THE UNIVERSITY OF HONG KONG
SOCIAL SCIENCES RESEARCH CENTRE
Director: Dr. J. Bacon-Shone *(PhD Birmingham)*

香港大學
社會科學研究中心
主任：白景崇

Behavioural Risk Factor Survey (October 2005)

Main Report

Commissioned by

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Executive Summary

Introduction

The Social Sciences Research Centre of the University of Hong Kong (SSRC) was commissioned by the Department of Health in October 2005 to conduct a survey on behavioural risk factors. This survey aimed to detect changes in health risk and behaviour as well as to collect further information on the health related behavioural issues among the Hong Kong population. This will provide information to facilitate the planning, implementation and evaluation of health promotion programmes on the prevention of diseases related to lifestyle and behaviour.

The scope of this survey encompassed the following:

1 Distribution of body mass index (BMI) and waist circumference
2 Prevalence of obesity/overweight/underweight
3 Pattern of physical activity
4 Prevalence of adequate/inadequate juice, fruit and vegetable consumption
5 Pattern of alcohol consumption
6 Smoking habits
7 General health status
8 Cervical screening (for female respondents only)
9 Pedestrian and driver road safety behaviour
10 Demographic information: gender, age, education, marital status, occupation, monthly personal income and monthly household income.

Research Methodology

This survey was conducted by using Computer Assisted Telephone Interviews (CATI). The sample was drawn randomly from a list of telephone numbers, which included unlisted and new numbers. The target respondents were Cantonese, Putonghua or English speaking residents in Hong Kong (excluding domestic helpers) aged 18-64. A bilingual (Chinese and English) questionnaire with 56 questions was used to collect data. Fieldwork took place between the 28th October and 25th November 2005. A sample size of 2 168 successful interviews was achieved. The contact rate was 45.1% and the overall response rate was 66.4%. The width of a 95% confidence interval was at most +/- 2.1%. Weighting was applied based on age and gender in order to make our findings more representative, using the Hong Kong population data compiled by the Census and Statistics Department for mid-2005 as reference.

Statistical tests were applied to investigate if there is any significant association between demographics and the response variables. Only the statistically significant findings at the 5% level (2-tailed) are presented in the report.

Key Findings of the Survey

Body weight control

According to the Asian standard of WHO classification of weight status, over two-fifths (41.0%) of respondents were either 'overweight' or 'obese', approximately half of respondents (49.0%) were classified as 'normal' and the rest (10.0%) were 'underweight'.

Respondents' perception of their current weight status showed a similar distribution, with about half of respondents (52.6%) perceiving their current weight as 'just right', more than a third (38.1%) felt they were 'overweight' and 9.2% found themselves 'underweight'. However, a significant proportion of respondents did not view their own weight status in the same way that the WHO classification for Asians suggested. More specifically, less than three quarters of the respondents (72.1%) who perceived themselves as 'overweight' were classified as 'overweight' or 'obese' by the WHO and only 40.8% of those who felt they were 'underweight' matched the WHO classification. Females, the older respondents (aged 35 years or above), the lower educated, and the divorced/separated/widowed respondents were more likely to view themselves as 'overweight'.

Only 15.0% of the respondents reported a weight difference of more than 10 pounds when compared with one year ago, of which about two-thirds (62.2%) reported an increase in weight. During the 12 months prior to the survey, over one quarter (26.6%) of the respondents had done something to control their weight, of which 57.9% had aimed to lose weight. Among those respondents who had deliberately controlled their weight, doing physical exercise (84.6%) and changing dietary habits (74.6%) were the most common adopted ways to control weight by the respondents.

Exercise/physical activities

The survey revealed that most respondents were not physically active in the week prior to the survey. Over half of the respondents had not engaged in any moderate exercise (54.9%) or vigorous exercise (65.9%) for at least 10 minutes a day during the week. On the other hand, walking was the most common form of physical activities in which 75.0% of the respondents had spent at least 10 minutes on walking everyday in the week prior to the survey. The survey also revealed that respondents had spent long hours sitting during the day, as shown by an average of 6.3 hours per day during weekdays (Monday to Friday) in the week prior to the survey. Based on the categorical scoring of the International Physical Activity Questionnaire (IPAQ) analysis, most of the respondents' level of physical activity was found to be either 'moderate' (57.9%) or 'low' (20.7%), only about one in five (21.4%) respondents were found to have "high" level of physical activity. Female, respondents aged 35-44 years, those having tertiary or above education, clerks and respondents with monthly household income below $8,000 were more likely than their respective counterparts to have 'low' level of physical activity.

Dietary habits

Most respondents (82.6%) had eaten vegetables on a daily basis while over half of the respondents (53.0%) had taken fruit everyday. However, the average daily intake of fruit and vegetables by the respondents was only 3.4 servings (excluding juice). Moreover, fruit/vegetable juice consumption was found to be uncommon amongst respondents, as only 6.3% of the respondents drank fruit/vegetable juice daily.

Only around one-fifth of the respondents (including juice: 20.2%; excluding juice: 19.1%) had a daily average intake of 5 or more servings of fruit and vegetables in the week prior to the survey. Males, younger respondents (aged 18-34 years), respondents with high educational attainment and the never married respondents were less likely than their respective counterparts to have consumed the recommended at least 5 servings of fruit and vegetables a day.

Pattern of alcohol consumption

Approximately one third of respondents (31.5%) were drinkers who had drunk at least one alcoholic drink during the month prior to the survey. On the whole, drinking was more prevalent among males, respondents aged 25-34 years, those with tertiary or above education respondents, never married, managerial/professional workers and those having a monthly household income $40,000 or above.

Among the drinkers in this survey, 28.7% of them reported binge drinking (drinking 5 or more glasses/cans of alcohol on one occasion) at least once in the month prior to the survey. Binge drinking was more common among males, the divorced/separated/widowed respondents, service and blue-collar workers.

According to the classification of sensible drinking habits in the British Alcohol Guidelines, 30.1% of the drinkers were found to have exceeded the recommended low risk level. Respondents with lower education (primary or below) were more likely to have drinking habits which exceeded the low risk level.

Smoking habits

15.8% of the respondents were smoking at time of this survey. Among them, 92.0% were daily smokers. A higher proportion of smokers who reported smoking more than 20 cigarettes a day were found in males, those aged 55-64 years, less educated respondents and blue-collar workers.

General health Status

Over two in five of all respondents (43.9%) claimed their general health status was 'good', 'very good' or 'excellent', whereas 6.3% claimed their general health status was 'poor'.

Almost one-third of all respondents (33.4%) considered their health condition was 'better' or 'much better' compared with people of their age. On the other hand, about one in eight (12.0%) considered their health condition was 'worse' or 'much worse' than those of their age.

Only 15.0% of all respondents reported their present health condition was 'better' or 'much better' compared with 12 months ago. In contrast, over one-fifth of them (21.8%) reported 'worse' or 'much worse'.

Cervical screening

Near two-thirds of the female respondents (62.1%) had been screened for cervical cancer before. Females aged below 35 years, the better educated, the never married and clerks and service workers were less likely than their counterparts to have ever had a cervical smear.

Pedestrian and driver road safety behaviour

About one quarter of all respondents (25.7%) reported that they had driven a vehicle in the 12 months prior to the survey. Among them, two-thirds (66.8%) had broken the speed limit by at least 15km per hour and 4.9% had driven a vehicle within 2 hours after drinking alcoholic beverages.

Half of all respondents (50.2%) claimed that they would use a seat-belt as a passenger 'all of the time' where it is mandatory or available. Besides, 7.2% of respondents claimed that they jay-walked "all" or "most" of the time.

Recommendations

Some recommendations based on the survey findings are suggested below:

1. Messages on achieving an optimal weight status, engaging in regular physical activity, having adequate daily fruit and vegetables consumption should be further promoted. Using the Asian standard of WHO classification, over two-fifths (41.0%) of the respondents were either 'overweight' or 'obese' at the time of this survey, while over half of those respondents who considered themselves 'underweight' were in fact 'normal' (55.4%). Furthermore, only around one fifth of the respondents (including juice: 20.2%; excluding juice: 19.1%) had a daily average intake of five or more servings of fruit and

vegetables in the week prior to the survey. Respondents' daily consumption of fruit and vegetables was still far from satisfactory. Therefore, more health promotion should be done to educate the community about:

i. proper assessment of body weight status, such as using the Body Mass Index (BMI);

ii. proper methods of maintaining normal body weight, such as increased physical activity and having healthy diets; and

iii. increasing the daily intake of fruit and vegetables to at least 5 servings a day.

2. The road safety behaviour of drivers should be further enhanced. The findings revealed that two-thirds of drivers (66.8%) in our sample broke the speed limit by more than 15km per hour, especially male and younger drivers.

3. Close to one third of drinkers (30.1%) had their drinking habit exceeding the recommended low risk drinking level. Promotion of sensible drinking should be particularly targeted at male drinkers and those with lower education. .

4. It is essential to identify factors which attribute to the disparities of health related behaviour among segments of the population, including differences that occur across gender, age, education level, marital status, occupation and income level. It is important to address the extent of health problems affected by unhealthy behavioural practices which may not only be related to personal characteristics but also to some socio-economic and environmental factors. Health promotion programmes should therefore take such underlying factors into account and strategic plans should be formulated to enhance awareness of certain groups of people on the relevant areas that need to be improved.

Chapter 1 Introduction

The Social Sciences Research Centre of the University of Hong Kong (SSRC) was commissioned by the Department of Health in October 2005 to conduct a survey on behavioural risk factors. This survey aimed to detect changes in health risk and behaviour as well as to collect further information on the health related behavioural issues among the Hong Kong population. This will provide information to facilitate the planning, implementation and evaluation of health promotion programmes on the prevention of diseases related to lifestyle and behaviour.

The scope of this survey encompasses the following:

- Distribution of body mass index (BMI) and waist circumference
- Prevalence of obesity/overweight/underweight
- Pattern of physical activity
- Prevalence of adequate/inadequate juice, fruit and vegetable consumption
- Pattern of alcohol consumption
- Smoking habits
- General health status
- Cervical screening (for female respondents only)
- Road safety behaviour including pedestrians and drivers
- Demographic information: gender, age, education, marital status, occupation, monthly household income and monthly household income

Chapter 2 Research Methodology

2.1 Sampling method

Telephone interview by using CATI (Computer Assisted Telephone Interview) was adopted. A random sample was drawn from 24 000 residential telephone numbers. These numbers were generated from the 2003 English residential telephone directory[1] by dropping the last digit, removing duplicates, adding all 10 possible final digits, randomizing order, and selecting as needed. This method provided an equal probability sample that covered unlisted and new numbers but excluded large businesses that used blocks of at least 10 numbers[2].

Where more than one eligible person resided in a household and more than one was present at the time of the telephone contact, the 'Next Birthday' rules were applied to each successful contacted residential unit, i.e., the household member who had his/her birthday the soonest was selected. This reduced the over-representation of housewives in the sample.

2.2 Target respondents

Eligible respondents were residents in different districts of Hong Kong and were aged between 18 and 64. They were Cantonese, Putonghua or English speaking. Domestic helpers were excluded.

2.3 Questionnaire design

A bilingual (Chinese and English) questionnaire with 39 pre-coded questions and 17 open-ended questions (with 10 demographics questions) was designed to cover the following 10 areas:

- Body height, weight and waist circumference
- Weight control
- Pattern of physical activity
- Prevalence of adequate/inadequate juice, fruit and vegetable consumption
- Pattern of alcohol consumption
- Smoking habits
- General health status
- Cervical screening (for female respondents only)
- Pedestrian and driver road safety behaviour
- Demographic information: gender, age, education, marital status, occupation, monthly personal income,and monthly household income.

A copy of the questionnaire is enclosed in Annex A.

[1] Chinese residential telephone directory was not used because the total number of telephone contacts is less than the English residential telephone directory. This process would have a lower response rate than pure directory sampling which does not cover unlisted and new numbers.

[2] This selection process includes some business and fax numbers so that the contact rate is lower than a pure directory sample.

2.4 Pilot study

A pilot study comprising 53 successfully completed interviews was conducted on 20th October 2005 to test the length, logic, wording and format of the questionnaire. The data collected from these pilot interviews were not counted as part of the survey report.

2.5 Fieldwork

Fieldwork took place between the 28th October and 25th November 2005. Because of the briefing, fieldwork telephone calls were made between 8:00 p.m. to 10:30 p.m. on 28th October. From 31st October to 1st November, telephone calls were made between 6:30 p.m. to 10:30 p.m. From 2nd to 4th November, 7th to 11th November, 14th to 18th November, and 21st to 25th November, fieldwork started earlier at 4:00 p.m. and finished at 10:30 p.m. For 12th and 19th November, telephone calls were made between 2:00 p.m. to 7:00 p.m.

2.6 Response rate

A total of 19 135 telephone numbers were attempted. The number of successful interviews was 2 168. Refusal and dropout cases amounted to 1 097. The cases which were 'not available' (3 719), and 'no answer' (3 773) were attempted three times before being classified as non-contact cases. The contact rate was 45.1%[3] and the overall response rate was 66.4%[4]. Table 2.6 details the breakdown of telephone contact status.

Table 2.6: Final status of telephone numbers attempted

Type	Final status of contacts[5]	Number of cases
1	Success	2 168
2	Drop-out	319
3	Refusal	778
4	Language problems	51
5	Not eligible	417
6	Business lines	1 177
7	Not available	3 719
8	Busy tone	401

[3] Contact rate = the number of answered telephone calls divided by the total number of calls attempted, i.e. from Table 2.6, Sum of (types 1 to 7) / Total = (2 168+319+778+51+417+1 177+3 719)/19 135 = 45.1%.

[4] Response rate = the number of successful interviews divided by the sum of the numbers of successful interviews, drop-out cases and refusal cases, i.e. from Table 2.6, (type 1) / (type 1 + type 2 + type 3) = 2 168/(2 168+319+778)=66.4%.

[5] 'Drop-out': eligible respondents who initially accepted the interview but failed to complete the interview due to some reasons. 'Refusal': eligible respondents who refused the interview. 'Language problems': eligible respondents who were not able to speak clearly in any of our 3 languages. 'Not available': eligible respondents were busy at the time of telephone contact. 'Invalid': not a valid telephone line (because we used a random method to generate telephone numbers, see section 2.1).

9	No answer	3 773
10	Fax/data lines	946
11	Invalid	5 386
TOTAL		**19 135**

2.7 Sample size and sample error

A sample size of 2 168 successful interviews was achieved (target sample size was 2 000). The width of a 95% confidence interval is at most + / – 2.1%[6]. This means that we can have 95% confidence that the true population proportion falls within the sample proportion plus or minus 2.1%. For example, 80% of the respondents in the sample claimed that their weights differed by more than 10 pounds when compared with one year ago. Then the conservative 95% confidence interval for the true percentage of the population stating a weight difference for the above question falls between 80% ± 2.1%, i.e. 77.9% and 82.1%.

2.8 Quality control

All SSRC interviewers were well trained in a standardized approach prior to the commencement of the survey. All interviews were conducted by experienced interviewers fluent in Cantonese, Putonghua and English.

The SSRC engaged in quality checks for each stage of the survey to ensure satisfactory standards of performance. At least 15% of the questionnaires completed by each interviewer were checked by the SSRC independently.

2.9 Data processing and statistical analysis

This survey revealed some differences in gender and age proportions when compared with the Hong Kong population data compiled by the Census and Statistics Department (C&SD) for mid-2005. The proportions of respondents among age groups 18-24, 40-44 and 60-64 were higher than the population while the proportions of respondents aged 25-29, 30-34, 45-49 and 55-59 years were lower. The sample also contained a higher percentage of females iwhen compared with the population. Table 2.9a shows the differences in terms of age and gender.

[6] As the population proportion is unknown, 0.5 is put into the formula of the sampling error to produce the most conservative estimation of the sampling error. The confidence interval width is:

$$\pm 1.96 \times \sqrt{\frac{0.5 * 0.5}{2168}} \times 100\% \ = 2.1\%$$

Table 2.9a: Distribution differences of age and gender between this survey and the Hong Kong population data compiled by the C&SD for mid-2005

Age Group	This survey			Hong Kong population data – from the C&SD (mid 2005)*		
	Male	**Female**	***Total***	**Male**	**Female**	***Total***
	% of Total	% of Total	*% of Total*	% of Total	% of Total	*% of Total*
18-24	**9.31**	**7.99**	*17.30*	**6.47**	**6.58**	*13.05*
25-29	**3.88**	**4.07**	*7.94*	**4.64**	**5.26**	*9.90*
30-34	**3.97**	**6.00**	*9.98*	**5.13**	**6.77**	*11.89*
35-39	**4.07**	**8.32**	*12.39*	**5.48**	**7.31**	*12.79*
40-44	**6.19**	**11.35**	*17.54*	**6.74**	**7.99**	*14.73*
45-49	**4.54**	**6.24**	*10.78*	**6.73**	**7.02**	*13.75*
50-54	**3.50**	**7.57**	*11.06*	**5.30**	**5.45**	*10.75*
55-59	**2.60**	**4.54**	*7.14*	**4.18**	**4.05**	*8.23*
60-64	**3.31**	**2.55**	*5.86*	**2.61**	**2.29**	*4.90*
Total	**41.37**	**58.63**	*100.00*	**47.28**	**52.72**	*100.00*

**Provisional figures obtained from the C&SD*

In view of the demographic differences between this sample and the population, weighting was applied to gender and age in order to make the results more representative of the general population. The weights are the ratio of the age and gender distribution of the population to that of this sample (Table 2.9b).

Table 2.9b: Weights by age and gender applied in the analyses

Age	Male	Female
18-24	0.694163595	0.823710543
25-29	1.195790042	1.294745541
30-34	1.291101655	1.126863970
35-39	1.348310663	0.878195551
40-44	1.088437065	0.704334602
45-49	1.482978059	1.124728449
50-54	1.515968809	0.720055541
55-59	1.607324699	0.892985863
60-64	0.787822709	0.896946565
Age data missing	1.000000000	1.000000000

Statistical tests were applied to study the significant differences between sub-groups. Associations between selected demographic information and responses of selected questions were examined. Significance testing was conducted at the 5% level (2-tailed). The statistical software, SPSS for Windows version 12.0, was used to perform all statistical analyses.

Chapter 3 Findings of the Survey

This chapter presents the findings of this survey after weighting for gender and age. Some percentages in the figures may not add up to the total or 100% because of rounding.

3.1 Demographics

This section briefly describes the characteristics of respondents in this survey (Table 3.1).

3.1.1 Gender and age

Weighting was applied to gender and age in the survey such that the distribution of gender and age reported in Table 3.1 matches the Hong Kong population data compiled by the C&SD for mid-2005 (Table 2.9a).

3.1.2 Marital status

Over half of all respondents (56.0%) were married with child/children and 7.7% were married without child. Around one-third (31.9%) were never married, while 3.5% were divorced or separated. There were also 1.0% of the respondents widowed.

3.1.3 Educational attainment

A larger proportion of the respondents had an education level of secondary or above. 39.7% had either completed secondary (F.5) or matriculation. 30.4% attained tertiary education or above while the rest (29.9%) had an education level of lower secondary or below.

3.1.4 Occupation

One-third of the respondents were not working (33.8%). This included 6.6% students and 17.5% homemakers, 4.5% unemployed and 5.1% retired persons or other non-working persons.

For working respondents, the largest portion was clerks (15.7%), followed by professionals (8.3%) and associate professionals (8.2%).

3.1.5 Income

Respondents more commonly had a monthly personal income within $10,000-$19,999 (40.2%) or below $10,000 (31.0%).

In terms of monthly household income, a larger proportion of the respondents were from the category of $10,000-$19,999 (27.6%), followed by $30,000-$49,999 (21.4%).

Table 3.1: Demographic information (D1 - D10)[7]

Gender	**Base =2 168**
Male	47.1%
Female	52.9%
Age	**Base = 2 115**
18-24	13.0%
25-29	9.9%
30-34	11.9%
35-39	12.8%
40-44	14.7%
45-49	13.8%
50-54	10.8%
55-59	8.2%
60-64	4.9%
Marital Status	**Base = 2 151**
Never married	31.9%
Married and with child	56.0%
Married and without child	7.7%
Divorced/ separated	3.5%
Widowed	1.0%
Educational Attainment	**Base = 2 157**
Primary or below	13.3%
Had not completed secondary	16.6%
Completed secondary (F.5)	31.3%
Matriculation	8.4%
Tertiary or above	30.4%

Occupation	**Base = 2 129**
Employer/ Manager/ Administrator	7.9%
Professional	8.3%
Associate professional	8.2%
Clerk	15.7%
Service worker	7.5%
Shop sales worker	3.6%
Skilled agricultural/ fishery worker	0.5%
Craft and related worker	3.3%
Plant and machine operator and assembler	5.8%
Unskilled worker	5.4%
Student	6.6%
Home-maker	17.5%
Unemployed person	4.5%
Retired person or other non-working person	5.1%
Monthly Personal Income	**Base =1 246**
Below $ 10,000	31.0%
$10,000-$19,999	40.2%
$20,000-$29,999	13.8%
$30,000-$49,999	9.7%
$50,000 or above	5.3%
Monthly Household Income	**Base =1 651**
Below $ 10,000	15.0%
$10,000-$19,999	27.6%
$20,000-$29,999	19.4%
$30,000-$49,999	21.4%
$50,000 or above	16.6%

[7] Refer to the question number in the survey questionnaire, see Appendix A.

3.2 Body weight control

Fourteen questions were asked in this section to ascertain the respondents' height, weight, waist circumference and their weight controlling methods. According to respondents' reported height and weight, their Body Mass Index (BMI) was derived and classified to assess their weight status according to the World Health Organization (WHO) classifications (both European and Asian Standards).

Those respondents with a body height out of the suggested range 100-190 cm or body weights out of the suggested range 37-120kg, they would be treated as outliers and excluded from height, weight and BMI analyses. A total of six cases were treated as outliers. Furthermore, seventy-six cases were excluded from the BMI analyses due to missing data for height or weight.

3.2.1 Height (when not wearing shoes)

The height of the respondents when not wearing shoes ranged from 125.5 to 190.0cm. More than one third of respondents (36.2%) were within the range from 160.0 to less than 170.0 cm, followed by 34.8% in the range from 150.0 to less than 160.0 cm. The overall mean and median heights were 162.9cm and 162.5cm respectively (Table 3.2.1).

Table 3.2.1: Height distribution of respondents (percentage, mean and median) (Q1a)

Height (cm)	Number	% of Total
Less than 150.0	48	2.3%
150.0 – <160.0	736	34.8%
160.0 – <170.0	765	36.2%
170.0 – <180.0	481	22.8%
180.0 or above	82	3.9%
Total	***2 113****	***100.0%***
Other statistics	**cm**	
Mean	162.9	
Median	162.5	

**All respondents excluding outliers, 'don't know' and refusal*

3.2.2 Weight (wearing light clothes)

The weight of the respondents when wearing light clothes ranged from 38.0 to 105.0 kg. More than one-third of the respondents (38.3%) fell into the weight range from 50.0 to less than 60.0 kg, followed by 24.2% of the respondents in the range from 60.0 to less than 70.0 kg. As a whole, the mean and median weights were 60.1kg and 59.0kg respectively (Table 3.2.2).

Table 3.2.2: Weight distribution of respondents (percentage, mean and median) (Q1b)

Weight (kg)	Number	% of Total
Less than 40.0	5	0.3%
40.0 – <50.0	358	16.8%
50.0 – <60.0	815	38.3%
60.0 – <70.0	515	24.2%
70.0 – <80.0	270	12.7%
80.0 or above	162	7.6%
Total	***2 125****	***100.0%***
Other statistics	**kg**	
Mean	60.1	
Median	59.0	

**All respondents excluding outliers, 'don't know' and refusal*

3.2.3 Waist circumference

The waist circumference of the respondents ranged from 50.0 to 110.0cm. More respondents had their waist circumference in the range from 70.0 to less than 80.0 cm (41.5%). The overall mean and median waist circumferences were 74.1 and 72.5cm respectively (Table 3.2.3).

Table 3.2.3: Waist circumference distribution of respondents (percentage and mean, median) (Q1c)

Waist circumference (cm)	Number	% of Total
Less than 60.0	19	0.9%
60.0 – <70.0	587	28.4%
70.0 – <80.0	860	41.5%
80.0 – <90.0	469	22.6%
90.0 or above	136	6.6%
Total	***2 071****	***100.0%***
Other statistics	**cm**	
Mean	74.1	
Median	72.5	

**All respondents excluding outliers, 'don't know' and refusal*

3.2.4 Body Mass Index (BMI)

BMI scores were derived from weight and height by the following formula:

BMI = body weight (kg) / [height (m)]^2

3.2.5 Weight status by WHO classification

According to WHO's standard European and Asian classification of weight status, respondents were classified into four categories of weight status as in Table 3.2.5a and Table 3.2.5b respectively.

Using the European standard, more than two-thirds of the respondents (68.5%) were classified as 'normal'. 'Overweight' and 'obese' respondents represented 18.2% and 3.4% of the sample respectively, while the rest (10.0%) were regarded as 'underweight'.

When using the Asian standard, slightly less than half of the respondents (49.0%) was classified as 'normal'. Whie 21.5% of the respondents were considered 'obese', 19.5% were regarded as 'overweight'. The rest (10.0%) was considered as 'underweight'.

Table 3.2.5a: WHO classification for weight status (European standard) (Q1a,Q1b)

Weight status by WHO classifications	BMI score	Number	% of Total
Underweight	BMI < 18.5	208	10.0%
Normal	BMI 18.5 – <25.0	1 430	68.5%
Overweight	BMI 25.0 – <30.0	379	18.2%
Obese	BMI ≥ 30.0	70	3.4%
	Total	***2 087****	***100.0%***

**All respondents excluding outliers and missing data for height or weight*

Table 3.2.5b: WHO classification for weight status (Asian standard) (Q1a,Q1b)

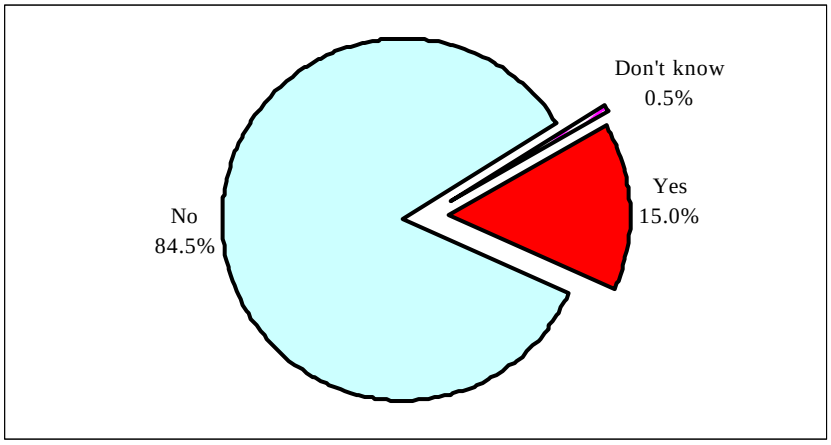
Weight status by WHO classifications	BMI score	Number	% of Total
Underweight	BMI < 18.5	208	10.0%
Normal	BMI 18.5 – <23.0	1 023	49.0%
Overweight	BMI 23.0 – <25.0	407	19.5%
Obese	BMI ≥ 25.0	450	21.5%
	Total	***2 087****	***100.0%***

**All respondents excluding outliers and missing data for height or weight*

3.2.6 Weight difference from one year ago

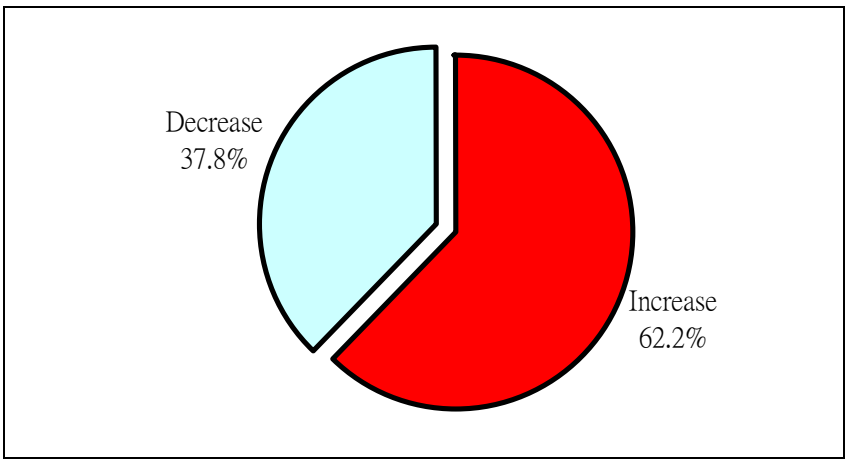
When respondents were asked whether they had a weight difference of more than 10 pounds when compared with one year ago, 84.5% of them did not report such a difference and 15.0% did so (Fig. 3.2.6a). Of the respondents who had such a weight difference, about two-thirds (62.2%) and 37.8% claimed to have a weight increase and reduction of more than 10 pounds respectively (Fig. 3.2.6b).

Fig. 3.2.6a: Weight differed by more than 10 pounds when compared with one year ago (Q2a)



Base: All respondents excluding outliers

Fig. 3.2.6b: Weight increased or decreased by more than 10 pounds when compared with last year (Q2b)



Base: Respondents who had a weight difference of more than 10 pounds when compared with one year ago = 324

3.2.7 Perception of current weight status

More than half of the respondents (52.6%) perceived their current weight status as 'just right'. 38.1% felt they were 'overweight' and only 9.2% found themselves 'underweight' (Table 3.2.7a).

Table 3.2.7a: Perception of current weight status (Q3)

Perception of current weight	Number	% of Total
Overweight	825	38.1%
Just right	1 139	52.6%
Underweight	199	9.2%
Total	***2 163****	***100.0%***

** All respondents excluding outliers*

Table 3.2.7b shows the differences of weight status between the classification of the WHO (Asian standard) and the respondents' perception. More than half of the respondents (52.6%) viewed their weight status as 'just right' but 49.0% of the respondents were actually 'normal' under the WHO classification (Asian standard). Similarly, 38.3% of the respondents perceived themselves as 'overweight', but in fact 41.0% were classified as 'overweight' or 'obese' according to the WHO criteria (Asian standard).

Table 3.2.7b: Comparison of weight status between WHO classification (Asian standard) and respondents' perception of their current weight (Q1a, Q1b, Q3)

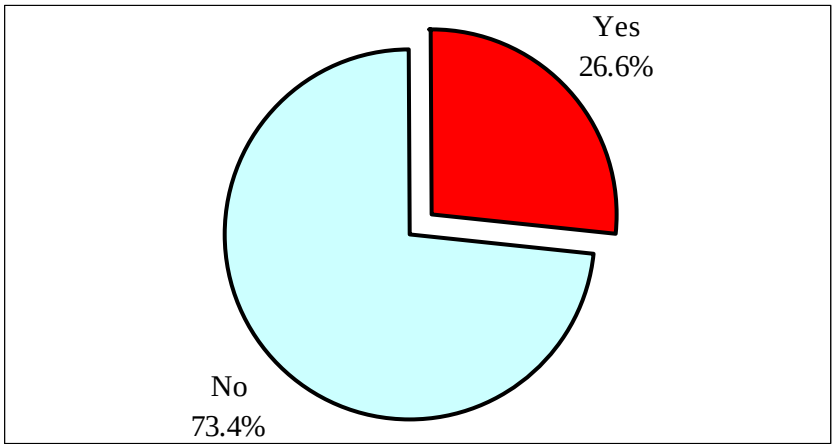
Cross-tabulation		Weight status by WHO classification (Asian standard)				
		Underweight	**Normal**	**Overweight**	**Obese**	***Total***
Respondents' perception of current weight	**Overweight**	10	213	232	345	**799**
	% of Total	0.5%	10.2%	11.1%	16.5%	**38.3%**
	Just right	121	705	171	102	**1 099**
	% of Total	5.8%	33.8%	8.2%	4.9%	**52.6%**
	Underweight	77	105	4	3	**190**
	% of Total	3.7%	5.0%	0.2%	0.1%	**9.1%**
	Total	**208**	**1 023**	**407**	**450**	**2 087**
	% of Total	**10.0%**	**49.0%**	**19.5%**	**21.5%**	**100.0%**

**All respondents excluding refusal, outliers and missing responses either in the question of perception about current weight or the weight status by WHO classification. The percentages of respondents' perception of current weight are slightly different from Table 3.2.7a since the bases are different.*

3.2.8 Weight control

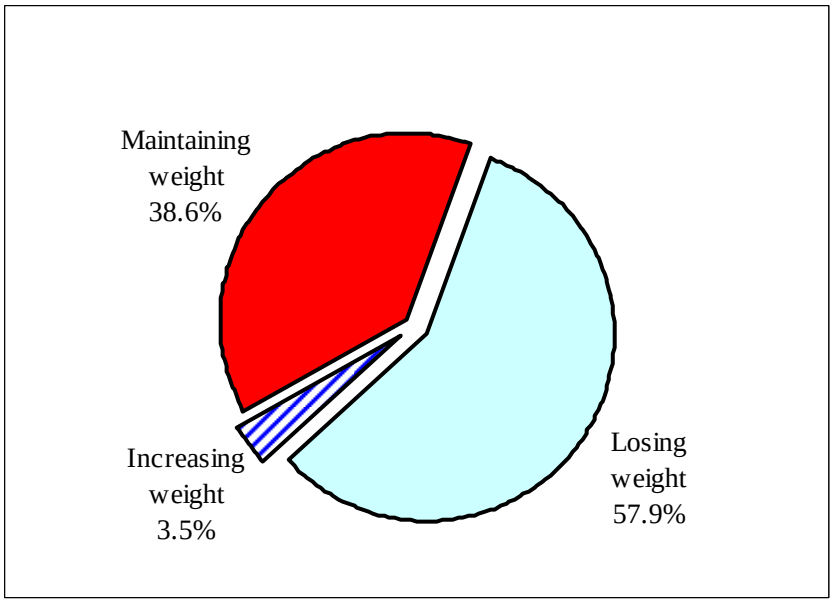
During the 12 months prior to the survey, slightly more than one quarter of the respondents (26.6%) had done something deliberately to control their weight (Fig. 3.2.8a). Among these respondents, 57.9% of them aimed to lose weight, 38.6% aimed to maintain weight and 3.5% reported trying to increase weight (Fig. 3.2.8b).

Fig. 3.2.8a: Controlling weight deliberately in 12 months prior to the survey (Q4a)



Base: All respondents

Fig. 3.2.8b: Purpose of controlling weight (Q4b)

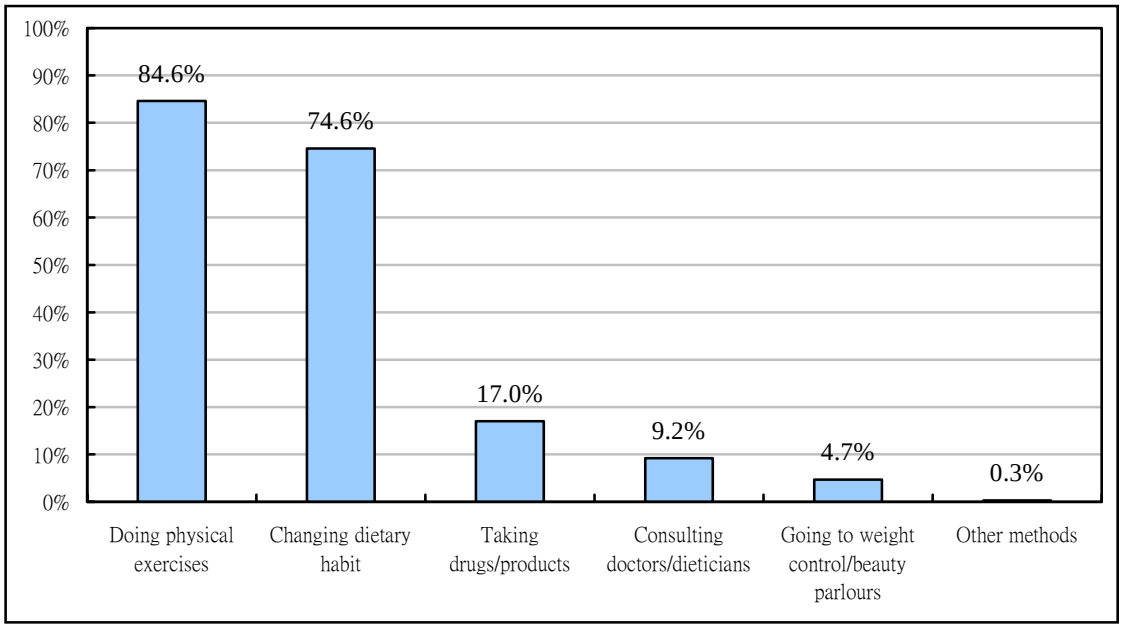


Base: Respondents who had deliberately controlled their weight = 578

3.2.9 Methods adopted to control weight

The most commonly used methods reported by respondents who intended to control weight were ‘doing physical exercise’ (84.6%) and ‘changing dietary habits’ (74.6%). The other less frequently mentioned methods included ‘taking drugs/products’ (17.0%), ‘consulting doctors/dieticians’ (9.2%) and ‘going to weight control/beauty parlours’ (4.7%) (Fig. 3.2.9).

Fig. 3.2.9: Methods used to control weight (Q5a-f)



Base: Respondents who had deliberately controlled their weight = 578 (multiple responses)

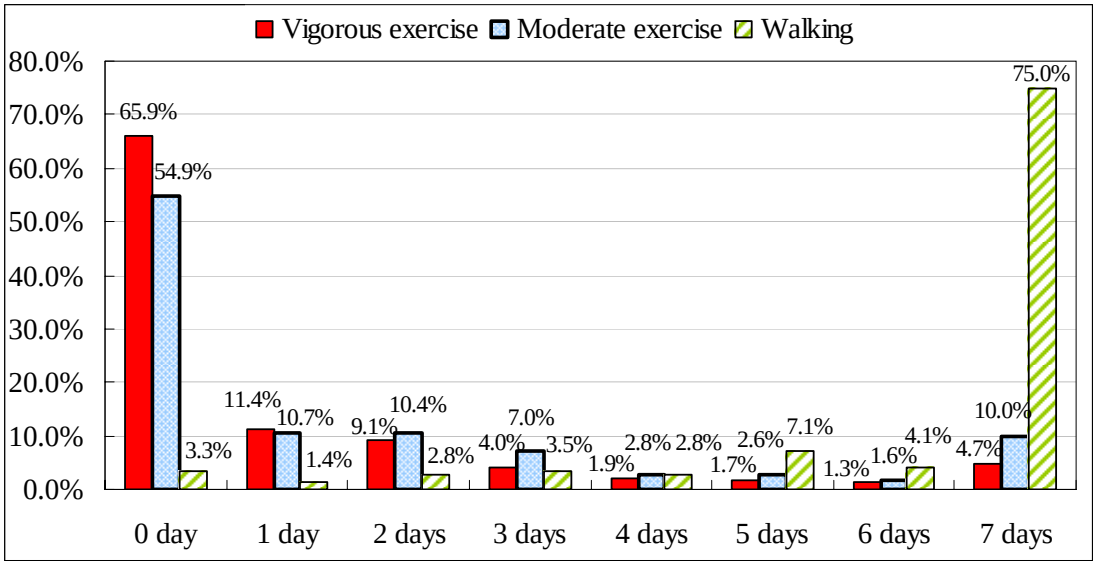
3.3 Eexercise/Physical activities

The questions about physical activities covered in this survey (see Annex A, Q6 – Q12) were adapted from the International Physical Activity Questionnaire (IPAQ) short form. Seven questions were asked to understand the frequency and duration with which respondents engaged in exercise/physical activities [8]. All the reported exercise/physical activities lasted for at least 10 minutes and were based on their experiences during the seven days prior to the survey.

3.3.1 Frequency of physical activities per week

On a weekly basis, walking appeared to be far more prevalent than vigorous and moderate physical activities. Three-quarters (75.0%) of the respondents spent at least 10 minutes walking every day of the week prior to the survey. In contrast, slightly more than one-third of the respondents (34.1%) reported spending at least one day in the week prior to the survey engaged in vigorous physical activities and less than half (45.1%) of the respondents engaged in moderate physical activities (Fig. 3.3.1a).

Fig. 3.3.1a: Number of days per week spent on doing each type of physical activities in the week prior to the survey (Q6, 8 & 10)



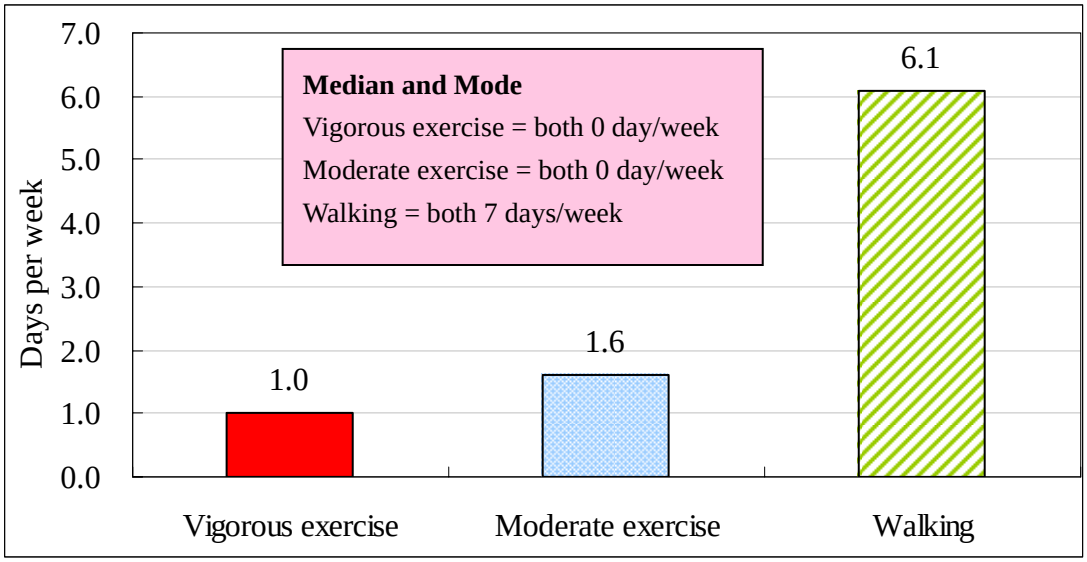
Base: All respondents excluding 'don't know'. (Vigorous exercise = 2 162; Moderate exercise = 2 159; Walking = 2 166)

[8] Respondents were informed of the definitions of vigorous physical activities, moderate physical activities and walking. Vigorous physical activities are defined as those that make people breathe much harder than normal, for example aerobics, football, swimming, heavy physical work and jogging. Moderate physical activities are defined as those that make people breathe somewhat harder than normal, for example biking, washing cars/polishing, fast walking and cleaning windows. Walking includes walking to work or school, walking to travel from place to place and walking for leisure. All the questions about vigorous exercise, moderate exercise and walking only referred to those activities on which the respondents had spent at least 10 minutes at a time.

Fig. 3.3.1b shows the weekly average, i.e., the average number of days during the seven days prior to the survey engaged in walking, moderate or vigorous exercise/physical activities for at least 10 minutes.

Walking is the most common physical activity, with the respondents, on average, walking 6.1 days per week. Less days were spent on vigorous and moderate physical activities in a week. The average number of days per week for these two physical activities was 1.0 and 1.6 respectively. In addition, the median and mode values for both vigorous and moderate physical activities were both zero days while those for walking were both seven days per week.

Fig. 3.3.1b: Weekly average number of days spent on different types of physical activities with median and mode (Q6, 8 & 10)



Base: All respondents excluding 'don't know'. (Vigorous exercise = 2 162; Moderate exercise = 2 159; Walking = 2 166)

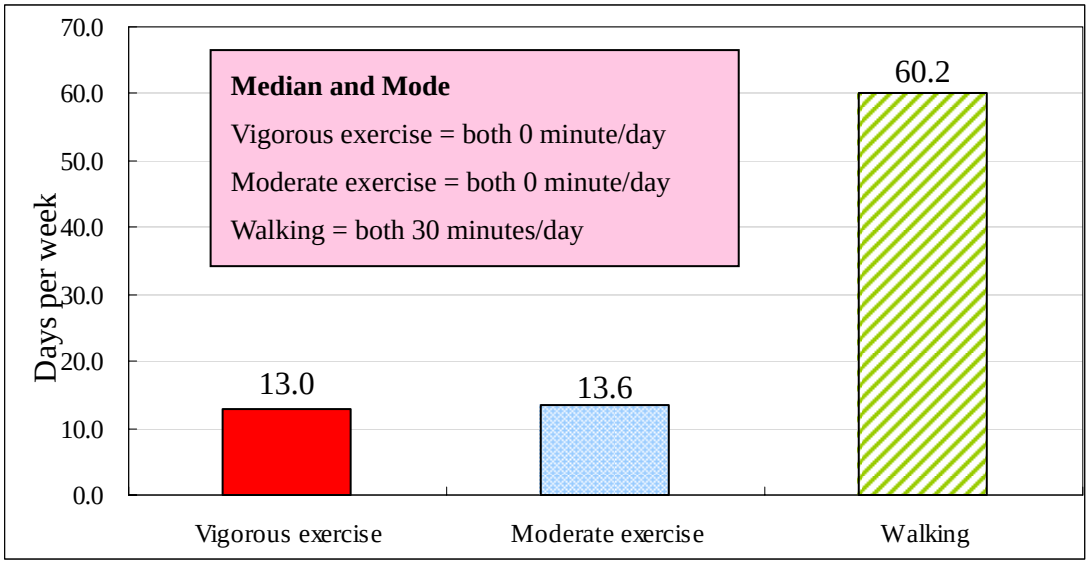
3.3.2 Daily average time spent on exercise/physical activities[9]

The average time per day spent on each type of physical activity was 13.0 and 13.6 minutes for vigorous and moderate physical activities respectively, and 60.2 minutes for walking. The median and mode average time spent per day were both zero minute for vigorous and moderate physical activities and both 30 minutes for walking (Fig. 3.3.2a).

The proportions of all respondents spending a daily average of 31 minutes or more time on vigorous physical activities, moderate physical activities and walking were 8.6%, 9.5% and 40.4% respectively (Table 3.3.2b).

[9] The daily average minutes spent on each type of exercise was computed by multiplying the average number of days engaged in each type of exercise on a weekly basis and the average minutes of time spent on each type of exercise on those days they have done exercise and then divided by 7 days. Vigorous exercise: (Q6xQ7)/7; Moderate exercise: (Q8xQ9)/7; Walking: (Q10xQ11)/7.

Fig 3.3.2a: Daily average minutes spent on different types of exercise and median and mode (Q6, 7, 8, 9, 10 and 11)



Base: All respondents excluding 'don't know'. (Vigorous exercise = 2 155; Moderate exercise = 2 149; Walking = 2 088)

Table 3.3.2b: Daily average time spent on doing different types of exercise (Q6, 7, 8, 9, 10 and 11)

Minutes	Vigorous exercise		Moderate exercise		Walking	
	Number	% of Total	Number	% of Total	Number	% of Total
Below 10	1 725	80.0%	1 595	74.2%	204	9.8%
10 – <16	75	3.5%	120	5.6%	248	11.9%
16 – <31	170	7.9%	231	10.7%	791	37.9%
31 – <61	111	5.2%	115	5.4%	441	21.1%
61 or above	75	3.5%	88	4.1%	403	19.3%
Total	***2 155****	***100.0%***	***2 149****	***100.0%***	***2 088****	***100.0%***

**All respondents excluding 'don't know'. (Vigorous exercise = 2 155; Moderate exercise = 2 149; Walking = 2 088)*

3.3.3 Sitting[10]

Respondents were asked how much time per day on average they spent on sitting during weekdays (Monday to Friday) in the week prior to the survey. Table 3.3.3 indicates that 53.8% of the respondents sat for at least six hours per day. On weekdays (Monday to Friday), respondents spent an average of 6.3 hours per day sitting. The median and mode were six and ten hours respectively.

[10] Sitting includes time spent sitting at work, at home, visiting friends, reading, travelling on public transport and lying down to watch television.

Table 3.3.3: Average time spent on sitting per day during weekdays in the week prior to the survey (percentage, mean, median and mode) (Q12)

Sitting Hours	Number	% of Total
Below 2	108	5.2%
2 – <4	382	18.6%
4 - <6	460	22.3%
6 - <8	328	16.0%
8 - <10	338	16.4%
10 or above	442	21.5%
Total	***2 058****	***100.0%***

Other statistics	Hours
Mean	6.3
Median	6.0
Mode	10.0

**All respondents excluding 'don't know' and outliers*

3.3.4 Analysis of the International Physical Activity Questionnaire

The analysis in this section is based on the guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ) – Short Form (revised November 2005)[11]. A copy of the guidelines is enclosed in Annex B. The age range of respondents of this survey (18-64) is within the age criteria of the IPAQ analysis, i.e., 15-69. The analysis of the IPAQ short form provides two indicators of physical activity, namely categorical and continuous indicators.

According to the IPAQ data processing and cleaning rules, one hundred and eight cases were excluded from this part of analyses for being classified as outliers, 'don't know' and 'refusal'.

[11] This document for data processing and analysis of the IPAQ is available on the website: http://www.ipaq.ki.se.

3.3.4.1 Categorical scoring

The categorical score comprises three levels of physical activity, namely 'low', 'moderate' and 'High' (Health enhancing physical activity, a high active category). Table 3.3.4.1 details the criteria of classification.

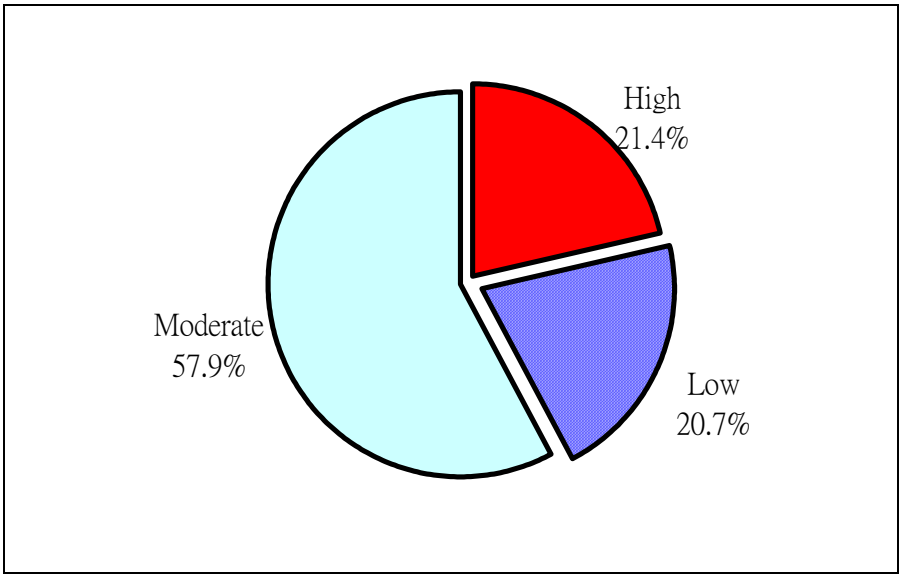
Table 3.3.4.1: Categorical scoring classification of physical activity

Level of physical activity	Categorical scoring classification criteria
Low	▪ No activity is reported OR ▪ Some activity is reported but not enough to meet Categories 'Moderate' or 'High'
Moderate	Any one of the following 3 criteria ▪ 3 or more days of vigorous-intensity activity of at least 20 minutes per day OR ▪ 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR ▪ 5 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of at least 600 MET-min/week
High	Any one of the following 2 criteria ▪ Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week OR ▪ 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of at least 3000 MET-minutes/week

Note: MET = multiples of resting metabolic rate.
Source: Guidelines for data processing and analysis of the IPAQ – short form

According to the classification criteria listed in Table 3.3.4.1, more than half of the respondents (57.9%) in this survey were classified as having 'moderate', 21.4% having 'high' and 20.7% having 'low' level of physical acitivty (Fig. 3.3.4.1).

Fig. 3.3.4.1: Classification of respondents' physical activity level (Q6-Q11)



Base: All respondents excluding 'don't know', 'refusal' and outliers according to the data processing rules of the IPAQ analysis guidelines = 2 060.

3.3.4.2 Continuous scoring

Continuous scoring is another measurement of physical activity suggested in the IPAQ - short form guidelines. This is achieved by weighting each type of activity by its energy requirements defined in METs (METs are multiples of the resting metabolic rate) to yield a score in MET-minutes. A MET-minute score[12] is computed by multiplying the MET by the minutes performed. MET-minute scores are equivalent to kilocalories for a 60 kilogram person. Kilocalories can be computed from MET-minutes using the following equation: MET-minute x (weight in kilograms/60 kilograms). The selected MET values were derived from work undertaken during the IPAQ Reliability Study conducted in 2000-2001. This study yielded MET values for the three types of activity, namely 'walking'= 3.3 METs, 'moderate physical activity = 4.0 METs and 'vigorous physical activity' = 8.0 METs. These MET values are used for the continuous scoring analysis of IPAQ data in this part.

More specifically, the continuous score for each type of physical activity was computed according to the formula and examples in Table 3.3.4.2a.

[12] Source of information: Guideline for data processing and analysis of the IPAQ

Table 3.3.4.2a: Continuous score computation

MET-min per week for each activity	= (MET level) x (min of activity) x (events per week)
Total MET-min per week	= (Walk METs x min x days) + (Moderate PA METs x min x days) + (Vigorous PA METs x min x days)
Example:	***Given:*** *MET-min/week for 30 min episodes, 5 times/week, MET levels for walking = 3.3METs, Moderate PA= 4.0METs and Vigorous PA= 8.0METs*
MET-min/week for walking	= 3.3 x 30 x 5 = 495 MET-min/week
MET-min/week for Moderate PA	= 4.0 x 30 x 5 = 600 MET-min/week
MET-min/week for Vigorous PA	= 8.0 x 30 x 5 = 1,200 MET-min/week
Total MET-min/week	Total = 2 295 MET-min/week

Note: PA = physical activity
Source: Guidelines for data processing and analysis of the IPAQ – short form

As suggested by the IPAQ – short form guidelines, the continuous indicator is presented as median minutes or median MET-minutes rather than mean minutes or mean MET-minutes given the non-normal distribution of energy expenditure in many populations. However, median scores (unlike mean scores) are not additive, so the median score is not the sum of the median scores for each type of physical activity.

Table 3.3.4.2b shows the medians of the continuous scores for each type of physical activities. The medians for vigorous physical activity and moderate activity were both 0 while the median for walking was 693 MET-minutes per week. The median score of these three activities combined was 1 293 MET-minutes per week.

Table 3.3.4.2b: Medians of the IPAQ continuous score for each type of physical activity (Q6-Q11)

Statistics	Continuous Score (MET-minutes/week)			
	Vigorous exercise	Moderate exercise	Walking	**Total**
Median	0	0	693	1293

**All respondents excluding 'don't know', 'refusal' and outliers according to the data processing rules of the IPAQ analysis guideline (Vigorous exercise = 2 155; Moderate exercise = 2 149; Walking = 2 088)*

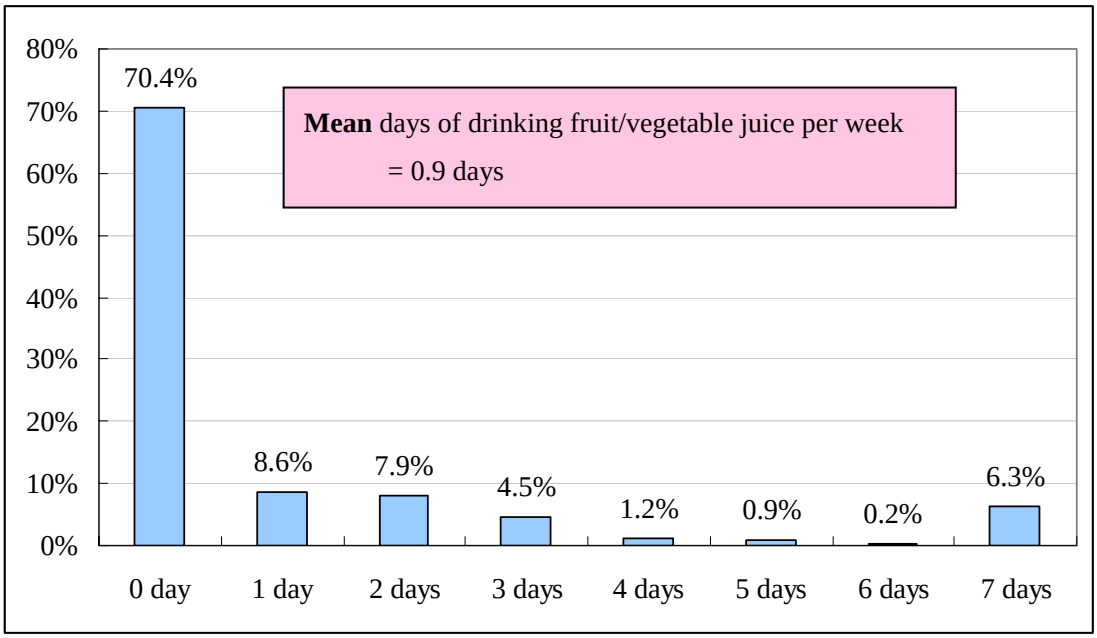
3.4 Dietary habits

Six questions were asked in this section to gauge respondents' dietary habits with particular reference to the consumption of fruit/vegetable juice[13], fruit and vegetables.

3.4.1 Frequency of consuming fruit/vegetable juice per week

More than two-thirds of the respondents (70.4%) did not consume any fruit/vegetable juice during the week prior to the survey. Only 6.3% of the respondents drank fruit/vegetable juice on a daily basis. The average days per week in which the respondents drank fruit/vegetable juice was 0.9 days (Fig 3.4.1).

Fig. 3.4.1: Number of days in the week when respondents drank fruit/vegetable juice (Q13a)



Base: All respondents excluding 'don't know' and outliers = 2 158

3.4.2 Amount of fruit/vegetable juice drunk per day

Most respondents (92.9%) had drunk an average of less than one cup (250 ml) of fruit/vegetable juice per day in the week. The average cups of fruit/vegetable juice that respondents drank per day was 0.2 cups (about 50 ml). (Table 3.4.2)

[13] Fruit/vegetable juice refers to freshly squeezed juice or those labelled 100% or pure fruit/vegetable juice.

Table 3.4.2: Daily average amount of fruit/vegetable juice drunk (Q13b)

Average no. of cups of fruit/vegetable juice drunk per day	No. of respondents	
	Number	% of Total
Less than 1	2 000	92.9%
1 – 2	148	6.9%
More than 2	5	0.2
Total	***2 153****	***100.0%***
Mean	0.2 cups	

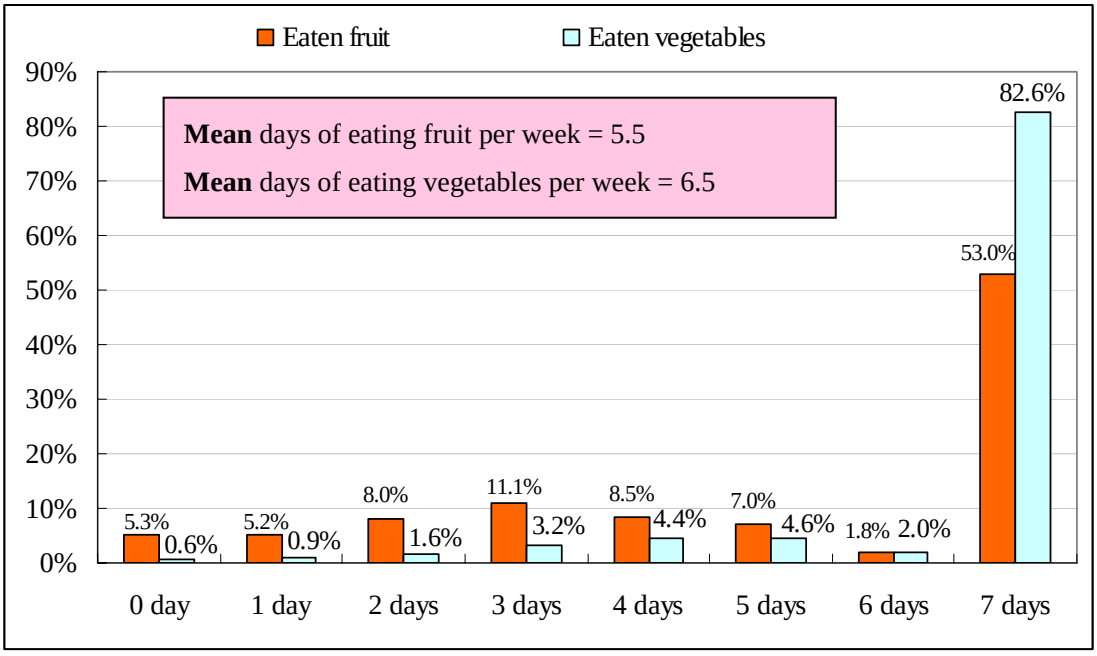
**All respondents excluding 'don't know'*

3.4.3 Frequency of consuming fruit and vegetables per week

Vegetables appeared to be more frequently consumed than fruit by the respondents. Fig. 3.4.3 shows that the majority of the respondents (82.6%) had consumed vegetables on a daily basis. In contrast, only slightly more than half of the respondents (53.0%) had eaten fruit on a daily basis. Furthermore, the proportion of respondents consuming no fruit at all during the week (5.3%) was much higher than that for vegetables (0.6%) (Fig. 3.4.3).

The overall average number of days per week in which the respondents consumed vegetables was 6.5 days, which is more than the corresponding figure for consuming fruit (5.5 days).

Fig. 3.4.3 Number of days in the week when respondents ate fruit and vegetables (Q14a, Q15a)



Base: All respondents = 2 168

3.4.4 Amount of fruit and vegetables eaten per day[14]

On a daily basis, nearly half of the respondents (44.2%) consumed less than one portion of fruit and less than one-third (29.5%) ate less than one bowl of vegetables on average. Overall, the daily average amount consumed was just 1.0 piece of fruit and 1.2 bowls of vegetables (Table 3.4.4).

Table 3.4.4: Daily average amount of fruit/vegetable eaten (Q14a, Q14b, Q15a and Q15b)

Average no. of fruit/bowl of vegetables eaten per day	No. of respondents			
	Fruit		Vegetables	
	Number	% of Total	Number	% of Total
Less than 1	957	44.2%	635	29.5%
1 – 2	1 105	51.1%	1 410	65.5%
More than 2	102	4.7%	107	5.0%
Total	***2 163****	***100.0%***	***2 152****	***100.0%***
Mean	1.0 fruit		1.2 bowls of vegetables	

**Base: All respondents excluding 'don't know' and 'refusal'. (Eating fruit = 2163; Eating vegetables = 2 152)*

3.4.5 The total number of servings of fruit and vegetables consumed per day

The WHO recommends that adults should eat at least five servings of fruit and vegetables per day or a daily intake of at least 400 grams of fruit and vegetables, to obtain optimal health benefits[15].

Total servings excluding fruit/vegetable juice

The number of servings of fruit and vegetables consumed per day in this section was defined as the sum of the average number of fruit eaten per day and twice the average number of bowl of vegetables eater per day (i.e. 1 piece of fruit was equated to 1 serving and 1 bowl of cooked vegetables was equated to 2 servings).

It was found that, only 19.1% of the respondents ate 5 or more servings of fruit and vegetables per day. The mean and median numbers of servings were 3.4 and 3.0 respectively (Table 3.4.5a).

[14] Respondents were informed that a portion of fruit was defined as one fruit equal in size to a medium sized apple or orange, one banana, two apricots or plums, or one bowl of small fruit like grapes or strawberries. A portion of vegetables was defined in terms of a bowl where one bowl refers to the size of a rice bowl. The average number of fruit eaten per day is calculated by: (the average number of days eating fruit per week x the average portion of fruit eaten on those days)/ 7. Similarly, the average number of bowls of vegetables eater per day is calculated by: (the average number of days eating vegetables per week x the average number of bowls of vegetable eaten on those days) / 7.

[15] Fruit, vegetables and NCD disease prevention. Geneva: World Health Organization; 2003. (http://www.who.int/dietphysicalactivity/media/en/gsfs_fv.pdf)

Table 3.4.5a: Number of servings of fruit and vegetables consumed per day (percentage, mean and median) (Q14a, Q14b, Q15a and Q15b)

No. of servings (excluding juice)	**No. of respondents**	
	Number	**% of Total**
Less than 3	913 (0 serving = 5)	42.5% (0 serving =0.2%)
3 - <5	824	38.3%
5 or above	411	19.1%
Total	***2 148****	***100.0%***
	No. of servings of fruit and vegetables eaten per day	
Mean	3.4 servings	
Median	3.0 servings	

**All respondents excluding 'don't know' and 'refusal' for either question*

Total servings including fruit/vegetable juice

The total number of servings of fruit and vegetables consumed per day in this section was defined as the sum of the average number of fruit eaten per day and twice the average number of bowl of vegetables eaten per day (i.e. 1 piece of fruit was equated to 1 serving and 1 bowl of cooked vegetables was equated to 2 servings) and the average cups of fruit/ vegetable juice drunk per day (but fruit/vegetable juice only counted as 1 serving, regardless of how many cups of juice were drunk; less than 1 cup a day did not count[16]).

Overall, 20.2% of the respondents ate 5 or more servings of fruit and vegetables per day if fruit/vegetable juice was included in calculating the total servings per day. The mean and median numbers of servings were 3.5 and 3.0 respectively (Table 3.4.5b).

Table 3.4.5b: Number of servings of fruit and vegetables consumed per day (percentage, mean and median) (Q13a, Q13b, Q14a, Q14b, Q15a and Q15b)

No. of servings (including juice)	**No. of respondents**	
	Number	**% of Total**
Less than 3	873 (0 serving = 4)	40.9% (0 serving = 0.2%)
3 - <5	829	38.9%
5 or above	431	20.2%
Total	***2 133****	***100.0%***
	No. of servings of fruit and vegetables eaten per day	
Mean	3.5 servings	
Median	3.0 servings	

**All respondents excluding 'don't know', 'refusal' and outliers for either question*

[16] Juice (fruit or vegetable) only counted as 1 serving a day, regardless of how much is drunk, because it has very little fibre. It is also likely to lose some vitamins once juiced (particularly vitamin C, which is easily destroyed by light and air).

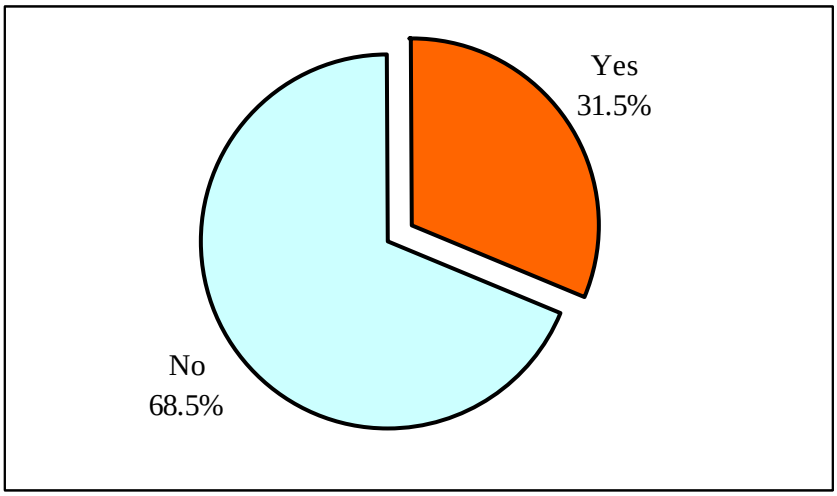
3.5 Pattern of alcohol consumption

Five questions were asked in order to understand respondents' alcohol drinking patterns and to assess if their drinking habits were within the low risk level defined by the British Alcohol Guidelines[17].

One case had reported the amount of standard drinks consumed out of the suggested range 0-24 standard units; therefore it was treated as an outlier and excluded from the analyses from sections 3.5.1 to 3.5.4.

Around one-third of the respondents (31.5%) consumed at least one alcoholic drink during the month prior to the survey (Fig. 3.5).

Fig. 3.5: Consumption of at least one alcoholic drink during the month prior to the survey (Q16a)



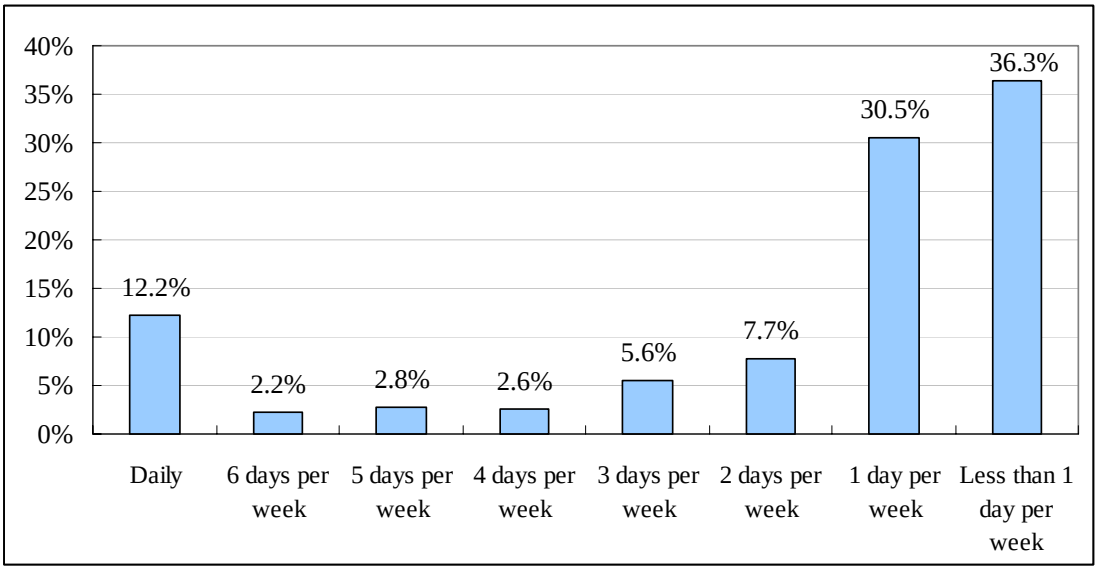
Base: All respondents = 2 168

3.5.1 Frequency of alcohol consumption

Alcohol drinkers were asked how many days per week they drank at least one alcoholic drink during the month prior to the survey. It was found that around one-eighth (12.2%) consumed at least one alcoholic drink daily; over two-third of the drinkers (66.8%) drank one day or less per week (Fig. 3.5.1).

[17] TheBritish Alcohol Guidelines: http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/AlcoholMisuse/AlcoholMisuseGeneralInformation/AlcoholMisuseGeneralArticle/fs/en?CONTENT_ID=4062199&chk=J782BY

Fig. 3.5.1: Frequency of drinkers consuming at least one alcoholic drink during the month prior to the survey (Q16b)



Base: All drinkers excluding 'don't know' and outliers = 658

3.5.2 Amount of alcoholic drinks consumed

Among those who drank at least one glass during the month prior to the survey, the average number of standard drinks[18] consumed on each drinking day was 2.5. The median was 1.5 standard drinks. Table 3.5.2 also shows that one-third of the drinkers (33.3%) drank 3 or more standard drinks on average on those drinking days during the month prior to the survey.

Table 3.5.2: Average number of standard drinks consumed on the days they drank alcohol (percentage, mean and median) (Q16c)

No. of standard drinks	No. of drinkers	
	Number	% of Total
Less than 3	448	66.7%
3 – <5	155	23.0%
5 or above	69	10.2%
Total	***672****	***100.0%***
Mean	2.5 standard drinks	
Median	1.5 standard drinks	

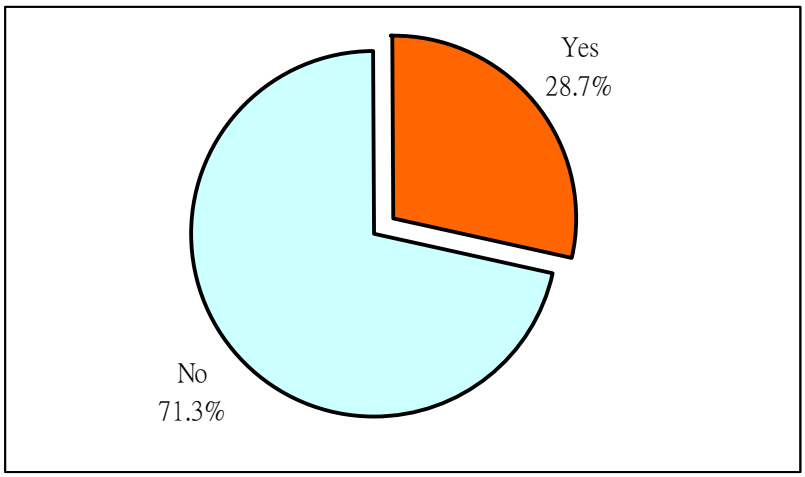
**All drinkers excluding 'don't know' and outliers = 672*

[18] The amount of drinks consumed was measured by the following standard units: one can or small bottle of beer is approximately equal to 1.5 standard drinks, or one standard drink is approximately equal to one dining glass of wine, or one spirit nip of brandy/whisky, or one small glass of Chines wine such as rice wine.

3.5.3 Drinking at least 5 glasses/cans of alcohol on one occasion (Binge drinking)

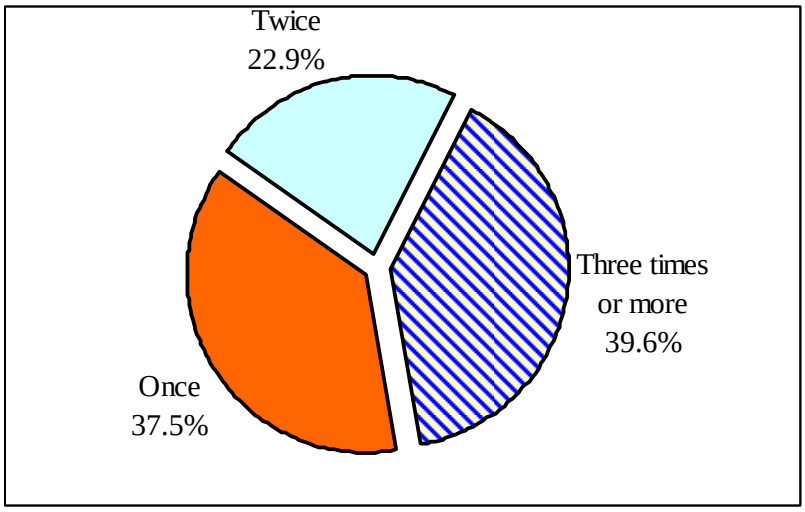
More than a quarter of the drinkers (28.7%) had consumed at least 5 glasses/cans of alcohol on one single occasion[19] during the month prior to the survey (Fig. 3.5.3a), of which about two-fifths (39.6%) had binge drinking three times or more，more than one-fifth (22.9%) had such experience twice and over one-third (37.5%) had such heavy consumption once during the month prior to the survey (Fig. 3.5.3b).

Fig. 3.5.3a: Consumption of at least 5 glasses (or cans) of alcohol by drinkers on one single occasion during the month prior to the survey (Q16d)



Base: All drinkers excluding outliers = 682

Fig. 3.5.3b: Frequency of consuming at least 5 glasses (or cans) of alcohol on one single occasion by heavy drinkers during the month prior to the survey (Q16e)



Base: Drinkers who drank at least 5 glasses or cans of alcohol on at least one occasion, excluding 'don't know' and outliers = 195

[19] Refer to total number of glasses/cans of any types of alcohol. One single occasion means a period of a few hours.

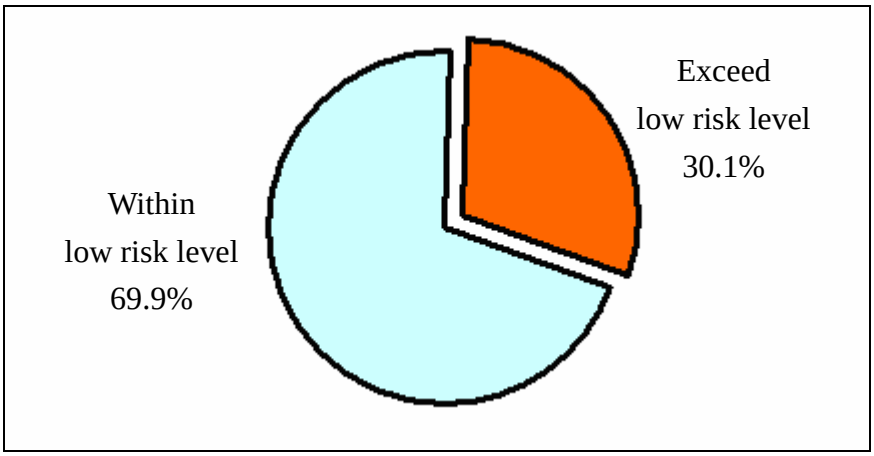
3.5.4 Drinking habits by low risk level

According to the classification of low risk level of drinking habits in the British Alcohol Guidelines (Table 3.5.4), more than two-thirds (69.9%) of the drinkers were found to drink within the low risk level (Fig. 3.5.4).

Table 3.5.4: Classification of low risk level of drinking habit by the British Alcohol Guidelines

Gender	British Alcohol Guidelines – classification of low risk level
Male	▪ No more than **4 standard drink**s a day, and ▪ At least **2 alcohol-free days** per week, and ▪ No more than **21 standard drinks** over a week[20]
Female	▪ No more than **2 standard drinks** a day, and ▪ At least **2 alcohol-free days** per week, and ▪ No more than **14 standard drinks** over a week[20]

Fig. 3.5.4: Classification of respondents' drinking habits (Q16a-Q16c)



Base: All drinkers excluding 'don't know' and outliers = 648

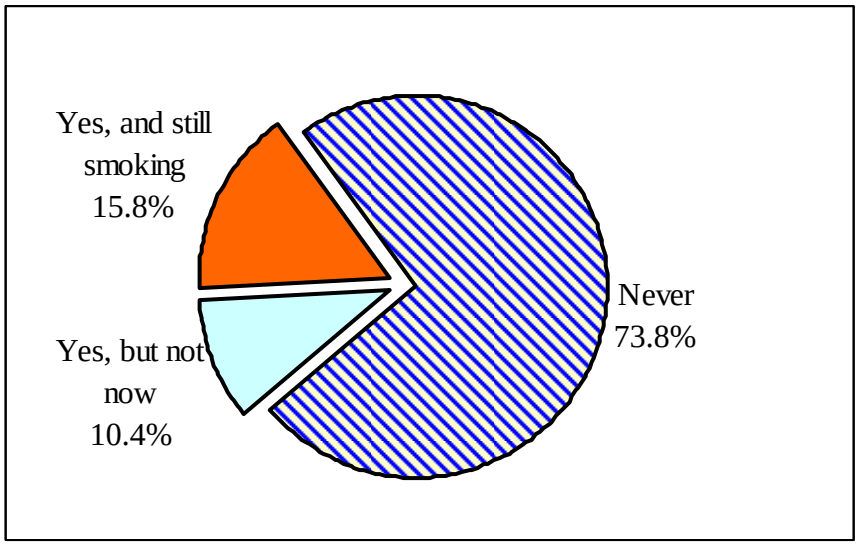
[20] The number of standard drinks per week was computed by multiplying 'weekly frequency in which drinkers drank at least one alcoholic drink during last month' (i.e. Q17b) and 'the number of standard drinks consumed each day on those drinking days' (i.e. Q17c). In Q17b, 0.5 day was used for 'less than one day per week' for the computations.

3.6 Smoking habits

Three questions were asked to understand respondents' smoking habits in this section.

Around three-quarters of the respondents (73.8%) reported that they had never smoked, 10.4% smoked in the past but now abstained and 15.8% of the respondents were current smokers (Fig. 3.6).

Fig. 3.6: Breakdown of smoking habits amongst respondents (Q17a)

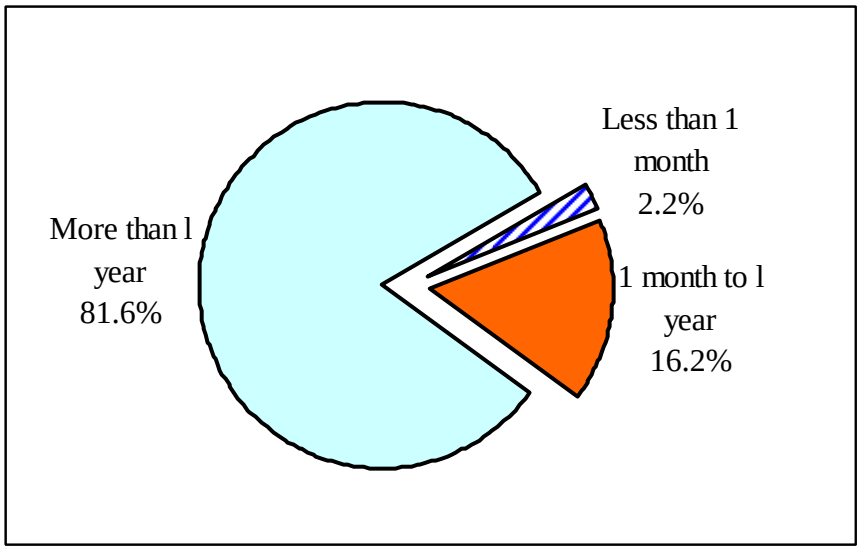


Base: All respondents = 2 168

3.6.1 Abstaining from smoking

Among those who smoked before but now abstained from smoking, the majority of them (81.6%) had given up smoking for more than one year (Fig 3.6.1).

Fig. 3.6.1: Length of time abstained from smoking (Q17b)

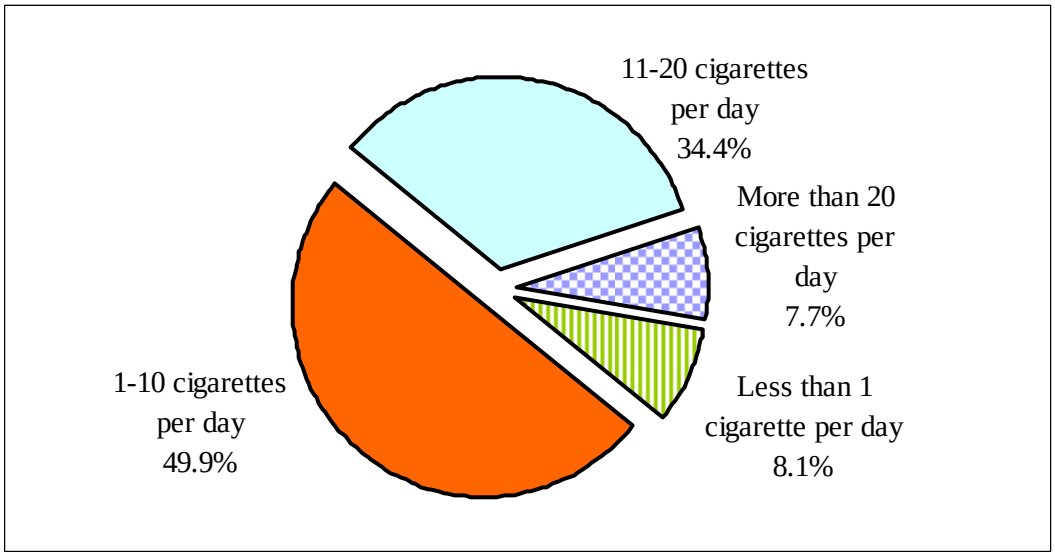


Base: All past smokers = 225

3.6.2 Cigarette consumption

Of the current smokers, 92.0% were daily smokers, around half of them (49.9%) reported they smoked 1- 10 cigarettes per day and over two-fifths of them (42.1%) smoked at least 11 cigarettes a day (Fig. 3.6.2).

Fig. 3.6.2: Number of cigarettes smoked on average per day by current smokers (Q17c)



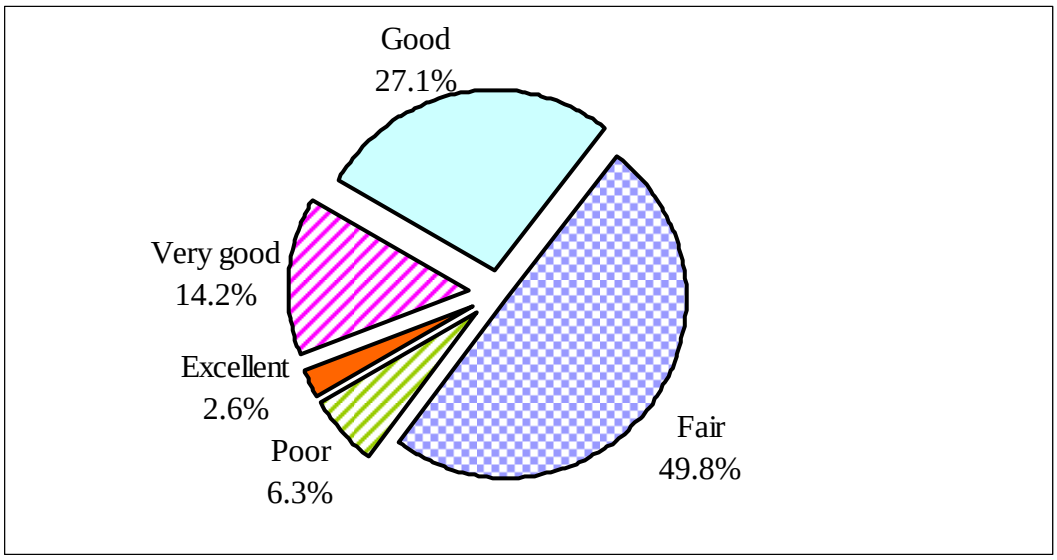
Base: All current smokers excluding 'don't know' = 343

3.7 General Health Status

Three questions in this survey were asked the respondents to self assess their general health status.

Overall, 2.6% claimed their health status was “excellent” and more than two-fifths (41.3%) claimed their health status was “good” or “very good”. Almost half of respondents (49.8%) claimed “fair” while 6.3% claimed “poor” health (Fig. 3.7.1).

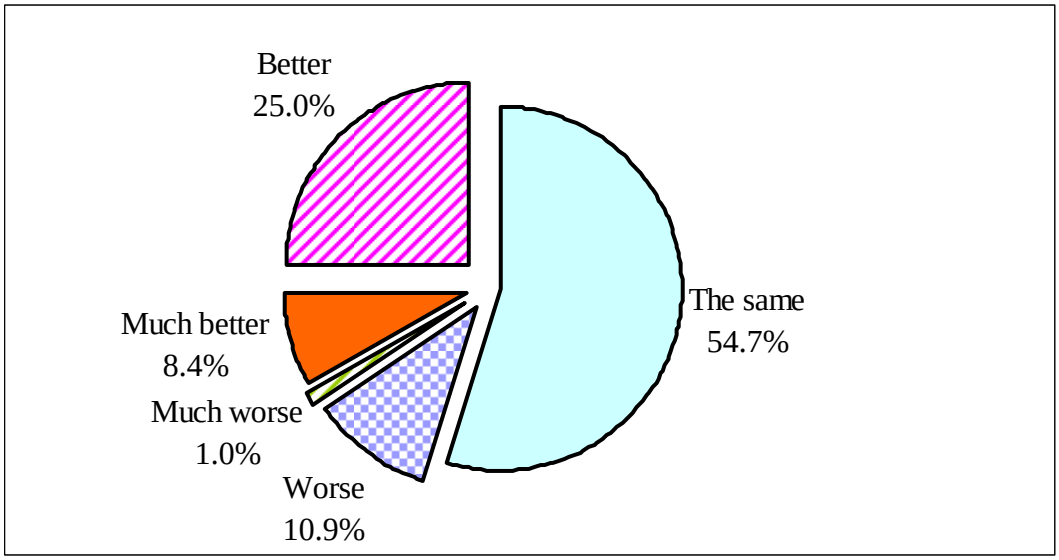
Fig. 3.7.1: Perception about general health status (Q18)



Base: All respondents = 2 168

Respondents were further asked to compare their health condition with people of their age. Almost one-third of respondents (33.4%) considered their health condition were “better” or “much better” than people of their age while about one-eighth (12.0%) considered “worse” or “much worse” than people of their age. Furthermore, more than half (54.7%) claimed their health condition was “the same” as people of their age (Fig. 3.7.2).

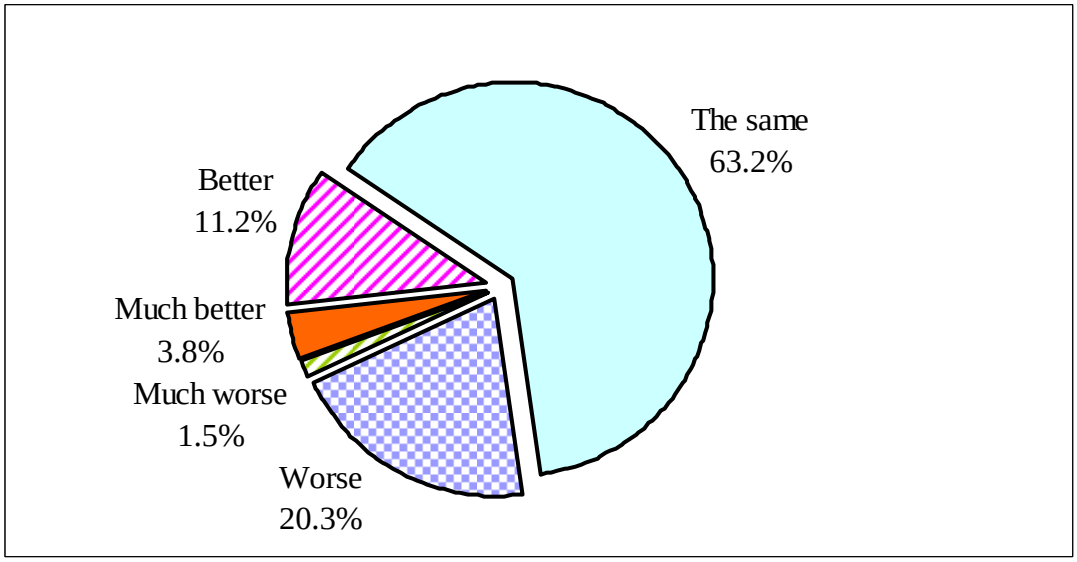
Fig. 3.7.2: Respondents compared their health condition with people of the same age (Q19)



Base: All respondents = 2 168

When respondents were asked to compare their current health condition with 12 months ago, 15.0% of respondents claimed their current health condition was "better" or" much better" than 12 months ago, while over one-fifths (21.8%) claimed their current health condition was "worse" or "much worse" than 12 months ago. Furthermore, 63.2% claimed their current health condition was "the same" as 12 months ago (Fig. 3.7.3).

Fig. 3.7.3: Compared with 12 months ago, perception about the present health condition (Q20)



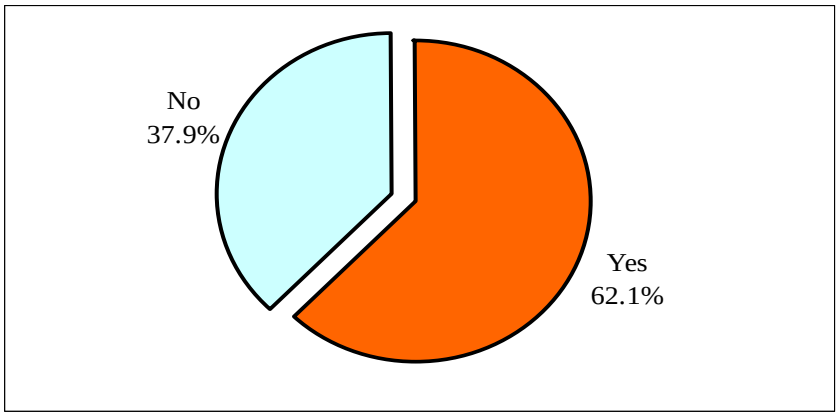
Base: All respondents = 2 168

3.8 Cervical screening (for female respondents only)

Two questions were asked to understand female respondents' behaviour of cervical screening.

In this survey, 52.9% of the respondents were females after weighting. Among the female respondents, near two-thirds (62.1%) reported that they had a cervical smear before (Fig. 3.8).

Fig. 3.8: Being screened for cervical smear before (Q21a)

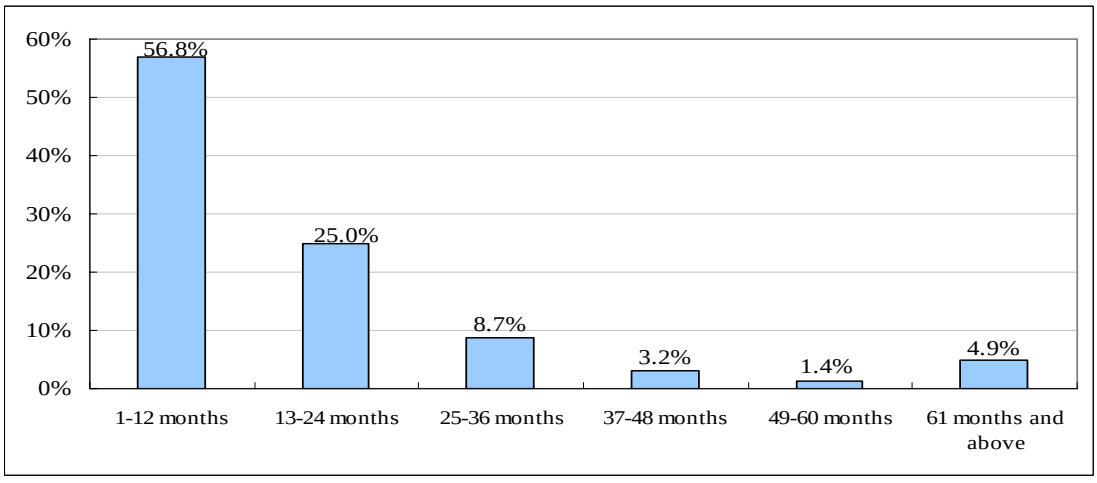


Base: All female respondents excluding 'not sure' = 1 137

3.8.1 Last cervical smear

Among the female respondents who had a cervical smear before, over half of them (56.8%) had the last cervical smear taken within the 12 months prior to the survey. One quarter of the female respondents (25.0%) had the examination within 13-24 months, while 18.2% of them had their last cervical smear 25 or more months ago (Fig. 3.8.1).

Fig. 3.8.1: Period of time since last cervical smear if ever had a smear (Q21b)



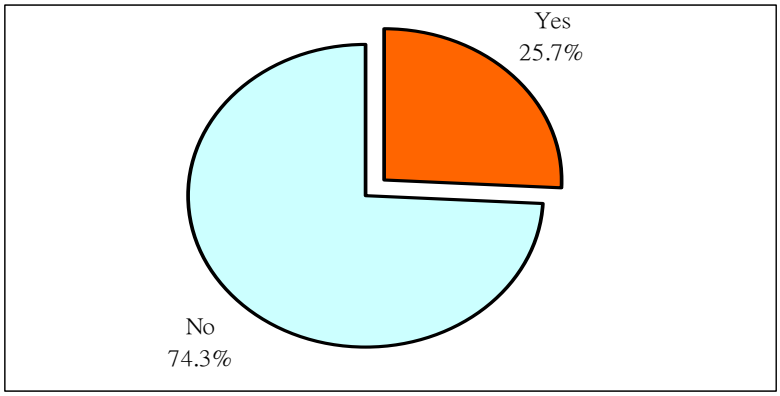
Base: Female respondents who ever had a cervical smear before, excluding 'can't remember' = 700

3.9 Pedestrian and driver road safety behaviour

Five questions were asked in this section to investigate the behaviour of pedestrians and drivers on road safety.

Overall, approximately one-quarter of respondents (25.7%) reported that they had driven a vehicle in the past 12 months prior to the survey (Fig. 3.9).

Fig. 3.9: Proportion of respondents having driven a vehicle in the past 12 months prior to the survey (Q22)

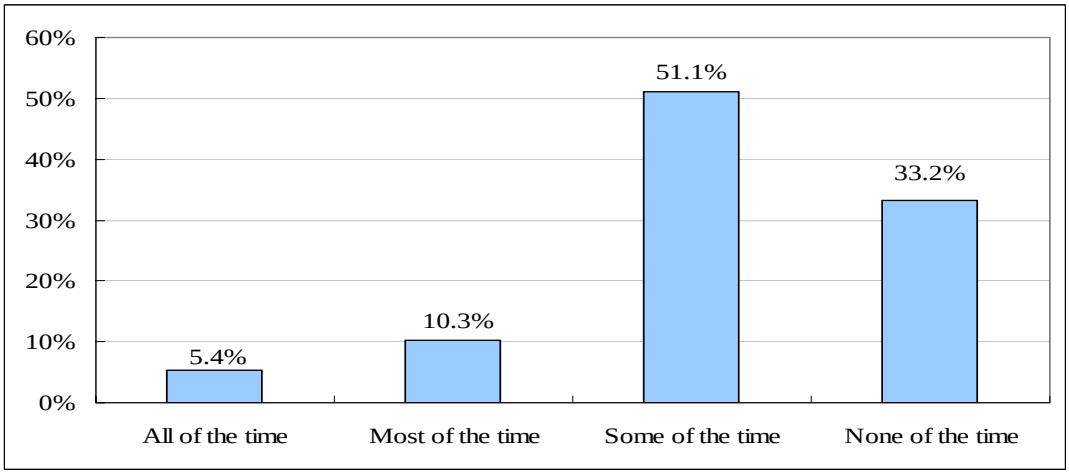


Base: All respondents = 2 168

3.9.1 Breaking speed limit

When the drivers were asked how often they would break the speed limit by 15km per hour or more, 5.4 % of the respondents admitted doing so “all of the time”, 10.3% reported “most of the time” and 51.1% respondents stated that they would do so “some of the time”. In contrast, 33.2% of drivers claimed that they never broke the speed limit by more than 15km per hour (Fig. 3.9.1).

Fig. 3.9.1: The extent of the speed limit being exceeded by 15km per hour or above (Q23)

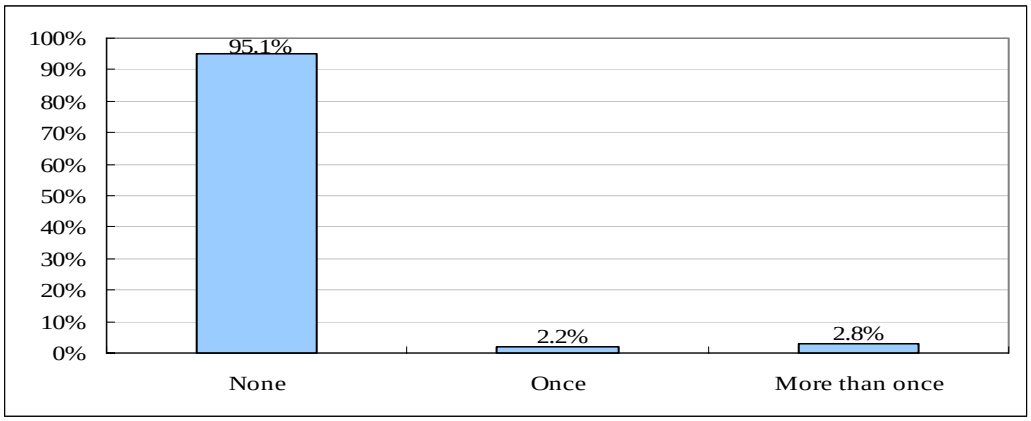


Base: All drivers = 556

3.9.2 Driving after drinking alcohol

When the drivers were further asked how frequently during the previous month prior to the survey they had driven a vehicle or car within the two hour period after drinking alcohol beverages, the majority (95.1%) reported that they did not drive a vehicle in this situation. However, 2.2% and 2.8% of drivers reported that they had done so on one occasion and two or more occasions respectively (Fig. 3.9.2).

Fig. 3.9.2: The number of times drivers had driven a vehicle/car within the two hour period after drinking alcohol during the previous month prior to the survey (Q24)

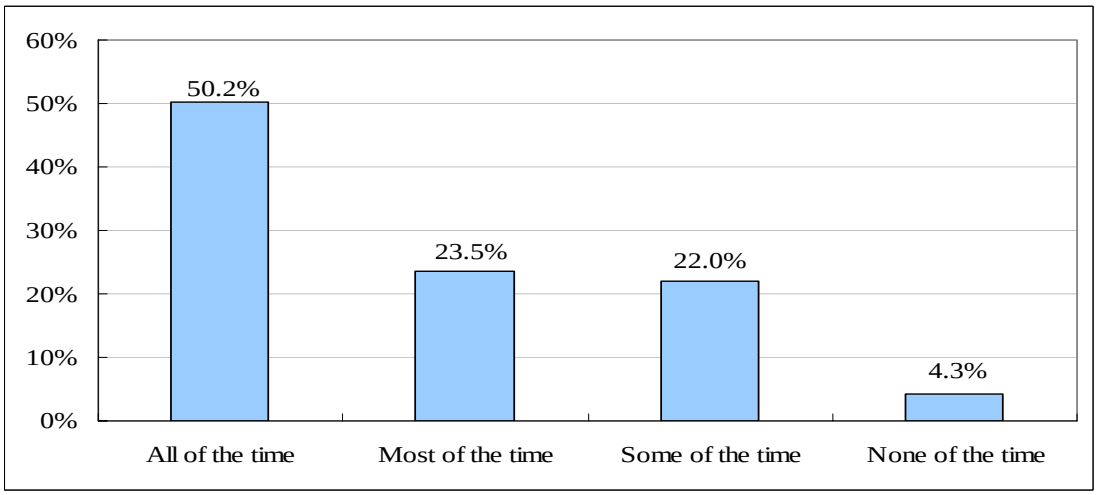


Base: All drivers = 556

3.9.3 Use of seat-belts

As a passenger, respondents were asked how often they would use seatbelt at private car, taxi or public mini-bus where it is mandatory and available. Results showed that 4.3% of respondents reported that they would use seat-belt "none of the time", while only about half (50.2%) would use seat belt "all of the time" (Fig. 3.9.3).

Fig. 3.9.3: The extent of compliance with the regulation of using seat-belt where it is mandatory and available (Q25)

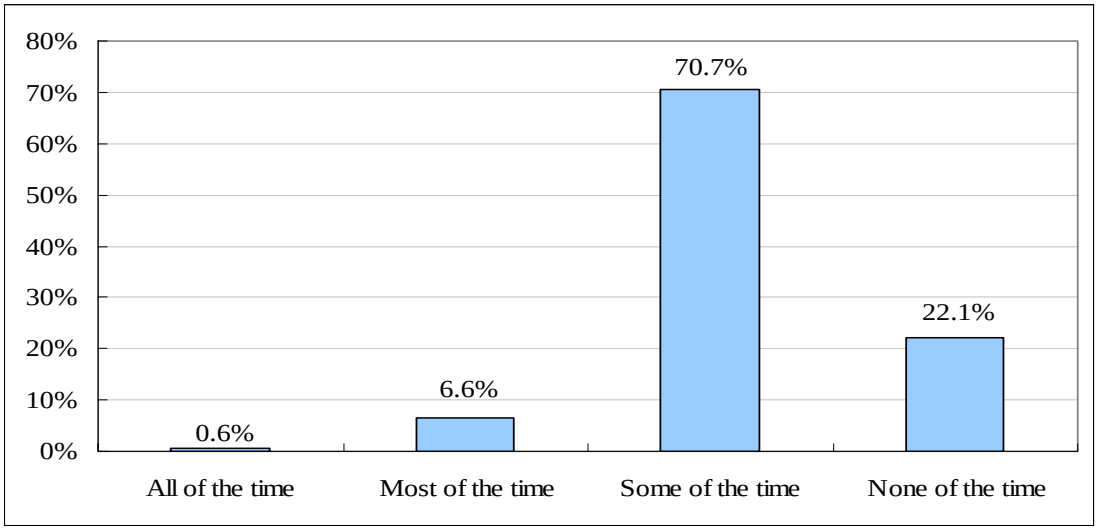


Base: All passengers excluding 'those who did not use a vehicle/car' = 2 132

3.9.4 Compliance with traffic instructions to cross road

Over one-fifth of pedestrians (22.1%) reported that they never jay-walked (such as crossing the road by ignoring traffic light instructions, not using zebra-crossing or footbridge when they are available). In contrast, 7.2% claimed that they did not comply with traffic instructions "all" or "most" of the time when crossed road (Fig. 3.9.4).

Fig. 3.9.4: The extent of non-compliance with traffic instructions, such as not using zebra--crossing or footbridge to cross road (Q26)



Base: All respondents excluding 'those who did not cross roads' = 2 163

Chapter 4 Sub-group Analysis by Demographic Information and Related Questions

4.1 Re-grouping of variables

In this chapter, sub-group analyses were performed based on the breakdown of respondents' demographic information including gender, age, educational attainment, marital status, occupation and monthly household income to see if there were any significant associations between these demographic factors and the areas being investigated. In addition, cross tabulations were also done for special areas of interest. For example, Body Mass Index (BMI) was analyzed by perceptions about current weight.

Some of the responses have been re-grouped into smaller number of categories in order to make the sub-group analyses more robust and representative. Table 4.1a shows how the demographic variables have been re-grouped while Table 4.1b illustrates how the responses of some questions were combined. The response of 'don't know', 'can't remember', 'not sure', 'not applicable', 'refuse to answer' and 'outliers' have been excluded from all the sub-group analyses in this chapter.

Table 4.1a: Re-grouping the responses of demographic information (D1-D9)

Demographic variable	Original level	Re-grouped level	Sample size (weighted)
Gender	Male	Male	1 021
	Female	Female	1 147
Age group	No grouping	18 – 24	276
		25 – 34	461
		35 – 44	582
		45 – 54	518
		55 – 64	278
Educational attainment	Primary or below	Primary or below	287
	Had not completed secondary	Had not completed secondary	358
	Completed secondary (F.5)	Completed secondary (F.5)	676
	Matriculation	Matriculation	181
	Tertiary (non-degree)/degree or above	Tertiary or above	655
Martial status	Never married	Never married	686
	Married with child(ren)	Married	1 369
	Married without child(ren)		
	Divorced/Separated	Divorced/Separated/Widowed	97
	Widowed		

Occupation	Employer/Managers/ Administrator	Managerial/professional worker	520
	Professional		
	Associate professional		
	Clerk	Clerk	334
	Service worker	Service worker	235
	Shop sales worker		
	Skilled agricultural/ fishery worker	Blue collar worker	320
	Craft and related worker		
	Plant and machine operator and assembler		
	Unskilled worker		
	Student	Not working persons	719
	Home-maker		
	Unemployed person		
	Retired person		
	Other not-worker person		
Monthly household income	Less than $2,000	Below $8,000	159
	$2,000 - $3,999		
	$4,000 - $5,999		
	$6,000 - $7,999		
	$8,000 - $9,999	$8,000 - $13,999	316
	$10,000 - $11,999		
	$12,000 - $13,999		
	$14,000 - $15,999	$14,000 - $19,999	228
	$16,000 - $17,999		
	$18,000 - $19,999		
	$20,000 - $24,999	$20,000 - $39,999	555
	$25,000 - $29,999		
	$30,000 - $34,999		
	$35,000 - $39,999		
	$40,000 - $44,999	$40,000 or above	393
	$45,000 - $49,999		
	$50,000 - $54,999		
	$55,000 - $59,999		
	$60,000 or above		

Table 4.1b: Re-grouping the responses of questions

Question No.	Question content	Original level	Re-grouped level
Q6, Q8 and Q10	Average days per week spent on vigorous/moderate physical activities/exercise and walking	0 day	0 – 1 day
		1 day	
		2 days	2 – 3 days
		3 days	
Q13a, Q14a and Q15a	Average days per week that respondents drink fruit/vegetable juice, eat fruit/vegetable	4 days	4 – 5 days
		5 days	
		6 days	6 – 7 days
		7 days	
Q16b	Weekly frequency of drinking at least one alcoholic drink last month	Daily	6 days or more per week
		6 days per week	
		5 days per week	4 – 5 days per week
		4 days per week	
		3 days per week	2 – 3 days per week
		2 days per week	
		1 day per week	1 day or less per week
		Less than 1 day per week	
Q21b	Period of time since last cervical smear	1 – 12 months	1 – 12 months
		13 – 24 months	13-36 months
		25 – 36 months	
		37 – 48 months	37 or more months
		49 – 60 months	
		61 months or above	

Three types of statistical tests[21] were used for sub-group analysis in this report, namely Pearson chi-square test, Kruskal-Wallis test and Spearman's rank correlation. When both variables were nominal, the chi-square test was used. When one variable was nominal and the other one was ordinal, the Kruskal-Wallis test was adopted. Spearman's rank correlation was performed when both variables were ordinal. Only statistically significant results at the 5% level are presented in this chapter. As for the Pearson chi-square test, only those tables where no more than 20% of the cells had expected values of less than 5 were included.

Only Pearson chi-square test was carried out with weighting; the Kruskal-Wallis test and Spearman's rank correlation were carried out without weighting as SPSS is unable to handle non-integer weights for these two tests. However, all percentages reported were after weighting for gender and age.

[21] These statistical tests used SPSS. Formulae for the three tests are included for reference.

Pearson chi-square statistics:

$$\lambda^2 = \sum_i \sum_j \frac{(Oij - eij)^2}{eij}$$

where O_{ij} is the observed value corresponding to the ith column and the jth row, e_{ij} is the expected value corresponding to the ith column and the jth row. The calculation of e_{ij} is as follows: expected value = (ith column total x jth row total) / Overall total

Kruskal-Wallis test:

$$U = N_1 N_2 + \frac{N_1(N_1+1)}{2} - T_1$$

where N_1 and N_2 are the sample sizes of the groups and T_1 is the sums of the ranks of the combined groups (adjustments are made if there are ties).

Spearman's rank correlation coefficient:

$$r = \sum_{i=1}^{N} \frac{(X_i - \overline{X})(Y_i - \overline{Y})}{(N-1)SxSy}$$

where N is the sample size and Sx and Sy are the standard deviations of the rank of the two variables and Xi and Yi are the ith rank of X and Y respectively and $\overline{X}$ and $\overline{Y}$ are the mean rank of X and Y respectively. The rank order of each data value is used in the above formula (adjustments are made if there are ties). Pairwise method is used to handle missing data.

4.2 Body weight control

4.2.1 Weight status

In this section, respondents were classified as ‘underweight’, ‘normal’, ‘overweight’ and ‘obese’ based on their BMI and the WHO classification for the Asian standard. ‘Underweight’ is defined as having a BMI below 18.5; ‘normal’ refers to having a BMI score between 18.5 and less than 23.0; ‘overweight’ is having a BMI score between 23.0 and less than 25.0; and ‘obese’ is defined as having a BMI score greater than or equal to 25.0.

Using the Asian standard of WHO classification, weight status was found to be significantly associated with five demographic variables including gender, age, educational attainment, marital status and occupation (Table 4.2.1).

More males (29.4%) were found to be ‘obese’ while more females (13.7%) were classified as ‘underweight’. In terms of age, younger respondents aged 34 or below were more likely to be ‘underweight’ (ranged from 14.3% to 28.2%), whereas those aged 35 or above were more likely to be classified as ‘overweight’ (ranged from 21.1% to 23.9%) or ‘obese’ (ranged from 23.2% to 29.0%).

Respondents with lower educational attainment were more like to be ‘overweight’ or ‘obese’. A higher proportion of respondents with primary school education level or below were found being classified as ‘overweight’ (25.5%) or ‘obese’ (31.2%) when compared to their counterparts.

The never married respondents (18.8%) were more likely to be ‘underweight’ than the married (6.0%) and the divorced/separated/widowed (4.8%). A higher proportion of divorced/separated/widowed respondents (28.8%) than never married (14.1%) and married (24.7%) were ‘obese’ (Table 4.2.1).

With regard to occupation, blue-collar workers were more likely to be ‘overweight’ (25.3%) or ‘obese’ (30.5%) while clerks (12.1%) and the not working respondents (13.5%) were more likely to be ‘underweight’ (Table 4.2.1)

Table 4.2.1: Weight status based on BMI score and the classification of WHO (Asian standard)

Variable	Level	Base	Under-weight	Normal	Over-weight	Obese	P-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	988	5.9%	42.1%	22.6%	29.4%		0.000	
	Female	1 099	13.7%	55.2%	16.7%	14.5%			

Age	18-24	266	28.2%	52.5%	10.3%	9.0%			0.000
	25-34	441	14.3%	55.8%	15.5%	14.4%			
	35-44	561	7.2%	48.5%	21.1%	23.2%			
	45-54	507	3.8%	43.2%	23.9%	29.0%			
	55-64	263	3.9%	44.5%	22.8%	28.8%			
Educational attainment	Primary or below	269	5.9%	37.5%	25.5%	31.2%			0.000
	Had not completed secondary	346	9.0%	43.8%	21.0%	26.1%			
	Completed secondary (F.5)	649	10.1%	50.3%	18.6%	21.1%			
	Matriculation	180	18.0%	55.0%	12.5%	14.5%			
	Tertiary or above	634	10.0%	53.8%	19.0%	17.2%			
Marital status	Never married	661	18.8%	54.0%	13.1%	14.1%		0.000	
	Married	1 318	6.0%	46.4%	22.9%	24.7%			
	Divorced/ Separated/ Widowed	93	4.8%	51.0%	15.4%	28.8%			
Occupation	Managerial/ Professional worker	509	8.1%	49.7%	20.5%	21.8%		0.000	
	Clerk	325	12.1%	53.6%	18.1%	16.2%			
	Service worker	227	8.7%	48.1%	18.8%	24.4%			
	Blue collar worker	307	4.5%	39.6%	25.3%	30.5%			
	Not working	684	13.5%	51.3%	16.4%	18.9%			

4.2.2 Perception about current weight status

Perception about current weight status was found to have significant associations with respondents' gender, age, educational attainment and marital status.

A greater proportion of female respondents (41.7%) than male respondents (34.2%) considered themselves 'overweight', while more male respondents (12.2%) perceived themselves as 'underweight' than female respondents (6.6%). Respondents aged 18-24 (14.0%) were more likely to consider themselves 'underweight' than those of older age groups (ranged from 7.1% to 10.1%). In terms of educational attainment, the lower the level of educational attainment, the more likely the respondents considered themselves 'overweight'. Divorced/separated/widowed (46.2%) and married respondents (42.9%) were also found to be more likely to consider themselves 'overweight' when compared to never married (27.4%) respondents (Table 4.2.2a).

Table 4.2.2a: Perception about current weight status (Q3)

Variable	Level	Base	Under-weight	Just right	Over-weight	P-value		
						Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 019	12.2%	53.6%	34.2%		0.000	
	Female	1 144	6.6%	51.8%	41.7%			
Age	18-24	275	14.0%	63.1%	22.8%			0.000
	25-34	461	9.5%	57.9%	32.6%			
	35-44	579	8.3%	52.0%	39.7%			
	45-54	517	7.1%	45.1%	47.8%			
	55-64	278	10.1%	48.2%	41.7%			
Educational attainment	Primary or below	286	7.4%	50.1%	42.5%			0.004
	Had not completed secondary	357	11.8%	45.5%	42.7%			
	Completed secondary (F.5)	674	8.6%	52.6%	38.8%			
	Matriculation	181	10.5%	61.3%	28.2%			
	Tertiary or above	654	9.0%	55.4%	35.7%			
Marital status	Never married	685	12.5%	60.0%	27.4%		0.000	
	Married	1 364	7.6%	49.5%	42.9%			
	Divorced/ Separated/ Widowed	97	11.0%	42.8%	46.2%			

Analyses of respondents' perception about their current weight by their weight status based on the Asian standard of WHO classifications were carried out. Significant associations were found between these two types of variables.

Amongst respondents who considered themselves 'overweight', close to three-quarters (29.0% 'overweight'; 43.1% 'obese') had a perception consistent with the WHO's classification; 26.6% of them were being classified as 'normal' if using the WHO's classification (Table 4.2.2b).

In respondents who perceived themselves as 'underweight', over half of them (55.4%) were considered as 'normal' using WHO's classification. Besides, 1.2% of the respondents who considered themselves as 'overweight' were in fact 'underweight' and 3.8% who considered themselves as 'underweight' were in fact 'overweight' or 'obese' using WHO's classification (Table 4.2.2b).

Table 4.2.2b: Perception about current weight status analysed by weight status based on WHO classification (Asian standard)

Variable	Level	Base	WHO classification				P-value		
			Under -weight	Normal	Over-weight	Obese	Chi-square test	Kruskal-Wallis test	Rank correlation
Perception of current weight	Overweight	799	1.2%	26.6%	29.0%	43.1%			0.000
	Just right	1 099	11.0%	64.1%	15.6%	9.3%			
	Underweight	190	40.8%	55.4%	2.3%	1.5%			

4.2.3 Weight control

Statistically significant associations were found between respondents' behaviour in controlling weight deliberately over the 12 months prior to the survey and their gender, occupation and monthly household income.

The proportion of females (30.0%) who reported that they had tried to control their weights deliberately during the 12 months prior to the survey was significantly larger than the proportion of males (22.9%). Service workers (31.3%) and managerial/professional workers (29.9%) were more likely than respondents from other occupations to control their weights. Respondents with monthly household income $20,000 or above (30.1%-31.9%) were more likely than any other income level to have controlled their weights during the 12 months prior to the survey (Table 4.2.3).

Table 4.2.3: Controlling weight deliberately in the 12 months prior to the survey (Q4a)

Variable	Level	Base	Yes	No	P-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	22.9%	77.1%	0.000		
	Female	1 147	30.0%	70.0%			
Occupation	Managerial/ Professional worker	520	29.9%	70.1%	0.032		
	Clerk	334	27.2%	72.8%			
	Service worker	235	31.3%	68.7%			
	Blue collar worker	320	21.1%	78.9%			
	Not working	719	25.6%	74.4%			
Monthly household income	Below $8,000	159	23.3%	76.7%		0.005	
	$8,000 - $13,999	316	22.1%	77.9%			
	$14,000 - $19,999	228	21.0%	79.0%			
	$20,000 - $39,999	555	30.1%	69.9%			
	$40,000 or above	393	31.9%	68.1%			

4.2.4 Methods adopted to control weight

4.2.4.1 Physical exercise

Respondent's gender was significantly associated with using physical exercise as a method to control weight.

The proportion of respondents reported that they had chosen doing physical exercise to control their weight was higher among males than females (90.0% vs. 80.9%) (Table 4.2.4.1).

Table 4.2.4.1: Doing physical exercise to control weight (Q5d)

Variable	Level	Base	Yes	No	P-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	234	90.0%	10.0%	0.003		
	Female	344	80.9%	19.1%			

4.2.4.2 Taking drugs/products

Gender, age and educational attainment were found to be significantly associated with the weight control method of taking drugs/products.

A higher proportion of females (23.8%), respondents aged 18-24 (25.5%) and those having a matriculation level of education (30.7%) reported that they had taken drugs/products to control weight (Table 4.2.4.2).

Table 4.2.4.2: Taking drugs/products to control weight (Q5a)

Variable	Level	Base	Yes	No	P-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	234	6.9%	93.1%	0.000		
	Female	344	23.8%	76.2%			
Age	18-24	75	25.5%	74.5%		0.002	
	25-34	120	24.3%	75.7%			
	35-44	167	14.6%	85.4%			
	45-54	141	15.4%	84.6%			
	55-64	63	2.8%	97.2%			
Educational attainment	Primary or below	61	5.6%	94.4%		0.014	
	Had not completed secondary	85	15.6%	84.4%			
	Completed secondary (F.5)	183	17.4%	82.6%			
	Matriculation	50	30.7%	69.3%			
	Tertiary or above	195	17.0%	83.0%			

4.2.4.3 Going to weight control or beauty parlours

Gender was found to be significantly associated with weight control by going to weight control or beauty parlours.

Females (7.4%) was more likely than males (0.9%) to control weight by going to weight control or beauty parlours(Table 4.2.4.3).

Table 4.2.4.3: Going to weight control or beauty parlours (Q5c)

Variable	Level	Base	Yes	No	P-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	234	0.9%	99.1%	0.000		
	Female	344	7.4%	92.6%			

4.2.4.4 Changing dietary habit

Age, educational attainment and occupation were also found to be significantly associated with weight control by changing dietary habit.

Respondents aged 25-34 (81.5%), those having an education attainment of primary or below (81.0%) and service workers (82.9%) were more likely than their counterparts to control their weight by changing their dietary habits (Table 4.2.4.4).

Table 4.2.4.4: Changing dietary habit (Q5e)

Variable	Level	Base	Yes	No	P-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Age	18-24	75	74.1%	25.9%		0.044	
	25-34	120	81.5%	18.5%			
	35-44	167	79.0%	21.0%			
	45-54	141	68.1%	31.9%			
	55-64	63	69.6%	30.4%			
Educational attainment	Primary or below	61	81.0%	19.0%		0.013	
	Had not completed secondary	85	73.5%	26.5%			
	Completed secondary (F.5)	183	66.7%	33.3%			
	Matriculation	50	77.1%	22.9%			
	Tertiary or above	195	79.8%	20.2%			

Occupation	Managerial/ Professional worker	155	71.6%	28.4%	0.045		
	Clerk	91	78.9%	21.1%			
	Service worker	74	82.9%	17.1%			
	Blue collar worker	68	62.5%	37.5%			
	Not working	184	76.2%	23.8%			

4.3 Exercise/physical activities

4.3.1 Vigorous Exercise/physical activities

Number of days spent on doing vigorous physical activities/exercise for at least 10 minutes in the week prior to the survey were found to be associated significantly with respondents' demographic characteristics including gender, age, marital status and occupation.

Females (82.3%), respondents aged 55-64 (82.1%), those married (79.8%) and clerk (82.6%) were more likely than their respective counterparts to have engaged in vigorous exercise/physical activities for at least 10 minutes on one day or less in the week before interview (Table 4.3.1).

Table 4.3.1: Number of days per week spent on doing vigorous physical activities/ exercise for at least 10 minutes in the week prior to the survey (Q6)

Variable	Level	Base	0 – 1 day	2 – 3 days	4 – 5 days	6 – 7 days	P-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	71.6%	16.6%	4.5%	7.2%		0.000	
	Female	1 141	82.3%	10.0%	2.8%	4.9%			
Age	18-24	273	63.5%	26.1%	5.2%	5.2%			0.000
	25-34	457	79.2%	14.8%	3.6%	2.4%			
	35-44	582	79.4%	12.8%	3.2%	4.6%			
	45-54	518	77.3%	9.2%	4.7%	8.8%			
	55-64	278	82.1%	5.8%	1.5%	10.6%			
Marital status	Never married	682	73.1%	19.3%	4.1%	3.6%		0.000	
	Married	1 366	79.8%	10.1%	3.3%	6.8%			
	Divorced/ Separated/ Widowed	97	73.9%	9.5%	5.7%	10.9%			
Occupation	Managerial/ Professional worker	518	76.8%	15.5%	3.6%	4.1%		0.001	
	Clerk	330	82.6%	11.6%	3.1%	2.7%			
	Service worker	235	75.9%	16.0%	2.4%	5.7%			
	Blue collar worker	320	69.9%	10.1%	5.8%	14.2%			
	Not working	718	79.0%	12.4%	3.3%	5.4%			

4.3.2 Moderate exercise/physical activities

Number of days spent on doing moderate physical activities/exercise for at least 10 minutes in the week prior to the survey was found to be significantly associated with respondents' gender, age, educational attainment, marital status, occupation and

monthly household income.

Males (67.3%), respondents aged 25-34 (69.4%), those having matriculation education (69.0%), those never married (69.1%), clerks (75.5%) and those having a monthly household income $40,000 or above (66.8%) were more likely than their respective counterparts to have spent one day or less on such activity for at least 10 minutes in the week prior to the survey (Table 4.3.2).

Table 4.3.2: Number of days spent on doing moderate physical activities/exercise or at least 10 minutes in the week prior to the survey (Q8)

Variable	Level	Base	0 – 1 day	2 – 3 days	4 – 5 days	6 – 7 days	P-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 019	67.3%	16.9%	4.8%	10.9%		0.034	
	Female	1 140	64.0%	17.9%	5.9%	12.2%			
Age	18-24	274	66.3%	16.7%	6.9%	10.1%			0.036
	25-34	457	69.4%	17.8%	4.5%	8.2%			
	35-44	582	65.2%	17.2%	5.5%	12.2%			
	45-54	517	62.2%	19.1%	4.2%	14.6%			
	55-64	277	64.4%	15.2%	6.8%	13.6%			
Educational attainment	Primary or below	287	68.8%	13.1%	4.3%	13.8%			0.003
	Had not completed secondary	356	58.5%	15.8%	6.0%	19.7%			
	Completed secondary (F.5)	671	64.2%	18.0%	6.2%	11.5%			
	Matriculation	180	69.0%	16.1%	4.6%	10.3%			
	Tertiary or above	654	68.2%	20.0%	4.9%	7.0%			
Marital status	Never married	681	69.1%	17.0%	5.2%	8.7%		0.023	
	Married	1 365	64.0%	17.5%	5.5%	12.9%			
	Divorced/ Separated/ Widowed	96	61.9%	17.5%	5.2%	15.4%			
Occupation	Managerial/ Professional worker	518	67.8%	19.1%	3.9%	9.2%		0.000	
	Clerk	330	75.5%	14.5%	4.4%	5.5%			
	Service worker	235	64.3%	18.0%	5.5%	12.2%			
	Blue collar worker	320	61.4%	15.7%	4.7%	18.2%			
	Not working	717	61.3%	18.0%	7.4%	13.3%			

Monthly household income	Below $8,000	158	64.4%	15.9%	4.2%	15.5%			0.012
	$8,000 - $13,999	316	61.7%	15.5%	5.9%	16.9%			
	$14,000 - $19,999	228	60.4%	17.0%	6.0%	16.6%			
	$20,000 - $39,999	552	66.5%	18.7%	5.4%	9.5%			
	$40,000 or above	392	66.8%	20.5%	4.8%	7.8%			

4.3.3 Walking

Significant associations were found between number of days spent on walking for at least 10 minutes in the week prior to the survey and respondents' age, educational attainment, marital status and occupation.

Respondents in the 55-64 years age group (86.4%), those having an education attainment of primary or below (86.6%), those married (80.9%) and blue collar workers (87.7%) had a higher proportion of people reported that they walked for at least 10 minutes on 6-7 days within the week prior to the survey (Table 4.3.3).

Table 4.3.3: Number of days spent on walking for at least 10 minutes in the week prior to the survey (Q10)

Variable	Level	Base	0 – 1 day	2 – 3 days	4 – 5 days	6 – 7 days	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Age	18-24	276	3.5%	5.5%	15.7%	75.3%			0.000
	25-34	461	5.3%	6.9%	11.2%	76.6%			
	35-44	582	6.3%	8.4%	10.3%	75.0%			
	45-54	517	4.0%	5.5%	7.2%	83.4%			
	55-64	277	3.0%	4.8%	5.8%	86.4%			
Educational attainment	Primary or below	286	4.0%	3.3%	6.1%	86.6%			0.011
	Had not completed secondary	358	6.4%	5.7%	6.5%	81.4%			
	Completed secondary (F.5)	676	5.1%	7.1%	10.8%	77.0%			
	Matriculation	181	2.5%	8.2%	10.6%	78.7%			
	Tertiary or above	654	4.3%	6.9%	12.1%	76.7%			

Marital status	Never married	686	4.4%	6.4%	12.9%	76.2%		0.033	
	Married	1 366	4.4%	6.2%	8.4%	80.9%			
	Divorced/ Separated/ Widowed	97	9.7%	8.2%	9.3%	72.8%			
Occupation	Managerial/ Professional worker	519	4.5%	6.5%	9.4%	79.6%		0.002	
	Clerk	334	6.2%	5.8%	12.8%	75.2%			
	Service worker	235	4.3%	9.3%	9.8%	76.6%			
	Blue collar worker	320	5.3%	4.1%	2.9%	87.7%			
	Not working	718	3.8%	6.7%	12.2%	77.2%			

4.3.4 Physical activity level based on the analysis of IPAQ

The physical activity level based on the IPAQ analysis was found to be associated significantly with gender, age, educational attainment, occupation and monthly household income.

Females (22.4%), respondents of age 35-44 years (24.8%), those having tertiary or above education (21.2%), clerks (27.3%) and respondents with monthly household income below $8,000 (24.4%) were more likely than their respective counterparts to be classified as having “low” level of physical activity (Table 4.3.4).

Table 4.3.4: Physical activity level classified based on categorical score derived from the analysis of IPAQ

Variable	Level	Base	Low	Moderate	High	p-value		
						Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	971	18.8%	56.7%	24.5%	0.003		
	Female	1 089	22.4%	59.0%	18.6%			
Age	18-24	267	17.3%	61.2%	21.5%		0.000	
	25-34	430	22.5%	60.6%	16.9%			
	35-44	552	24.8%	56.1%	19.0%			
	45-54	496	18.1%	55.6%	26.3%			
	55-64	264	17.6%	56.4%	26.0%			

Educational attainment	Primary or below	274	19.9%	50.9%	29.1%		0.001	
	Had not completed secondary	341	20.7%	50.9%	28.3%			
	Completed secondary (F.5)	640	20.4%	57.5%	22.1%			
	Matriculation	172	21.0%	64.3%	14.7%			
	Tertiary or above	622	21.2%	63.5%	15.3%			
Occupation	Managerial/ Professional worker	489	19.6%	59.4%	21.0%	0.000		
	Clerk	314	27.3%	61.6%	11.2%			
	Service worker	224	25.8%	46.3%	27.9%			
	Blue collar worker	307	17.0%	48.6%	34.4%			
	Not working	688	18.3%	62.7%	19.0%			
Monthly household income	Below $8,000	155	24.4%	54.4%	21.2%		0.044	
	$8,000 - $13,999	301	20.8%	49.6%	29.7%			
	$14,000 - $19,999	218	19.9%	57.2%	22.9%			
	$20,000 - $39,999	531	22.5%	58.3%	19.2%			
	$40,000 or above	376	19.2%	63.4%	17.4%			

4.4 Dietary habits

4.4.1 Frequency of drinking fruit/vegetable juice per week

Respodents' age, educational attainment, marital status, occupation and monthly household income were all found to be associated significantly with the frequency of fruit/vegetable juice consumption.

A greater proportion of respondents aged 55-64 (86.7%), those with primary or below education (88.1%), those married (81.1%), blue collar workers (87.8%) and those having a monthly household income below $8,000 (85.4%) reported that they drank juice/vegetable juice 1 day or less in a week (Table 4.4.1).

Table 4.4.1: Number of days per week in which respondents consumed fruit/ vegetable juice (Q13a)

Variable	Level	Base	0 – 1 day	2 – 3 days	4 – 5 days	6 – 7 days	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Age	18-24	274	72.0%	18.5%	2.6%	6.8%			0.000
	25-34	458	71.0%	18.9%	2.7%	7.5%			
	35-44	580	80.9%	10.9%	1.7%	6.4%			
	45-54	516	83.2%	9.3%	1.6%	5.8%			
	55-64	278	86.7%	4.6%	2.1%	6.6%			
Educational attainment	Primary or below	283	88.1%	7.0%	0.9%	4.1%			0.000
	Had not completed secondary	358	84.0%	8.6%	0.4%	7.0%			
	Completed secondary (F.5)	673	82.5%	8.8%	2.3%	6.4%			
	Matriculation	181	70.8%	20.9%	1.7%	6.6%			
	Tertiary or above	652	70.9%	18.2%	3.4%	7.5%			
Marital status	Never married	682	74.4%	17.2%	2.5%	5.9%		0.002	
	Married	1 364	81.1%	10.3%	2.0%	6.7%			
	Divorced/ Separated/ Widowed	95	80.9%	9.5%	0.9%	8.7%			
Occupation	Managerial/ Professional worker	518	70.5%	16.7%	3.1%	9.8%		0.000	
	Clerk	331	76.2%	14.8%	2.9%	6.2%			
	Service worker	235	78.4%	13.9%	2.3%	5.5%			
	Blue collar worker	320	87.8%	7.1%	1.3%	3.7%			
	Not working	715	82.6%	10.0%	1.3%	6.1%			

Monthly household income	Below $8,000	158	85.4%	6.5%	3.1%	5.0%			0.000
	$8,000 - $13,999	314	84.9%	8.6%	0.4%	6.0%			
	$14,000 - $19,999	226	83.4%	9.5%	2.8%	4.3%			
	$20,000 - $39,999	555	79.5%	12.7%	2.2%	5.6%			
	$40,000 or above	393	68.7%	19.1%	1.9%	10.3%			

4.4.2 Number of cups of fruit/vegetable juice consumed per day

The average number of cups of fruit/vegetable juice consumed per day by the respondents in the week prior to the survey was found to be associated significantly with occupation only.

Managerial/professional workers (10.4%) were more likely than respondents of other occupational groups (3.8% - 6.9%) to consume one or more cups of fruit/vegetable juice per day (Table 4.4.2).

Table 4.4.2: Average number of cups per day which the respondents consumed of fruit/vegetable juice (Q13b)

Variable	Level	Base	Less than 1 cup	1 - 2 cups	More than 2 cups	p-value		
						Chi-square test	Kruskal-Wallis test	Rank correlation
Occupation	Managerial/ Professional worker	518	89.6%	9.8%	0.6%		0.048	
	Clerk	331	93.1%	6.9%	0.0%			
	Service worker	234	93.5%	6.5%	0.0%			
	Blue collar worker	319	96.2%	3.8%	0.0%			
	Not working	712	93.5%	6.3%	0.2%			

4.4.3 Frequency of consuming fruit per week

The frequency of fruit consumption was found to be associated significantly with respondents' gender, age, educational attainment, marital status and occupation.

The proportion of people consuming fruit 6-7 days a week was higher among females (60.4%), respondents aged 55-64 (72.5%), those with primary education or below (65.1%), those married (60.2%) and not working respondents (63.8%) (Table 4.4.3).

Table 4.4.3: Number of days per week in which respondents ate fruit (Q14a)

Variable	Level	Base	0 – 1 day	2 – 3 days	4 – 5 days	6 – 7 days	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	15.5%	20.6%	15.4%	48.4%		0.000	
	Female	1 147	6.2%	17.9%	15.5%	60.4%			
Age	18-24	276	12.3%	26.3%	16.5%	44.9%			0.000
	25-34	461	13.6%	24.4%	20.5%	41.5%			
	35-44	582	9.3%	18.9%	17.2%	54.5%			
	45-54	518	9.7%	15.5%	13.2%	61.6%			
	55-64	278	7.1%	12.8%	7.6%	72.5%			
Educational attainment	Primary or below	287	9.5%	14.5%	11.0%	65.1%			0.000
	Had not completed secondary	358	13.0%	15.6%	11.7%	59.6%			
	Completed secondary (F.5)	676	11.6%	19.8%	16.0%	52.7%			
	Matriculation	181	4.3%	22.5%	19.6%	53.6%			
	Tertiary or above	655	10.6%	21.4%	18.0%	50.0%			
Marital Status	Never married	686	13.6%	25.2%	16.9%	44.4%		0.000	
	Married	1 369	8.6%	16.4%	14.8%	60.2%			
	Divorced/ Separated/ Widowed	97	14.4%	15.5%	17.5%	52.6%			
Occupation	Managerial/ Professional worker	520	10.3%	22.3%	15.8%	51.6%		0.000	
	Clerk	334	10.3%	24.4%	19.0%	46.2%			
	Service worker	235	14.5%	20.8%	18.0%	46.8%			
	Blue collar worker	320	13.9%	17.4%	14.0%	54.7%			
	Not working	719	7.7%	14.5%	14.0%	63.8%			

4.4.4 Frequency of consuming vegetables per week

The frequency of vegetable consumption in the week prior to the survey was also found to be related significantly with gender, age, educational attainment, marital status and occupation.

Females (88.4%), respondents aged 55-64 (91.6%), thosewith primary or below education (90.2%), those married (89.0%) and those not working (88.0%) were more likely than their respective counterparts to have consumed vegetables 6-7 days a week (Table 4.4.4).

Table 4.4.4: Number of days per week in which respondents consumed vegetables (Q15a)

Variable	Level	Base	0 – 1 day	2 – 3 days	4 – 5 days	6 – 7 days	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	2.2%	6.9%	10.5%	80.4%		0.000	
	Female	1 147	0.9%	3.1%	7.7%	88.4%			
Age	18-24	276	3.0%	6.6%	9.9%	80.6%			0.000
	25-34	461	2.2%	6.1%	12.3%	79.4%			
	35-44	582	0.9%	6.1%	9.0%	84.0%			
	45-54	518	1.3%	2.6%	7.8%	88.3%			
	55-64	278	0.9%	3.0%	4.5%	91.6%			
Educational attainment	Primary or below	287	1.1%	3.0%	5.7%	90.2%			0.011
	Had not completed secondary	358	2.8%	3.9%	6.7%	86.6%			
	Completed secondary (F.5)	676	1.7%	6.2%	9.9%	82.2%			
	Matriculation	181	2.4%	4.9%	7.4%	85.4%			
	Tertiary or above	655	0.6%	4.8%	11.1%	83.6%			
Marital status	Never married	686	2.3%	7.5%	12.8%	77.4%		0.000	
	Married	1 369	1.0%	3.1%	7.0%	89.0%			
	Divorced/ Separated/ Widowed	97	3.0%	11.1%	10.5%	75.4%			
Occupation	Managerial/ Professional worker	520	1.2%	4.0%	12.1%	82.7%		0.002	
	Clerk	334	1.0%	4.3%	7.7%	86.9%			
	Service worker	235	4.1%	6.9%	11.1%	78.0%			
	Blue collar worker	320	1.4%	8.1%	8.8%	81.7%			
	Not working	719	1.3%	3.7%	6.9%	88.0%			

4.4.5 Number of servings of fruit and vegetables consumed per day (excluding fruit/vegetable juice consumption)

From this survey, the average number of servings of fruit and vegetables consumed[22] per day was found to be associated significantly with gender, age, educational

[22] Total average number of servings: average no. of servings of fruit eaten per day + average no. of servings of vegetables eaten per day

attainment, marital status and occupation.

Females (23.5%), those aged 55-64 (24.3%), respondents with primary or below education (25.4%), those divorced/separated/widowed (24.0%) and those not working (24.2%) were more likely than their respective counterparts to have consumed 5 or more servings of fruit and vegetables per day (Table 4.4.5).

Table 4.4.5: Proportion of respondents who had consumed at least 5 servings of fruit and vegetables a day in the week prior to the survey (Q14b & Q15b)

Variable	Level	Base	Less than 5 servings of fruit and vegetables	5 or more servings of fruit and vegetables	p-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 011	85.8%	14.2%		0.000	
	Female	1 137	76.5%	23.5%			
Age	18-24	275	84.7%	15.3%			0.000
	25-34	456	84.9%	15.1%			
	35-44	578	80.4%	19.6%			
	45-54	513	79.1%	20.9%			
	55-64	274	75.7%	24.3%			
Educational attainment	Primary or below	282	74.6%	25.4%			0.046
	Had not completed secondary	354	82.0%	18.0%			
	Completed secondary (F.5)	673	81.4%	18.6%			
	Matriculation	180	83.8%	16.2%			
	Tertiary or above	649	81.8%	18.2%			
Marital status	Never married	682	85.7%	14.3%		0.000	
	Married	1 354	79.0%	21.0%			
	Divorced/ Separated/ Widowed	96	76.0%	24.0%			
Occupation	Managerial/ Professional worker	515	84.7%	15.3%		0.000	
	Clerk	332	86.2%	13.8%			
	Service worker	233	80.8%	19.2%			
	Blue collar worker	318	80.5%	19.5%			
	Not working	714	75.8%	24.2%			

4.5 Pattern of alcohol consumption

4.5.1 Consumption of alcohol

The consumption of at least one alcoholic drink in the month prior to the survey was found to be associated significantly with gender, age, educational attainment, marital status, occupation and monthly household income.

Males (45.4%), respondents aged 25-34 years (39.8%), those with tertiary or above education (40.2%), those never married (35.4%), managerial/professional workers (41.0%) and those having a monthly household income $40,000 or above (39.6%) were more likely than their respective counterparts to report having consumed at least one alcoholic drink in the month prior to the survey (Table 4.5.1).

Table 4.5.1: Consumption of at least one alcoholic drink in the month prior to the survey (Q16a)

Variable	Level	Base	Yes	No	p-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	45.4%	54.6%	0.000		
	Female	1 147	19.1%	80.9%			
Age	18-24	276	28.5%	71.5%		0.000	
	25-34	461	39.8%	60.2%			
	35-44	582	32.8%	67.2%			
	45-54	518	27.8%	72.2%			
	55-64	278	24.2%	75.8%			
Educational attainment	Primary or below	287	21.7%	78.3%		0.000	
	Had not completed secondary	358	25.9%	74.1%			
	Completed secondary (F.5)	676	29.9%	70.1%			
	Matriculation	181	31.9%	68.1%			
	Tertiary or above	655	40.2%	59.8%			
Marital status	Never married	686	35.4%	64.6%	0.021		
	Married	1 369	29.4%	70.6%			
	Divorced /Separated/Widowed	97	32.3%	67.7%			
Occupation	Managerial/ Professional worker	520	41.0%	59.0%	0.000		
	Clerk	334	32.9%	67.1%			
	Service worker	235	37.0%	63.0%			
	Blue collar worker	320	37.4%	62.6%			
	Not working	719	20.1%	79.9%			

Monthly household income	Below $8,000	159	14.5%	85.5%		0.000	
	$8,000 - $13,999	316	25.3%	74.7%			
	$14,000 - $19,999	228	27.2%	72.8%			
	$20,000 - $39,999	555	33.9%	66.1%			
	$40,000 or above	393	39.6%	60.4%			

4.5.2 Frequency of alcohol consumption

The frequency of alcohol consumption per week during the month prior to the survey was found to have significant associations with gender, age, educational attainment, marital status, occupation and monthly household income.

Males (18.1%), respondents aged 55-64 years (27.4%), those with primary or below education (51.3%), those divorced/separated/ widowed (28.4%), blue collar workers (22.8%) and those having a monthly household income of $8,000-$13,999 (28.2%) were more likely than their correspeonding counterparts to report that they drank 6 days or more per week (Table 4.5.2).

Table 4.5.2: Frequency of consuming at least one alcoholic drink in the month prior to the survey (Q16b)

Variable	Level	Base	1 day or less per week	2-3 days per week	4-5 days per week	6 days or more per week	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	451	61.5%	14.6%	5.8%	18.1%		0.000	
	Female	207	78.1%	10.8%	4.6%	6.5%			
Age	18-24	76	75.6%	12.1%	5.6%	6.7%			0.000
	25-34	176	72.0%	14.8%	4.8%	8.4%			
	35-44	186	69.7%	11.6%	7.7%	10.9%			
	45-54	139	53.8%	15.9%	4.8%	25.4%			
	55-64	65	56.1%	13.8%	2.8%	27.4%			
Educational attainment	Primary or below	59	36.9%	4.5%	7.3%	51.3%			0.000
	Had not completed secondary	88	56.9%	18.1%	3.9%	21.0%			
	Completed secondary (F.5)	192	66.4%	15.4%	4.7%	13.4%			
	Matriculation	58	72.4%	15.3%	7.8%	4.5%			
	Tertiary or above	258	75.4%	12.0%	5.6%	7.0%			
Marital status	Never married	236	73.9%	13.3%	5.5%	7.2%		0.004	
	Married	385	62.9%	13.7%	5.4%	18.0%			
	Divorced /Separated/Widowed	30	56.9%	12.4%	2.3%	28.4%			

Occupation	Managerial/ Professional worker	210	67.7%	14.6%	5.8%	11.9%		0.010	
	Clerk	106	71.5%	15.3%	4.9%	8.3%			
	Service worker	85	73.6%	8.9%	2.2%	15.2%			
	Blue collar worker	112	52.7%	14.9%	9.6%	22.8%			
	Not working	138	67.9%	12.2%	3.3%	16.5%			
Monthly household income	Below $8,000	23	45.3%	27.1%	5.8%	21.8%			0.019
	$8,000 - $13,999	73	57.3%	7.4%	7.2%	28.2%			
	$14,000 - $19,999	59	82.5%	6.6%	1.5%	9.4%			
	$20,000 - $39,999	183	61.9%	15.9%	6.1%	16.1%			
	$40,000 or above	154	74.5%	13.2%	4.9%	7.3%			

4.5.3 Consumption of at least 5 glasses/cans of alcohol on one occasion (Binge drinking)

Binge drinking during the month prior to the survey was associated significantly with respondents' gender, educational attainment, marital status and occupation.

Such pattern of drinking was more common among males (33.8%), respondents who had not completed secondary education (37.8%), those divorced/separated/widowed (39.9%) and the service workers (42.8%) (Table 4.5.3).

Table 4.5.3: Consumption of at least 5 glasses/cans of alcohol on one occasion (Q16d)

Variable	Level	Base	Yes	No	p-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	463	33.8%	66.2%	0.000		
	Female	219	17.9%	82.1%			
Educational attainment	Primary or below	62	33.8%	66.2%		0.002	
	Had not completed secondary	93	37.8%	62.2%			
	Completed secondary (F.5)	202	34.8%	65.2%			
	Matriculation	58	13.3%	86.7%			
	Tertiary or above	264	23.0%	77.0%			

Marital status	Never married	243	33.9%	66.1%	0.020		
	Married	402	25.0%	75.0%			
	Divorced/ Separated/ Widowed	31	39.9%	60.1%			
Occupation	Managerial/ Professional worker	213	26.7%	73.3%	0.000		
	Clerk	110	16.3%	83.7%			
	Service worker	87	42.8%	57.2%			
	Blue collar worker	120	41.9%	58.1%			
	Not working	144	22.7%	77.3%			

4.5.4 Drinking habit by low risk level

Education attainment was found to have significant association with low risk drinking habit as defined by the British Alcohol Guidelines.

The lower the education level, the more likely that the respondents would have drunk exceeding the low risk level, rising from 21.9% among those with tertiary or above education to 59.4% among those with primary or below education (Table 4.5.4).

Table 4.5.4: Classification of alcohol consumption bylow risk level

Variable	Level	Base	Within low risk level	Exceed low risk level	p-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Education attainment	Primary or below	59	40.6%	59.4%		0.000	
	Had not completed secondary	85	62.1%	37.9%			
	Completed secondary (F5)	190	65.4%	34.6%			
	Matriculation	57	91.6%	8.4%			
	Tertiary or above	254	78.1%	21.9%			

4.6 Smoking habits

4.6.1 Smoking habits

Smoking habit was found to be associated significantly with gender, age, educational attainment, marital status and occupation.

A higher proportion of males (26.6%), respondents aged 25-34 (19.8%), those had not completed secondary education (26.4%), those divorced/separated/widowed (26.0%) and blue collar workers (29.4%) were identified as current smokers (Table 4.6.1).

Table 4.6.1: Smoking habit (Q17a)

Variable	Level	Base	Yes, but not now	Yes, and still smoking	Never	p-value		
						Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	15.8%	26.6%	57.6%	0.000		
	Female	1 147	5.5%	6.2%	88.2%			
Age	18-24	276	6.6%	11.8%	81.6%		0.002	
	25-34	461	9.5%	19.8%	70.7%			
	35-44	582	9.2%	14.3%	76.5%			
	45-54	518	12.0%	16.5%	71.4%			
	55-64	278	14.2%	16.5%	69.3%			
Educational attainment	Primary or below	287	10.9%	15.2%	73.9%		0.000	
	Had not completed secondary	358	11.3%	26.4%	62.2%			
	Completed secondary (F.5)	676	11.0%	18.6%	70.4%			
	Matriculation	181	10.8%	10.0%	79.2%			
	Tertiary or above	655	9.0%	9.2%	81.8%			
Marital status	Never married	686	8.0%	17.5%	74.6%	0.002		
	Married	1 369	11.7%	14.2%	74.1%			
	Divorced/ Separated/ Widowed	97	8.8%	26.0%	65.2%			
Occupation	Managerial/ Professional worker	520	11.0%	14.5%	74.5%	0.000		
	Clerk	334	8.9%	12.8%	78.2%			
	Service worker	235	11.9%	27.5%	60.6%			
	Blue collar worker	320	16.1%	29.4%	54.5%			
	Not working	719	7.8%	8.8%	83.4%			

4.6.2 Amount of cigarettes consumed

Amount of cigarettes consumed was associated significantly with respondents' gender, age, educational attainment and occupation.

A higher proportion of males (9.4%), those aged 55-64 years (10.4%), those with primary or below education (12.8%) and blue-collar workers (13.4%) reported that they smoked more than 20 cigarettes per day (Table 4.6.2).

Table 4.6.2: Average number of cigarettes which the respondents smoked per day (Q17c)

Variable	Level	Base	Less than 1 cigarette per day now	1-10 cigarettes per day now	11-20 cigarettes per day now	More than 20 cigarettes per day now	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	271	7.8%	42.0%	40.7%	9.4%		0.000	
	Female	71	8.9%	79.8%	10.3%	1.0%			
Age	18-24	33	4.3%	74.1%	13.2%	8.5%			0.002
	25-34	91	6.7%	61.8%	26.1%	5.5%			
	35-44	83	12.6%	43.8%	34.3%	9.3%			
	45-54	86	8.3%	37.0%	47.7%	6.9%			
	55-64	46	5.5%	41.8%	42.3%	10.4%			
Educational attainment	Primary or below	44	0.0%	43.4%	43.8%	12.8%			0.000
	Had not completed secondary	95	2.8%	34.6%	52.6%	9.9%			
	Completed secondary (F.5)	126	12.3%	54.3%	25.4%	8.0%			
	Matriculation	18	6.0%	61.6%	32.4%	0.0%			
	Tertiary or above	60	13.9%	65.8%	18.4%	2.0%			
Occupation	Managerial/ Professional worker	75	13.2%	52.4%	28.6%	5.9%		0.000	
	Clerk	43	5.3%	74.0%	17.9%	2.8%			
	Service worker	65	11.9%	48.4%	34.1%	5.6%			
	Blue collar worker	94	4.3%	34.2%	48.0%	13.4%			
	Not working	64	5.7%	55.4%	32.1%	6.8%			

4.7 General Health Status

4.7.1 Perception about general health status

The perception about general health status was found to be associated significantly with respondents' gender, age, educational attainment, marital status, occupation and monthly household income.

Self-rated "poor" health status was more common among females (7.5%), respondents aged 25-34 (7.8%), those with primary or below education (9.2%), those divorced/ separated/widowed (11.1%), those not working (7.3%) and those having a monthly household income below $8,000 (15.6%) (Table 4.7.1).

Table 4.7.1: Perception about general health status (Q18)

Variable	Level	Base	Excellent	Very good	Good	Fair	Poor	p-value		
								Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	3.2%	15.9%	30.7%	45.3%	5.0%		0.000	
	Female	1 147	2.1%	12.7%	23.9%	53.9%	7.5%			
Age	18-24	276	1.6%	16.6%	31.3%	45.8%	4.7%			0.001
	25-34	461	1.9%	15.1%	28.1%	47.1%	7.8%			
	35-44	582	2.5%	13.8%	27.7%	50.4%	5.6%			
	45-54	518	3.1%	15.4%	23.1%	52.2%	6.2%			
	55-64	278	3.6%	8.2%	27.1%	53.6%	7.6%			
Educational attainment	Primary or below	287	2.7%	11.7%	20.1%	56.3%	9.2%			0.000
	Had not completed secondary	358	1.6%	12.0%	24.9%	54.0%	7.5%			
	Completed secondary (F.5)	676	2.2%	12.6%	27.5%	52.6%	5.1%			
	Matriculation	181	2.8%	15.8%	26.5%	50.3%	4.7%			
	Tertiary or above	655	3.2%	17.6%	31.0%	42.1%	6.3%			
Marital status	Never married	686	1.8%	15.4%	29.7%	46.0%	7.1%		0.006	
	Married	1 369	2.9%	13.6%	26.4%	51.5%	5.7%			
	Divorced/ Separated/ Widowed	97	2.4%	12.6%	16.3%	57.5%	11.1%			

Occupation	Managerial/ Professional worker	520	4.0%	16.0%	32.7%	41.4%	5.8%		0.002	
	Clerk	334	2.3%	15.9%	23.2%	52.3%	6.2%			
	Service worker	235	2.3%	12.1%	26.7%	51.9%	7.0%			
	Blue collar worker	320	2.0%	11.6%	26.0%	55.5%	4.9%			
	Not working	719	1.9%	14.0%	24.7%	52.1%	7.3%			
Monthly household income	Below $8,000	159	1.9%	9.5%	21.1%	51.9%	15.6%			0.000
	$8,000 - $13,999	316	1.2%	12.0%	26.2%	54.2%	6.4%			
	$14,000 - $19,999	228	1.4%	14.0%	28.8%	48.9%	6.9%			
	$20,000 - $39,999	555	1.9%	13.8%	25.8%	54.0%	4.5%			
	$40,000 or above	393	3.7%	18.5%	32.4%	41.5%	3.9%			

4.7.2 Perception of health condition compared with people of the same age

The perception of health condition compared with people of the same age was found to be associated significantly with the respondents' gender, age, marital status, occupation and monthly household income.

Females (1.5%), respondents aged 35-44 years (1.6%), those divorced/separated/widowed (6.4%), those not working (1.5%) and those having a monthly household income below $8,000 (4.7%) were more likely than their counterparts to self-perceive that their health status was "much worse" than their respective counterparts (Table 4.7.2).

Table 4.7.2: Perception of the health condition compared with people of the same age (Q19)

Variable	Level	Base	Much better	Better	The same	Worse	Much worse	p-value		
								Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	8.2%	28.3%	54.0%	9.0%	0.6%		0.004	
	Female	1 147	8.6%	22.0%	55.2%	12.7%	1.5%			
Age	18-24	276	2.9%	17.2%	65.5%	14.2%	0.3%			0.000
	25-34	461	5.8%	24.0%	57.2%	12.0%	1.0%			
	35-44	582	7.9%	26.1%	54.2%	10.2%	1.6%			
	45-54	518	12.4%	26.7%	50.7%	8.8%	1.4%			
	55-64	278	11.5%	29.7%	46.0%	12.4%	0.3%			

Marital status	Never married	686	5.4%	22.6%	57.7%	13.8%	0.5%		0.000	
	Married	1 369	9.8%	26.0%	53.8%	9.5%	0.9%			
	Divorced/ Separated/ Widowed	97	10.3%	27.2%	46.2%	9.9%	6.4%			
Occupation	Managerial/ Professional worker	520	10.1%	27.6%	54.0%	7.4%	0.9%		0.000	
	Clerk	334	6.0%	22.4%	56.2%	14.4%	1.1%			
	Service worker	235	10.5%	25.0%	56.0%	7.7%	0.8%			
	Blue collar worker	320	9.2%	28.1%	53.8%	8.4%	0.5%			
	Not working	719	7.6%	22.4%	54.1%	14.4%	1.5%			
Monthly household income	Below $8,000	159	8.6%	15.1%	51.8%	19.7%	4.7%			0.013
	$8,000 - $13,999	316	7.7%	27.6%	53.2%	9.9%	1.6%			
	$14,000 - $19,999	228	9.8%	25.7%	55.1%	8.9%	0.5%			
	$20,000 - $39,999	555	7.1%	24.0%	57.7%	10.5%	0.6%			
	$40,000 or above	393	10.3%	26.3%	55.2%	7.6%	0.5%			

4.7.3 Perception of present health condition compared with 12 months ago

Respondents' age, occupation and monthly household income was found to be associated significantly with their perception of present health condition compared with 12 months ago.

Respondents aged 55-64 years (2.2%), those not working (2.4%) and those having a monthly household income of below $8,000 (7.0%) were more likely than their respective counterparts to perceive that their health status was "much worse" compared with 12 months ago (Table 4.7.3).

Table 4.7.3: Perception of the general health status compared with 12 months ago (Q20)

Variable	Level	Base	Much better	Better	The same	Worse	Much worse	p-value		
								Chi-square test	Kruskal-Wallis test	Rank correlation
Age	18-24	276	2.8%	12.9%	65.8%	17.9%	0.6%			0.041
	25-34	461	4.9%	11.9%	64.4%	17.1%	1.8%			
	35-44	582	3.8%	9.8%	63.2%	21.5%	1.8%			
	45-54	518	2.8%	11.1%	62.8%	22.1%	1.2%			
	55-64	278	4.4%	11.6%	59.2%	22.7%	2.2%			

Occupation	Managerial/ Professional worker	520	2.9%	9.5%	67.3%	19.5%	0.8%		0.032	
	Clerk	334	1.2%	9.3%	64.9%	22.7%	1.8%			
	Service worker	235	6.6%	10.0%	65.9%	16.4%	1.1%			
	Blue collar worker	320	5.8%	9.3%	61.5%	22.7%	0.7%			
	Not working	719	3.7%	14.8%	59.3%	19.9%	2.4%			
Monthly household income	Below $8,000	159	3.4%	16.5%	43.8%	29.2%	7.0%			0.032
	$8,000 - $13,999	316	5.5%	11.0%	60.3%	21.9%	1.3%			
	$14,000 - $19,999	228	5.4%	9.5%	61.3%	22.5%	1.4%			
	$20,000 - $39,999	555	2.7%	8.4%	69.2%	19.1%	0.6%			
	$40,000 or above	393	3.5%	12.9%	65.4%	17.2%	1.1%			

4.8 Cervical screening (for female respondents only)

4.8.1 Experience of cervical screening

Experience of cervical screening was found to be associated significantly with fenale respondents' age, educational attainment, marital status, occupation and monthly household income.

Females aged 45-54 (79.3%), those with primary or below education (70.6%), those married (79.3%), blue collar workers (67.5%) and those having a monthly household income of $40,000 or above (70.0%) were more likely than their respective counterparts to have ever had cervical screening (Table 4.8.1).

Table 4.8.1: Ever had cervical smear before (Q21a)

Variable	Level	Base	Yes	No	p-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Age	18-24	138	8.3%	91.7%		0.000	
	25-34	253	53.5%	46.5%			
	35-44	321	75.0%	25.0%			
	45-54	262	79.3%	20.7%			
	55-64	132	67.6%	32.4%			
Educational attainment	Primary or below	180	70.6%	29.4%		0.000	
	Had not completed secondary	193	67.7%	32.3%			
	Completed secondary (F.5)	362	65.9%	34.1%			
	Matriculation	98	46.4%	53.6%			
	Tertiary or above	297	54.5%	45.5%			
Marital status	Never married	320	19.5%	80.5%	0.000		
	Married	743	79.3%	20.7%			
	Divorced/ Separated/ Widowed	65	77.1%	22.9%			
Occupation	Managerial/ Professional worker	200	58.4%	41.6%	0.006		
	Clerk	203	55.2%	44.8%			
	Service worker	112	54.5%	45.5%			
	Blue collar worker	74	67.5%	32.5%			
	Not working	524	67.1%	32.9%			
Monthly household income	Below $8,000	91	60.6%	39.4%		0.040	
	$8,000 - $13,999	169	68.5%	31.5%			
	$14,000 - $19,999	132	54.2%	45.8%			
	$20,000 - $39,999	268	62.2%	37.8%			
	$40,000 or above	192	70.0%	30.0%			

4.8.2 Time since last cervical smear

The period since the female respondents' last cervical smear for those ever screened was found to be associated significantly with age, educational attainment and monthly household income.

A higher proportion of females aged 55-64 years (23.5%), those with primary or below education (19.7%) and those having a monthly household income below $8,000 (19.7%) reported that they had their last smear 37 or more months ago (Table 4.8.2).

Table 4.8.2: Period of time since last cervical smear (Q21b)

Variable	Level	Base	1-12 months ago	13-36 months ago	37 or more months ago	p-value		
						Chi-square test	Kruskal-Wallis test	Rank correlation
Age	18-24	11	53.8%	46.2%	0.0%			0.000
	25-34	135	65.7%	30.7%	3.6%			
	35-44	239	57.0%	35.6%	7.4%			
	45-54	206	55.4%	34.8%	9.8%			
	55-64	88	44.9%	31.6%	23.5%			
Educational attainment	Primary or below	125	49.1%	31.2%	19.7%			0.005
	Had not completed secondary	130	55.8%	30.8%	13.4%			
	Completed secondary (F.5)	236	58.9%	34.2%	6.9%			
	Matriculation	45	51.8%	43.1%	5.1%			
	Tertiary or above	161	61.9%	34.5%	3.6%			
Monthly household income	Below $8,000	54	47.3%	33.0%	19.7%			0.000
	$8,000 - $13,999	113	51.7%	34.4%	13.8%			
	$14,000 - $19,999	71	55.3%	28.4%	16.4%			
	$20,000 - $39,999	167	59.8%	35.6%	4.6%			
	$40,000 or above	134	62.6%	34.7%	2.7%			

4.9 Pedestrian and driver road safety behaviour

4.9.1 Driving in the past 12 months

Driving a vehicle/car in the past 12 months prior to the survey was associated significantly with respondents' gender, age, educational attainment, occupation and monthly household income.

More males (39.8%), respondents aged 25-34 years (33.2%), those with tertiary or above education (38.7%), managerial/professional workers (43.9%) and those having a monthly household income $40,000 or above (45.9%) reported that they had driven a vehicle or car in the past 12 months prior to the survey (Table 4.9.1).

Table 4.9.1: Driving a vehicle/car during the previous 12 months prior to the survey (Q22)

Variable	Level	Base	Yes	No	p-value		
					Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 021	39.8%	60.2%	0.000		
	Female	1 147	13.0%	87.0%			
Age	18-24	276	12.1%	87.9%		0.000	
	25-34	461	33.2%	66.8%			
	35-44	582	28.9%	71.1%			
	45-54	518	27.3%	72.7%			
	55-64	278	16.4%	83.6%			
Educational attainment	Primary or below	287	10.5%	89.5%		0.000	
	Had not completed secondary	358	18.7%	81.3%			
	Completed secondary (F.5)	676	23.5%	76.5%			
	Matriculation	181	24.1%	75.9%			
	Tertiary or above	655	38.7%	61.3%			
Occupation	Managerial/ Professional worker	520	43.9%	56.1%	0.000		
	Clerk	334	21.4%	78.6%			
	Service worker	235	20.9%	79.1%			
	Blue collar worker	320	36.9%	63.1%			
	Not working	719	10.3%	89.7%			

Monthly household income	Below $8,000	159	12.0%	88.0%		0.000	
	$8,000 - $13,999	316	14.1%	85.9%			
	$14,000 - $19,999	228	17.1%	82.9%			
	$20,000 - $39,999	555	27.1%	72.9%			
	$40,000 or above	393	45.9%	54.1%			

4.9.2 Breaking speed limit

Frequency of breaking speed limit by 15 km per hour or above was associated significantly with respondents' gender, occupation and monthly household income.

Males (17.3%), service workers (18.4%) and respondents who had a monthly household income $20,000-$39,999 (18.5%) or $40,000 or above (17.6%) were more likely than their respective counterparts to report that they broke speed limit "all" or "most" of the time (Table 4.9.2).

Table 4.9.2: The extent of the speed limit being exceeded by 15km per hour or above (Q23)

Variable	Level	Base	All of the time	Most of the time	Some of the time	None of the time	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	407	5.8%	11.5%	53.3%	29.4%		0.002	
	Female	150	4.5%	6.9%	45.1%	43.6%			
Occupation	Managerial/ Professional worker	229	7.0%	8.7%	54.9%	29.4%		0.042	
	Clerk	71	2.1%	7.3%	48.6%	42.0%			
	Service worker	49	4.3%	14.1%	46.5%	35.2%			
	Blue collar worker	118	5.2%	12.6%	55.8%	26.5%			
	Not working	74	4.6%	11.7%	38.4%	45.3%			
Monthly household income	Below $8,000	19	5.2%	11.4%	19.5%	63.9%			0.027
	$8,000 - $13,999	44	2.4%	8.6%	54.8%	34.2%			
	$14,000 - $19,999	39	0.0%	14.2%	51.8%	34.1%			
	$20,000 - $39,999	150	8.1%	10.3%	45.6%	36.0%			
	$40,000 or above	180	7.1%	10.5%	54.7%	27.7%			

4.9.3 Use of seat-belts

The habit of using a seat-belt where it is mandatory and available (such as in private car, taxi or public light bus) was found to be associated significantly with respodents' age, marital status, occupation and monthly household income.

Respondents aged 18-24 years (8.2%), those never married (5.5%), blue collar workers (6.5%) and those having a monthly household income below $8,000 (9.5%) were more likely to report that they never used seat belt (Table 4.9.3).

Table 4.9.3: The extent of compliance with the regulation of 'using a seat-belt where it is mandatory and available' (Q25)

Variable	Level	Base	All of the time	Most of the time	Some of the time	None of the time	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Age	18-24	274	29.4%	29.0%	33.4%	8.2%			0.000
	25-34	455	45.9%	26.4%	23.9%	3.8%			
	35-44	572	50.2%	25.9%	19.5%	4.4%			
	45-54	508	60.0%	19.5%	18.3%	2.2%			
	55-64	273	61.5%	14.9%	18.8%	4.8%			
Marital status	Never married	675	38.4%	29.0%	27.1%	5.5%		0.000	
	Married	1 349	55.8%	20.7%	19.7%	3.8%			
	Divorced/ Separated/ Widowed	92	55.8%	22.3%	17.9%	4.1%			
Occupation	Managerial/ Professional worker	517	55.8%	22.4%	20.1%	1.8%		0.002	
	Clerk	332	47.0%	27.9%	19.9%	5.3%			
	Service worker	231	41.4%	24.1%	30.5%	3.9%			
	Blue collar worker	307	52.7%	20.3%	20.4%	6.5%			
	Not working	707	49.5%	23.0%	22.3%	5.2%			
Monthly household income	Below $8,000	154	51.3%	12.5%	26.7%	9.5%			0.000
	$8,000 - $13,999	307	42.7%	23.8%	27.5%	6.0%			
	$14,000 - $19,999	225	52.5%	20.6%	22.8%	4.1%			
	$20,000 - $39,999	555	48.7%	25.0%	22.2%	4.0%			
	$40,000 or above	386	54.7%	26.6%	16.2%	2.5%			

4.9.4 Compliance with traffic instructions to cross road

The habit of crossing road by ignoring traffic instructions (e.g. ignoring traffic light instructions, not using zebra or footbridge) was found to be associated significantly with respondents' gender, age, educational attainment, marital status, occupation and monthly household income.

A higher proportion of males (9.2%), respondents aged 18-24 (13.3%), those with tertiary or above education (10.1%), those never married (11.8%), clerks (10.3%) and those having a monthly household income $14,000-$19,999 or $20,000-$39,999 (8.4% and 8.6% respectively) reported that they jay-walked "all" or "most" of the time (Table 4.9.4).

Table 4.9.4: The extent of ignoring traffic instructions, not using zebra-crossing or footbridge to cross road (Q26)

Variable	Level	Base	All of the time	Most of the time	Some of the time	None of the time	p-value		
							Chi-square test	Kruskal-Wallis test	Rank correlation
Gender	Male	1 018	0.8%	8.4%	72.7%	18.1%		0.000	
	Female	1 145	0.4%	4.9%	69.0%	25.7%			
Age	18-24	276	1.3%	12.0%	72.6%	14.1%			0.000
	25-34	461	0.3%	12.3%	71.7%	15.7%			
	35-44	581	1.0%	4.2%	72.5%	22.3%			
	45-54	515	0.4%	3.3%	72.6%	23.7%			
	55-64	278	0.0%	3.1%	61.8%	35.2%			
Educational attainment	Primary or below	287	0.5%	3.9%	66.0%	29.6%			0.000
	Had not completed secondary	358	1.1%	4.5%	67.3%	27.2%			
	Completed secondary (F.5)	675	0.4%	5.8%	71.1%	22.7%			
	Matriculation	180	0.7%	6.9%	68.8%	23.6%			
	Tertiary or above	653	0.5%	9.5%	74.7%	15.2%			
Marital status	Never married	686	0.7%	11.1%	75.5%	12.8%		0.000	
	Married	1 365	0.5%	4.4%	69.0%	26.2%			
	Divorced/ Separated/ Widowed	96	1.9%	5.4%	62.4%	30.4%			

Occupation	Managerial/ Professional worker	518	0.9%	7.7%	72.9%	18.4%		0.000	
	Clerk	334	0.0%	10.3%	74.9%	14.7%			
	Service worker	235	0.6%	6.9%	74.7%	17.9%			
	Blue collar worker	320	0.8%	6.2%	72.1%	20.9%			
	Not working	719	0.6%	3.9%	65.4%	30.1%			
Monthly household income	Below $8,000	159	0.9%	2.5%	62.7%	33.9%			0.001
	$8,000 - $13,999	316	0.3%	5.7%	69.7%	24.2%			
	$14,000 - $19,999	227	0.9%	7.6%	74.4%	17.2%			
	$20,000 - $39,999	555	0.5%	8.1%	74.6%	16.9%			
	$40,000 or above	393	0.7%	7.0%	71.0%	21.2%			

Chapter 5 Conclusion and Recommendations

5.1 Conclusion

5.1.1 Body weight control

According to the WHO classification of weight status for Asians, survey results revealed that over two-fifths (41.0%) of respondents were either 'overweight' or 'obese', approximately half of respondents (49.0%) were classified as 'normal' and the rest (10.0%) were 'underweight'.

Respondents' perception of their current weight status showed a similar distribution, with about half of respondents (52.6%) perceiving their current weight as 'just right', more than a third (38.1%) felt they were 'overweight' and 9.2% found themselves 'underweight'. However, a significant proportion of respondents did not view their own weight status in the same way that the WHO classification for Asians suggested. More specifically, less than three quarters of the respondents (72.1%) who perceived themselves as 'overweight' were classified as 'overweight' or 'obese' by the WHO and 40.8% of those who felt they were 'underweight' matched the WHO classification. Females, the older respondents (aged 35 years or above), the lower educated and the divorced/separated/widowed respondents were more likely to view themselves as 'overweight'.

Only 15.0% of the respondents reported a weight difference of more than 10 pounds when compared with one year ago, of which about two-thirds (62.2%) reported an increase in weight. During the 12 months prior to the survey, over one quarter (26.6%) of the respondents had done something to control their weight, of which 57.9% had aimed to lose weight. Among those respondents who had deliberately controlled their weight, doing physical exercise (84.6%) and changing dietary habits (74.6%) were the most common adopted ways to control weight by the respondents.

5.1.2 Exercise/physical activities

For people of all ages, sexes and bodily conditions, regular physical activity improves health[23]. However, this survey revealed that most respondents were not physically active in the week prior to the survey. Over half of the respondents had not engaged in any moderate exercise (54.9%) or vigorous exercise (65.9%) for at least 10 minutes a day during the week. On the other hand, walking was the most common form of physical activities in which 75.0% of the respondents had spent at least 10 minutes on walking everyday in the week prior to the survey. The survey also revealed that respondents had spent long hours sitting during the day, as shown by an average of 6.3 hours per day during weekdays (Monday to Friday) in the week prior to the survey. Based on the categorical scoring of the International Physical Activity Questionnaire (IPAQ) analysis, most of the respondents' level of physical activity was found to be either 'moderate' (57.9%) or 'low' (20.7%), only about one in five (21.4%)

[23] "Fact Sheet on Physical Activity", Department of Health. (http://www.info.gov.hk/dh/do_you_k/eng/exercise.htm)

respondents were found to have "high" level of physical activity. Female, respondents aged 35-44 years, those having tertiary or above education, clerks and respondents with monthly household income below $8,000 were more likely than their respective counterparts to have 'low' level of physical activity.

5.1.3 Dietary habits

Eating enough fruit and vegetables has many health benefits. Adequate consumption of fruit and vegetables as part of the daily diet could help prevent major non-communicable diseases (NCD) such as cardiovascular diseases and certain cancers.[24] Eating a variety of vegetables and fruit could ensure an adequate intake of most micronutrients, dietary fibres and a host of essential non-nutrient substances. Moreover, increased fruit and vegetables consumption can help displace foods high in saturated fats, sugar or salt.

In general, vegetables appeared to be more frequently consumed than fruit by the respondents. Most respondents (82.6%) had eaten vegetables on a daily basis while over half of the respondents (53.0%) had taken fruit everyday. However, the average daily intake of fruit and vegetables by the respondents was only 3.4 servings (excluding juice). Moreover, fruit/vegetable juice consumption was found to be uncommon amongst respondents, as only 6.3% of the respondents drank fruit/vegetable juice daily.

Only around one-fifth of the respondents (including juice: 20.2%; excluding juice: 19.1%) had a daily average intake of 5 or more servings of fruit and vegetables in the week prior to the survey. Males, younger respondents (aged 18-34 years), those with high educational attainment and the never married respondents were less likely than their respective counterparts to have consumed the recommended at least 5 servings of fruit and vegetables a day.

5.1.4 Pattern of alcohol consumption

Approximately one third of respondents (31.5%) were drinkers who had drunk at least one alcoholic drink during the month prior to the survey. On the whole, drinking was more prevalent among males, respondents aged 25-34 years, those with tertiary or above education, those never married, managerial/professional workers and those having a monthly household income $40,000 or above.

Among the drinkers in this survey, 28.7% of them reported binge drinking (drinking 5 or more glasses/cans of alcohol on one occasion) at least once in the month prior to the survey. Binge drinking was more common among males, those divorced/separated/widowed, service and blue-collar workers.

[24] Fruit, vegetables and NCD prevention. Geneva: World Health Organization; 2003. (http://www.who.int/dietphysicalactivity/publications/facts/fruit/en/index.html)

According to the classification of sensible drinking habits in the British Alcohol Guidelines, 30.1% of the drinkers were found to have exceeded the recommended low risk level. Respondents with lower education (primary or below) were more likely to have drinking habits which exceeded the low risk level.

5.1.5 Smoking habits

Cigarette smoking is a leading cause of death and diseases including heart disease, certain cancers and chronic lung disease. 15.8% of the respondents were smokers at time of this survey. Among them, 92.0% were daily smokers. A higher proportion of smokers who reported smoking more than 20 cigarettes a day were found in males, those aged 55-64 years, those less educated and blue-collar workers.

5.1.6 General health status

Over two in five of all respondents (43.9%) claimed their general health status was ‘good’, ‘very good’ or ‘excellent’, whereas 6.3% claimed their general health status was ‘poor’.

Almost one-third of all respondents (33.4%) considered their health condition was ‘better’ or ‘much better’ compared with people of their age. On the other hand, around one in eight (12.0%) considered their health condition was ‘worse’ or ‘much worse’ than those of their age.

Only 15.0% of all respondents reported their present health condition was ‘better’ or ‘much better’ compared with 12 months ago. In contrast, over one-fifth of them (21.8%) reported ‘worse’ or ‘much worse’.

5.1.7 Cervical screening

Near two-thirds of the female respondents (62.1%) had been screened for cervical cancer before. Females aged below 35 years, the better educated, the never married and clerks and service workers were less likely than their counterparts to have ever had a cervical smear.

5.1.8 Pedestrian and driver road safety behaviour

About one quarter of all respondents (25.7%) reported that they had driven a vehicle in the 12 months prior to the survey. Among them, two-thirds (66.8%) had broken the speed limit by at least 15km per hour and 4.9% had driven within 2 hours after drinking alcoholic beverages.

Half of all respondents (50.2%) claimed that they would use a seat-belt as a passenger 'all of the time' where it is mandatory or available. Besides, 7.2% of respondents claimed that they jay-walked "all" or "most" of the time.

5.2 Recommendations

Some recommendations based on the survey findings are suggested below:

4. Messages on achieving an optimal weight status, engaging in regular physical activity, having adequate daily fruit and vegetables consumption should be further promoted. Using the Asian standard of WHO classification, over two-fifths (41.0%) of the respondents were either 'overweight' or 'obese' at the time of this survey, while over half of those respondents who considered themselves 'underweight' were in fact 'normal' (55.4%). Furthermore, only around one fifth of the respondents (including juice: 20.2%; excluding juice: 19.1%) had a daily average intake of five or more servings of fruit and vegetables in the week prior to the survey. respondents' daily consumption of fruit and vegetables was still far from satisfactory. Therefore, more health promotion should be done to educate the community about:

   i. proper assessment of body weight status, such as using the Body Mass Index (BMI);

   ii. proper methods of maintaining normal body weight, such as increased physical activity and having healthy diets; and

   iii. increasing the daily intake of fruit and vegetables to at least 5 servings a day.

5. The road safety behaviour of drivers should be further enhanced. The findings revealed that two-thirds of drivers (66.8%) in our sample broke the speed limit by more than 15km per hour, especially male and younger drivers.

6. Close to one third of drinkers (30.1%) had their drinking habit exceeding the recommended low risk drinking level. Promotion of sensible drinking should be particularly targeted at male drinkers and those with lower education. .

4. It is essential to identify factors which attribute to the disparities of health related behaviour among segments of the population, including differences that occur across gender, age, education level, marital status, occupation and income level. It is important to address the extent of health problems affected by unhealthy behavioural practices which may not only be related to personal characteristics but also to some socio-economic and environmental factors. Health promotion programmes should therefore take such underlying factors into account and strategic plans should be formulated to enhance awareness of certain groups of people on the relevant areas that need to be improved.

5.3 Limitations

1. Although the data were weighted by age and sex distribution in order to correct for over- or under-representation of all groups in the population, the data were not weighted for the number of eligible respondents in a household and the number of phones in a household, or to account for non-response.

2. The use of the 'Next Birthday' rule to select respondent when there were more than one eligible respondent resided in a household by the time of the telephone contact could not cover people who were always not at home in the evening and weekends.

3. Household telephone survey excludes households without telephones and does not attempt to contact institutionalized people at all, which might result in selection bias due to under-representation of certain segments of the population. However, the possibility of people not being interviewed for the first reason should be small as domestic telephone coverage in Hong Kong is greater than 90.0%.

4. The survey relied on self-reported data and had certain limitations.

    i. Respondents might not be willing to disclose to interviewers and deliberately under-report those behaviours that are socially undesirable or considered as unhealthy (such as high alcohol consumption). Conversely, respondents might over-report those behaviours that are considered desirable (such as consuming more fruit and vegetables).

    ii. Self-reporting behaviour or practices was also subjected to recall bias and recall error. However, the recall period was kept quite short in this survey that would reduce such bias.

5. Finally, this was a cross-sectional study. The causal or time relationship between various factors could not be identified.

Annex A Survey Questionnaire

Introduction

Hello! My name is _____, an interviewer from the Social Sciences Research Centre of the University of Hong Kong (SSRC). We are commissioned by the Department of Health to conduct a public survey on healthy living. Would you mind sparing some time to answer a few questions? All the information provided by you will be kept strictly confidential and for collective analysis only. If you have any queries on this survey, you can call the SSRC at phone number: 2857 8333 during office hours between 9 am and 6 pm.

Respondent Selection

Because we are choosing a respondent randomly, please tell me how many people are living in this household, including yourself but excluding live-in maids?
(_____ persons)

Then, how many household members excluding domestic helpers aged 18-64 years who are at home right now? (____ persons)

Who is the one who will next have a birthday? (Interviewer: explain the "Next Birthday" rule if respondent questions)

Telephone No._____

Interviewer No._____

Body Weight Control

Because the Department of Health wishes to gauge the height and weight of Hong Kong people, please provide the figures as accurate as possible in the following questions. (Interviewer: please convert the measurement scale as needed; if the respondent does not know his/her height/weight/waist circumference, input '998'. If the respondent refuses to report his/her height/weight/waist circumference, input '999'.)

Q1a.What is your height without wearing shoes?

_____ cm (Interviewer: you may input, e.g.: 156cm, 1.56m, 6f2i)

Q1b.What is your weight wearing with simple clothes?

_____ Kg (Interviewer: you may input, e.g.: 60kg, 135lbs)

Q1c.What is your waist circumference?

_____ cm (Interviewer: you may input, e.g.: 60cm, 32i)

Q2a. Does your weight now differ by more than 10 pounds (about 4.5 Kgs) from your weight one year ago?
1. Yes
2. No (skip to Q3)
3. Don't know (skip to Q3)

Q2b.Did it increase or decrease?
1. Increase
2. Decrease

Q3. What do you think about your current weight?
1. Overweight
2. Just right
3. Underweight

Q4a. During the past 12 months, did you try to do something deliberately to control your weight for example increasing weight, decreasing weight or maintaining weight?
1. Yes
2. No (skip to Q6)

Q4b.Was it for increasing weight, losing weight or maintaining weight?
1. Losing weight
2. Increasing weight
3. Maintaining weight

Q5. During the past 12 months, did you use the following methods to control your weight?

Q5a.Taking the drugs or products including health food for controlling your weight?
1. Yes
2. No

Q5b. Consulting doctors or dieticians?
1. Yes
2. No

Q5c. Going to weight control or beauty parlours?
1. Yes
2. No

Q5d. Doing physical exercises?
1. Yes
2. No

Q5e.Changing dietary habit?
1. Yes
2. No

Q5f. Any other methods?
1. Yes, please specify
2. No

Physical Exercises/Activities

Please try your best to answer the following few questions, I am going to ask you about the time you spent on vigorous physical activities, moderate physical activities and walking in the last 7 days. These activities can be carried out in your work place, your home or in your leisure time.

Q6. During the last 7 days, on how many days did you do vigorous physical activities? Vigorous activities are those that make you breathe much harder than normal, e.g., aerobics, football, swimming, heavy physical work, jogging, etc., and you did these activities for at least 10 minutes at a time.

(Interviewer: if the respondent does not know or hard to say, input ’998’)

_____ days

Q7. [Ask those whose answers in Q6 are greater than or equal to “1”]

On those days that you have performed vigorous physical activity for at least 10 minutes, how much time on average per day did you usually spend on doing vigorous physical activities? (Interviewer: if the respondent does not know or hard to say, input ’998’)

_____ minutes

Q8. During the last 7 days, on how many days did you do moderate physical activities? Moderate physical activities are those that make you breathe somewhat harder than normal, e.g., biking, washing cars/polishing, fast walking, cleaning windows, etc. and you did these activities for at least 10 minutes at a time.

(Interviewer: if the respondent does not know or hard to say, input ’998’)

_____ days

Q9. [Ask those whose answers in Q8 are greater than or equal to "1"]

On those days that you have performed moderate physical activity for at least 10 minutes, how much time on average per day did you usually spend on doing moderate physical activities?

(Interviewer: if the respondent does not know or hard to say, input '998')

_____ minutes

Q10. During the last 7 days, on how many days did you walk for at least 10 minutes at a time? This includes walking to offices/schools, walking to travel from place to place, and walking for leisure.

(Interviewer: if the respondent does not know or hard to say, input '998')

_____ days

Q11. [Ask those whose answers in Q10 are greater than or equal to "1"]

On those days that you have walked for at least 10 minutes, how much time on average did you usually spend on walking in one of those days? (Interviewer: if the respondent does not know or hard to say, input '998')

_____ hours _____ minutes

Q12. During the last 7 days, how much time on average did you usually spend on sitting on a weekday? This includes time spent sitting at work, at home, visiting friends, reading, traveling on public transport, and lying down to watch television. [If the respondent cannot answer the daily average time, then say: Please try to make an estimate as accurate as possible.]

(Interviewer: if the respondent does not know or hard to say, input '998')

_____ hours _____ minutes

Dietary Habits

Q13a. On average, how many days do you drink fruit or vegetable juice each week? "Juice" refers to freshly squeezed juice or those are labelled 100% or pure fruit/vegetable juice.

_____ days (skip to Q14 if less than "1" day)

Q13b. On the day(s) that you have drunk juice, how many cups do you usually drink? A cup means 250 mls in volume or a standard-sized tetra pack of vitasoy.

_____ cups

Q14a. On average, how many days do you eat fruit each week? (not including fruit juice)

1. 1 day
2. 2 days
3. 3 days
4. 4 days
5. 5 days
6. 6 days
7. 7 days
8. None (skip to Q15a)

Q14b. [Ask those whose answers in Q14a are less than ”8”]

How many fruit, on average, did you eat on one of those days? (interviewer’s prompts on portion of fruit: One fruit equals to 1 medium sized apple or orange, 1 medium sized banana, or two kiwi fruit or plums, or one bowl of small fruit like grapes or strawberries) (Interviewer: ask exactly what they ate and then convert using table and the numbers can be recorded as half such as 0.5 or 1.5).

_____ No. of fruit

Q15a. On average, how many days do you eat vegetables each week?

1. 1 day
2. 2 days
3. 3 days
4. 4 days
5. 5 days
6. 6 days
7. 7 days
8. None (skip to Q16a)

Q15b. [Ask those whose answers in Q16a are less than “8”]

How many bowls of cooked vegetables, on average, did you eat on one of those days? (Interviewer’s prompts: one bowl refers to the size of a rice bowl. (Interviewer: ask exactly what they ate and then convert using table) (the numbers can be recorded as half such as 0.5 or 1.5. For uncooked leafy vegetables, half the total)

_____ No. of bowls of vegetables

Pattern of Alcohol Consumption

Q16a. During the last month, have you had at least one alcoholic drink?
1. Yes
2. No (skip to Q17a)

Q16b. On how many days per week during the last month, on average, did you drink at least one alcoholic drink?

(Interviewer: Do not read out the answers and if the respondent does not know or hard to say, input ’998’)
1. Daily
2. 6 days per week
3. 5 days per week
4. 4 days per week
5. 3 days per week
6. 2 days per week
7. 1 day per week
8. Less than 1 day per week

Q16c.How many standard drinks on average did you drink on those days?

(Read out the types of standard drink) (A can or small bottle of beer is approximately equal to 1.5 standard drinks. Or 1 standard drink is approximately equal to one dining glass of wine, or 1 spirit nip of brandy/whisky, or one small glass of Chinese wine such as rice wine) (a can/ small bottle of beer approximately equals to about 330 – 375 mls. Be aware, a big bottle can range from 640 mls (most brands) to 960 mls (Blue Ribbon)). [Interviewer please refer to the standard drink information sheet- the illustrated guide to typical standard drinks- for other examples if needed]

(Interviewer: if the respondent does not know or hard to say, input ’998’)

_____ No. of drink

Q16d. In the last month, did you drink at least 5 glasses or cans of alcohol on one occasion? That means the total number of glasses and cans of any type of alcohol, and one occasion means period of a few hours.
1. Yes
2. No (skip to Q17a)

Q16e. How many times did you do this in the last month? (Interviewer: Do not read out the answers)
1. Once
2. Twice
3. Three times or more

Smoking Pattern

Q17a. Have you smoked before?

(Interviewer: read out the answers one by one)
1. Yes, but not now
2. Yes, and still smoking (skip to Q17c)
3. Never (skip to Q18)

Q17b. How long have you abstained from smoking? (Interviewer: read out the answers one by one)
1. Had abstained for less than 1 month (skip to Q18)
2. Had abstained for 1 month to l year (skip to Q18)
3. Had abstained for more than l year (skip to Q18)

Q17c. How many cigarettes do you smoke on average per day? (Interviewer: Do not read out the answers)

1. less than 1 cigarette per day now
2. 1-10 cigarettes per day now
3. 11-20 cigarettes per day now
4. more than 20 cigarettes per day now

General Health Status

Q18. In general, would you say your health is: (Interviewer: Read out the answers)

1. Excellent
2. Very good
3. Good
4. Fair
5. Poor

Q19. Compared with people of your age, do you consider that your health condition is: (Interviewer: Read out the answers)

1. Much better
2. Better
3. The same
4. Worse
5. Much worse

Q20. Compared with past 12 months, what do you think about your present health condition? (Interviewer: Read out the answers)

1. Much better
2. Better
3. The same
4. Worse
5. Much worse

Cervical Screening (females only)

Q21a. Have you had a cervical smear before?
1. Yes
2. No (skip to Q22)
3. Not sure (skip to Q22)

Q21b. [Ask those whose answers in Q21a are "Yes"]

About how long ago did you have the last cervical smear? (Interviewer: Do not read out the answers)

1. Within 12 months
2. 13-24 months
3. 25-36 months
4. 37-48 months
5. 49-60 months
6. 61 months and above
7. Cannot remember

Pedestrian's and Driver's Behaviours on Road Safety

Q22. Have you driven a vehicle in the last 12 months?
1. Yes
2. No (skip to Q25)

Q23. How often do you break speed limit by 15km/hr? (Interviewers please clarify "kilometers" or "miles" if necessary) (Interviewer: Read out 1-4 answers)
1. All of the time
2. Most of the time
3. Some of the time
4. None of the time

Q24. In the past month, how many times had you driven a vehicle/car within 2 hours after drinking alcoholic beverages?

_____[Key in number]

Q25. As a passenger, how often do you use seat-belt where it is mandatory and available, such as in private car, taxi, or public light bus? (Interviewer: Read out 1-4 answers)

1. All of the time
2. Most of the time
3. Some of the time
4. None of the time
5. N/A as do not use a vehicle/car

Q26.How often do you jay-walk, including ignore traffic light instructions, not using zebra-crossing or footbridge when they are available? (Interviewer: Read out 1-4 answers)

1. All of the time
2. Most of the time
3. Some of the time
4. None of the time
5. N/A as do not cross roads

Personal Information

Please tell us more about yourself in the order to facilitate our analysis. All information collected would be treated in strictest confidence.

D1. Record the gender

1. Male
2. Female

D2. What is your age?

_____ Years (Interviewer: please input '999' if respondent refuse to answer)

D3. What is your highest educational attainment? (Interview: please read out the answers one by one)

1. Primary or below
2. Had not completed secondary
3. Completed secondary (Form 5)
4. Matriculation
5. Tertiary (non-degree)/degree or above

999 Refuse to answer

D4. What is your marital status? (Interview: please read out the answers one by one)

1. Never married
2. Married and with child (ren)
3. Married and without child (ren)
4. Divorced or Separated
5. Widowed
6. Refuse to answer

D5. Are you currently engaged in a job?

1. Yes
2. No (skip toD7)

D6. What is your occupation?

1. Employers/Managers/Administrator (skip to D8)
2. Professional (skip to D8)
3. Associate Professional (skip to D8)
4. Clerk (skip to D8)
5. Service worker (skip to D8)
6. Shop sales worker (skip to D8)
7. Skilled agricultural/fishery worker (skip to D8)
8. Craft and related worker (skip to D8)
9. Plant and machine operator and assembler (skip to D8)
10. Un-skilled worker (skip to D8)

999 Refuse to answer (skip to D8)

D7. Are you a .....? (Interviewer: read out the answers one by one)

1. Student (skip to D9)
2. Home-maker (skip to D9)
3. Unemployed person (skip to D9)
4. Retired person (skip to D9)
5. Others, Please specify:_____ (skip to D9)

999 Refuse to answer (skip to D9)

D8. How much is your monthly personal income including all the income?

1. None
2. $1-1,999
3. $2,000-3,999
4. $4,000-5,999
5. $6,000-7,999
6. $8,000-9,999
7. $10,000-11,999
8. $12,000-13,999
9. $14,000-15,999
10. $16,000-17,999
11. $18,000-19,999
12. $20,000-24,999
13. $25,000-29,999
14. $30,000-34,999
15. $35,000-39,999
16. $40,000-44,999
17. $45,000-49,999
18. $50,000 or above
19. Refuse to answer

D9. How much is your monthly household income including all the income?

1. Less than $2,000
2. $2,000-3,999
3. $4,000-5,999
4. $6,000-7,999
5. $8,000-9,999
6. $10,000-11,999
7. $12,000-13,999
8. $14,000-15,999
9. $16,000-17,999
10. $18,000-19,999
11. $20,000-24,999
12. $25,000-29,999
13. $30,000-34,999
14. $35,000-39,999
15. $40,000-44,999
16. $45,000-49,999
17. $50,000-54,999
18. $55,000-59,999
19. $60,000 or above
20. Refuse to answer

D10. Language used

1. Cantonese
2. Putonghua
3. English

The end:
The survey has come to the end. Thank you very much for your participation. Goodbye!

Annex B Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ)

Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire (IPAQ)

– Short and Long Forms

November 2005

Contents

1. Introduction

This document describes recommended methods of scoring the data derived from the telephone / interview administered and self-administered IPAQ short and long form instruments. The methods outlined provide a revision to earlier scoring protocols for the IPAQ short form and provide for the first time a comparable scoring method for IPAQ long form. Latest versions of IPAQ instruments are available from www.ipaq.ki.se.

Although there are many different ways to analyse physical activity data, to date there is no formal consensus on a 'correct' method for defining or describing levels of physical activity based on self–report population surveys. The use of different scoring protocols makes it very difficult to compare within and between countries, even when the same instrument has been used. Use of these scoring methods will enhance the comparability between surveys, provided identical sampling and survey methods have been used.

2. Uses of IPAQ Instruments

IPAQ short form is an instrument designed primarily for population surveillance of physical activity among adults. It has been developed and tested for use in adults (age range of 15-69 years) and until further development and testing is undertaken the use of IPAQ with older and younger age groups is not recommended.

IPAQ short and long forms are sometimes being used as an evaluation tool in intervention studies, but this was not the intended purpose of IPAQ. Users should carefully note the range of domains and types of activities included in IPAQ before using it in this context. Use as an outcome measure in small scale intervention studies is not recommended.

3. Summary Characteristics of IPAQ Short and Long Forms

1. IPAQ assesses physical activity undertaken across a comprehensive set of domains including:
    a. leisure time physical activity
    b. domestic and gardening (yard) activities
    c. work-related physical activity
    d. transport-related physical activity;

2. The IPAQ **short** form asks about three specific types of activity undertaken in the four domains introduced above. The specific types of activity that are assessed are walking, moderate-intensity activities and vigorous-intensity activities.

3. The items in the **short** IPAQ form were structured to provide separate scores on walking, moderate-intensity and vigorous-intensity activity. Computation of the total score for the short form requires summation of the duration (in minutes) and frequency (days) of walking, moderate-intensity and vigorous-intensity activities. Domain specific estimates cannot be estimated.

4. The IPAQ **long** form asks details about the specific types of activities undertaken within each of the four domains. Examples include walking for transportation and moderate-intensity leisure-time activity.

5. The items in the **long** IPAQ form were structured to provide separate domain specific scores for walking, moderate-intensity and vigorous-intensity activity within each of the work, transportation, domestic chores and gardening (yard) and leisure-time domains. Computation of the total scores for the long form requires summation of the duration (in minutes) and frequency (days) for all the types of activities in all domains. Domain specific scores or activity specific sub-scores may be calculated. Domain specific scores require summation of the scores for walking, moderate-intensity and vigorous-intensity activities within the specific domain, whereas activity-specific scores require summation of the scores for the specific type of activity across domains.

4. Overview of Continuous and Categorical Analyses of IPAQ

Both categorical and continuous indicators of physical activity are possible from both IPAQ forms. However, given the non-normal distribution of energy expenditure in many populations, it is suggested that the continuous indicator be presented as median minutes/week or median MET–minutes/week rather than means (such as mean minutes/week or mean MET-minutes/week).

4.1 Continuous Variables

Data collected with IPAQ can be reported as a continuous measure. One measure of the volume of activity can be computed by weighting each type of activity by its energy requirements defined in METs to yield a score in MET–minutes. METs are multiples of the resting metabolic rate and a MET-minute is computed by multiplying the MET score of an activity by the minutes performed. MET-minute scores are equivalent to kilocalories for a 60 kilogram person. Kilocalories may be computed from MET-minutes using the following equation: MET-min x (weight in kilograms/60 kilograms). MET-minutes/day or MET-minutes/week can be presented although the latter is more frequently used and is thus suggested.

Details for the computation for summary variables from IPAQ short and long forms are detailed below. As there are no established thresholds for presenting MET-minutes, the IPAQ Research Committee propose that these data are reported as comparisons of median values and interquartile ranges for different populations.

4.2 Categorical Variable: Rationale for Cut Point Values

There are three levels of physical activity proposed to classify populations:

1. Low
2. Moderate
3. High

The algorithms for the short and long forms are defined in more detail in Sections 5.3 and 6.3, respectively. Rules for data cleaning and processing prior to computing the algorithms appear in Section 7.

Regular participation is a key concept included in current public health guidelines for physical activity.[1] Therefore, both the total volume and the number of days/sessions are included in the IPAQ analysis algorithms.

The criteria for these levels have been set taking into account that IPAQ asks questions in all domains of daily life, resulting in higher median MET-minutes estimates than would have been estimated from leisure-time participation alone. The criteria for these three levels are shown below.

Given that measures such as IPAQ assess total physical activity in all domains, the "leisure time physical activity" based public health recommendation of 30 minutes on most days will be achieved by most adults in a population. Although widely accepted as a goal, in absolute terms 30 minutes of moderate-intensity activity is low and broadly equivalent to the background or basal levels of activity adult individuals would accumulate in a day. Therefore a new, higher cutpoint is needed to describe the levels of physical activity associated with health benefits for measures such as IPAQ, which report on a broad range of domains of physical activity.

'High'

This category was developed to describe higher levels of participation. Although it is known that greater health benefits are associated with increased levels of activity there is no consensus on the exact amount of activity for maximal benefit. In the absence of any established criteria, the IPAQ Research Committee proposes a measure which equates to approximately at least one hour per day or more, of at least moderate-intensity activity above the basal level of physical activity Considering that basal activity may be considered to be equivalent to approximately 5000 steps per day, it is proposed that "high active" category be considered as those who move at least 12,500 steps per day, or the equivalent in moderate and vigorous activities. This represents at least an hour more moderate-intensity activity over and above the basal level of activity, or half an hour of vigorous-intensity activity over and above basal levels daily. These calculations were based on emerging results of pedometers studies.[2]

This category provides a higher threshold of measures of total physical activity and is a useful mechanism to distinguish variation in population groups. Also it could be used to set population targets for health-enhancing physical activity when multi-domain instruments, such as IPAQ are used.

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[1] Pate RR, Pratt M, Blair SN, Haskell WL , Macera CA, Bouchard C et al. Physical activity and public health. A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of American Medical Association* 1995; 273(5):402-7. and U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, The Presidents' Council on Physical Fitness and Sports: Atlanta, GA:USA. 1996.

[2] Tudor-Locke C, Bassett DR Jr. How many steps/day are enough? Preliminary pedometer indices for public health. Sports Med. 2004;34(1):1-8.

'Moderate'

This category is defined as doing some activity, more than the low active category. It is proposed that it is a level of activity equivalent to "half an hour of at least moderate-intensity PA on most days", the former leisure time-based physical activity population health recommendation.

'Low'

This category is simply defined as not meeting any of the criteria for either of the previous categories.

5. Protocol for IPAQ Short Form

5.1 Continuous Scores

Median values and interquartile ranges can be computed for walking (W), moderate-intensity activities (M), vigorous-intensity activities (V) and a combined total physical activity score. All continuous scores are expressed in MET-minutes/week as defined below.

5.2 MET Values and Formula for Computation of MET-minutes/week

The selected MET values were derived from work undertaken during the IPAQ Reliability Study undertaken in 2000-2001[3]. Using the Ainsworth et al. Compendium (*Med Sci Sports Med* 2000) an average MET score was derived for each type of activity. For example; all types of walking were included and an average MET value for walking was created. The same procedure was undertaken for moderate-intensity activities and vigorous-intensity activities. The following values continue to be used for the analysis of IPAQ data: Walking = 3.3 METs, Moderate PA = 4.0 METs and Vigorous PA = 8.0 METs. Using these values, four continuous scores are defined:

Walking MET-minutes/week = 3.3 * walking minutes * walking days
Moderate MET-minutes/week = 4.0 * moderate-intensity activity minutes * moderate days
Vigorous MET-minutes/week = 8.0 * vigorous-intensity activity minutes * vigorous-intensity days
Total physical activity MET-minutes/week = sum of Walking + Moderate + Vigorous MET-minutes/week scores.

5.3 Categorical Score

Category 1 Low

This is the lowest level of physical activity. Those individuals who not meet criteria for Categories 2 or 3 are considered to have a 'low' physical activity level.

[3] Craig CL,Marshall A , Sjostrom M et al. International Physical Activity Questionnaire: 12 country reliability and validity *Med Sci Sports Exerc* 2003;August

Category 2 Moderate

The pattern of activity to be classified as 'moderate' is either of the following criteria:

a) 3 or more days of vigorous-intensity activity of at least 20 minutes per day
OR
b) 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day
OR
c) 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum Total physical activity of at least 600 MET-minutes/week.

Individuals meeting at least one of the above criteria would be defined as accumulating a minimum level of activity and therefore be classified as 'moderate'. See Section 7.5 for information about combining days across categories.

Category 3 High

A separate category labelled 'high' can be computed to describe higher levels of participation.
The two criteria for classification as 'high' are:

a) vigorous-intensity activity on at least 3 days achieving a minimum Total physical activity of at least 1500 MET-minutes/week
OR
b) 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum Total physical activity of at least 3000 MET-minutes/week.

See Section 7.5 for information about combining days across categories.

5.4 Sitting Question in IPAQ Short Form

The IPAQ sitting question is an additional indicator variable of time spent in sedentary activity and is not included as part of any summary score of physical activity. Data on sitting should be reported as median values and interquartile ranges. To-date there are few data on sedentary (sitting) behaviours and no well-accepted thresholds for data presented as categorical levels.

6. Protocol for IPAQ Long Form

The long form of IPAQ asks in detail about walking, moderate-intensity and vigorous-intensity physical activity in each of the four domains. Note: asking more detailed questions regarding physical activity within domains is likely to produce higher prevalence estimates than the more generic IPAQ short form.

6.1 Continuous Score

Data collected with the IPAQ long form can be reported as a continuous measure and reported as median MET-minutes. Median values and interquartile ranges can be computed for walking (W), moderate-intensity activities (M), and vigorous-intensity activities (V) within each domain using the formulas below. Total scores may also be calculated for walking (W), moderate-intensity activities (M), and vigorous-intensity activities (V); for each domain (work, transport, domestic and garden, and leisure) and for an overall grand total.

6.2 MET Values and Formula for Computation of MET-minutes

Work Domain

Walking MET-minutes/week at work = 3.3 * walking minutes * walking days at work

Moderate MET-minutes/week at work= 4.0 * moderate-intensity activity minutes * moderate-intensity days at work

Vigorous MET-minutes/week at work= 8.0 * vigorous-intensity activity minutes * vigorous-intensity days at work

Total Work MET-minutes/week =sum of Walking + Moderate + Vigorous MET-minutes/week scores at work.

Active Transportation Domain

Walking MET-minutes/week for transport = 3.3 * walking minutes * walking days for transportation

Cycle MET-minutes/week for transport= 6.0 * cycling minutes * cycle days for transportation

Total Transport MET-minutes/week = sum of Walking + Cycling MET-minutes/week scores for transportation.

Domestic and Garden [Yard Work] Domain

Vigorous MET-minutes/week yard chores= 5.5 * vigorous-intensity activity minutes * vigorous-intensity days doing yard work (**Note**: the MET value of 5.5 indicates that vigorous garden/yard work should be considered a moderate-intensity activity for scoring and computing total moderate intensity activities.)

Moderate MET-minutes/week yard chores= 4.0 * moderate-intensity activity minutes * moderate-intensity days doing yard work

Moderate MET-minutes/week inside chores= 3.0* moderate-intensity activity minutes * moderate-intensity days doing inside chores.

Total Domestic and Garden MET-minutes/week =sum of Vigorous yard + Moderate yard + Moderate inside chores MET-minutes/week scores.

Leisure-Time Domain

Walking MET-minutes/week leisure = 3.3 * walking minutes * walking days in leisure

Moderate MET-minutes/week leisure = 4.0 * moderate-intensity activity minutes * moderate-intensity days in leisure

Vigorous MET-minutes/week leisure = 8.0 * vigorous-intensity activity minutes * vigorous-intensity days in leisure

Total Leisure-Time MET-minutes/week = sum of Walking + Moderate + Vigorous MET-minutes/week scores in leisure.

Total Scores for all Walking, Moderate and Vigorous Physical Activities

Total Walking MET-minutes/week = Walking MET-minutes/week (at Work + for Transport + in Leisure)

Total Moderate MET-minutes/week total = Moderate MET-minutes/week (at Work + Yard chores + inside chores + in Leisure time) + Cycling Met-minutes/week for Transport + Vigorous Yard chores MET-minutes/week

Total Vigorous MET-minutes/week = Vigorous MET-minutes/week (at Work + in Leisure)

Note: Cycling MET value and Vigorous garden/yard work MET value fall within the coding range of moderate-intensity activities.

Total Physical Activity Scores

An overall total physical activity MET-minutes/week score can be computed as:

Total physical activity MET-minutes/week = sum of Total (Walking + Moderate + Vigorous) MET-minutes/week scores.

This is equivalent to computing:

Total physical activity MET-minutes/week = sum of Total Work + Total Transport + Total Domestic and Garden + Total Leisure-Time MET-minutes/week scores.

As there are no established thresholds for presenting MET-minutes, the IPAQ Research Committee proposes that these data are reported as comparisons of median values and interquartile ranges for different populations.

6.3 Categorical Score

As noted earlier, regular participation is a key concept included in current public health guidelines for physical activity.[4] Therefore, both the total volume and the number of day/sessions are included in the IPAQ analysis algorithms. There are three levels of physical activity proposed to classify populations – 'low', 'moderate', and 'high'. The criteria for these levels are the same as for the IPAQ short [described earlier in Section 4.2]

Category 1 Low

This is the lowest level of physical activity. Those individuals who not meet criteria for Categories 2 or 3 are considered 'low'.

Category 2 Moderate

The pattern of activity to be classified as 'moderate' is either of the following criteria:

d) 3 or more days of vigorous-intensity activity of at least 20 minutes per day
OR
e) 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day
OR

[4] Pate RR, Pratt M, Blair SN, Haskell WL , Macera CA, Bouchard C et al. Physical activity and public health. A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *Journal of American Medical Association* 1995; 273(5):402-7. and U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, The Presidents' Council on Physical Fitness and Sports: Atlanta, GA:USA. 1996.

f) 5 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum Total physical activity of at least 600 MET-minutes/week.

Individuals meeting at least one of the above criteria would be defined as accumulating a moderate level of activity. See Section 7.5 for information about combining days across categories.

Category 3 High

A separate category labelled 'high' can be computed to describe higher levels of participation.
The two criteria for classification as 'high' are:

a) vigorous-intensity activity on at least 3 days achieving a minimum Total physical activity of at least 1500 MET-minutes/week

OR

b) 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum Total physical activity of at least 3000 MET-minutes/week.

See Section 7.5 for information about combining days across categories.

6.4 IPAQ Sitting Question IPAQ Long Form

The IPAQ sitting question is an additional indicator variable and is not included as part of any summary score of physical activity. To-date there are few data on sedentary (sitting) behaviours and no well-accepted thresholds for data presented as categorical levels. For the sitting question 'Minutes' is used as the indicator to reflect time spent in sitting rather than MET-minutes which would suggest an estimate of energy expenditure.

IPAQ long assesses an estimate of sitting on a typical weekday, weekend day and time spent sitting during travel (see transport domain questions).

Summary sitting variables include

Sitting Total Minutes/week = weekday sitting minutes* 5 weekdays + weekend day sitting minutes* 2 weekend days

Average Sitting Total Minutes/day = (weekday sitting minutes* 5 weekdays + weekend day sitting minutes* 2 weekend days) / 7

Note: The above calculation of 'Sitting Total' excludes time spent sitting during travel because the introduction in IPAQ long directs the responder to NOT include this component as it would have already been captured under the Transport section. If a summary sitting variable including time spent sitting for transport is required, it should be calculated by adding the time reported (travelling in a motor vehicle) under transport to the above formula. Care should be taken in reporting these alternate data to clearly distinguish the 'total sitting' variable from a 'total sitting – including transport' variable.

7. Data Processing Rules

In addition to a standardized approach to computing categorical and continuous measures of physical activity, it is necessary to undertake standard methods for the cleaning and treatment of IPAQ datasets. The use of different approaches and rules would introduce variability and reduce the comparability of data.

There are no established rules for data cleaning and processing on physical activity. Thus, to allow more accurate comparisons across studies IPAQ Research Committee has established and recommends the following guidelines:

7.1 Data Cleaning

I. Any responses to duration (time) provided in the hours and minutes response option should be converted from hours and minutes into minutes.
II. To ensure that responses in 'minutes' were not entered in the 'hours' column by mistake during self-completion or during data entry process, values of '15', '30', '45', '60' and '90' in the 'hours' column should be converted to '15', '30', '45', '60' and '90' minutes, respectively, in the minutes column.
III. In some cases duration (time) will be reported as weekly (not daily) e.g., VWHRS, VWMINS. These data should be converted into an average daily time by dividing by 7.
IV. If 'don't know' or 'refused ' or data are missing for time or days then that case is removed from analysis.

Note: Both the number of days *and* daily time are required for the creation of categorical and continuous summary variables

7.2 Maximum Values for Excluding Outliers

This rule is to exclude data which are unreasonably high; these data are to be considered outliers and thus are excluded from analysis. All cases in which the sum total of all Walking, Moderate and Vigorous time variables is greater than 960 minutes (16 hours) should be excluded from the analysis. This assumes that on average an individual of 8 hours per day is spent sleeping.

The 'days' variables can take the range 0-7 days, or 8, 9 (don't know or refused); values greater than 9 should not be allowed and those cases excluded from analysis.

7.3 Minimum Values for Duration of Activity

Only values of 10 or more minutes of activity should be included in the calculation of summary scores. The rationale being that the scientific evidence indicates that episodes or bouts of at least 10 minutes are required to achieve health benefits. Responses of less than 10 minutes [and their associated days] should be re-coded to 'zero'.

7.4 Truncation of Data Rules

This rule attempts to normalize the distribution of levels of activity which are usually skewed in national or large population data sets.

In IPAQ short - it is recommended that all Walking, Moderate and Vigorous time variables exceeding ' 3 hours' or '180 minutes' are truncated (that is re-coded) to be equal to '180 minutes' in a new variable. This rule permits a maximum of 21 hours of activity in a week to be reported for each category (3 hours * 7 days).

In IPAQ long – the truncation process is more complicated, but to be consistent with the approach for IPAQ short requires that the variables total Walking, total Moderate-intensity and total Vigorous-intensity activity are calculated and then, for each of these summed behaviours, the total value should be truncated to 3 hours (180 minutes).

When analysing the data as categorical variable or presenting median and interquartile ranges of the MET-minute scores, the application of the truncation rule will not affect the results. This rule does have the important effect of preventing misclassification in the 'high' category. For example, an individual who reports walking for 10 minutes on 6 days and 12 hours of moderate activity on one day could be coded as 'high' because this pattern meets the '7 day" and "3000 MET-min" criteria for 'high'. However, this uncommon pattern of activity is unlikely to yield the health benefits that the 'high' category is intended to represent.

Although using median is recommended due to the skewed distribution of scores, if IPAQ data are analysed and presented as a continuous variable using mean values, the application of the truncation rule will produce slightly lower mean values than would otherwise be obtained.

7.5 Calculating MET-minute/week Scores

Data processing rules 7.2, 7.3, and 7.4 deals first with excluding outlier data, then secondly, with recoding minimum values and then finally dealing with high values. These rules will ensure that highly active people remain classified as 'high', while decreasing the chances that less active individuals are misclassified and coded as 'high'.

Using the resulting variables, convert time and days to MET-minute/week scores [see above Sections 5.2 and 6.2; METS x days x daily time].

7.6 Calculating Total Days for Presenting Categorical Data on Moderate and High Levels

Presenting IPAQ data using categorical variables requires the total number of 'days' on which all physical activity was undertaken to be assessed. This is difficult because frequency in 'days' is asked separately for walking, moderate-intensity and vigorous-intensity activities, thus allowing the total number of 'days' to range from a minimum

of 0 to a maximum of 21'days' per week in IPAQ short and higher in IPAQ long. The IPAQ instrument does not record if different types of activity are undertaken on the same day.

In calculating 'moderately active', the primary requirement is to identify those individuals who undertake activity on at least '5 days'/week [see Sections 4.2 and 5.3]. Individuals who meet this criterion should be coded in a new variable called "*at least five days*" and this variable should be used to identify those meeting criterion b) at least 30 minutes of moderate-intensity activity and/or walking; and those meeting criterion c) any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of 600 MET-minutes/week.

Below are two examples showing this coding in practice:

i) an individual who reports '2 days of moderate-intensity' and '3 days of walking' should be coded as a value indicating "*at least five days*";

ii) an individual reporting '2 days of vigorous-intensity', '2 days of moderate-intensity' and '2 days of walking should be coded as a value to indicate "*at least five days*" [even though the actual total is 6].

The original frequency of 'days' for each type of activity should remain in the data file for use in the other calculations.

The same approach as described above is used to calculate total days for computing the 'high' category. The primary requirement according to the stated criteria is to identify those individuals who undertake a combination of walking, moderate-intensity and or vigorous-intensity activity on at least 7 days/week [See section 4.2]. Individuals who meet this criterion should be coded as a value in a new variable to reflect "*at least 7 days*".

Below are two examples showing this coding in practice:

i) an individual who reports '4 days of moderate-intensity' and '3 days of walking' should be coded as the new variable "*at least 7 days*".

ii) an individual reporting '3 days of vigorous-intensity', '3 days moderate-intensity' and '3 days walking' should be coded as "*at least 7 days*" [even though the total adds to 9] .

8. Summary algorithms

The algorithms in Appendix 1 and Appendix 2 to this document show how these rules work in an analysis plan, to develop the categories 1 [Low], 2 [Moderate], and 3 [High] levels of activity.

IPAQ Research Committee
November 2005

APPENDIX 1

At A Glance
IPAQ Scoring Protocol (Short Forms)

Continuous Score

Expressed as MET-min per week: MET level x minutes of activity/day x days per week

Sample Calculation

MET levels	MET-minutes/week for 30 min/day, 5 days
Walking = 3.3 METs	3.3*30*5 = 495 MET-minutes/week
Moderate Intensity = 4.0 METs	4.0*30*5 = 600 MET-minutes/week
Vigorous Intensity = 8.0 METs	8.0*30*5 = 1,200 MET-minutes/week
	TOTAL = 2,295 MET-minutes/week

Total MET-minutes/week = Walk (METs*min*days) + Mod (METs*min*days) + Vig (METs*min*days)

Categorical Score- three levels of physical activity are proposed

1. Low

   - No activity is reported **OR**
   - Some activity is reported but not enough to meet Categories 2 or 3.

2. Moderate

   Either of the following 3 criteria
   - 3 or more days of vigorous activity of at least 20 minutes per day **OR**
   - 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day **OR**
   - 5 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of at least 600 MET-minutes/week.

3. High

   Any one of the following 2 criteria
   - Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week **OR**
   - 7 or more days of any combination of walking, moderate- or vigorous-intensity activities accumulating at least 3000 MET-minutes/week

Please review the full document "Guidelines for the data processing and analysis of the International Physical Activity Questionnaire" for more detailed description of IPAQ analysis and recommendations for data cleaning and processing [www.ipaq.ki.se].

APPENDIX 2

At A Glance
IPAQ Scoring Protocol (Long Forms)

Continuous Score

Expressed as MET-minutes per week: MET level x minutes of activity/day x days per week

Sample Calculation

MET levels	**MET-minutes/week for 30 min/day, 5 days**
Walking at work= 3.3 METs	3.3*30*5 = 495 MET-minutes/week
Cycling for transportation= 6.0 METs	6.0*30*5 = 900 MET-minutes/week
Moderate yard work= 4.0 METs	4.0*30*5 = 600 MET-minutes/week
Vigorous intensity in leisure= 8.0 METs	8.0*30*5 = 1,200 MET-minutes/week
	TOTAL = 3,195 MET-minutes/week

Domain Sub Scores
Total MET-minutes/week at **work** = Walk (METs*min*days) + Mod (METs*min*days) + Vig (METs*min*days) at work

Total MET-minutes/week for **transportation** = Walk (METs*min*days) + Cycle (METs*min*days) for transportation

Total MET-minutes/week from **domestic and garden** = Vig (METs*min*days) yard work + Mod (METs*min*days) yard work + Mod (METs*min*days) inside chores

Total MET-minutes/week in **leisure-time** = Walk (METs*min*days) + Mod (METs*min*days) + Vig (METs*min*days) in leisure-time

Walking, Moderate-Intensity and Vigorous-Intensity Sub Scores

Total **Walking** MET-minutes/week = Walk MET-minutes/week (at Work + for Transport + in Leisure)

Total **Moderate** MET-minutes/week = Cycle MET-minutes/week for Transport + Mod MET-minutes/week (Work + Yard chores + Inside chores + Leisure) + Vigorous Yard chores MET-minutes

Note: The above is a total moderate activities only score. If you require a total of all moderate-intensity physical activities you would sum Total Walking and Total Moderate

Total **Vigorous** MET-minutes/week = Vig MET-minutes/week (at Work + in Leisure)

Total Physical Activity Score
Total Physical Activity MET-minutes/week = **Walking** MET-minutes/week + **Moderate** MET-minutes/week + Total **Vigorous** MET-minutes/week

Continued……..

Also

Total Physical Activity MET-minutes/week = Total MET-minutes/week (at Work + for Transport + in Chores + in Leisure)

Categorical Score- three levels of physical activity are proposed

1. Low

   No activity is reported **OR**
   a. Some activity is reported but not enough to meet Categories 2 or 3.

2. Moderate

   Either of the following 3 criteria
   a. 3 or more days of vigorous-intensity activity of at least 20 minutes per day **OR**
   b. 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day **OR**
   c. 5 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of at least 600 MET-min/week.

3. High

   Any one of the following 2 criteria
   - Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week **OR**
   - 7 or more days of any combination of walking, moderate- or vigorous- intensity activities accumulating at least 3000 MET-minutes/week

Please review the full document "Guidelines for the data processing and analysis of the International Physical Activity Questionnaire" for more detailed description of IPAQ analysis and recommendations for data cleaning and processing [www.ipaq.ki.se].

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- End of Report -