

National University of Singapore

Community Health @ Bukit Panjang: a Report on the Baseline Survey

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Introduction

The Community Health @Bukit Panjang study was conceptualised jointly by the Bukit Panjang Constituency Office led by Mayor Dr Teo Ho Pin and organizations of the National University Health System (NUHS) – Saw Swee Hock School of Public Health's Epidemiology Domain, the NUHS Regional Health System (RHS) Planning Office and the Geriatric Medicine Division.

The study has 3 objectives:

- 1) *Surveillance*. To assess the health status of the Bukit Panjang Constituency residents aged 40 and above who are Singapore citizens or Permanent Residents. For those who are aged 65 and over, additional assessments were included to study specifically elderly health.
- 2) *Intervention*. To identify opportunities for interventions that promote health and interventions that manage disease progression.
- 3) *Research*. The Bukit Panjang cohort is part of the nation-wide cohort, the Singapore Population Health Studies (SPHS)¹ that prospectively follows up some 50,000 Singaporeans and Permanent Residents of Chinese, Malay or Indian ethnicities over time to determine risk factors that led to the development and progression of complex diseases.

This report presents the findings from the baseline assessment and identifies opportunities for programmatic interventions.

Study Protocol

The study proposal was reviewed and approved by the National Healthcare Group Domain Specific Review Board.

Publicity began with the help of the Bukit Panjang Community Club (BPCC) office in April 2015. Banners were put up at public amenities such as the marketplace and the Club, posters were displayed at the bulletin boards at each lift lobby of each HDB block and invitation letters were sent to the first RC zone that would be surveyed. In order to kick start the recruitment and also to develop 'study ambassadors' to help disseminate information about the study to the community, 38 grassroots volunteers were recruited in the first week with the help of the BPCC office. Each participant would have received an invitation letter to participate in the Community Health @Bukit Panjang study at least 2 weeks before he or she would be contacted by a trained interviewer from NUHS. Interviewers went door to door or approached BPCC's activity groups to screen for residents who would be eligible for the study.

At the first meeting, participants were presented full information about the study to enable them to decide whether to take part. Written consent was obtained from those willing or from the legal guardians of those with mental conditions. A face-to-face interview would take place immediately after or at another arranged time. Most of the interviews were conducted in the participant's home or at a nearby Residents' Committee centre. All interviews were audio-recorded for quality control and training purposes. A \$10 token of appreciation was provided to each participant at the end of the interview. Interviewed participants were given an option to undergo a health screening that was held at BPCC, which included collection of blood and urine samples for immediate tests and storage

¹ More information on the SPHS is available at <https://blog.nus.edu.sg/sphs/>.

for future research. Participants were advised to fast from the night before and the health screening was conducted only in the morning. Each participant received a \$20 token of appreciation for completing the health screening. Table 1.1 shows the type of data collected from the interview and the health screening. The consent forms and data collection forms are accessible at <https://blog.nus.edu.sg/sphs/community-health-study/>.

Table 1.1. Types of data collected in the study

Interview data	Physical examination	Laboratory tests
<ul style="list-style-type: none"> • Socio-demography • Smoking • Alcohol consumption • Physical activity • Medication • Medical history • Medical screening practice • Health-related Quality of Life (EQ-5D) • Mental health (Mini-International Neuropsychiatric Interview (M.I.N.I.) – depression, mania and generalized anxiety disorder) <p><i>Additional for participants aged 65 and over</i></p> <ul style="list-style-type: none"> • Oral health • Activities of Daily Living (Barthel) • Instrumental Activities of Daily Living (Lawton) • Cognitive test (MMSE) • FRAILTY • Falls risk • 3-min Nutritional Survey 	<ul style="list-style-type: none"> • Height, weight, hip and waist circumferences • Blood pressure • Ankle Brachial Index • Visual acuity • Screening audiometry • Hand grip strength • * Timed-Up-&-Go 	<ul style="list-style-type: none"> • Serum creatinine • Fasting glucose • Glucose tolerance test • Lipids • HbA1c • Albumin/creatinine ratio • C-reactive protein (hsCRP) <p><i>Additional for 480 participants aged 65 and over</i></p> <ul style="list-style-type: none"> • Serum albumin • Full blood count • Iron panel • Hepcidin • Interleukin-6 • Tumour Necrosis Factor-alpha • Interferon-gamma • Erythropoietin

All the data was collected real-time via tablets and stored securely at SSHSPH servers, where the research data would be de-identified. Blood and urine samples were labelled with non-identifying codes and couriered to National University Hospital laboratories within the same day.

Participants who were eligible for a faecal immunochemical test (FIT) or mammogram screening were identified when they attended the health screening. Participants who are 50 years old or older and who had not done a FIT or a colonoscopy or sigmoidoscopy in the past 10 years would be issued a free FIT kit. Female participants who are 50 years old or older and have not had a mammogram screening in the last 2 years would be offered a service to schedule them for a screening on a mammo bus that was brought to the BPC vicinity on a pre-planned day.

Within 4 weeks of their health screening, participants would receive personal reports of their results through mail, and which would include, if applicable, referral letters to their family doctor, optometrist or dentist. Participants who have the conditions picked up through the study

assessments as shown in Table 1.2 were mailed a general practitioner (GP) consultation fee waiver voucher² worth \$35 along with their health screening report.

Table 1.2. List of abnormal screening results that would be highlighted in the post-screening report with a recommendation to the participant to follow up with a GP.

Aged 40 and over	Additional results for aged 65 and over
<ul style="list-style-type: none"> • Low / High BMI • Low / High Ankle Brachial Index • Very low / elevated blood glucose • Elevated blood pressure, HbA1c, serum creatinine, low-density lipoprotein cholesterol (LDL-C), total cholesterol, triglycerides, C-reactive protein, albumin/creatinine ratio or random urine albumin • Low high-density lipoprotein cholesterol (HDL-C) • Major depressive episode (current, past or recurrent) • Manic episode (current or past) • Hypomanic episode (current or past) • Generalized anxiety disorder 	<ul style="list-style-type: none"> • Impaired cognition (low MMSE score) • Suspected malnutrition • High falls risk (at least 1 fall in the last 12 months or took more than 12sec to complete the Timed-Up-and-Go test) • Low serum albumin, hemoglobin, vitamin B12, serum ferritin or serum transferrin • Low / High serum iron

Between 3 weeks to 3 months after the report had been mailed, NUHS RHS care coordinators and health ambassadors would call each participant who had been issued a GP consultation fee waiver voucher to highlight the use of the voucher. NUHS RHS monitored the utilization of the vouchers within the 3-month validity period.

Area, Period and Number Surveyed

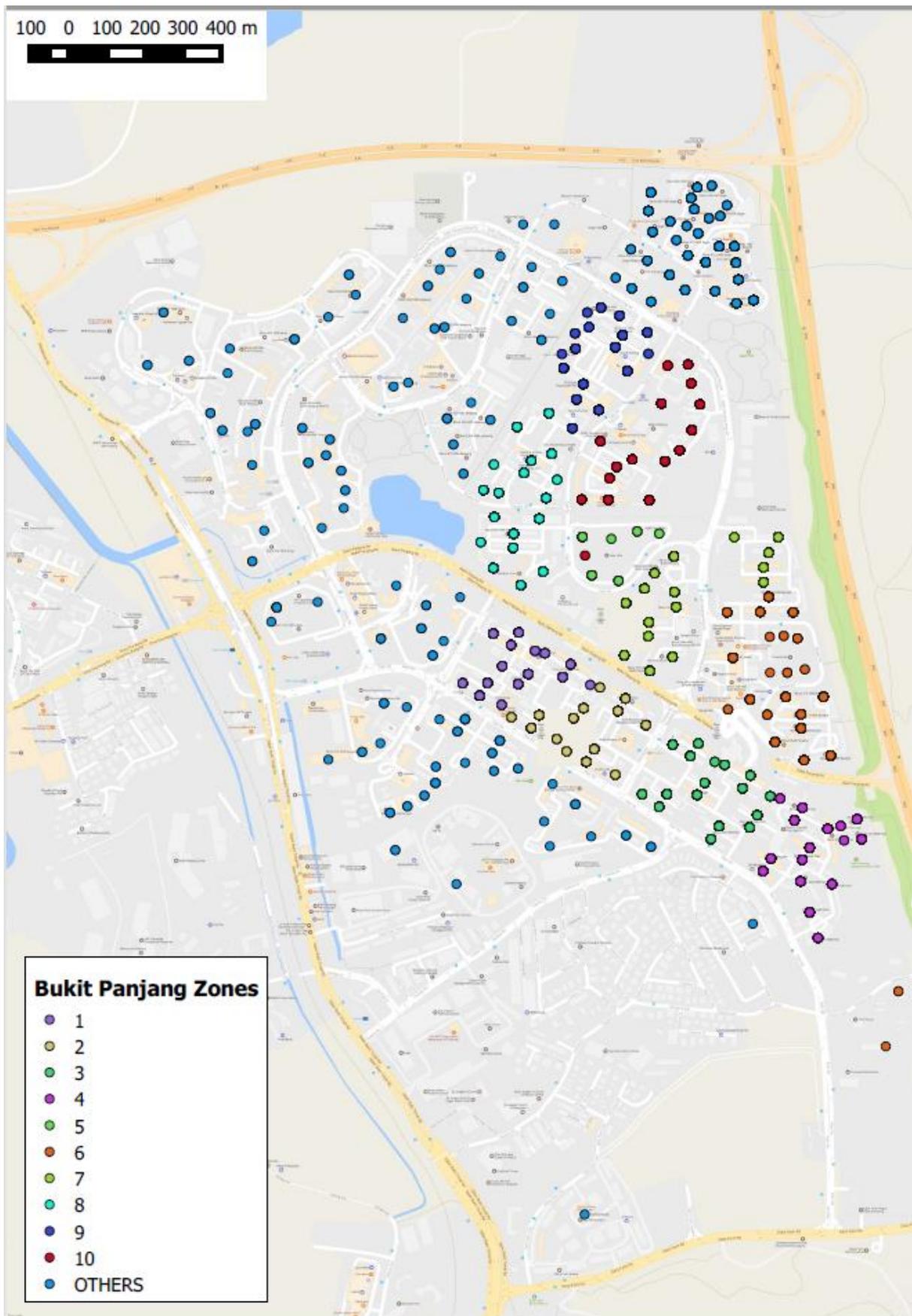
The Community Health @Bukit Panjang study began in April 2015 and concluded in August 2016. A total of 4906 residents were interviewed, of which 3799 underwent the health screening.

Table 1.3. Total number of participants interviewed and underwent health screening, by areas

Constituency	Number surveyed	Number screened	% of surveyed who were screened
Bukit Panjang Constituency, RC Zones	4242	3273	77.2
Cashew Constituency	92	87	94.6
Zhenghua Constituency	563	430	76.4
Others	9	9	100.0
Total	4906	3799	77.4

² The voucher could only be used at 9 participating GP clinics within the Bukit Panjang Constituency and has a 3-month validity period.

Figure 1.1 Area of survey. Each dot represents a participating residential block.



Socio-Demographic Profile

Table 1.4. Socio-demographic characteristics of the study participants

	All (N)	All (%)
Number	4906	100.0
Gender		
Male	1969	40.1
Female	2937	59.9
Age group (years)		
30-39	1	0
40-49	1296	26.4
50-59	1820	37.1
60-69	1239	25.3
70-79	457	9.3
80-108	93	1.9
Ethnicity		
Chinese	3514	71.6
Malay	843	17.2
Indian	460	9.4
Others	89	1.8
Highest education		
No formal education/Primary/PSLE	1679	34.2
Secondary, GCE O/N level	2122	43.3
GCE A level, Polytechnic & other diploma, degree, professional qualification	1103	22.5
Work status		
Working	2991	61
Homemaker/ Housewife	1269	25.9
Retired	443	9.0
Others	200	4.1
Average monthly household earnings (\$)		
Below 2,000	1216	31.8
2,000-5,999	1880	49.2
Above 5,999	729	19.1
Type of housing		
HDB 1-3 room flat	787	16.0
HDB 4-5 room flat	4083	83.2
Private	31	0.6
Others	4	0.1

Medical Conditions

Diabetes Mellitus

Participants are classified into different diabetes and normal categories based on self-reported diagnosis, and where available, the results of fasting blood glucose and glycated haemoglobin (HbA1c) tests. 3642 (74.2%) participants have fasting blood glucose.

The current recommendation test for the diagnosis of diabetes by the Ministry of Health (MOH) is the Oral Glucose Tolerance Test (OGTT) which requires two blood samples to be drawn from a subject. The first for a fasting sample and the second to be taken 2 hours after a 75g glucose liquid has been consumed right after the first blood sample was taken. The glucose levels in the 2 samples would then classify the subject as normal, with impaired glucose tolerance or with diabetes. The primary objective of this study was to screen, not diagnose, residents at risk and therefore, OGTT was not performed on all who are not diagnosed diabetics. It was offered to the participants whose fasting blood glucose results classify them as at-risk, however, as the OGTT would have to be performed on another occasion, not everyone offered took up the test.

Presently, the HbA1c test is used in standard medical practice in Singapore only to monitor the control of blood glucose levels in diabetics. It indicates the average level of blood glucose for the past 3 months and is not affected by short-term dietary changes including fasting. From 2011 onwards, the World Health Organization (WHO) recommends the use of HbA1c test as an additional test for the diagnosis of diabetes mellitus.³ To estimate the number of participants who are undiagnosed, we use both the fasting blood glucose and HbA1c results.

Table 2.1. Classification of blood glucose levels

Classification	Criteria
Normal blood glucose	Fasting blood glucose <7mmol/l and HbA1c <6.5%
High blood glucose	Fasting blood glucose ≥7mmol/l or HbA1c ≥6.5%

Table 2.2. Classification of diabetes status

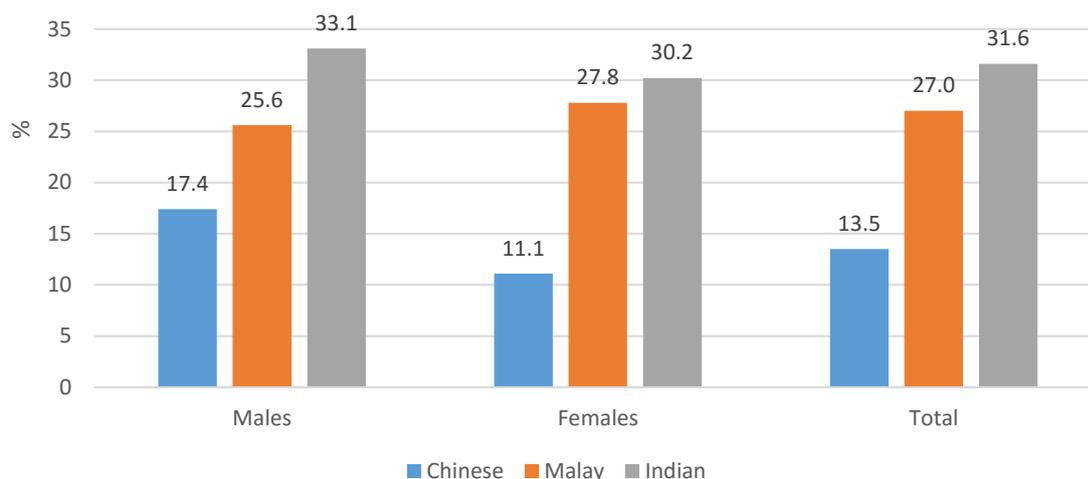
Classification	Criteria
Diagnosed diabetic	Had been told by doctor to have diabetes or was taking medications for diabetes
Undiagnosed with high blood glucose	Participants who met all of these criteria <ul style="list-style-type: none">• Had not been told by a doctor to have diabetes, not sure if had been told by a doctor to have diabetes, or had been told to have prediabetes• Was not on medication for diabetes• Fasting glucose ≥7mmol/l or HbA1c≥6.5%

³ WHO. Use of glycated haemoglobin (HbA1c) in the diagnosis of diabetes mellitus: Abbreviated report of a WHO consultation. 2011

Prevalence of diagnosed and undiagnosed diabetes

16.9% of the participants had diagnosed diabetes or had high blood glucose levels. The proportion of these participants was higher in males (19.9%) than in females (15.1%), and the proportion in Indians (31.6%) was highest amongst the ethnic groups, followed by Malays (27.0%) and then Chinese (13.5%).

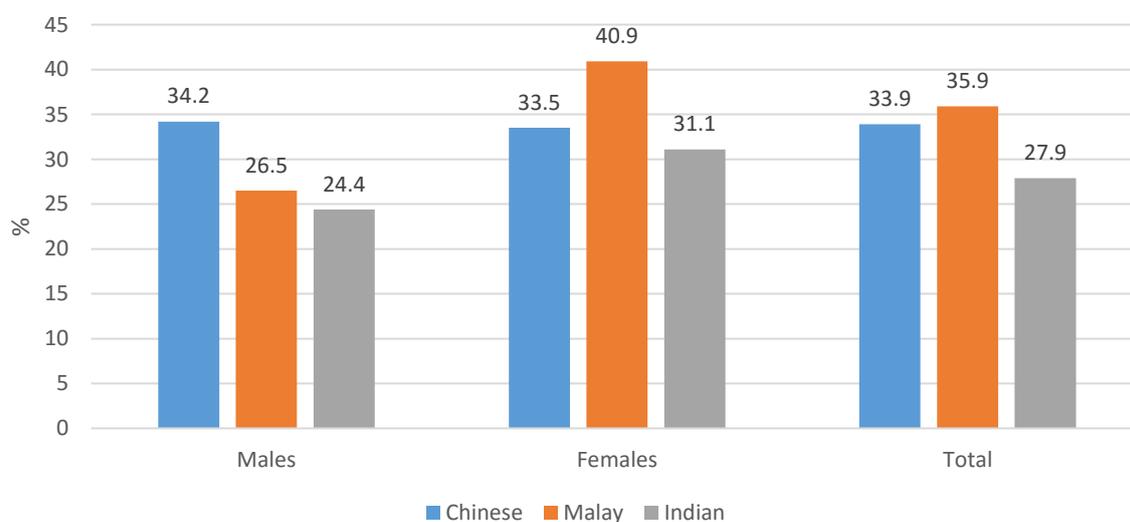
Figure 2.1. Percentage of participants who were diagnosed with diabetes or had high blood glucose levels, by gender and ethnic group



Prevalence of undiagnosed diabetes

33.4% of the participants who had high blood glucose levels had not been previously diagnosed with diabetes. The proportion of this group was higher in females (35.5%) than in males (30.8%), and the proportion in Chinese (33.9%) and Malays (35.9%) was higher than in Indians (27.9%).

Figure 2.2. Percentage of participants with high blood glucose levels who were previously undiagnosed, by gender and ethnic group



Control of blood glucose levels in diagnosed diabetics

Table 2.3. Classification of poorly controlled blood glucose levels

Classification	HbA1c result (%)
Well controlled	<8%
Poorly controlled	≥8%

32.6% of diagnosed diabetics had poorly controlled blood glucose levels. The proportion of males who were known diabetics and had poorly controlled blood glucose levels (34.1%) was similar to females (31.2%). Amongst the ethnic groups, the proportion in Malays was the highest (47.2%), followed by Indians (34.7%) and then Chinese (26.1%).

Table 2.4. Control of blood glucose levels in diagnosed diabetics

Blood glucose level control	N (%)
Well controlled	304 (67.4%)
Poorly controlled	147 (32.6%)
Total	451

Table 2.5. Control of blood glucose levels in diagnosed diabetics, by gender and ethnic group

Blood glucose level control	Male				Female			
	Chinese	Malay	Indian	Other	Chinese	Malay	Indian	Other
Well controlled	98	18	25	2	100	39	22	0
Poorly controlled	37	26	11	0	33	25	14	1
Proportion poorly controlled (%)	27.4	59.1	30.6	0	24.8	39.1	38.9	100.0

Hypertension

Table 2.6. Classification of blood pressure

Classification	Blood pressure range
Normal blood pressure	Systolic <140mmHg and diastolic <90mmHg
High blood pressure	Systolic ≥140mmHg or diastolic ≥90mmHg

Source: MOH Clinical Practice Guidelines on Hypertension, 2005.

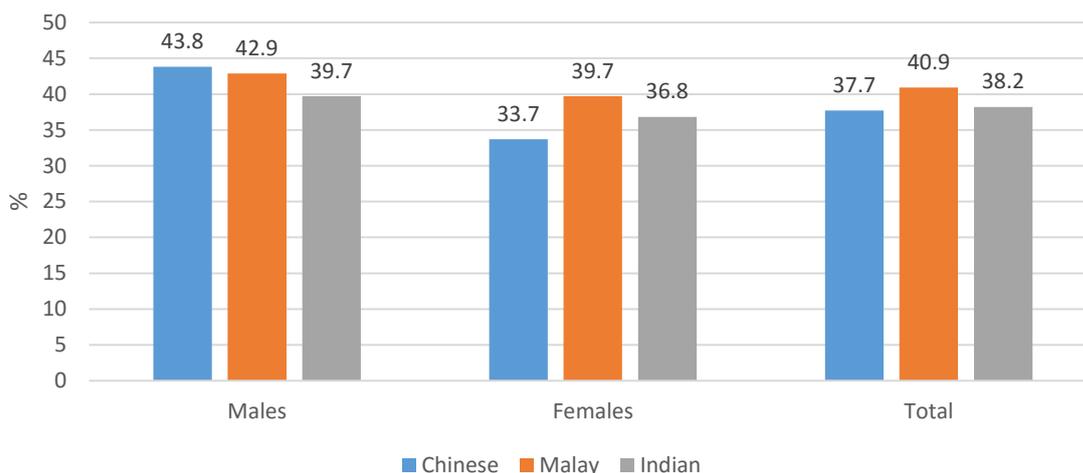
Table 2.7. Classification of participants with high blood pressure

Classification	Criteria
Diagnosed hypertensive	Had been told by doctor to have high blood pressure or was taking medications for high blood pressure
Undiagnosed with high blood pressure	Participants who met all of these criteria <ul style="list-style-type: none"> • Had not been told by a doctor to have high blood pressure or not sure if had been told by a doctor to have high blood pressure • Was not on medication for high blood pressure • Systolic ≥140mmHg or diastolic ≥90mmHg

Prevalence of diagnosed and undiagnosed hypertension

38.4% of participants had been previously diagnosed to have hypertension or had blood pressure in the hypertension range. The prevalence of hypertension was higher in males (43.4%) than in females (35.0%), but did not differ substantially by ethnicity.

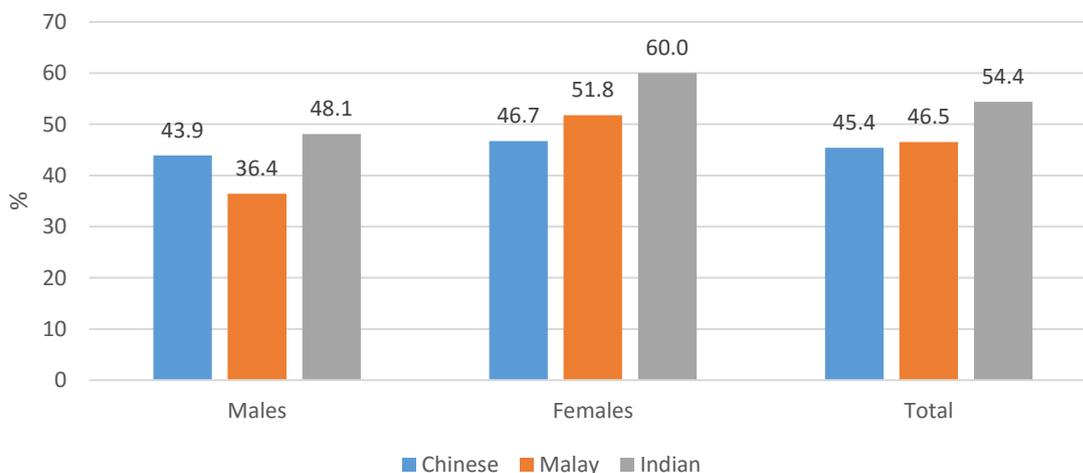
Figure 2.3. Percentage of participants who were diagnosed with hypertension or had high blood pressure results, by gender and ethnic group



Prevalence of undiagnosed hypertension

46.1% of the participants who had high blood pressure had not been previously diagnosed. The proportion of this group was higher in females (48.8%) than males (42.8%), and the proportion in Indians (54.4%) was highest amongst the ethnic groups, followed by Malays (46.5%) then Chinese (45.4%).

Figure 2.4. Percentage of participants with high blood pressure results who were previously undiagnosed, by gender and ethnic group



Control of blood pressure in diagnosed hypertensives

Table 2.8. Classification of poorly controlled blood pressure levels

Blood pressure control	Blood pressure levels
Well controlled	Systolic <180mmHg and diastolic <110mmHg
Poorly controlled	Systolic ≥180mmHg or diastolic ≥110mmHg

Only 20 (1.8%) of the participants diagnosed with hypertension had poorly controlled blood pressure. The proportion of males with poorly controlled blood pressure was the same as females (1.8%). The proportions of these participants were not very different amongst the Chinese, Malay and Indian ethnic groups.

Table 2.9. Control of blood pressure levels in participants diagnosed with hypertension

Blood pressure control	N (%)
Well controlled	1098 (98.2%)
Poorly controlled	20 (1.8%)
Total	1118

Table 2.10. Control of blood pressure levels in participants diagnosed with hypertension, by gender and ethnic group

Blood pressure control	Male				Female			
	Chinese	Malay	Indian	Other	Chinese	Malay	Indian	Other
Well controlled	366	79	45	13	437	103	44	11
Poorly controlled	7	2	0	0	9	1	1	0
Proportion poorly controlled (%)	1.9	2.5	0.0	0.0	2.0	1.0	2.2	0.0

Abnormal Blood Cholesterol Levels

Table 2.11. Classification of blood cholesterol levels

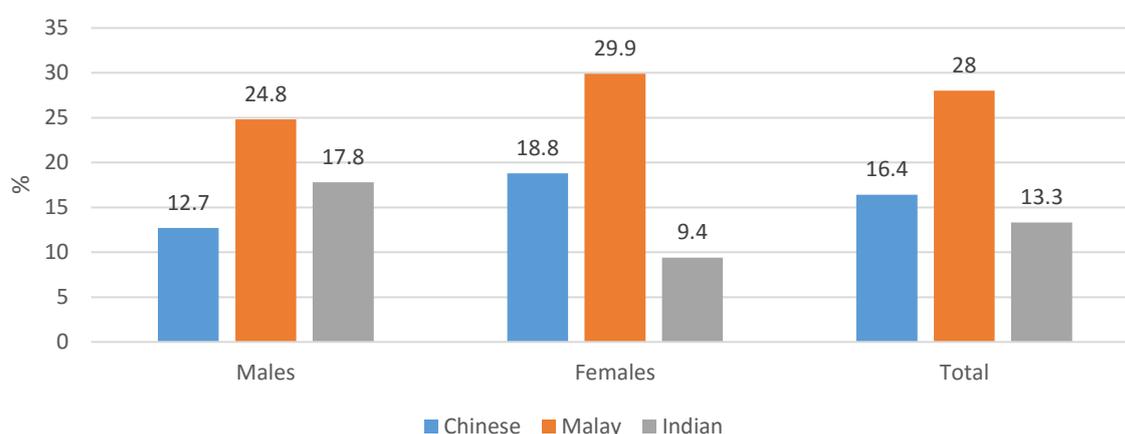
	Classification	Cholesterol concentration (mmol/l)
Total cholesterol	Desirable	<5.2
	Borderline high	5.2-6.1
	High	≥6.2
High density lipoprotein cholesterol (HDL-C)	Low	<1.0
	Desirable	1.0-1.5
	Optimal	≥1.6
Low density lipoprotein cholesterol (LDL-C)	Optimal	<2.6
	Desirable	2.6-3.3
	Borderline high	3.4-4.0
	High	4.1-4.8
	Very high	≥4.9

Source: MOH Clinical Practice Guidelines on Lipids, 2016.

Prevalence of high total cholesterol

17.8% of participants had been measured to have high total cholesterol. The proportion of this group was higher in females (19.8%) than males (14.9%). The proportion in Malays was the highest (28.0%), followed by Chinese (16.4%) then Indians (13.3%).

Figure 2.5. Percentage of participants with high total cholesterol, by gender and ethnic group



Prevalence of undiagnosed total cholesterol

54.0% of the participants who had high total cholesterol had not been previously diagnosed. The proportion of this group was higher in females (56.3%) than males (49.3%), and the proportion in Malays (61.4%) was slightly higher than amongst Chinese (51.5%) and Indians (52.4%).

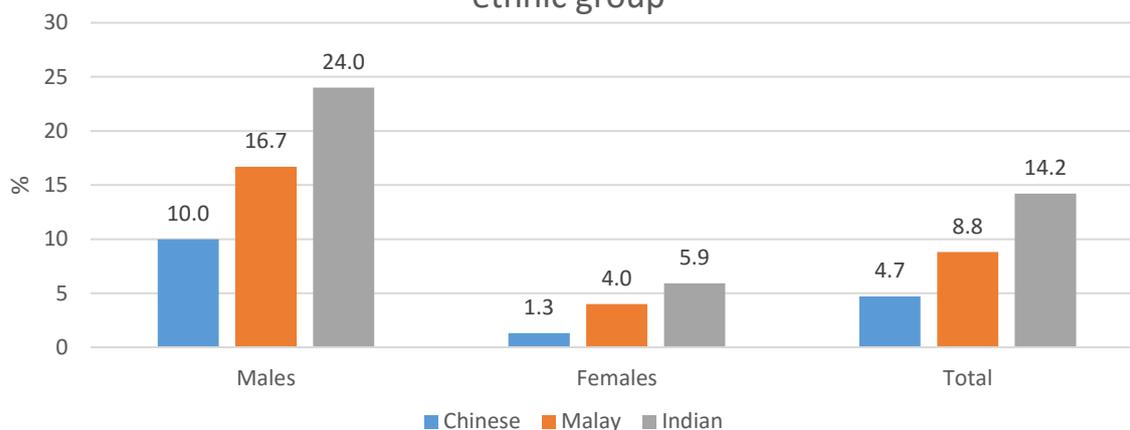
Prevalence of low HDL-C

6.4% of the participants had low levels of HDL-C. The proportion of this group of participants was higher in males (13.0%) than in females (2.1%). The proportion in Indians was the highest (14.2%), followed by Malays (8.8%) then Chinese (4.7%).

Table 2.12. Prevalence of low HDL-C levels

HDL-C levels (mmol/l)	N (%)
≥1.0	3527 (93.6%)
<1.0	242 (6.4%)
Total	3769

Figure 2.6. Percentage of participants with low HDL-C, by gender and ethnic group



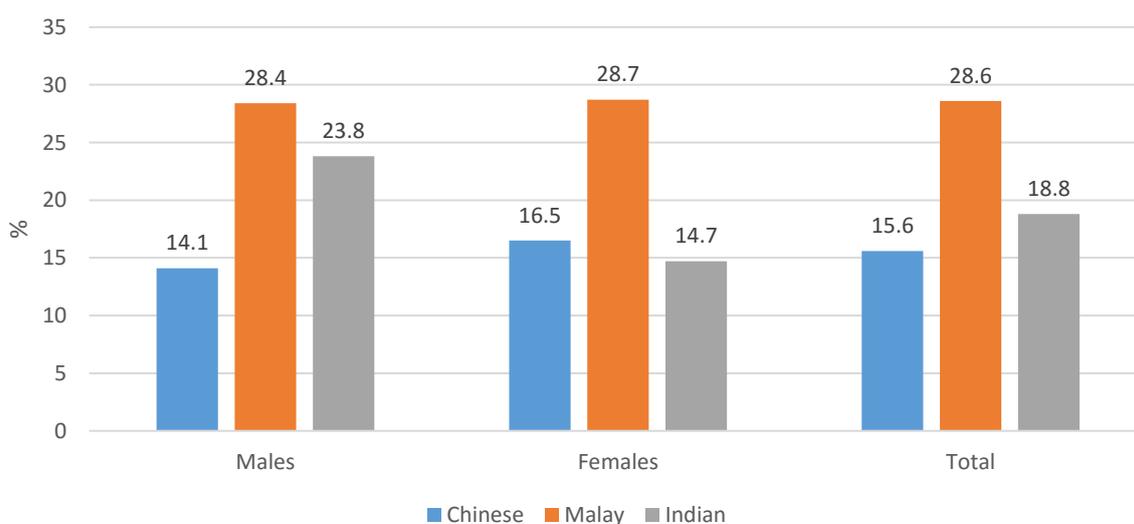
Prevalence of high LDL-C

17.8% of the participants had high levels of LDL-C. The proportion of this group of participants was slightly higher in females (18.3%) than in males (17.0%), although the opposite was observed among Indians. The proportion in Malays was the highest (28.6%), followed by Indians (18.8%) and then Chinese (15.6%).

Table 2.13. Prevalence of high LDL-C levels

LDL-C levels (mmol/l)	N (%)
<4.1	3067 (82.2%)
≥4.1	665 (17.8%)
Total	3732

Figure 2.7. Percentage of participants with high LDL-C, by gender and ethnic group



Obesity

Table 2.14. Classification of weight status

Asian Classification	Body Mass Index (BMI) (kg/m ²)
Underweight	<18.5
Normal	18.5-22.9
Overweight	23-27.4
Obese	≥27.5

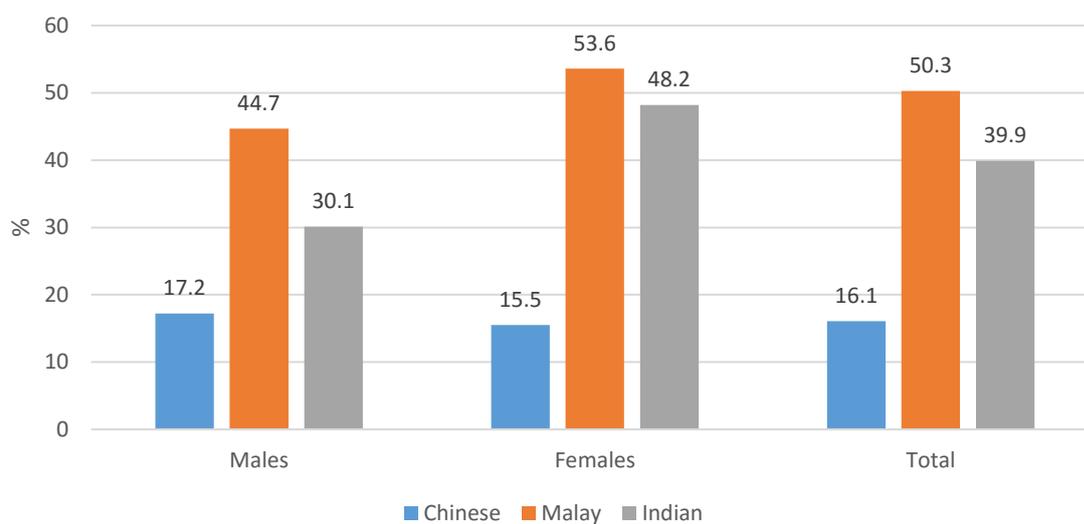
Prevalence of obesity

40.8% of the participants were overweight and 24.0% were obese. The proportion of obese adults was similar in females (24.4%) and in males (23.4%). The proportion in Malays was the highest (50.3%), followed by Indians (39.9%) and then Chinese (16.1%).

Table 2.15. Prevalence of obesity

Classification	N (%)
Underweight	158 (4.2%)
Normal	1177 (31.0%)
Overweight	1550 (40.8%)
Obese	911 (24.0%)
Total	3796

Figure 2.8. Percentage of participants with obesity, by gender and ethnic group



Abdominal adiposity

The ratio of waist to hip circumference is a measure of an abdominal fat distribution which is often an indicator of the metabolic syndrome. Metabolic syndrome refers to a cluster of conditions that include excess fat around the waist, high blood pressure and glucose, and abnormal levels of cholesterol or triglycerides. The concurrence of all these conditions increases the risk of diabetes, heart disease and stroke.

Table 2.16. Classification of abdominal adiposity, by gender

Gender	Recommended Waist-Hip Ratios
Male	≥0.90
Female	≥0.85

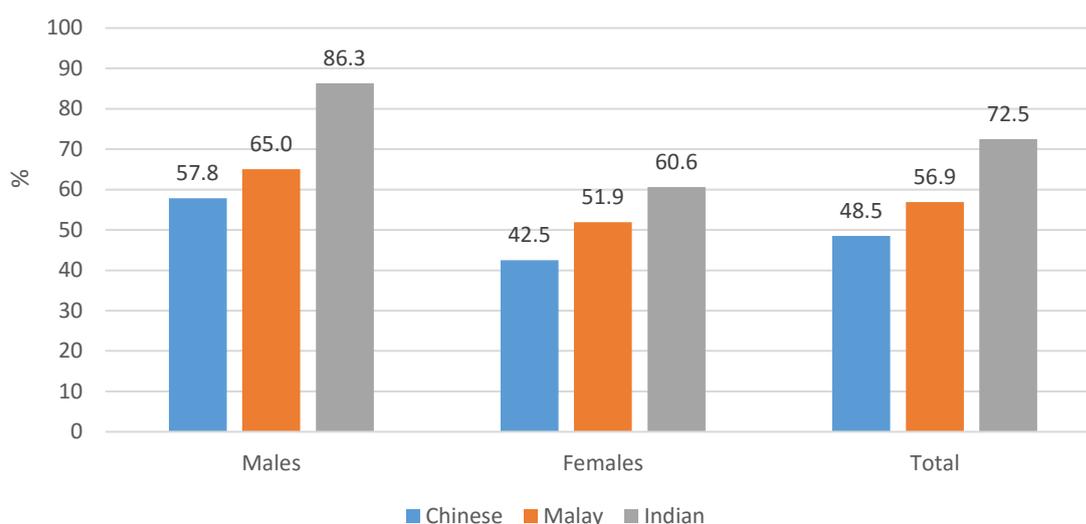
Prevalence of abdominal adiposity

52.0% of the participants had high waist-hip ratios. This was more common in males (62.1%) than in females (45.4%). The proportion of participants with high waist-hip ratio was the highest in Indians (72.5%), followed by Malays (56.9%) then Chinese (48.5%).

Table 2.17. Prevalence of abdominal adiposity

Classification	N (%)
Normal	1819 (48.0%)
Abdominal adiposity	1972 (52.0%)
Total	3791

Figure 2.9. Percentage of participants with abdominal adiposity, by gender and ethnic group



Cardiovascular Disease

Heart Disease

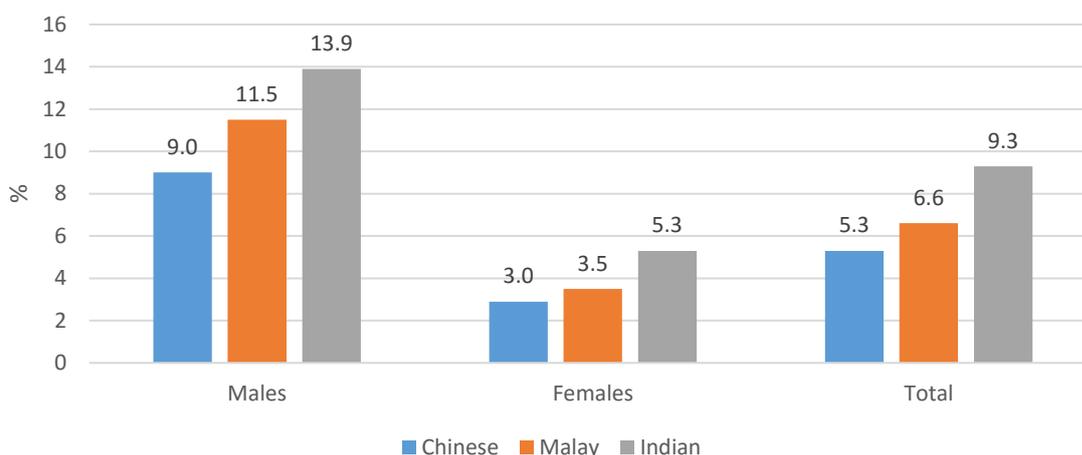
Prevalence of heart disease

5.9% of the participants had a history of heart disease. This was more common in males (9.9%) than in females (3.3%). The proportion of participants with heart disease was the highest in Indians (9.3%), followed by Malays (6.6%) and then Chinese (5.3%).

Table 2.18. Prevalence of heart disease

Classification	N (%)
Normal	4615 (94.1%)
Heart disease	291 (5.9%)
Total	4906

Figure 2.10. Percentage of participants with heart disease, by gender and ethnic group



Stroke

Prevalence of stroke

1.8% of the participants had a history of stroke. This was more common in males (2.4%) than in females (1.3%). The proportion of participants with stroke was the highest in Malays (3.0%), followed by Indians (2.4%) and then Chinese (1.4%).

Table 2.19. Prevalence of stroke

Classification	N (%)
Normal	4819 (98.2%)
Stroke	87 (1.8%)
Total	4906

Peripheral Arterial Disease

Prevalence of peripheral arterial disease

0.7% of the participants had been diagnosed with peripheral arterial disease (PAD). This was more common in males (0.9%) than in females (0.5%).

Table 2.20. Prevalence of peripheral arterial disease

Classification	N (%)
Normal	4872 (99.3%)
Peripheral arterial disease	34 (0.7%)
Total	4906

Abnormal Ankle Brachial Index

The ankle brachial index (ABI) test helps screen for individuals at risk of PAD. 148 (3.9%) of the participants had abnormal ABI values. There are 85 males and 63 females with abnormal ABI values.

Coronary Artery Disease Risk

Participants were first classified into very high and high risk of developing coronary artery disease (CAD) based on their medical history, medication information and blood test results.

Table 2.21. Classification of risk levels

Risk Level	Medical history, medication and blood test results
Very High	Participant had at least one of these: <ol style="list-style-type: none">1. LDL-C >4.9mmol/l or total cholesterol >7.5mmol/l and has a first degree relative who had high cholesterol/lipids or heart attack before age 602. Had been told to have blockage of artery supplying blood to heart3. Had had heart attack4. Had been told to have blockage of arteries in the leg or was taking medication for this5. Had been told to have atherosclerosis and had stroke6. Had been told to have diabetes or was taking diabetes medication, and has weak or failing kidney
High Risk	Participant did not have any of the above, but had one of these: <ol style="list-style-type: none">1. Had been told to have diabetes or was taking diabetes medication2. Fasting glucose \geq7mmol/l or HbA1c \geq6.5%

1q

The 10-Year CAD Risk Score which takes into account gender and ethnicity was then applied to further classify those participants who do not fall within the above classifications into high, intermediate and low risk.⁴

⁴ The two-tier risk classification method is adapted from the MOH Clinical Practice Guidelines on Lipids, 2016. The first tier risk classification should be based on clinical presentation. In this report, medical records data

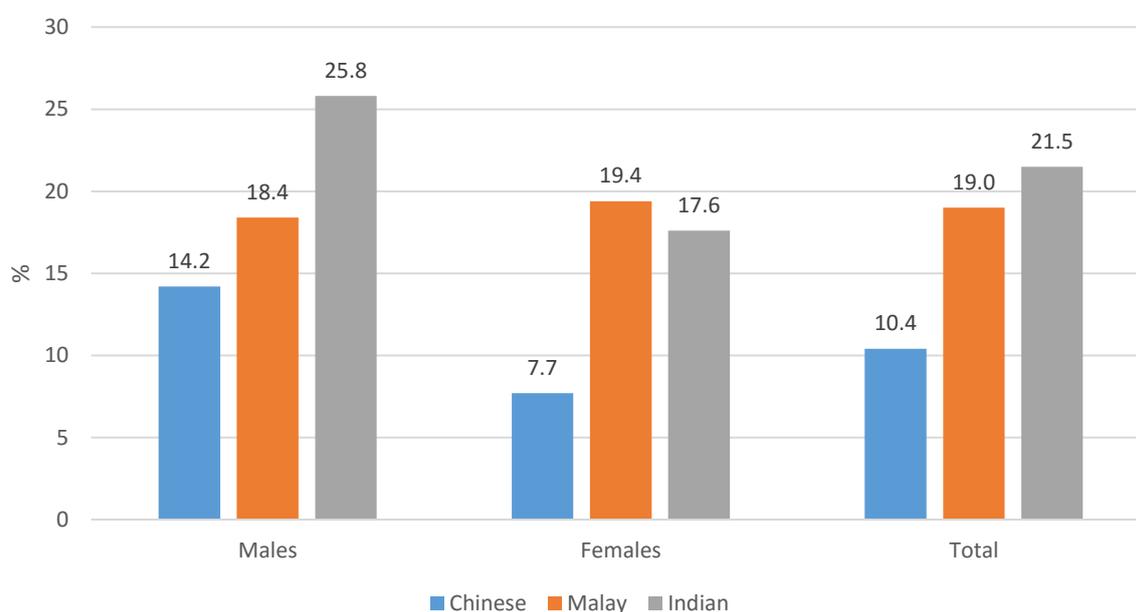
Prevalence of high and very high CAD risk

12.5% of the participants had high or very high CAD risk. The proportion of this group of participants was higher in males (15.6%) than in females (10.3%). The proportion in Indians was the highest (21.5%), followed by Malays (19.0%) then Chinese (10.4%).

Table 2.22. Prevalence of high and very high risk groups

Classification	N (%)
Low and Intermediate risk of CAD	2266 (87.5%)
High and Very high risk of CAD	324 (12.5%)
Total	2590

Figure 2.11. Percentage of participants with high and very high CAD risk, by gender and ethnic group



Control of LDL-C in high and very high risk groups

LDL cholesterol target levels in the four risk group categories:

Table 2.23. Classification of LDL-C target levels by risk group categories

Risk group category	LDL-C target level (mmol/l)
Very high risk	<2.1
High risk	<2.6
Intermediate risk	<3.4
Low risk	<4.1

Source: MOH Clinical Practice Guidelines on Lipids, 2016

was not available for analysis and therefore, self-reported information on medical history and medication was used instead to estimate the level of risk.

Table 2.24. Control of LDL-C in high and very high risk groups

Control of LDL-C	Very high risk	High risk
Well controlled	39	15
Poorly controlled	131	96
Proportion poorly controlled (%)	77.1	86.5

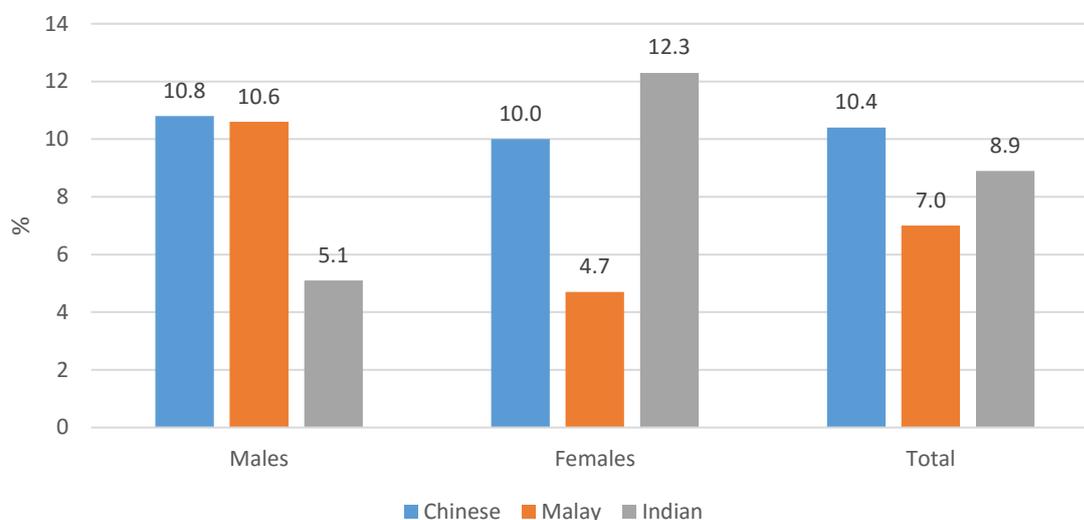
Prevalence of Other Physical Health Conditions

Cataract

9.6% of the participants had cataract. The proportion of males who had cataract (10.0%) was similar as in females (9.3%). The proportion of participants with cataract was highest in Chinese (10.4%), followed by Indians (8.9%) then Malays (7.0%).

Table 2.25. Prevalence of cataract

Classification	N (%)
Normal	4436 (90.4%)
Cataract	470 (9.6%)
Total	4906

Figure 2.12. Percentage of participants with cataract, by gender and ethnic group

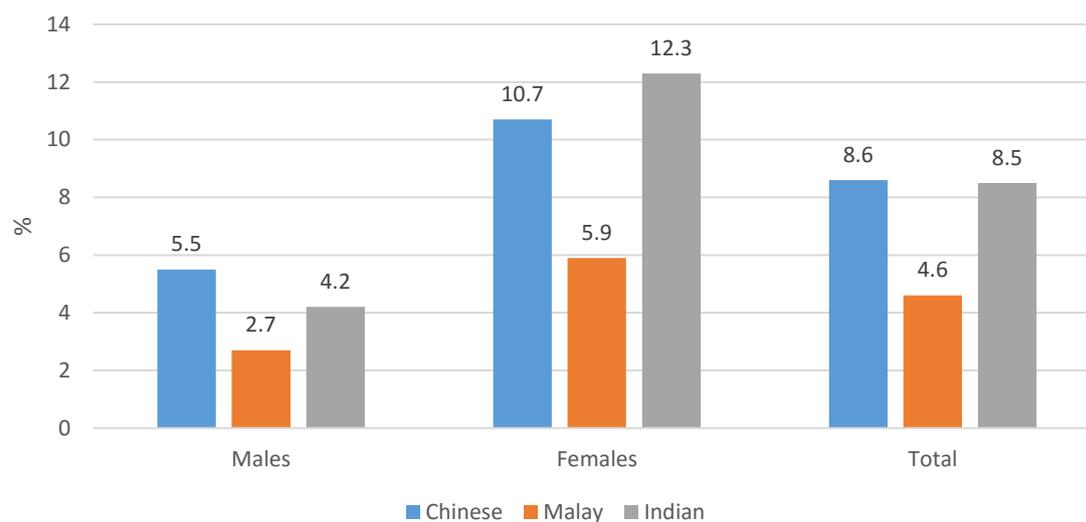
Osteoarthritis

7.9% of the participants had osteoarthritis. The proportion of this group of participants was higher in females (9.9%) than in males (4.9%). The proportion in Indians was the highest (8.5%), followed by Chinese (8.6%) then Malays (4.6%).

Table 2.26. Prevalence of osteoarthritis

Classification	N (%)
Normal	4520 (92.1%)
Osteoarthritis	386 (7.9%)
Total	4906

Figure 2.13. Percentage of participants with osteoarthritis, by gender and ethnic group



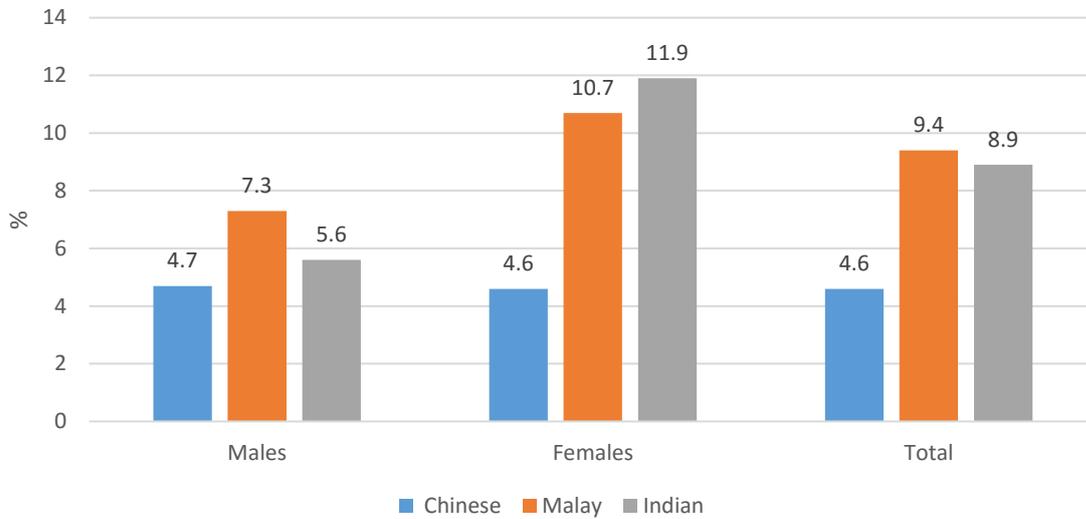
Asthma

5.8% of the participants had asthma. This was more common in females (6.3%) than in males (5.2%). The proportion of participants with asthma was the highest in Malays (9.4%), followed by Indians (8.9%) then Chinese (4.6%).

Table 2.27. Prevalence of asthma

Classification	N (%)
Normal	4620 (94.2%)
Asthma	286 (5.8%)
Total	4906

Figure 2.14. Percentage of participants with asthma, by gender and ethnic group



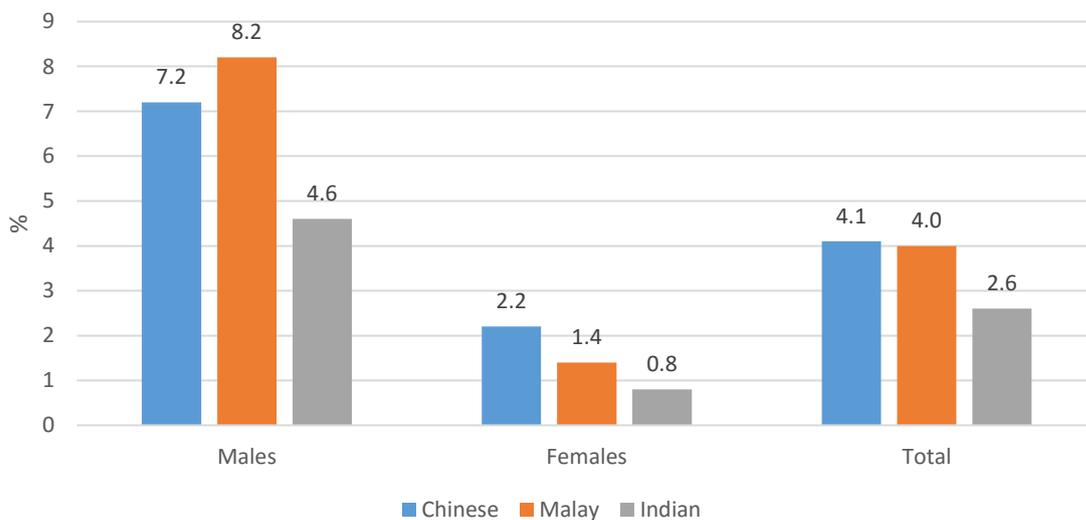
Gout

4.0% of the participants had gout. The proportion of this group of participants was higher in males (7.2%) than in females (1.9%). The proportion in Chinese was the highest (4.1%), followed by Malays (4.0%) and then Indians (2.6%).

Table 2.28. Prevalence of gout

Classification	N (%)
Normal	4708 (96.0%)
Gout	198 (4.0%)
Total	4906

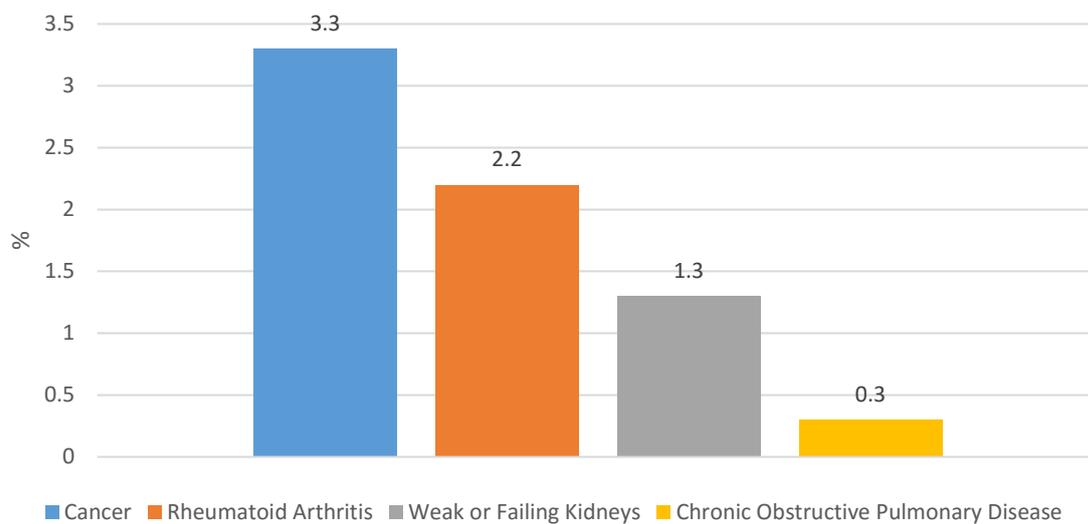
Figure 2.15. Percentage of participants with gout, by gender and ethnic group



Cancer, Rheumatoid Arthritis, Weak or Failing Kidneys, and Chronic Obstructive Pulmonary Disease

3.3% of the participants reported that they had cancer, 2.2% with rheumatoid arthritis, 1.3% had weak or failing kidneys, and 0.3% had chronic obstructive pulmonary disease.

Figure 2.16. Prevalence of Cancer, Rheumatoid Arthritis, Weak or Failing Kidneys, and Chronic Obstructive Pulmonary Disease



Mental Health

3.7% of the participants were screened positive for any of the 3 categories of mental conditions. The number of participants who were screened positive for episodes of major depression or mania, or generalised anxiety disorder is shown in Table 2.29.

Table 2.29. Prevalence of mental health conditions

Types of mental health conditions	Males	Females	Total number with this disorder	Percentage of total surveyed (%)
Current/recurrent/ past major depressive episode	53	83	136	2.8
Current/past manic/hypomanic episode, or hypomanic symptoms	26	26	52	1.1
Generalized anxiety disorder	12	25	37	0.8
Any of the above	69	113	182	3.7

Lifestyle

Smoking

Table 3.1. Classification of smoking status

Classification	
Non smoker	Never smoked or never smoked at least 100 cigarettes
Former smoker	Have stopped smoking completely
Light smoker	<1 pack years ⁵ or occasionally smoking
Heavy smoker	≥ 1 pack years

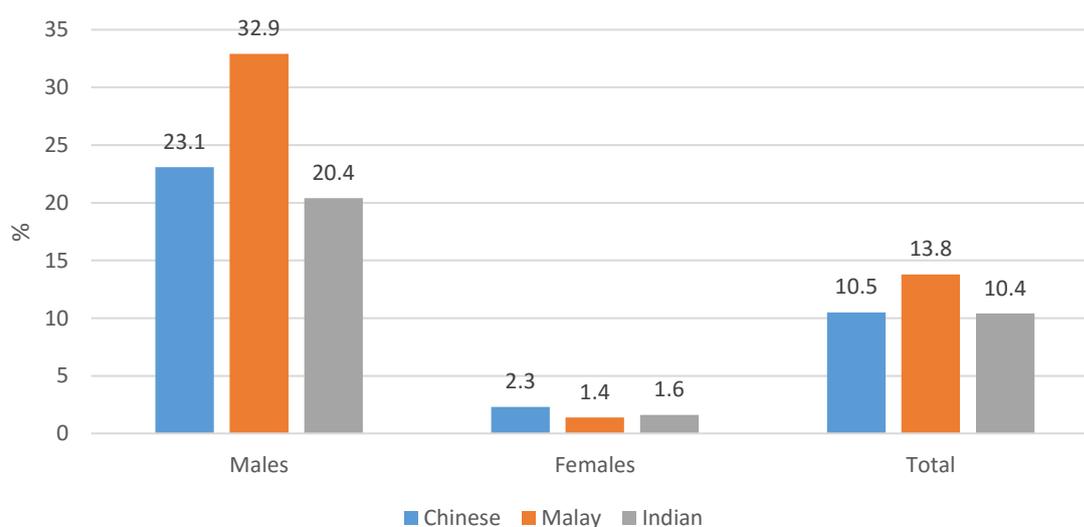
Prevalence of smoking

11.0% of the participants were heavy smokers. The proportion of this group of participants was higher in males (24.3%) than in females (2.1%). Among the males, the proportion in Malays was the highest (32.9%), followed by Chinese (23.1%) then Indians (20.4%).

Table 3.2. Prevalence of heavy smokers

Classification	N (%)
Non smoker	3822 (77.9%)
Former smoker	432 (8.8%)
Light smoker	111 (2.3%)
Heavy smoker	540 (11.0%)
Total	4905

Figure 3.1. Percentage of heavy smokers, by gender and ethnic group



⁵ 1 pack-year is equal to smoking 20 cigarettes (1 pack) per day for 1 year

Factors associated with smoking

Males were more likely to be smokers than females. Smokers were more likely to be Malays, to have 'PSLE' level or lower education and to be younger. Adults aged between 40 and 64 years were more likely to be smokers than those aged 65 years and older.

Alcohol

Table 3.3. Classification of heavy drinking, by gender

Gender	Frequency of alcohol consumption
For males	>2 servings per day
For females	>1 servings per day

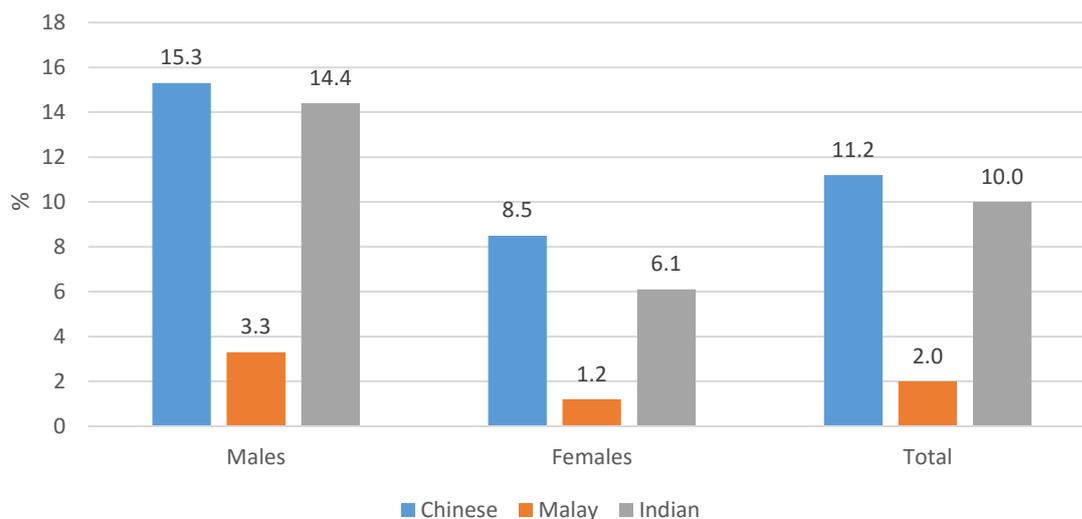
Prevalence of heavy drinkers

9.7% of the participants were heavy drinkers. The proportion of this group of participants was higher in males (13.6%) than in females (7.2%). The proportion in Chinese was the highest (11.2%), followed by Indians (10.0%) then Malays (2.0%).

Table 3.4. Prevalence of heavy drinkers

Classification	N (%)
Non heavy drinkers	4429 (90.3%)
Heavy drinkers	477 (9.7%)
Total	4906

Figure 3.2. Percentage of heavy drinkers, by gender and ethnic group



Factors associated with heavy drinking

Heavy drinkers were more likely to be males, Chinese, to have 'PSLE' level or lower education and to be younger. Adults aged between 40 and 64 years were more likely to be heavy drinkers than those aged 65 and above.

Physical Activity

Insufficient physical activity is defined as less than 150 minutes of moderate intensity or less than 75 minutes of vigorous intensity exercise or a combination per week.

Prevalence of insufficient physical activity

37.9% of the participants were not doing sufficient physical activity. The proportion of males (37.8%) in this group of participants was similar to females (37.9%). The proportion in Malays was the highest (42.3%), followed by Indians (41.5%) then Chinese (36.5%).

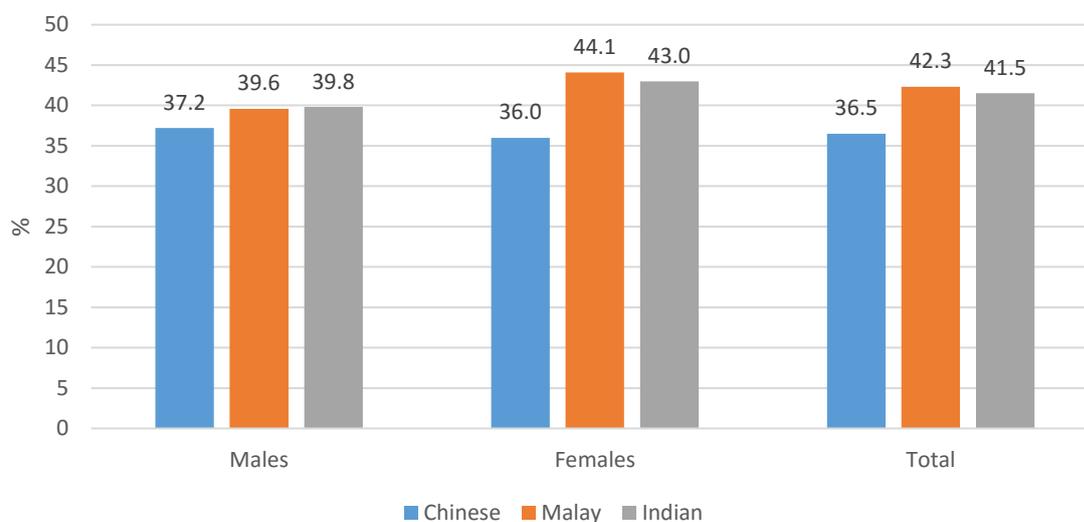
Table 3.5. Prevalence of insufficient physical activity

Classification	N (%)
At least 150 minutes per week	3048 (62.1%)
Less than 150 minutes per week	1858 (37.9%)
Total	4906

Table 3.6. Prevalence of insufficient physical activity stratified by age groups

	Aged 40-64	Aged 65 and above
At least 150 minutes per week	2464	584
Less than 150 minutes per week	1390	467
Proportion who were not doing sufficient physical activity (%)	36.1	44.4

Figure 3.3. Percentage of participants who were not doing sufficient physical activity, by gender and ethnic group



Prevalence of insufficient physical activity in those with no mobility problems

There were 36 participants who reported any problems with mobility⁶ in the age group 65 years old and above. The exclusion of these participants does not reduce the proportion of the participants in this age group who were not doing sufficient physical activity by much (44.4% to 43.1).

Table 3.7. Prevalence of insufficient physical activity in those with no mobility problems

Aged 65 and above	
At least 150 minutes per week	574 (56.9%)
Less than 150 minutes per week	435 (43.1%)
Total	1009

Factors associated with insufficient physical activity

Among participants aged below 65 years, those who had post-secondary education were more likely to be doing sufficient physical activity compared to those with PSLE and lower education.

Among participants aged 65 years and above, Malays and Indians were less likely to be doing sufficient physical activity compared to Chinese. Those who were immobile were less likely to be doing sufficient physical activity as compared with those who were mobile.

⁶ In the questionnaire section on activities of daily living.

Health Screening

Screening for Diabetes, Hypertension and Lipid Disorders

Table 4.1. Number of participants last screened for diabetes, hypertension and abnormal lipid levels, by recency

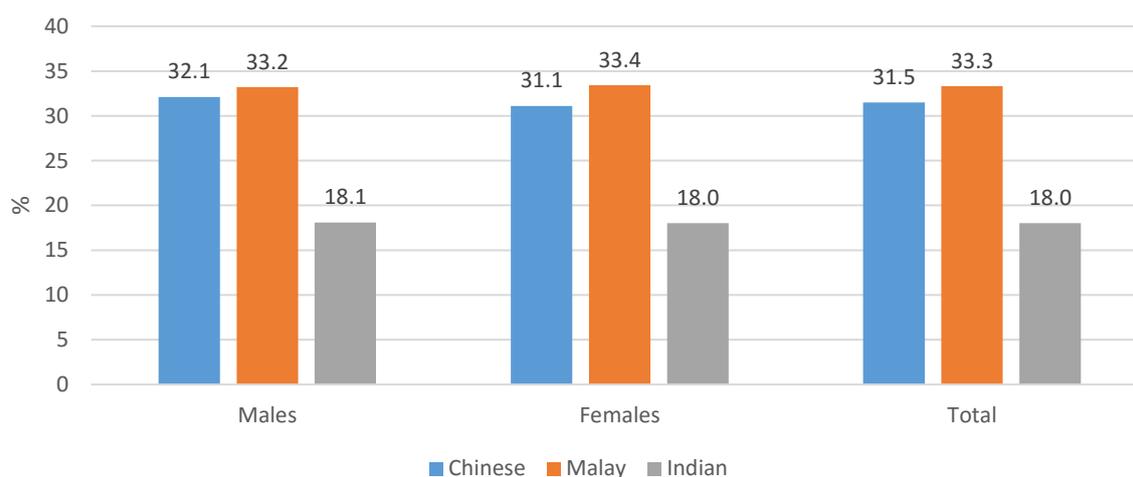
Screening for	0 – 1 year	1-3 years	3-5 years	>5 years	Never been checked
Hypertension	3869	688	113	142	94
Diabetes ⁷	2696	923	223	314	750
Lipid Disorders ⁷	2783	1013	245	309	556

30.5% of the participants had not been screened for either diabetes, hypertension or lipid disorders within last 3 years. The proportion of males (30.7%) in this group of participants was similar to females (30.4%). The proportion in Malays was the highest (33.3%), followed by Chinese (31.5%) then Indians (18.0%).

Table 4.2. Number and proportion of participants who have not had a screening for either diabetes, hypertension or abnormal lipid levels within the last 3 years

Screening for diabetes, hypertension and lipid disorders	N (%)
All 3 conditions were screened for within last 3 years	3410 (69.5%)
At least one condition had not been checked within last 3 years	1496 (30.5%)
Total	4906

Figure 4.1. Percentage of participants who reported that they have not had a screening for either diabetes, hypertension or lipid disorders within last 3 years, by gender and ethnic group



⁷ Recommended screening frequency for diabetes and lipid disorder is at least once every 3 years.

Proportion of participants who reported that they have never been screened for diabetes, hypertension or lipid disorders

There were 73 (1.5%) participants who have never been screened for diabetes, hypertension or lipid disorders.

Breast and Cervical Cancer Screening

Table 4.3. Number of participants aged 51 to 69 last screened for breast cancer and number of participants aged 40 to 69 last screened for cervical cancer, by recency

Screening for	0-2 years	2-3 years	3-4 years	4-5 years	>5 years	Never been screened	Did not know when
Breast cancer	600	238	89	70	315	440	14
Cervical cancer	818	331	173	125	617	529	23

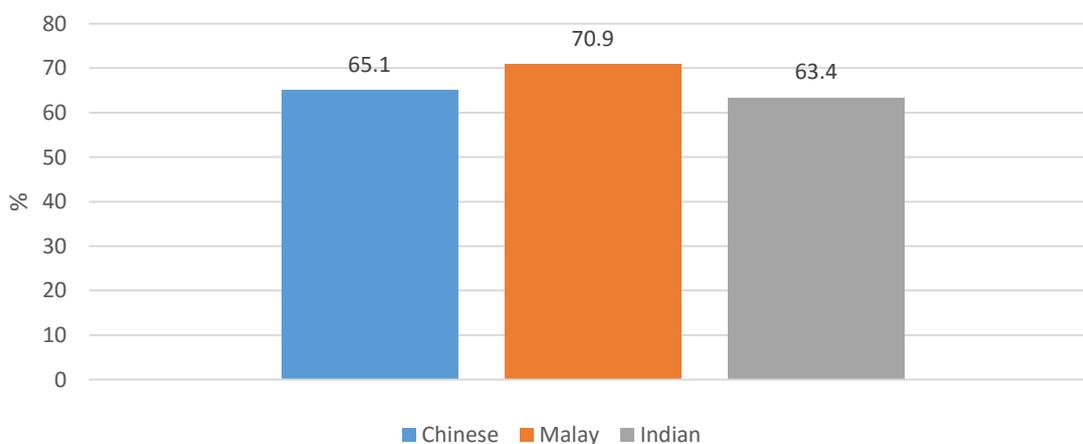
Mammogram screening

66.0% of the participants have not had a mammogram within the last 2 years. The proportion in Malays was the highest (70.9%), followed by Chinese (65.1%) then Indians (63.4%).

Table 4.4. Proportion of women aged 51 to 69 who have not had a mammogram within last 2 years

Screening for breast cancer	N (%)
Had mammography within last 2 years	600 (34.0%)
Not had mammography last 2 years	1166 (66.0%)
Total	1766

Figure 4.2. Percentage of women aged 51 to 69 who reported that they have not had a mammogram within last 2 years



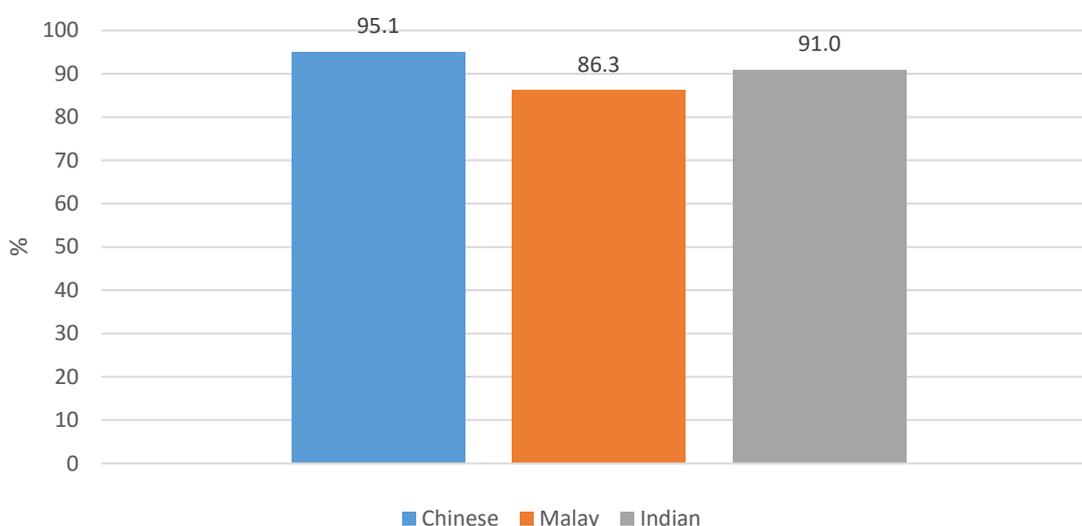
440 (24.9%) of the participants have never had a mammogram. The proportion in Malays was the highest (39.5%), followed by Indians (31.0%) then Chinese (20.9%).

93.2% of the women aged 51 to 69 were aware of mammography. The proportion in Chinese was the highest (95.1%), followed by Indians (91.0%) then Malays (86.3%).

Table 4.5. Proportion of women aged 51 to 69 who had knowledge of mammogram

	N (%)
No knowledge of mammogram	120 (6.8%)
Have knowledge of mammogram	1647 (93.2%)
Total	1767

Figure 4.3. Percentage of women aged 51 to 69 who had knowledge of mammogram



Factors associated with irregular screening and not screening

Women with knowledge about mammograms and those with higher incomes were more likely to have a mammogram done in the last 2 years. Malay women were less likely to have undergone mammography compared to Chinese women. Women aged 60 to 69 were more likely to have undergone mammography compared to women aged 50 to 59.

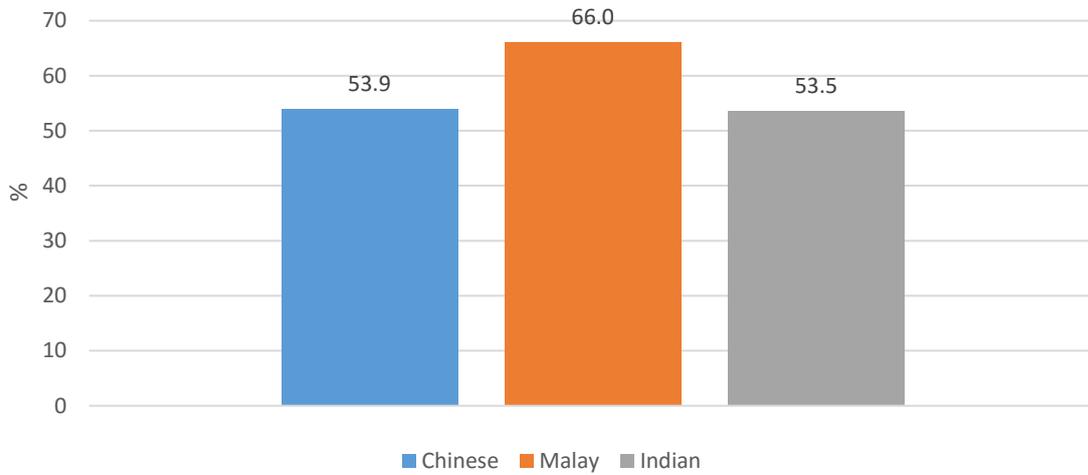
Pap smear test

56.1% of the participants have not had a Pap smear test within the last 3 years. The proportion in Malays was the highest (66.0%), followed by Indians (53.5%) then Chinese (53.9%).

Table 4.6. Proportion of women aged 40 to 69 who have not had a Pap smear test within last 3 years

Screening for cervical cancer	N (%)
Had Pap smear test within last 3 years	1149 (43.9%)
Not had Pap smear test within last 3 years	1467 (56.1%)
Total	2616

Figure 4.4. Percentage of women aged 40-69 who reported that they have not had a Pap smear test within last 3 years



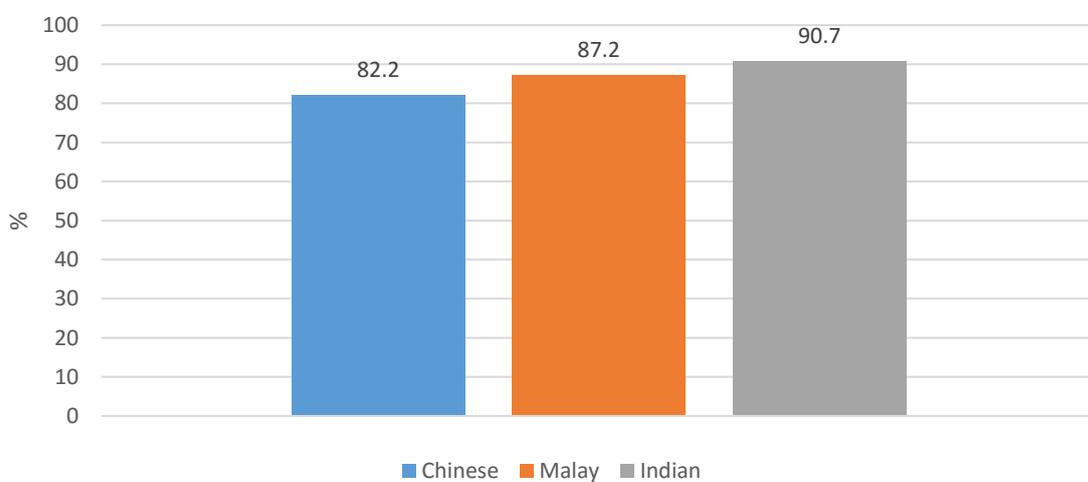
529 (20.2%) of the participants have never had a Pap smear test. The proportion in Malays was the highest (23.9%), followed by Chinese (19.8%) then Indians (18.1%).

84.1% of women aged 40 to 69 were aware of Pap smear tests. The proportion in Indians was the highest (90.7%), followed by Malays (87.2%) then Chinese (82.2%).

Table 4.7. Proportion of women aged 40 to 69 who had knowledge of Pap smear test

	N (%)
No knowledge of Pap smear	417 (15.9%)
Have knowledge of Pap smear	2206 (84.1%)
Total	2623

Figure 4.5. Percentage of women aged 40-69 who had knowledge of Pap smear test



Factors associated with irregular screening and not screening

Malay women were less likely to have gone for a Pap smear test within the last 3 years compared to Chinese women. Women aged 40 to 49 were more likely to have gone for timely Pap smear test compared to those aged 50 and above. Those who have gone for Pap smear test within the last 3 years or have undergone it before were likely to have secondary or higher education, knowledge about the test, higher income levels.

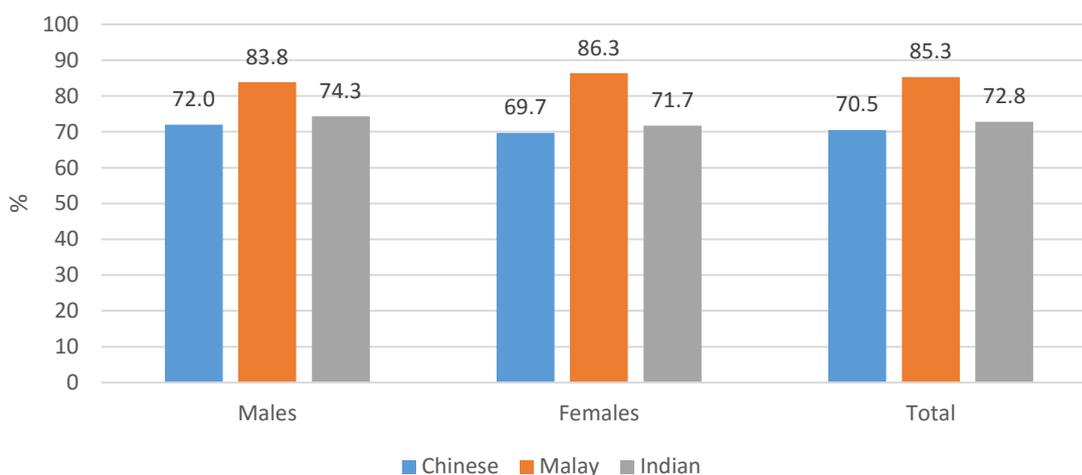
Colorectal Cancer Screening

Table 4.8. Number of participants aged 51 to 69 last screened for colorectal cancer by stool blood test, colonoscopy or sigmoidoscopy, by recency

Time last screened for colorectal cancer	N
Within the last 2 years	765
2-5 years ago	325
More than 5 years ago	284
Did not know when	19
Never been screened	1492

73.5% of the participants have not had a stool blood test, colonoscopy or sigmoidoscopy within the last 2 years. The proportion in males (74.4%) was similar to females (72.9%). The proportion in Malays was the highest (85.3%), followed by Indians (72.8%) then Chinese (70.5%).

Figure 4.6. Percentage of participants aged 51-69 who reported that they have not had a stool blood test, colonoscopy or sigmoidoscopy within last 2 years



1492 (51.7%) of the participants have never had a stool blood test, colonoscopy or sigmoidoscopy done. The proportion in males (53.1%) was similar to females (50.8%). The proportion in Malays was the highest (73.0%), followed by Indians (58.4%) then Chinese (45.6%).

Factors associated with irregular screening and not screening

Malays were less likely to have gone for either screening within last 2 years compared to Chinese. Those who were aged 60 to 69, with secondary or higher education were more likely to have gone for either screening within last 2 years. Malays, Indians and others were more likely to have never had both screening compared to Chinese. Those with secondary or higher education were more likely to have gone for either screening before.

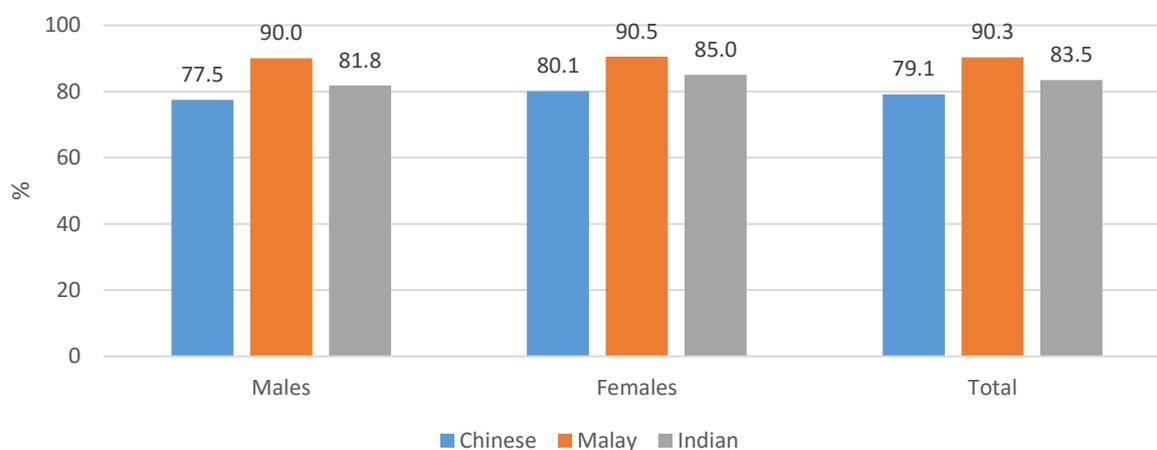
Sigmoidoscopy and colonoscopy

80.9% of the participants have not had a colonoscopy or sigmoidoscopy within the last 10 years. The proportion in males (80.0%) was similar to females (81.6%). The proportion in Malays was the highest (90.3%), followed by Indians (83.5%) then Chinese (79.1%).

Table 4.9. Number and proportion of participants aged 60 to 69 who last had a colonoscopy or sigmoidoscopy, by recency

Time last had sigmoidoscopy or colonoscopy	N (%)
Within last 10 years	236 (19.1%)
More than 10 years ago	44 (3.6%)
Did not know when	6 (0.5%)
Never had the procedure	952 (76.9%)
Total	1238

Figure 4.7. Percentage of participants aged 60-69 who reported that they have not had sigmoidoscopy or colonoscopy in the last 10 years



952 (76.9%) of the participants have never had colonoscopy or sigmoidoscopy. The proportion in females (77.4%) was similar to males (76.2%). The proportion in Malays was the highest (89.1%), followed by Indians (81.7%) then Chinese (74.2%).

Factors associated with irregular screening

Malays were less likely to have gone for sigmoidoscopy/colonoscopy within last 10 years than Chinese. Those who were older, with secondary or higher education were more likely to have gone for timely sigmoidoscopy/colonoscopy.

Vision and Hearing

Visual Impairment

Table 5.1. Prevalence of visual impairment

Categories	N (%)
Any one eye worse than 6/18	773 (20.4%)
Both eyes worse than 6/18	324 (8.5%)

The prevalence of visual impairment was 20.4% for any one eye worse than 6/18 and 8.5% for both eyes worse than 6/18. In both definitions, the prevalence increased rapidly with age.

Table 5.2. Prevalence of visual impairment stratified by age group

Categories	Aged 40-64	Aged 65-79	Aged 80 and above
Any one eye worse than 6/18	441 (14.7%)	290 (39.8%)	42 (73.7%)
Both eyes worse than 6/18	161 (5.4%)	140 (19.2%)	23 (40.4%)

Hearing Loss

Table 5.3. Prevalence of moderate hearing loss

Moderate hearing loss (≥ 40 dB)	N (%)
At least 3 out of 4 frequencies not heard in any ear	507 (13.5%)
At least 3 out of 4 frequencies not heard in both ears	167 (4.4%)
All 4 frequencies not heard in both ears	55 (1.5%)

The prevalence of hearing loss was 13.5% for at least three frequencies out of four affected in at least one ear, 4.4% for at least three frequencies out of four affected in both ears and 1.5% for all four frequencies affected in both ears. The prevalence of hearing loss was observed to increase with age.

Table 5.4. Prevalence of moderate hearing loss stratified by age group

Categories	Aged 40-64	Aged 65-79	Aged 80 and above
At least 3 frequencies out of 4 affected in at least 1 ear	248 (8.3%)	229 (32.0%)	30 (58.8%)
At least 3 frequencies out of 4 affected in both ears	62 (2.1%)	84 (11.7%)	21 (41.2%)
All 4 frequencies affected in both ears	16 (0.5%)	26 (3.6%)	13 (25.5%)

Elderly Health

Oral Check

62.0% of the participants have not had an oral health check within the last 1 year. The proportion of these participants was higher in males (64.2%) than in females (60.3%). The proportions of these participants were highest in Malays (70.8%), followed by Chinese (61.1%) then Indians (59.7%).

Table 6.1. Proportion of participants aged 65 and above who reported that they had not had an oral health check within last year

Oral health check	N (%)
Screened within last year	399 (38.0%)
Not screened within last year	651 (62.0%)
Total	1050

Table 6.2. Main reasons for not going for oral health check in the last year

Reasons	N
There is nothing wrong with my teeth	395
I have no more teeth (using dentures)	132
I cannot afford the dental treatment/travel expense	30
I have no time to go	28
I do not like to/am afraid to visit the dentist	24
I do not know where to see a dentist	4
I cannot find help to travel to the dentist	2
Other reasons	20

Cognitive Impairment

Cognitive impairment is defined as having a low cognitive screening test score that is below 24. 167 (16.0%) elderly had scored below 24 for the cognitive screening test. The proportion of this group was higher in those aged 80 and above (44.0%) than those aged between 65 and 79 years (13.3%).

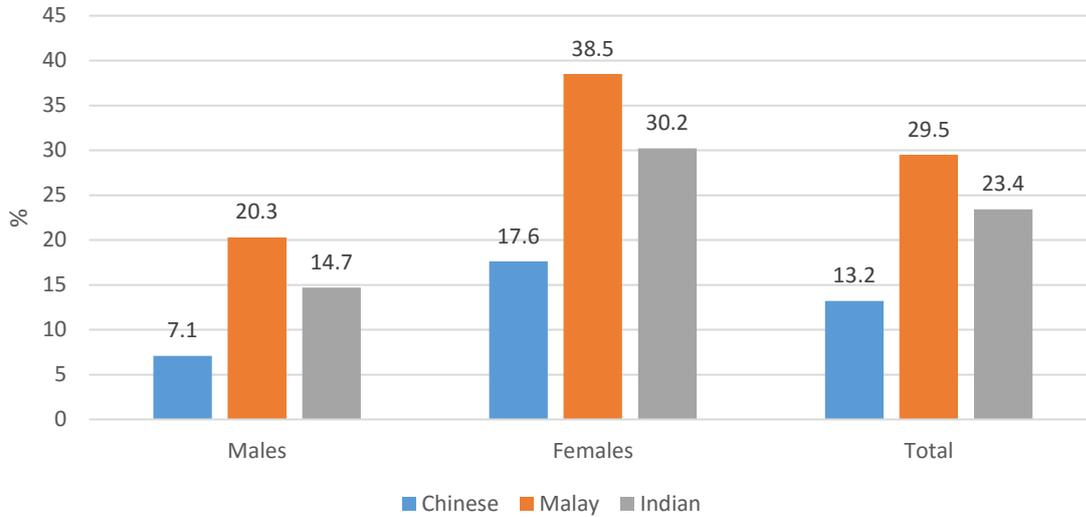
Table 6.3. Prevalence of cognitive impairment

Classification	N (%)
Normal	878 (84.0%)
Low cognitive test score	167 (16.0%)
Total	1045

Table 6.4. Prevalence of cognitive impairment stratified by age group

	Aged 65-79	Aged 80 and above
Normal	827 (86.7%)	51 (56.0%)
Low cognitive test score	127 (13.3%)	40 (44.0%)
Total	954	91

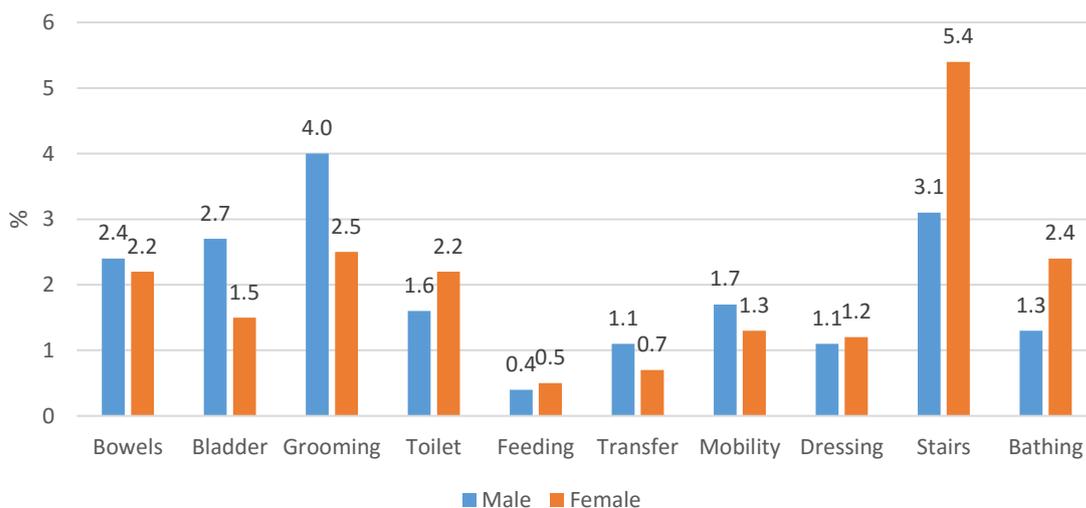
Figure 6.1. Percentage of participants aged 65 and above with low cognitive test score, by gender and ethnic group



Activities of Daily Living

There was a higher proportion of females (5.4%) who had problems with taking the stairs as compared to males (3.1%). The same can be observed for using the toilet and bathing. There was a higher proportion of males (4.0%) who had problems with grooming as compared to females (2.5%). The same can be observed for bladder problems.

Figure 6.2. Percentage of participants aged 65 and above with problems in ADLs, by gender



Members of the ElderShield scheme who are not able to perform at least 3 of the 6 activities of daily living (ADLs) defined in the scheme will be eligible for insurance payouts (unless the disability pre-dates the commencement of the policy). The 6 ADLs are:

Table 6.5. Prevalence of cognitive impairment stratified by age groups

Eldershield scheme list of 6 ADLs	
Washing	Unable to wash in the bath or shower (including getting into and out of the bath or shower) or wash by other means.
Dressing	Inability to put on, take off, secure and unfasten all garments and, as appropriate, any braces, artificial limbs or other surgical or medical appliances.
Feeding	Inability to feed oneself food after it has been prepared and made available.
Toileting	Inability to use the lavatory or manage bowel and bladder function through the use of protective undergarments or surgical appliances if appropriate.
Mobility	Inability to move indoors from room to room on level surfaces.
Transferring	Inability to move from a bed to an upright chair or wheelchair, and vice versa.

Source:

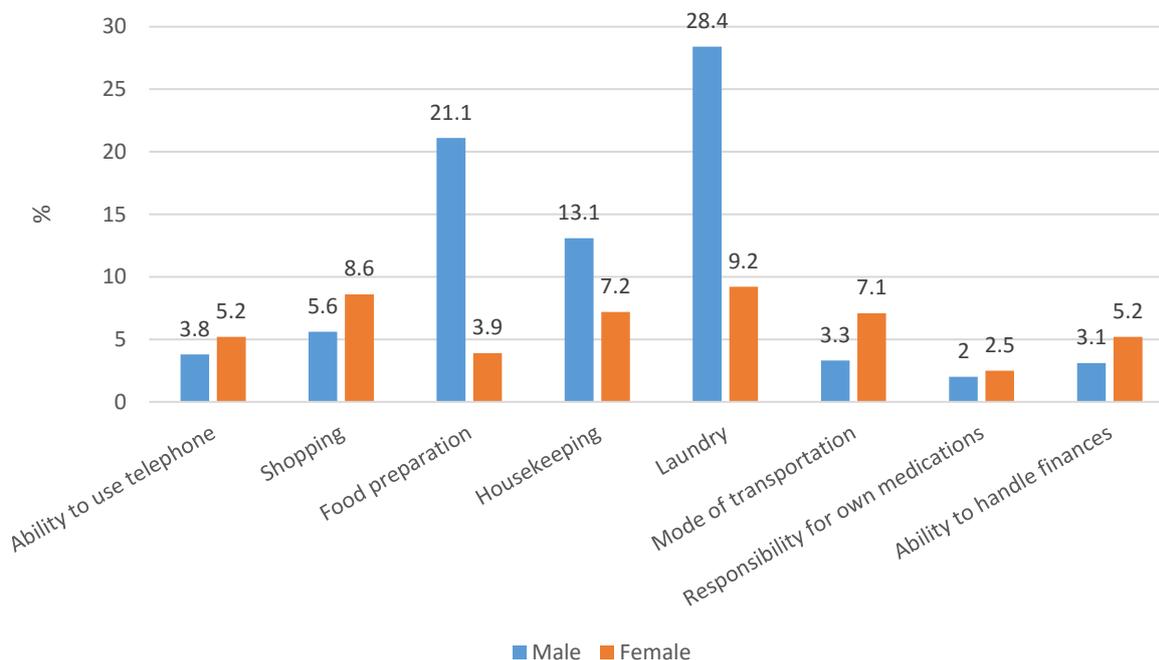
https://www.moh.gov.sg/content/moh_web/home/costs_and_financing/schemes_subsidies/ElderShield/Definition_of_Disability.html (accessed 21 July 2017)

There were 14 elderly participants (1.5%, 5 males and 9 females) who were not able to perform at least 3 of the 6 ADLs as defined above.

Instrumental Activities of Daily Living

There was a higher proportion of males (28.4%) who had problems with laundry as compared to females (9.2%). The same can be observed for food preparation and housekeeping. There was a higher proportion of females (8.6%) who had problems with shopping as compared to males (5.6%). The same can be observed for transportation, ability to use telephone and ability to handle finances.

Figure 6.3. Percentage of participants aged 65 and above with problems in IADLs, stratified by gender



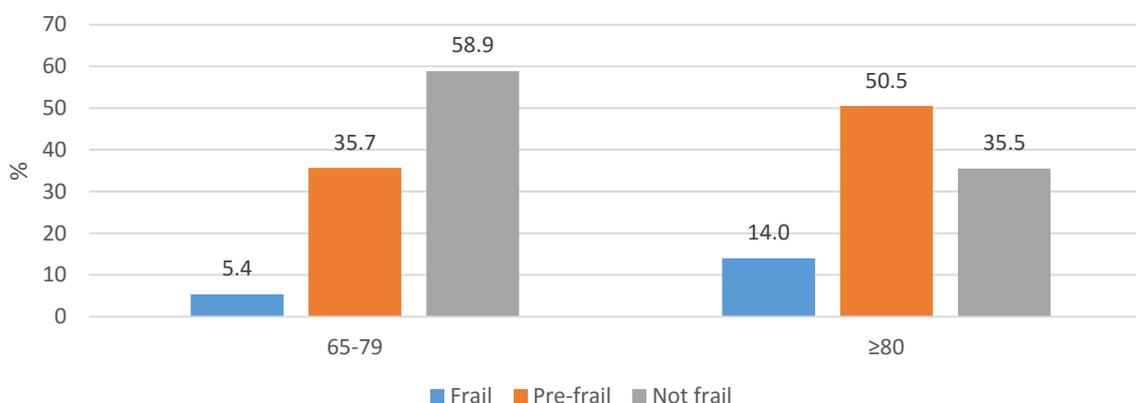
Frailty

6.2% of the participants had 3 or more problems on Frailty. The proportion of these participants was higher in females (7.7%) than in males (4.2%). The proportions of these participants were higher in those aged 80 and above (14.0%) compared to those aged 65 to 79 (5.4%).

Table 6.6. Prevalence of frailty

Classification	N (%)
Frail	65 (6.2%)
Pre-frail	389 (37.0%)
Not frail	597 (56.8%)
Total	1051

Figure 6.4. Percentage of participants in frail, pre-frail and not frail categories, by age group



Risk of Falls

Elderly participants were classified into low to very high risk of sustaining falls by their history of falls and the time taken to complete the Timed-Up-&-Go (TUG) test, a test which assesses mobility and balance. 158 (20.4%) elderly were in high and very high risk group. The proportion of those in high and very high risk group was 57.4% for elderly aged 80 and above compared to 17.6% for elderly aged 65 to 79. The proportion was observed to be highest in Indians (39.2%) followed by Malays (29.3%) then Chinese (17.7%).

Table 6.7. Number of participants in each risk category

Number of falls in last 12 months	Timed-Up-&-Go test completion time		
	<10s	10-14s	>14s
0	235	366	79
1	16	31	14
≥2, or ≥1 fall requiring hospitalisation	5	20	9

Colour legend: green= low risk; yellow= moderate risk; orange= high risk; red= very high risk

Table 6.8. Number and proportion of participants aged 65 and above in different risk categories stratified by age group

Risk categories	Aged 65-79	Aged 80 and above
Low	234 (32.5%)	1 (1.9%)
Moderate	360 (49.9%)	22 (40.7%)
High and Very high	127 (17.6%)	31 (57.4%)
Total	721	54

Table 6.9. Number and proportion of participants aged 65 and above in high and very high risk categories, by gender and ethnic group

	Male				Female			
	Chinese	Malay	Indian	Other	Chinese	Malay	Indian	Other
N	40	13	8	0	73	11	12	1
%	14.2	30.2	30.8	0	20.4	28.2	48.0	50.0

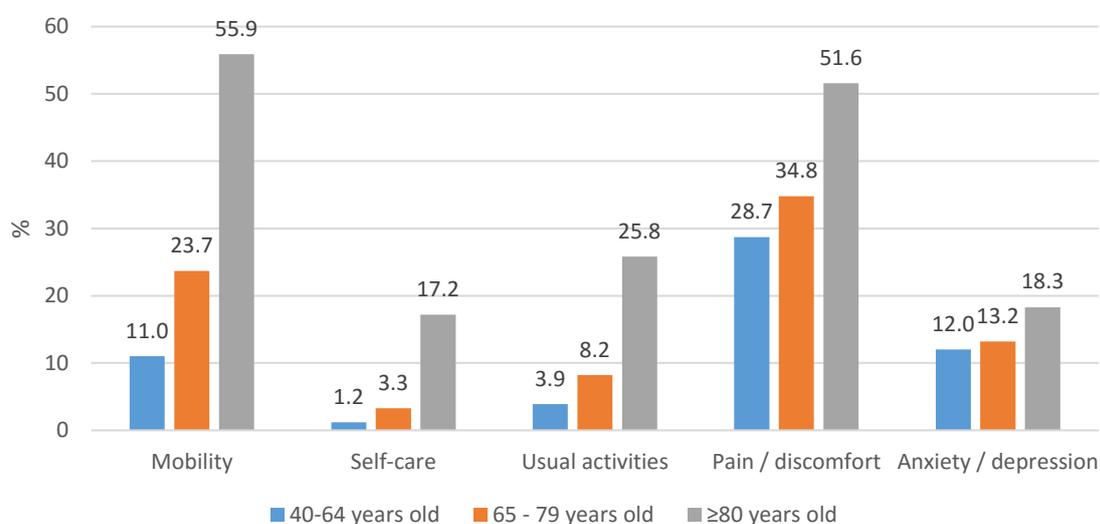
Health-Related Quality of Life

Self-Reported Problems

All the participants were administered the EQ-5D questionnaire which comprises two parts. The first part measures five dimensions of health (mobility, self-care, usual activities, pain/discomfort and anxiety/depression), within five levels—corresponding to “no problems,” “slight problems,” “moderate problems,” “severe problems,” and “extreme problems”.

A high proportion of participants aged 80 and above reported having problems with mobility (55.9%) and pain or discomfort (51.6%). Pain or discomfort was the most common problem for participants aged 40 to 64 years old and 65 to 79 years old.

Figure 7.1. Percentage of participants who reported having problems, by age group

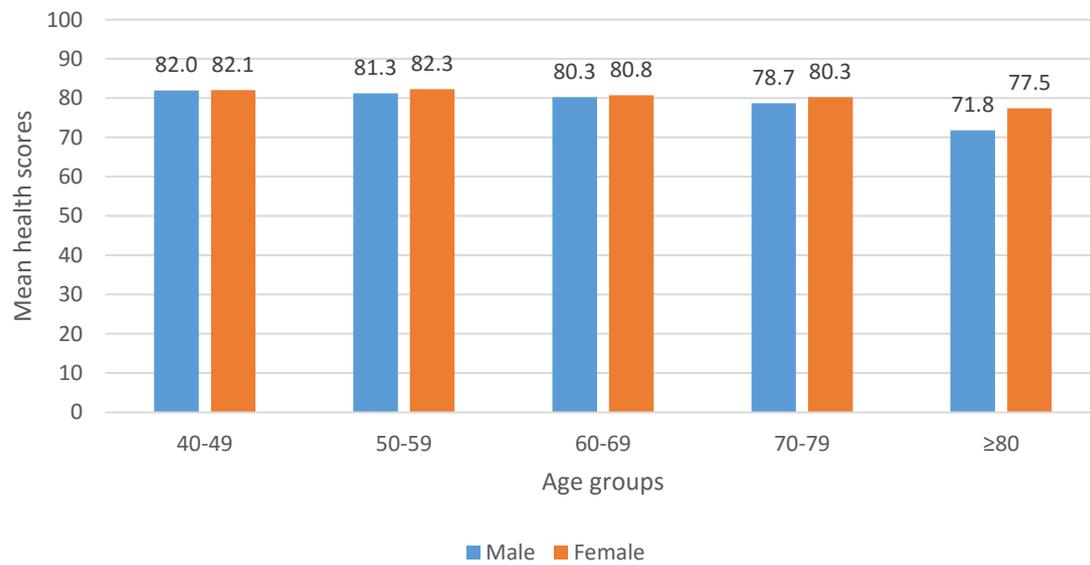


Self-Rated Overall Health Score

In the second part of the EQ-5D questionnaire, participants were asked to look at a 20cm long scale with values ranging from 0 (representing the poorest state of health) to 100 (representing the best state of health) and indicate the value that they think best represents their state of health on that day.

The mean self-rated health scores decreases as age increases with males showing a greater decrease than females as seen in Figure 7.2.

Figure 7.2. Mean self-rated health scores, by gender and age group



Key Points

Diabetes, hypertension and lipid disorders

16.9% of the participants had diagnosed diabetes or had high blood glucose levels. The prevalence was higher in males (19.9%) than in females (15.1%), and the prevalence was higher in Indians (31.6%) as compared with other ethnic groups. 33.4% of the participants who had high blood glucose levels had not been previously diagnosed with diabetes. 32.6% of diagnosed diabetics had poorly controlled blood glucose levels of which the proportion in Malays was the highest (47.2%) amongst the ethnic groups.

38.4% of participants had been previously diagnosed to have hypertension or had blood pressure in the hypertension range. The prevalence of hypertension was higher in males (43.4%) than in females (35.0%). 46.1% of the participants who had high blood pressure had not been previously diagnosed. 1.8% of the participants diagnosed with hypertension had poorly controlled blood pressure.

17.8% of the participants had high levels of LDL-C. The proportion in Malays was the highest (28.6%) amongst the ethnic groups.

17.8% of the participants had high total cholesterol. 54.0% of the participants who had high total blood cholesterol had not been previously diagnosed.

Obesity

40.8% of the participants were overweight and 24.0% were obese. The proportion of obese adults in Malays was higher (50.3%) compared to other ethnic groups.

Cardiovascular diseases

5.9% of the participants had a history of heart disease. This was more common in males (9.9%) than in females (3.3%). The prevalence was highest in Indians (9.3%), followed by Malays (6.6%) and then Chinese (5.3%).

1.8% of the participants had a history of stroke.

12.5% of the participants were at high risk or very high risk of coronary artery disease. The prevalence was higher in males (15.6%) than in females (10.3%). The prevalences in Indians and Malays were similar and higher than in Chinese.

Lifestyle

11.0% of the participants were heavy smokers. 1 in 4 males were heavy smokers while only 1 in 50 females were heavy smokers. Smokers were also more likely to be Malay, to have lower education levels and be in the 40 to 64 age group.

9.7% of the participants were heavy drinkers. Heavy drinking was more common in males (13.6%) than in females (7.2%).

37.9% of the participants were not doing sufficient physical activity. Among participants aged below 65 years, those who had post-secondary education were more likely to be doing sufficient physical activity compared to those with lower education levels. Among participants aged 65 years and above, Malays and Indians were less likely to be doing sufficient physical activity compared to Chinese. While problems with mobility were significantly associated with insufficient physical activity

in the older age group, the number of participants with mobility problems was too small to affect the overall proportion who were not active enough.

Screening

30.5% of the participants had not been screened for diabetes, hypertension or lipid disorders within last 3 years. The proportions of not being timely screened in Chinese and Malays were similar and higher than in Indians.

66.0% of the female participants aged 51 to 69 had not had a mammogram within the last 2 years. 93.2% of females in this age group had knowledge about mammogram.

56.1% of the female participants aged 40 to 69 had not had a Pap smear test within the last 3 years. 84.1% of females in this age group were aware of the Pap smear test.

Malays were less likely to have gone for a Pap smear test or mammogram compared with Chinese and Indians. Both knowledge about the test and higher income levels were associated with having a mammogram or a Pap smear done within the recommended timeframe. Higher education levels and lower age were associated with having a Pap smear test done within the last 3 years.

73.5% of the participants had not had a stool blood test, colonoscopy or sigmoidoscopy within the last 2 years. Malays were the least likely to have gone for either screening within last 2 years compared to Chinese and Indians. Those who were older, with secondary or higher education were more likely to have gone for either screening within last 2 years. The same factors were found to be associated with not having done a sigmoidoscopy/colonoscopy screening in the last 10 years.

Vision and hearing

20.4% of the participants were visually impaired in at least one eye. 13.5% had hearing impairment. The prevalence for both of these conditions increased with age.

Health of the elderly (aged 65 and older)

16.0% of the elderly participants had low cognitive screening test scores.

20.4% of the participants were at high or very high risk of sustaining falls. The proportion of these participants was highest in Indians (39.2%).

37.0% of the participants were in the pre-frail category and 6.2% were in the frail category.

62.0% of the participants have not had an oral health check within the last 1 year. The proportion of these participants was highest in Malays (70.8%).

The top 3 ADL problems that male participants had were grooming, followed by stair climbing and then bladder control. The top 3 for females were stair climbing, followed by grooming and then bathing and toileting. 14 (1.5%) elderly participants were not able to perform at least 3 of the 6 ADLs defined in the ElderShield Scheme.

The top 3 instrumental ADL problems reported by male participants had were laundry, followed by food preparation and then housekeeping. The top 3 for females were laundry, followed by shopping and then housekeeping.

Health-related Quality of Life

Pain/discomfort was the most commonly reported problem in both age groups 40 to 64 years old (28.7%), and 65 to 79 years old (34.8%). The mean self-rated health score decreased with age. The decrease was progressively larger with age in males than in females.

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