

# Health Status and Health-Related Behaviours in Adults with Self-Reported Diabetes

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## Introduction

Diabetes is a chronic disease in which blood sugar levels are above normal. Over time, if uncontrolled, the high blood sugar damages nerves and blood vessels, leading to complications such as heart disease, stroke, blindness and amputations.

One of the ways to control diabetes is through lifestyle modification such as eating healthily, maintaining a healthy weight and engaging in physical activity.

The National Health Surveillance Survey (NHSS) series collects nationally representative data on the health of adult Singaporeans.

The NHSS 2013 is the third survey in the series. It was conducted between November 2012 and October 2013. A wide range of data was collected, including self-reported health status and health behaviors such as dietary practices, physical activity, dental care, smoking and alcohol consumption.

In this article, we examine the health status and health behaviours of respondents who reported having doctor-diagnosed diabetes, along comparisons with the general population. These respondents were also asked about their practices in managing their diabetes.

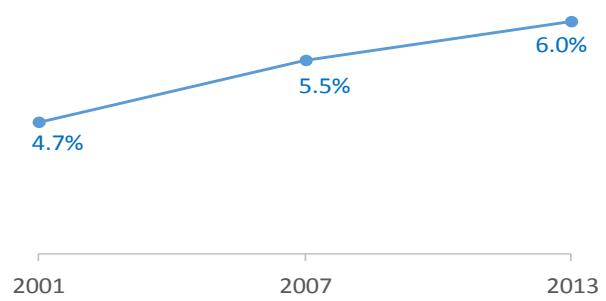
## Adults with Self-Reported Diabetes

### *Trends in the Prevalence of Self-Reported Diabetes*

Respondents who answered "yes" to both questions, "Have you ever been told by a doctor (western-trained) that you have diabetes?" and "Are you currently on any medications prescribed by your doctor for diabetes?" were classified as having diabetes.

In 2013, 6.0% adults aged 18 and above reported having diabetes (Chart 1). From 2001 to 2013, the prevalence of self-reported diabetes increased from 4.7% to 6.0%. Increased screening efforts such as Screen for Life<sup>1</sup> and the public's improved knowledge about symptoms of diabetes could lead to earlier and more detection of persons with diabetes.

CHART 1 PREVALENCE OF SELF-REPORTED DIABETES, 2001-2013



<sup>1</sup> Screen for Life is a new branding which consolidates the Health Promotion Board's (HPB) existing screening programmes. These include the previously known Integrated Screening Programme. Under this programme, diabetes is one of the conditions recommended for screening for persons aged 40 and above.

over time. Hence the observed upward trend in the prevalence of known diabetes should be interpreted with caution.

## Profile

The majority of adults with self-reported diabetes were men (53.3%) and almost two-thirds (65.2%) were Chinese (Table 1). More than three-quarters (81.2%) had an educational level of secondary/GCE 'O'/'N' level and below. Slightly more than half (54.8%) were not working. One-quarter (26.3%) of these self-reported diabetic adults resided in HDB 1-3 room flats.

The mean age of onset of diabetes reported by these diabetic adults was 50 years old. The mean duration of diabetes reported was 11 years. Four in five (80.9%) were currently on oral hypoglycemic agents.

TABLE 1 SOCIO-DEMOGRAPHIC AND SOCIO-ECONOMIC STATUS OF ADULTS WITH SELF-REPORTED DIABETES, 2013

Characteristics	%
Age (years)	
18-39	4.4
40-59	40.4
60+	55.2
Gender	
Male	53.3
Female	46.7
Ethnicity	
Chinese	65.2
Malay	18.5
Indian	14.9
Others	1.4
Education	
No formal education/primary/PSLE	43.0
Secondary/GCE 'O'/'N' level	38.2
GCE 'A' level, polytechnic & other diploma, degree & professional qualification	18.6
Refused to answer	0.2
Main work status	
Working	44.9
Non-working	54.8
Refused to answer	0.3
Dwelling type	
HDB 1-3 room	26.3
HDB 4-5 room, executive & other public flats	60.1
Private flats & condominium, landed property & others	13.6

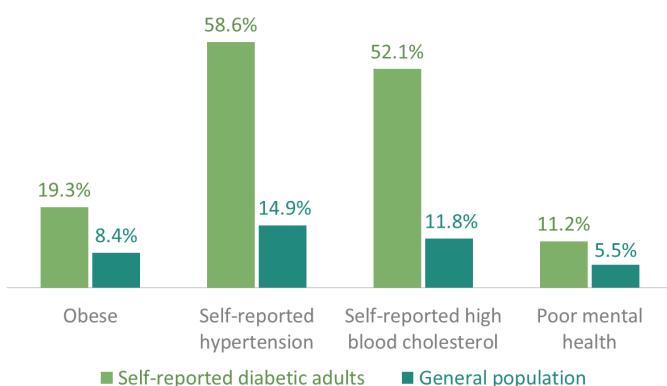
## Health Status

### Obesity

In overweight or obese individuals with diabetes, studies have shown that modest and sustained weight loss can improve glycemic control and reduce the need for glucose-lowering medications.

However, long-term weight loss is still a challenge for many of these diabetic individuals. One in five (19.3%) of the adults with self-reported diabetes were obese<sup>2</sup> (Chart 2). This was significantly higher than the prevalence of obesity (8.4%) in the general population.

CHART 2 HEALTH STATUS OF ADULTS WITH SELF-REPORTED DIABETES, 2013



### Self-Reported Chronic Diseases

Hypertension is more common in people with diabetes. Diabetes and hypertension together can lead to and aggravate many complications of diabetes, including kidney disease. Most people with diabetes would develop high blood pressure during their life.

People with diabetes have an increased risk of cardiovascular diseases such as heart attack and stroke if their "bad" cholesterol is elevated. Adults with diabetes should aim to lower their "bad" cholesterol level so as to reduce their risk of developing cardiovascular diseases.

2 Obese is defined as having a body mass index (BMI)  $\geq 30 \text{ kg/m}^2$ , where  $BMI = \frac{\text{Weight (kg)}}{\text{Height (m)} \times \text{Height (m}^2)}$

In 2013, 58.6% of the adults with self-reported diabetes reported having hypertension<sup>3</sup> and slightly more than half (52.1%) reported having high blood cholesterol<sup>4</sup>. Close to three-quarters (71.9%) reported having either hypertension or high blood cholesterol or both.

## Mental Health

Diabetes is one of the most psychologically-demanding chronic diseases because it requires strict daily management of the blood sugar level by the patients themselves.

Lack of active involvement can lead to poorer outcomes and increased risk of complications. The daily routine of monitoring the blood sugar level can be challenging and stressful to them.

The 12-Item General Health Questionnaire (GHQ-12) is a screening instrument used to measure the psychological well-being of an individual. A cut-off point of 3 and above is classified as having poor mental health.

Using this instrument, 11.2% of the self-reported diabetic adults was assessed to have poor mental health compared with 5.5% among the general population.

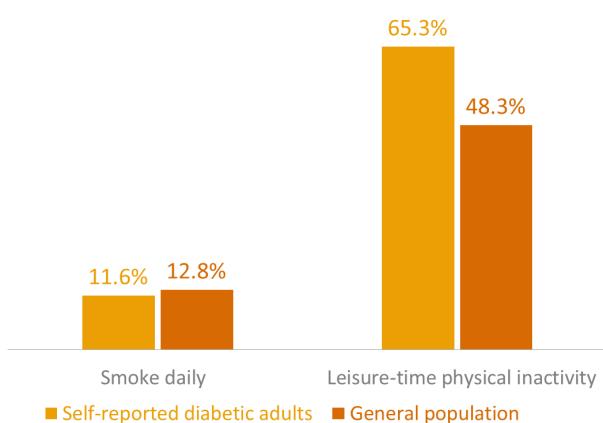
## Health Behaviours

### Smoking

Smokers with diabetes have higher risks for serious complications, including neuropathy, nephropathy and retinopathy. Avoidance of tobacco is an important component in the management of diabetes. 11.6% of self-reported diabetic adults smoked daily (Chart 3). The prevalence of smoking was higher in men (21.2%) than in women (0.6%).

CHART 3

### SMOKING AND LEISURE-TIME PHYSICAL INACTIVITY IN ADULTS WITH SELF-REPORTED DIABETES, 2013



### Physical Activity

Regular physical activity is a key part of managing diabetes along with maintaining a healthy diet, taking medications as prescribed, and having good stress management. Regular exercise helps to lower blood sugar, blood pressure and cholesterol levels.

It also improves the cardiovascular system and encourages weight loss, which brings about big benefits for people with diabetes such as reducing the risk of heart disease.

Almost two-thirds (65.3%) of the adults with self-reported diabetes did not participate in any physical activity<sup>5</sup> during leisure time, compared with 48.3% of the general population.

The top reasons for not doing any physical activities during leisure time were:

1. No time due to work or family commitment (36.3%)
2. Too old (19.6%)
3. Poor health (18.4%)

<sup>3</sup> Ever told by a doctor (western trained) to have hypertension and is currently on medication for hypertension.

<sup>4</sup> Ever told by a doctor (western trained) to have high blood cholesterol and is currently on medication for high blood cholesterol.

<sup>5</sup> Did not participate in any sport or exercise or walking during leisure time in the past 3 months.

## Healthy Eating

People with diabetes have to be extra cautious in ensuring that their food is balanced with insulin or oral medications or both, in conjunction with regular exercise to help manage their blood sugar levels.

The consumption of sweetened drinks such as soft drinks and juices should be reduced. The type of carbohydrates consumed and the serving size are also important.

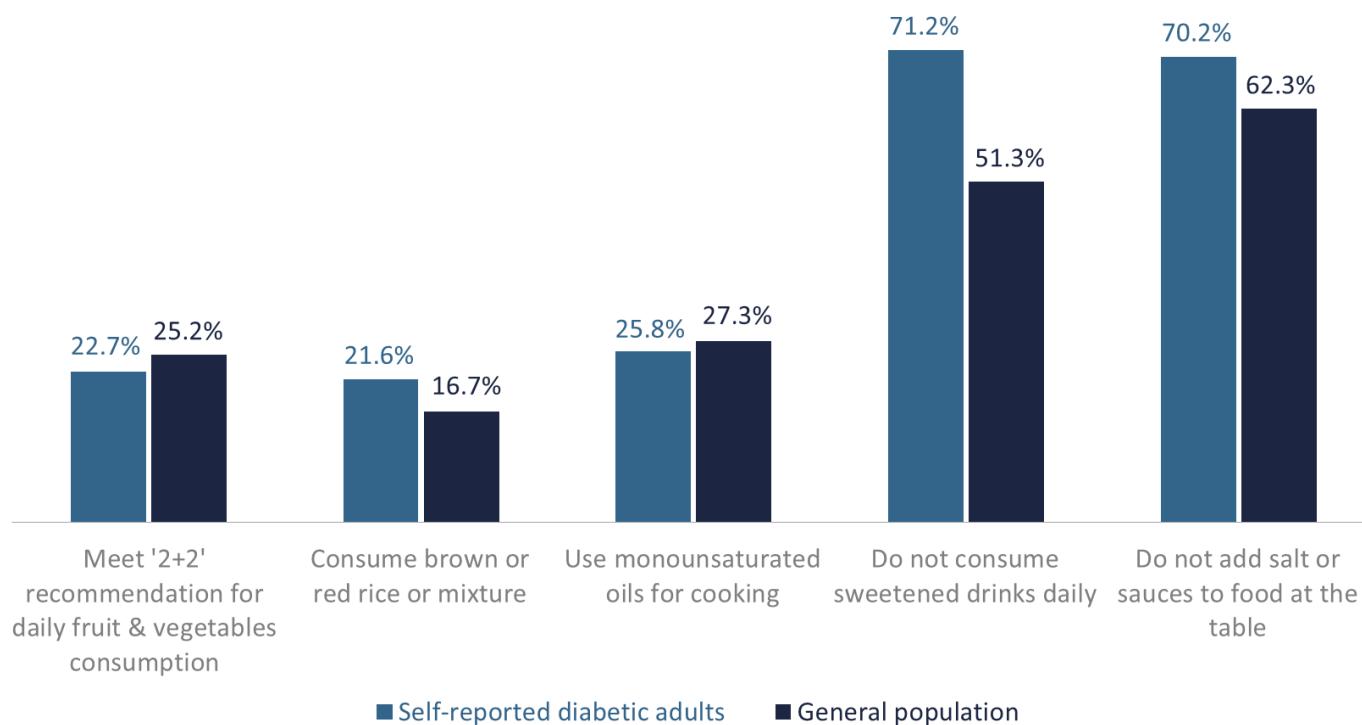
Diabetic individuals should focus on whole grain carbohydrates since they are high in fiber and get digested slowly, keeping blood sugar levels more even. Fruits and vegetables are also good sources of carbohydrates and fiber.

Studies have shown that a higher intake of fat from monounsaturated fat sources improves the glycemic and cholesterol profiles of diabetic individuals. Sources of monounsaturated fats include olive oil and canola oil. Diabetic individuals with hypertension should also cut down on their sodium intake.

In 2013, almost a quarter (22.7%) of the adults with self-reported diabetes met the '2+2' recommended daily intake for fruit and vegetables<sup>6</sup> (Chart 4). About one in five (21.6%) consumed brown or red rice<sup>7</sup> in their diet.

Almost three-quarters (71.2%) did not consume sweetened drinks<sup>8</sup> daily. One-quarter (25.8%) of the self-reported diabetic adults indicated the use of monounsaturated oils for cooking at home. 70.2% of them did not add salt or sauces to food at the table.

CHART 4 DIETARY PRACTICES IN ADULTS WITH SELF-REPORTED DIABETES, 2013



<sup>6</sup> The Health Promotion Board encourages everyone to eat 2 servings of fruits and 2 servings of vegetables daily.

<sup>7</sup> Usually eat brown/red rice only or a mixture of white and brown/red rice.

<sup>8</sup> Sweetened drinks include soft drinks, fruit drinks, packet drinks, cordial, yoghurt-based drinks and cultured milk drinks.

## Attitudes and Practices Towards Diabetes Management

### Lifestyle Modification

Almost all (93.9%) of the adults with self-reported diabetes were reported to have modified their lifestyle to control their diabetes.

The top lifestyle modifications adopted were “reduce intake of sugar, rice, bread” (91.5%), “increase intake of wholemeal bread, brown rice, vegetables and high fibre food” (43.5%), “reduce fat intake” (31.5%) and “exercise” (28.8%).

### Monitoring of Blood Sugar Level

Regular self-monitoring of blood sugar levels gives a quick snapshot of where the blood sugar levels are at any time. It enables tracking of how certain foods and activities affect the blood sugar.

15.8% of the adults with self-reported diabetes indicated that they checked their blood sugar levels at least once a day. About half (49.0%) checked their blood sugar levels less than 4 times a month. However, 14.7% did not check at all.

The hemoglobin A1c (HbA1c) test is an important blood test that measures how well diabetes is being controlled. Performed by a health professional, the test measures the average level of blood sugar over the past 3 months.

Slightly more than half (53.5%) of the self-reported diabetic adults had done the test 4 times or less over the past 12 months prior to the NHSS 2013. However, 12.1% of them had never heard of this test.

## Health-Care Utilisation

In the past 12 months, self-reported diabetic adults saw a doctor for their diabetes 4 times on average. Most of the time, they sought treatment at government polyclinics (60.0%), followed by private general practitioner clinics (21.4%).

Diabetic patients are able to use Medisave to pay for the outpatient treatment of diabetes<sup>9</sup>. However, almost three-quarters (71.5%) of the self-reported diabetic adults did not do so.

### Conclusion

Survey findings from the NHSS 2013 showed that many adults with self-reported diabetes were obese and had other chronic diseases.

Although these self-reported diabetic adults had been adopting certain healthy lifestyle habits such as including brown or red rice in their diet, abstaining from sweetened drinks and trying to reduce sodium intake, they could do more to lead a healthier lifestyle.

These include consuming more fruits and vegetables, increasing physical activity and maintaining a healthy weight.

Modifiable lifestyle characteristics, such as increased physical activity, positive changes in diet, and good management of stress are key factors that influence the outcome of diabetes management.

People with diabetes are encouraged to adopt and maintain these habits in order to effectively control the disease.

<sup>9</sup> The Chronic Disease Management Programme (CDMP) was first introduced by the Ministry of Health in Oct 2006 for diabetes mellitus, hypertension, hyperlipidemia (lipid disorders) and stroke. It was later expanded to include other chronic diseases such as asthma, chronic obstructive pulmonary disease (COPD) and major depression. Under this programme, patients are able to use their own or family member's Medisave to pay their outpatient bills.