



Lloyd's Register Foundation
Institute for the Public
Understanding of Risk

DIABETES PERCEPTION REPORT

**Perceptions of health-
screening participants in
Singapore**

in partnership with Diabetes Singapore

WHY FOCUS ON DIABETES?

Diabetes is a global health crisis, affecting one in ten adults (International Diabetes Federation, 2021; Lin et al., 2020). By 2045, this is expected to rise by 46%, with one in eight adults having diabetes. In Singapore, over 400,000 people currently live with diabetes, a number expected to reach 1 million by 2050; the increasing prevalence among individuals under 40 is particularly concerning (Seah & Yang, 2023). Beyond health risks, this chronic condition poses a significant economic burden on society (Ang et al., 2018; Png et al., 2016; SSHSPH, 2016).

Type-2 diabetes (T2D), the most common form, accounts for over 95% of cases (WHO, 2023). **Effective management of T2D requires not only medical interventions but also significant behavioral and lifestyle changes** (US CDC, 2024).

Given these findings, to better understand the perception of diabetes in Singapore, we have collaborated with **Diabetes Singapore** (DiabetesSG; founded 1971), the only registered charity dedicated to the fight against diabetes in Singapore. DiabetesSG organizes talks, exhibitions, and community events for members of the public, and in particular, health-screenings free-of-charge that aim to inform participants of their health status, particularly their blood sugar level.

This report aims to summarize the **key findings from data collected from health-screening participants** during community outreach events conducted between July and October 2024, to better understand their diabetes status, individual perceptions, and the perceived usefulness of potential interventions.

METHODOLOGY.

Data was collected during DiabetesSG community health-screening events from 7 July 2024 to 6 October 2024.

In addition to completing a series of objective health measures for participants' self-knowledge (blood glucose, height and weight measurement, blood pressure, and a lipid panel), participants answered several questions in a perceptions survey, which included the following sections:

- ▶ **Awareness of health status**, in particular, whether they reported having diabetes, were unsure/don't know, or did not have diabetes
- ▶ **Perceived usefulness of potential interventions** to improve diabetes care and management
- ▶ **Participant demographics** including age, gender, and ethnicity

The perceptions survey was conducted during the waiting time for the results of the objective health measures.

There were a total of 994 participants' responses collected across 13 events. To avoid potential skewing of the data, the main findings excluded those who self-declared having Type 1 diabetes ($n = 14$).

Participant Profile

994
participants

40.9
mean age (years)



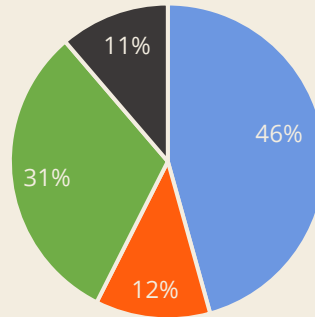
Male

35.2%

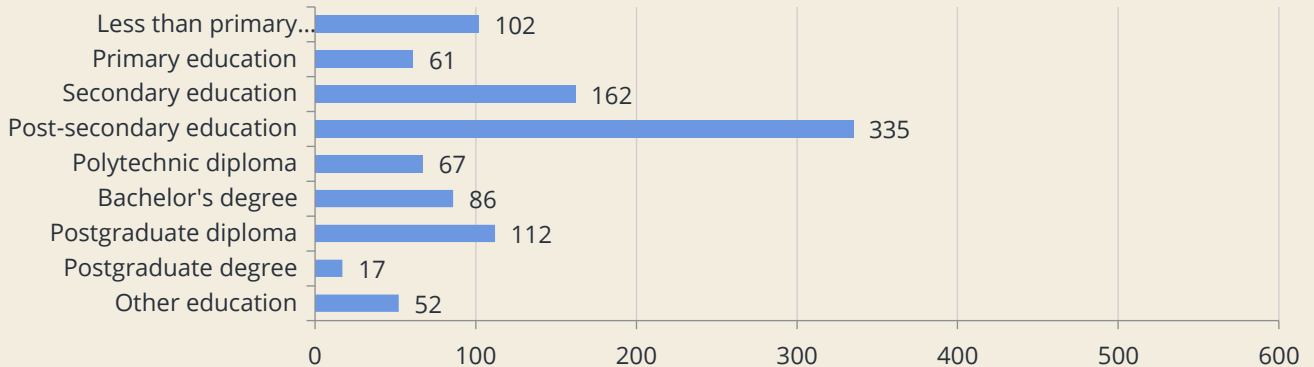
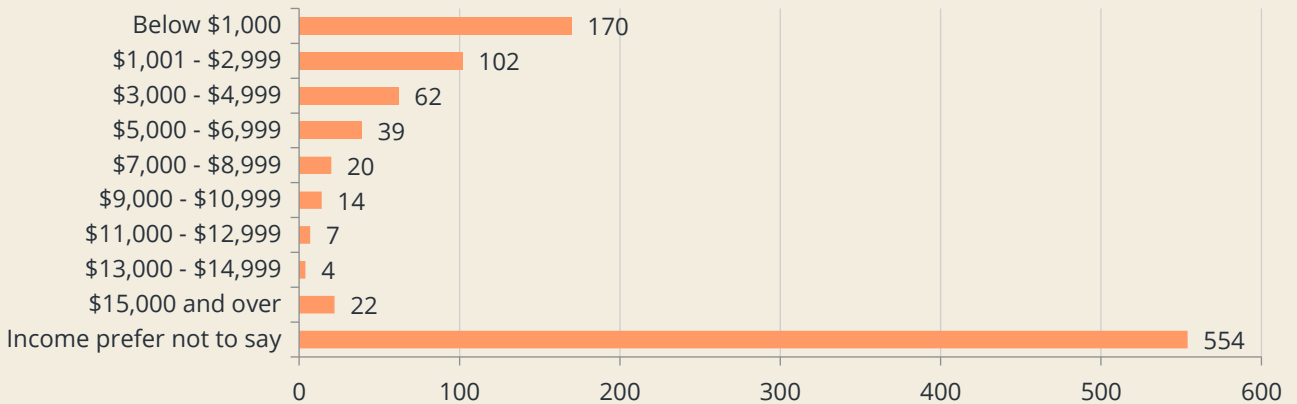
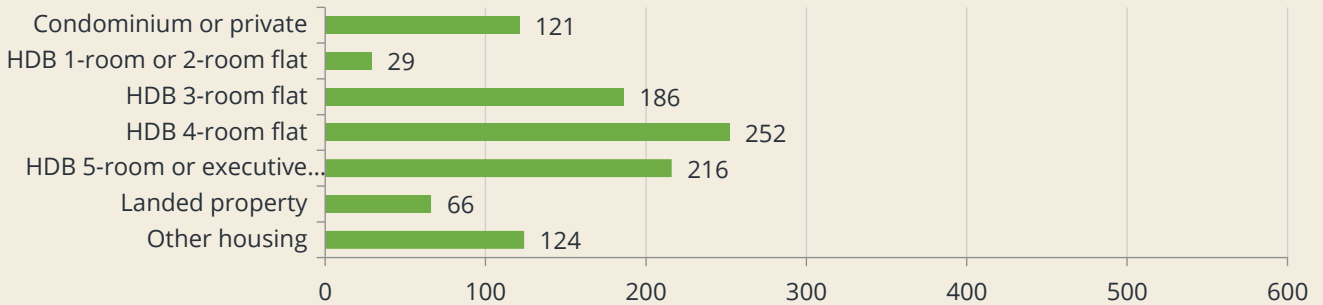


Female

64.8%



■ Chinese
■ Malay
■ Indian
■ Other ethnicity



Findings at-a-glance.

Almost 40% of all health-screening participants had pre-diabetes.

- Participants with pre-diabetes were significantly older, had significantly higher BMI than those without diabetes, and were more likely to be male.
 - Regardless of family history, one may have pre-diabetes or diabetes, highlighting the need for healthy lifestyle behaviors and interventions for all.
-

There seems to be a gap between perceptions and reality: Many participants had erroneous beliefs about their diabetes status, compared to their actual diabetes status (determined by blood glucose levels).

- Less than half with diabetes were aware they had diabetes.
 - Almost 70% of those with pre-diabetes thought they did not have diabetes.
 - More than a quarter of participants were unsure or did not know whether they had diabetes. Of these, more than half actually had pre-diabetes or diabetes.
 - Almost half who believed they had no diabetes actually had pre-diabetes or diabetes.
 - This calls for a greater need to emphasize the importance of regular health-screenings, so as to improve people's awareness of their diabetes status for timely management.
-

Potential actions to manage or prevent diabetes:

- Among those who reported having type 2 diabetes, **setting realistic health targets that they can achieve and build on** was perceived to be the most useful.

What is the actual diabetes status of health-screening participants? How are people with diabetes and pre-diabetes different from those without diabetes?

Medical tests and health measures performed:

- **HbA1c test**
- **Height and weight**

Almost 40% of all health-screening participants had pre-diabetes. They were significantly older and had significantly greater BMI than those without diabetes.

FIGURE 1.1 | Proportion of participants with diabetes, pre-diabetes, or not, as determined by HbA1c

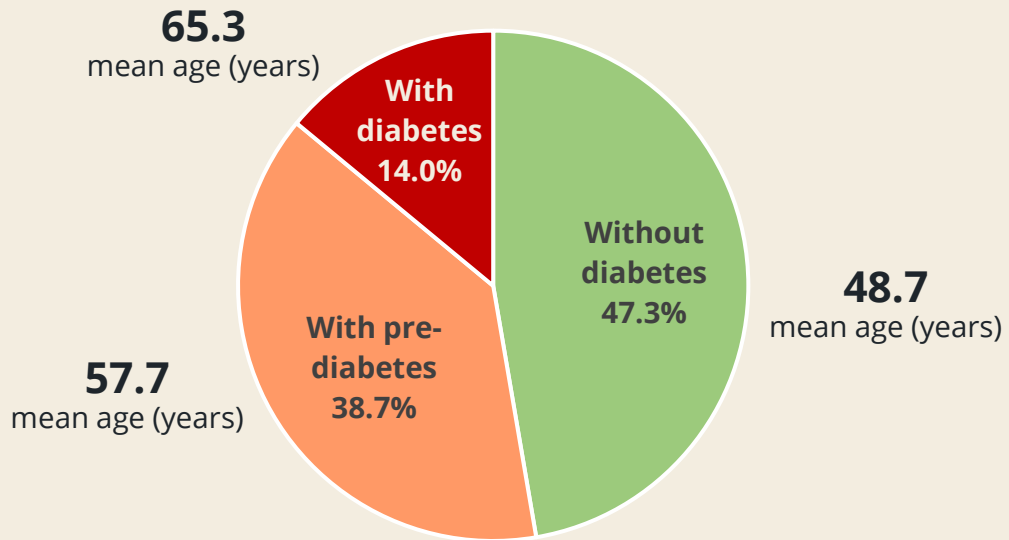
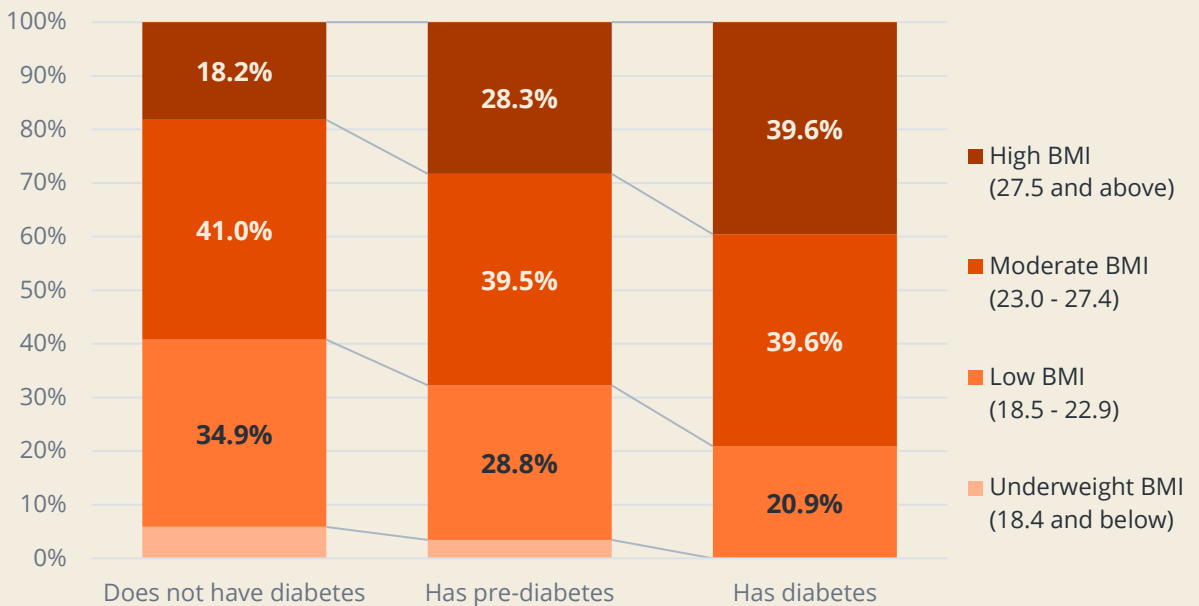


FIGURE 1.2 | BMI status of participants with diabetes, pre-diabetes, or not



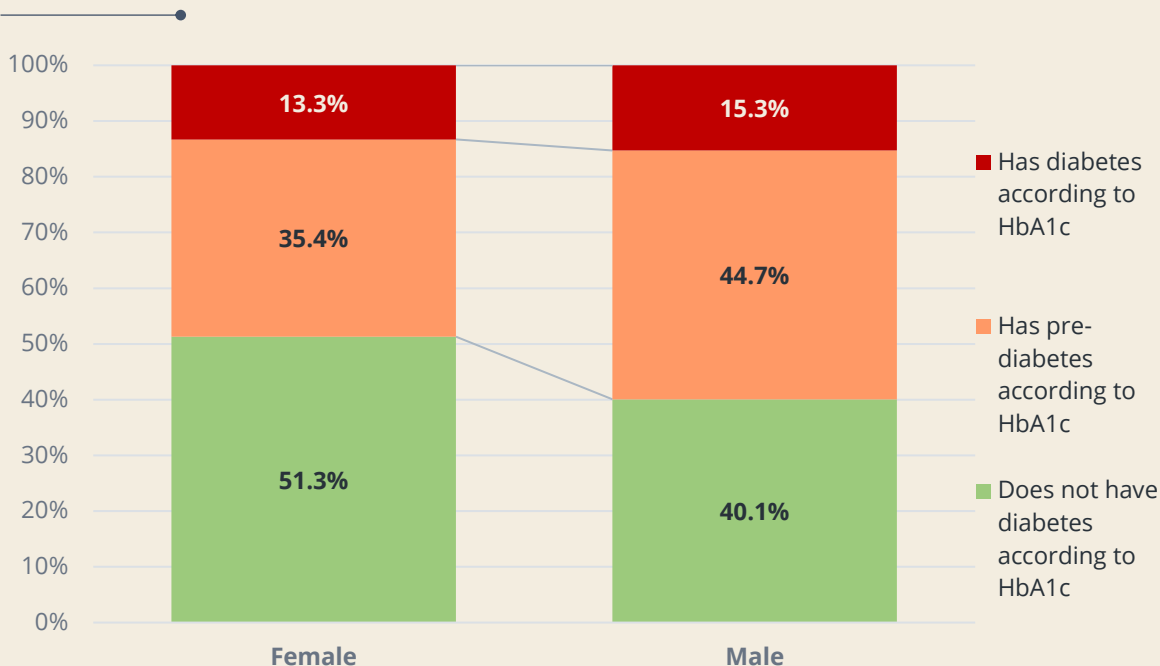
Diabetes status according to HbA1c

24.2 average BMI < **25.4** average BMI < **26.6** average BMI

All differences were statistically significant, all *ps* < .001

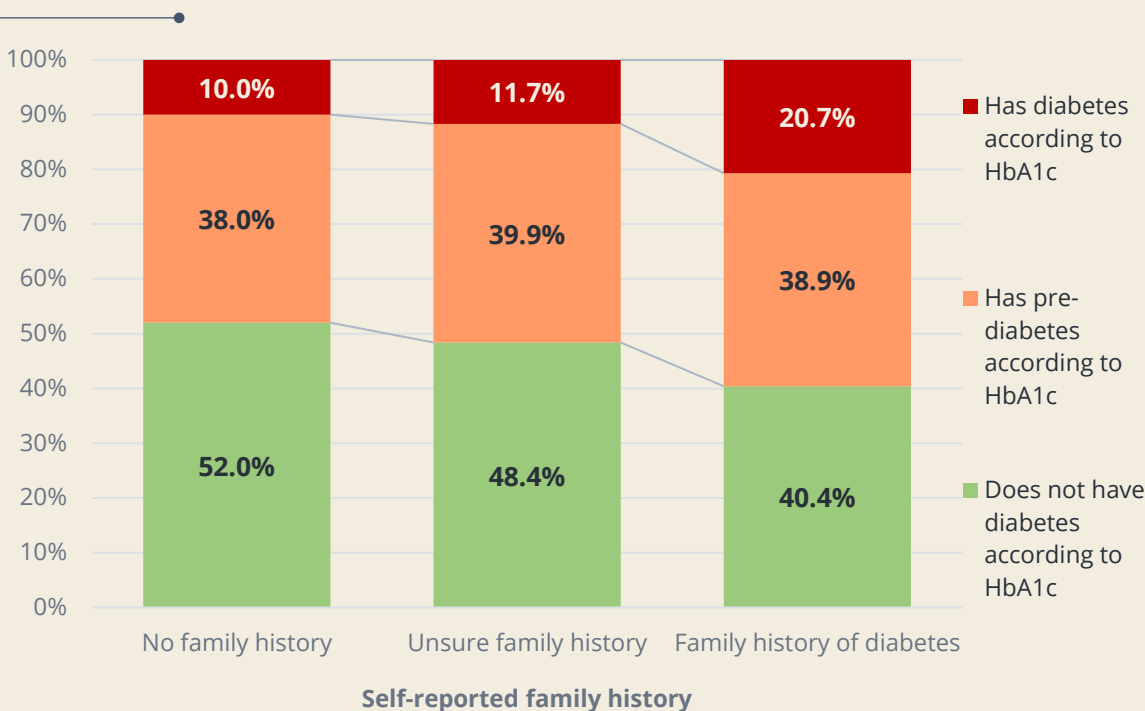
Males were significantly more likely to have pre-diabetes than females.

FIGURE 1.3 | Diabetes status of each gender



Regardless of family history, participants could have pre-diabetes or even diabetes, highlighting the need for healthy lifestyle behaviors and interventions.

FIGURE 1.4 | Diabetes status among participants with different self-reported family history



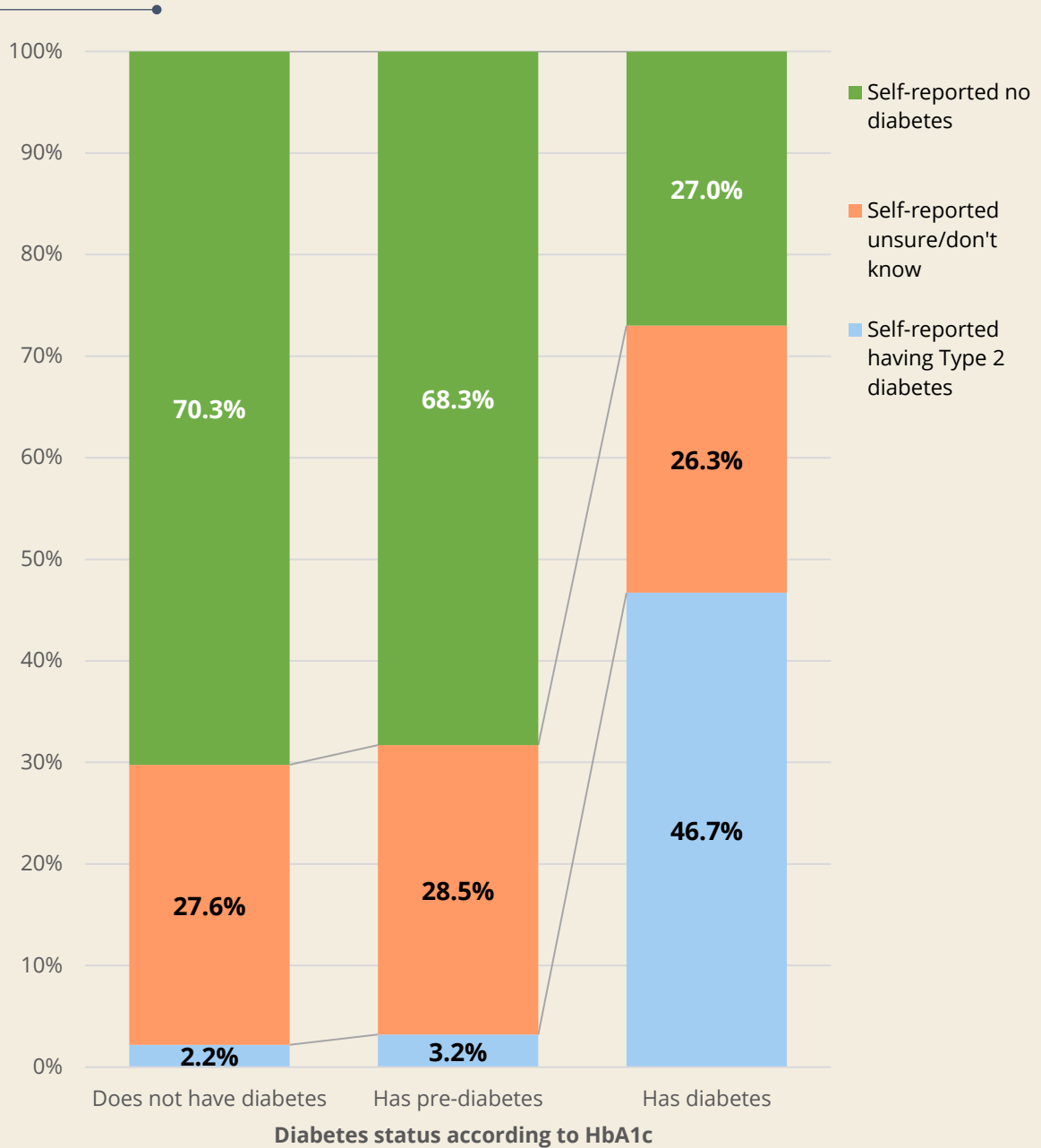
How do participants' actual diabetes status match up with their perceptions?

Questions asked:

- **Do you have diabetes?**
Yes, No, Unsure/Don't know
- **Do you have a family history of diabetes?**
Yes, No, Unsure/Don't know

Fewer than half who had diabetes knew they had diabetes. Almost 70% of those who had pre-diabetes thought they did *not* have diabetes.

FIGURE 2.1 | Self-reported status among participants with diabetes, pre-diabetes, or not

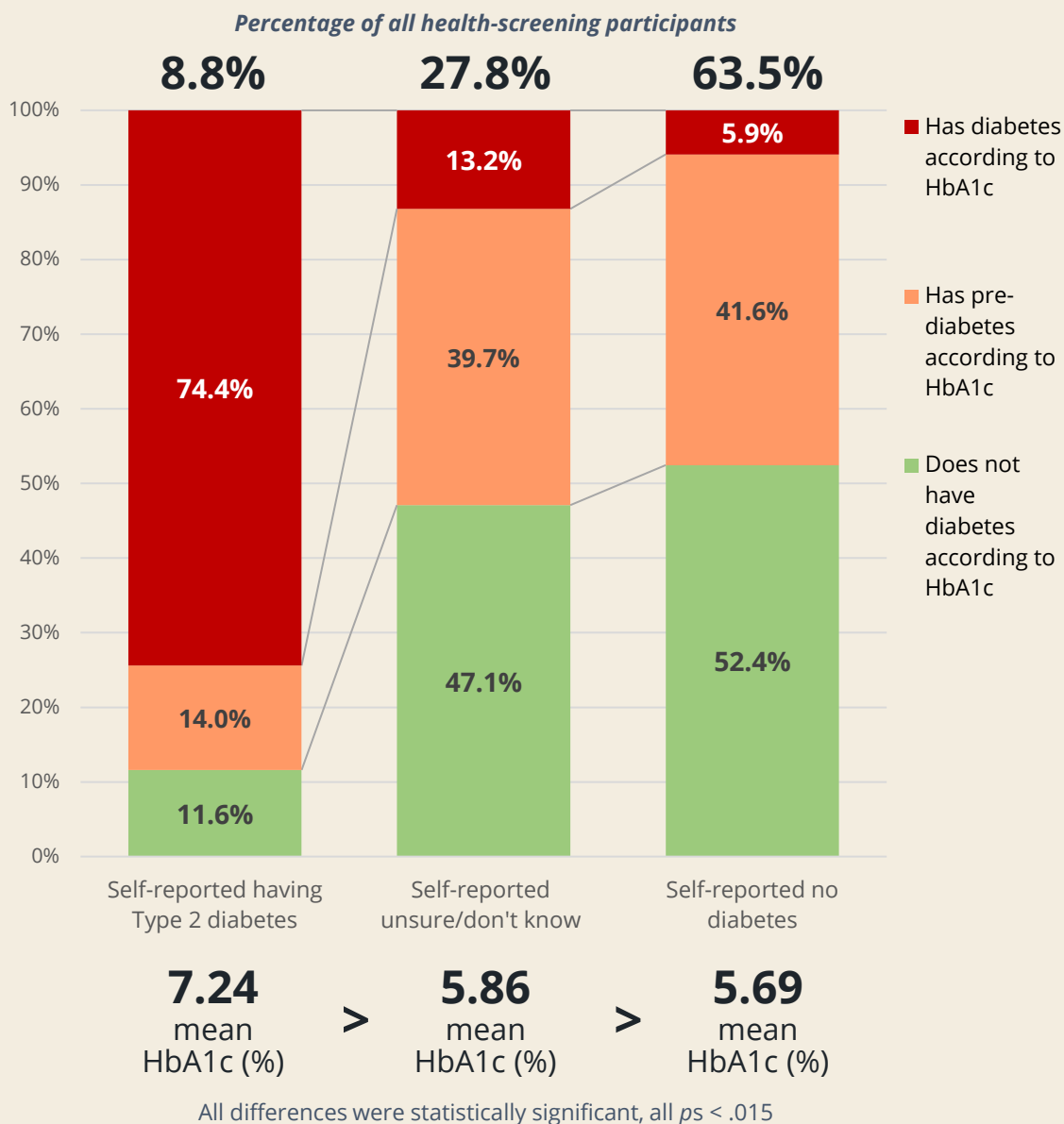


The findings reflect a significant gap between participants' actual diabetic condition and their perceptions. This highlights the importance of regular health-screenings, in particular blood glucose tests which are the only definitive method of determining one's diabetes status.

One reason for this awareness gap may be because diabetes is a "silent" disease in its early stages, whereby patients may feel perfectly normal until serious—even irreversible—complications arise (HealthHub, 2024).

More than a quarter of participants were unsure or did not know their condition. Of these, more than half actually had pre-diabetes or diabetes. Among those who believed they had no diabetes, almost half had pre-diabetes or diabetes.

FIGURE 2.2 | Actual diabetes status among each perceived diabetes status



Consistent with the previous findings, these results show that not only people who were unsure of, or not know, their diabetes status may actually have pre-diabetes or diabetes, but this also applies even to those who believed that they did not have diabetes. This is important because accurate self-knowledge is necessary to engage in effective management or prevention measures. While Singapore has launched the War on Diabetes in 2016 (Lam, 2024), these findings further highlight the significant work that remains to be done.

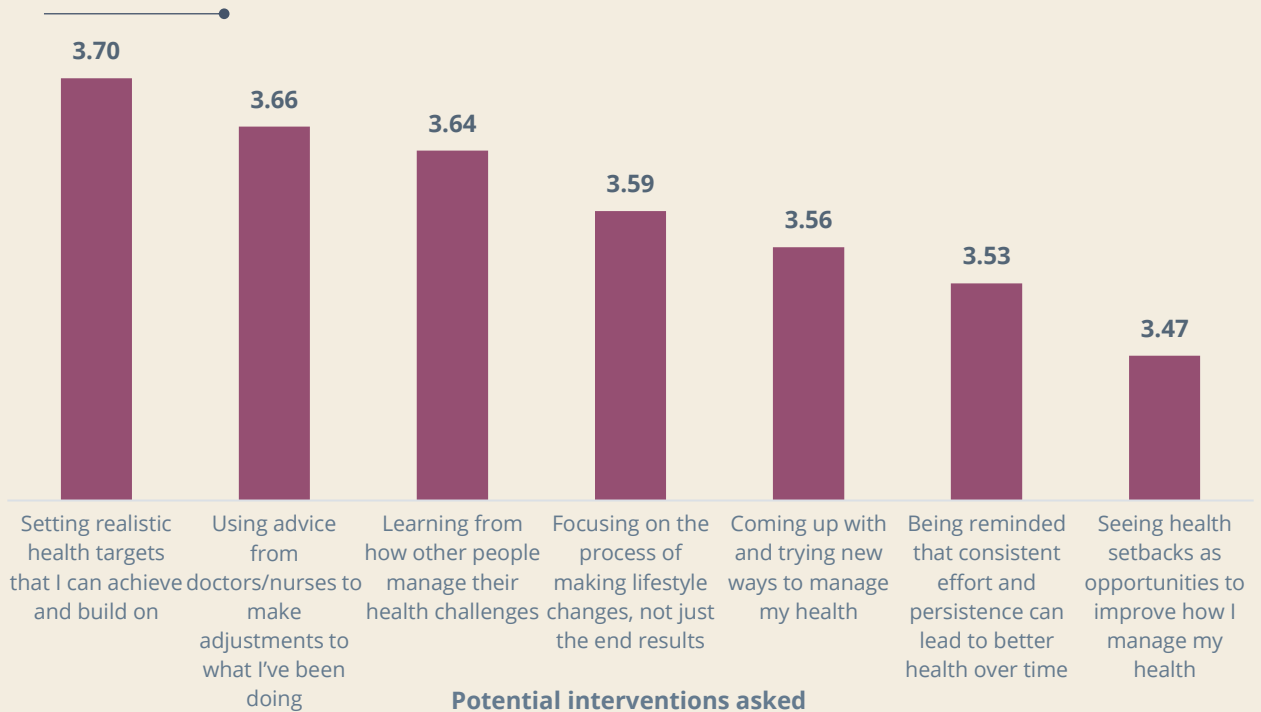
What are the perceived usefulness of various interventions for diabetes management or prevention?

List of interventions we asked participants to rate:

1. Seeing health setbacks as opportunities to improve how I manage my health
2. Being reminded that consistent effort and persistence can lead to better health over time
3. Coming up with and trying new ways to manage my health
4. Using advice from doctors/nurses to make adjustments to what I've been doing
5. Focusing on the process of making lifestyle changes, not just the end results
6. Setting realistic health targets that I can achieve and build on
7. Learning from how other people manage their health challenges

Among those who reported having type 2 diabetes, setting realistic health targets that they can achieve and build on was perceived to be the most useful.

FIGURE 3.1 | Average ratings of perceived usefulness of each intervention among those who self-reported having type 2 diabetes



Among participants who self-reported (perceived) having T2D, **setting realistic health targets that they can achieve and build on** was ranked the most useful measure to manage their diabetes. Participants viewed this as significantly more useful than:

- seeing health setbacks as opportunities to improve how they manage their health;
- being reminded that consistent effort and persistence can lead to better health over time;
- coming up with and trying new ways to manage their health; and
- focusing on the process of making lifestyle changes, not just the end results.

This may reflect the challenges and long-term nature of behavioral changes necessary to effectively manage and treat T2D.

On the other hand, **seeing health setbacks as opportunities to improve how they manage their health** was found to be the least useful, significantly less than:

- **setting realistic health targets that they can achieve and build on;**
- **using advice from doctors and nurses to make adjustments;** and
- **learning from how other people manage their health challenges.**

These findings could reflect how setbacks are, understandably, discouraging, and thus the work needed to convince participants that setbacks are potential opportunities to improve their health management.

The perceived usefulness of interventions was measured on a 5-point scale. Two-tailed paired samples t-tests were conducted for each pair of interventions; all differences described are statistically significant at $p < .05$

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RESOURCES.

Check out these free resources for more information about risk perceptions and risk communications:

- ▶ [IPUR Resources and Tools](#)
- ▶ [IPUR Risk Communication Masterclasses](#)
- ▶ [LRF World Risk Poll](#)
- ▶ [Risk Know-How: Resources for Communities](#)

WHO WE ARE.

The LRF Institute for the Public Understanding of Risk (IPUR) is the premier institute focusing on public risk perception and communication in Asia, a region which faces acute and growing risks relating to public health, the environment, climate change and emerging technologies. We investigate what people are worried about, where the gaps are between the public's understanding of these issues and the experts' risk assessment, and what interventions can help to bridge these gaps.

Launched in 2017, IPUR was established through funding from the Lloyd's Register Foundation and the National University of Singapore. IPUR strives to shed light on some of the most pressing societal matters which are subject to uncertainty. By dedicating ourselves to transform the risk communication landscape and enhance the public understanding of risk, we seek to improve lives with maximum impact.

Our research is multi-disciplinary and brings together social sciences — psychology, economics, public policy, communications, sociology—with marketing, science and engineering. Our research spans three main risk domains: Data and Technology, Environment and Climate, and Health and Lifestyle. We partner with government, industry and academia to design and evaluate intervention measures, train professionals and students, develop resources, and organise outreach events, stakeholder workshops and conferences.

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