method (74.4%). This was largely contributed by BSE. The prevalence for CBE and mammogram examination however was highest among Indians and Chinese.

Married women reported higher prevalence of breast examination by all methods except for mammogram which was highest among divorced women. The highest prevalence for BSE was among

married women followed by the unmarried. However, for CBE, the highest was among the married followed by divorcee.

The prevalence of breast examination by all three methods increased with education level. The prevalence of breast examination by any method was 86.9% among women with tertiary education, 79.7% among those with secondary education, 63.9% among those with primary education and 38% among those with no education.

Generally, the breast examination prevalence by all methods increased with household income. 26.1% of women with household income of more than RM 4000 have had mammogram done.

PAP SMEAR

The overall response rate for pap smear module was 99.0% (18,898 respondents) from 19,081 eligible respondents which represented 7,091,221 women aged 18 years and above.

Of the 18,898 women studied, 43.7% (CI: 42.9 - 44.6) reported to have undergone pap smear examination. Perlis had the highest prevalence of women who undergone pap smear examination (57.7%) whilst Sabah had the least (35.3%). The overall prevalence of pap smear examination among women living in rural area (45.0%) was slightly higher than those in urban area (43.1%).

The prevalence of pap smear examination increased with age up to 44 years old and declined after age 45 and above.

The highest prevalence of pap smear was among Chinese women (50.5%) followed by Other Bumis (45.5%), Malays (43.6%), Indian (37.2%) and 'Others' (24.7%).

Married women reported the highest prevalence of pap smear (56.4%). Only 37.0% of divorcees and 29.3% of widower had pap smear done.

Women with formal education (39.2% - 48.1%) had higher prevalence of pap smear examination as compared to those with none (26.9%).

The prevalence of pap smear examination was generally noted to increase with the household and individual income.

Majority of women had pap smear examination in government facilities (68.8%) as compared to private facilities (30.3%). However, the prevalence of those who attended the private facilities was higher among Chinese, those with tertiary education and higher household and personal income.

42.8% of women who had pap smear done was because of self awareness. Among those who did not have pap smear done, 24.1% gave the reason of being unmarried and 22.6% had no further information on pap smear.

Among women who had undergone pap smear, 59.8% had this examination done within the last 3 years.

Women who were ever married and had never done pap smear examination were highest in Selangor, Terengganu and Johore with prevalence of 17.9%, 13.8% and 13.1% respectively. The prevalence was also higher among urban women (59.1%). Among various ethnic groups, the Malays had the highest prevalence of not doing pap smear. The prevalence was also higher among those with lower personal and household income.

SEXUAL BEHAVIOUR

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The Sexual Behaviour module elicited information regarding the types of sexual orientation and practice, age at first sexual intercourse, sexual activity and partners in the past 12 months, level of knowledge and prevalence of STI, level of knowledge of HIV transmission, utilization and non-utilization of HIV testing services and condom usage during sexual intercourse. This module comprised of 33 questions, utilized self-administered questionnaire in four languages (Bahasa Malaysia, English, Mandarin and Tamil) to 39,910 eligible respondents[1] in selected households. The response rate ranged from 1.1% to 69.8% to the various questions. Eligible respondents were 94.2% Malaysians, 45.5% males, 17.8% aged less than 20 years, 58.7% urban, 55.7% Malays, 26.4% in RM1000-1999 household income, 44.8% with primary education / no education and 61.5% married. Among those who revealed their sexual orientation, 95.8% were heterosexuals, while the rest consisted of 1.1% female homosexuals (lesbians), 0.9% male homosexuals (gays) and 2.2% bisexuals. As for the type of sexual practice[2], 97.0% claimed that they had one type of sexual practice where 94.4% practised vaginal intercourse only. 3.0% had two types of sexual practice where the commonest were oral and vaginal (2.7%). The mean age of first sexual intercourse among the males (24.8 years) is significantly higher than the females (22.7 years). 35.8% were knowledgeable[3] about STI symptoms, while 49.6% were knowledgeable about HIV transmission through sexual intercourse. 50.8% perceived that condom protected against HIV when used every time during sexual intercourse. Although 94.5% of studied population was knowledgeable about high risk practices toward acquiring HIV/STD, only 16.7% of those who had sex with prostitutes practiced safe sexual intercourse[4]. Prevalence of HIV testing was not satisfactory (11.6%) and furthermore 61.7% of them did the test more than a year ago. The two main reasons for not having HIV test were either not necessary (63.3%) or ignorant of the venue for testing (24.6%).

[1] *Eligible respondents are individuals selected aged 13 and above.*

[2] *Types of sexual practice include oral sex, vaginal and / or anal intercourse.*

[3] *Knowledgeable about STI means those respondents who can identify the symptoms correctly.*

[4] *Practice safe sexual intercourse means using condom 'every time' having sexual intercourse with prostitute.*

PSYCHIATRIC MORBIDITY

PSYCHIATRIC MORBIDITY IN ADULT

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Mental illness is recognized as a major cause of morbidity in the community. The Malaysian Disease Burden study acknowledges the major contribution of mental illnesses towards the total disease burden in Malaysia (21% of total years lived with disability in both males and females) and the highest total disease burden in young adults 15-29 years is attributed to mental illness (24.0 % of DALY in males and 38% in females).

The objective of the study was to estimate the prevalence of psychiatric morbidity of 16 years and above. The self administered questionnaire, the General Health Questionnaire (GHQ 28) was used as a screening tool to determine psychiatric casenesss among the respondents within the population.

GHQ caseness

Prevalence of psychiatric casenesss by GHQ28 in this survey was 11.2% among those who completed the GHQ items, at the cut-off score of 6 and above on the GHQ scoring.

Highest prevalence for the state was Negeri Sembilan [21.1% (CI: 16.5 - 26.7)] followed by Johore [15.9% (CI: 13.5 - 18.7)], Perak [15.5% (CI: 12.6 - 18.9)] and Penang [14.7% (CI: 12.0 - 17.8)]. The states with the lowest prevalence were FT Labuan [3.0% (CI: 1.7 - 5.4)], Kelantan [4.4% (CI: 3.1 - 6.1)] and Terengganu [5.2% (CI: 3.7 - 7.4)]. Prevalence in the urban area was higher at 12.6% (CI: 11.7 - 13.5) compared to that of rural areas [8.5% (CI: 7.6 - 9.4)]. Prevalence among females was 12.1% (CI: 11.3 - 12.9), in males was 10.4% (CI: 9.6 - 11.2) with an adjusted odds ratio (OR) of 1.2 (CI: 1.1 - 1.3). Among the ethnic groups, the Chinese had the highest prevalence at 31.1% with an

adjusted OR 7.0 (CI: 5.6 - 8.7) relative to the Malays. The prevalence for Indian was 13.7%, adjusted OR 1.4 (CI: 1.0 - 1.8), and for Malays the prevalence was 5.3%. By age group, the highest prevalence was for the 70-74 years age group, at 19.5% (CI: 13.0 - 28.2), followed by the 16-19 age group at 14.4% (CI: 12.6 - 16.5) and the 20-24 age group with a prevalence of 12.1% (CI: 10.8 - 13.5). The age groups with the lowest prevalence were the 75-79 years age group, at 8.7% (CI: 3.3 - 21.1), and the 25-29 age group at 9.1% (CI: 7.9 - 10.3). By marital status, the married group had the lowest prevalence at 10.5%, adjusted OR relative to the not married group of 0.7 (CI: 0.7 - 0.8). The prevalence for the other groups were widow-widower 12.2%, not married group 13.1% and the divorced group 13.6%. Those with no education had the highest prevalence at 16.6% (CI: 10.6 - 24.9). For those with primary level education the prevalence was 15.0% (CI: 13.7 - 16.4). The prevalence for those with secondary education was 10.2% (CI: 9.5 - 11.0) while the prevalence for those with tertiary education was 10.0% (CI: 9.0 - 11.2). Respondents reporting a household income of less than RM 400 had a prevalence of 14.6% followed by those earning RM 4000 - RM 4999 at 14.1% (CI: 11.5 - 17.1), and those earning RM 5000 and above at 12.5% (CI: 10.7 - 14.5).

The CGHQ scoring is an alternative scoring system for the GHQ28. It assumes the presence of continuous symptoms over a longer duration.

The overall prevalence of psychiatric casenesss is 48.1% by CGHQ scoring.

Insomnia

2 items in the GHQ enabled the determination of acute and longer term insomnia (Insomnia A and Insomnia C).

The overall prevalence of insomnia A was 14.0%. The highest prevalence was for Negeri Sembilan at 22.5% followed by Perak at 17.9%. The prevalence of insomnia A was highest among Chinese (28.4%) followed by Indians (16.8%) and Malays (9.4%). By age group, the highest prevalence of insomnia A was in the 70-74 age group at 20.5% (CI: 13.8 - 29.3). Those with no education had the highest prevalence of insomnia A at 20.3% compared to other educational levels. The divorced had the highest prevalence compared to other marital groups. Those with low income (less than RM 400) had highest prevalence at 18.0%.

Suicidal ideation

The GHQ includes 4 items that assess suicidal ideation. These can be scored to determine acute suicidal ideation (Suicidal Ideation A) and chronic suicidal ideation (Suicidal Ideation C).

The overall prevalence for Suicidal Ideation A was 6.4%. Among the racial groups, Chinese had the highest prevalence at 10.8% (CI: 9.1 - 12.8). By age group, the 16-24 years group had the highest prevalence. By marital status, those who were not married had the highest prevalence at 10.0% (CI: 9.1 - 10.9). Those with a household income of less RM 400 had the highest prevalence of suicidal ideation A at 8.5% (CI: 6.7 - 10.7). Craft and related trade workers had the highest prevalence of 9.4% (CI: 7.8 - 11.3) followed by the unemployed with a prevalence of 8.9% (CI: 7.4 - 10.7).

The overall prevalence of Suicidal Ideation C was 26.0%. The highest prevalence was in Sabah [34.7% (CI: 32.2 - 37.1)] followed by Sarawak [30.8% (CI: 27.9 - 33.9)]. Those in rural areas had a higher prevalence at 28.1% (CI: 26.9 - 29.3). Among the races, the prevalence was lowest in the Malays [21.8% (CI: 21.0 - 22.7)], and almost the same among the other races (30.5% - 31.4%). By age group, the highest prevalence was in the youngest age group 16-19 years at 37.3% (CI: 34.8 - 40.0). By educational level, those with no education had the highest prevalence at 31.7% (CI: 23.8 - 40.7). The unmarried had the highest prevalence at 32.3% (CI: 31.0 - 33.6), and those with the lowest income had the highest prevalence at 33.2% (CI: 29.8 - 36.8). The unemployed had the highest prevalence at 32.1% (CI: 29.6 - 34.8) among the occupational groups.

PSYCHIATRIC MORBIDITY

PSYCHIATRIC MORBIDITY IN CHILDREN AND ADOLESCENTS

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Children and adolescents form the most vulnerable group in any society. They are exposed to many stressors that they have little or no ability to control without the help of the adults significant in their lives, especially their family members. This makes them more likely to develop psychiatric morbidity.

In the section on Psychiatric Morbidity in Children and Adolescents aged 5 -< 16 years, the sample size was 14,156. Of these, responses were obtained from 11,949, giving a response rate of 84.4%.

The estimated prevalence of psychiatric morbidity in children and adolescents was 20.3%. When generalized to the entire population, this gives a total number of 5,212,722 of Malaysians aged between 5 -< 16 years having any form of mental health problems.

Indians and Other Bumis are the ethnic groups having the highest percentages (26.7% and 20.5% respectively), followed by Malays [20.4% (CI: 19.3 - 21.6)] and Chinese [16.8% (CI: 14.7 - 19.1)]. Males, at 21.6% (CI: 20.4 - 22.8), were significantly higher than females at 19.0% (CI: 17.9 - 20.2). There were no significant differences between Malaysians and non-Malaysians as well as those in the different age groups (5-9 years, 10-14 years and 15 years and above).

Analysis by state revealed that Malacca had the highest prevalence [31.8% (CI: 24.3 - 40.5)] followed by Negeri Sembilan [28.8% (CI: 23.7 - 34.5)], Terengganu [26.6% (CI: 22.8 - 30.9)], Johore [24.6% (CI: 21.8 - 27.6)], FT Labuan [24.1% (CI: 18.1 - 31.4)], Pahang [21.1% (CI: 17.3 - 25.4)], Kedah [21.0% (CI: 17.8 - 24.6)], Kelantan [20.5% (CI: 17.7 - 23.6)], Sabah [20.0% (CI: 17.3 - 23.0)], Selangor [19.6% (CI: 17.5 - 21.9)], Perlis [17.3% (CI: 11.7 - 24.8)], Perak [16.4% (CI: 13.4 - 20.0)], Kuala Lumpur [15.7% (CI: 12.2 - 19.8)], Sarawak [15.6% (CI: 13.2 - 18.4)], and Penang [12.6% (CI: 9.3 - 16.7)].

Children and adolescents from households with incomes lower than RM 3000 have significantly higher psychiatric morbidity. Rural location had higher prevalence than urban (21.2% vs. 19.7%) but this had not achieved statistical significance.

Analysis of the individual items revealed that item 8 (*Does the child appear backward or slow to learn?*) had the highest percentage at 8.6. This was followed by item 4 (*Does the child suffer from frequent headaches?*) at 6.1% and item 9 (*Does the child nearly never play with other children?*) at 4.7%. 29.0% of the children and adolescents were rated positive on both items 11 and 12 (*Is the child able to concentrate? Is the child extremely active?*), indicating a high level of inattention-hyperactivity problems.