

Methods

The National Health and Morbidity Survey (NHMS) 2023 is a nationwide community-based survey using a cross-sectional study design. All eligible respondents aged 18 years and above completed modules on diabetes, hypertension, and hypercholesterolemia. The questionnaire was adapted from the World Health Organization (WHO) STEPS Instrument (8).

Capillary blood glucose levels were measured using the Accu-Chek® portable blood test system, while blood pressure was measured using the Omron Digital Automatic Blood Pressure Monitor, Model HEM-907. Capillary cholesterol levels were measured via finger prick capillary blood using the CardioChek® PA 3-in-1 lipid panel.

Undiagnosed diabetes was defined as fasting capillary blood sugars of ≥7.0 mmol/l or a random blood sugar level of ≥11.0 mmol/l among respondents not previously diagnosed with diabetes [9]. Undiagnosed hypertension was defined as an average systolic blood pressure measurement of ≥140 mmHg and/or ≥90 mmHg for diastolic blood pressure among respondents not previously diagnosed with hypertension [10]. Undiagnosed hypercholesterolaemia was defined as a total cholesterol level of ≥5.2mmol/L, among respondents not previously diagnosed with hypercholesterolaemia (11).

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**Conflict of interest**  
There is no conflict of interest

**Acknowledgement:**  
The authors wish to express their gratitude to the Director General of Health, Malaysia for granting permission to publish this document.

**This summary should be cited as:**  
Kishwen Kanna Yoga Ratnam, Kim Sui Wan, Tania Gayle Robert Lourdes, Halizah Mat Rifin (2024). Research Highlight: The undiagnosed NCD epidemic in Malaysia. The National Health and Morbidity Survey 2023: Non-Communicable Diseases and Healthcare Demand. Institute for Public Health (IKU).

This summary is based on:

**NHMS 2023:**  
**Non-Communicable Diseases**  
**and Healthcare Demand**

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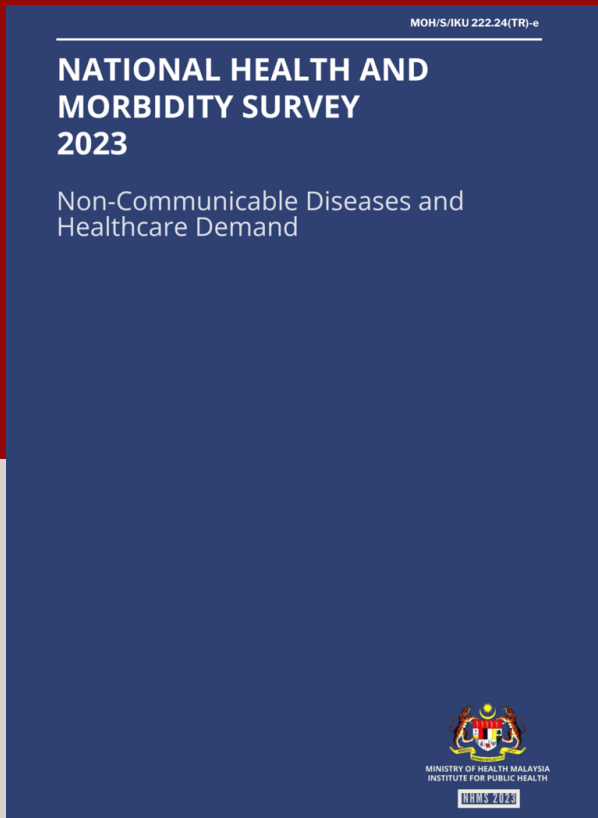
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The views, interpretation, implications, conclusions and recommendations are those of the author alone and do not necessarily represent the opinions of the investigators participating in the project nor the views or policy of the Ministry of Health, Malaysia.

**Project reference number:**

**NMRR ID-22-00545-XAC**

**Funded by:**



This research highlight is based on **NHMS 2023 — Non-Communicable Diseases and Healthcare Demand:**

**Who is this publication for?**

- Ministry of Health
- Other ministries
- Ministry of Education
- Ministry of Housing & Local Government
- Ministry of Communications
- Ministry of Higher Education
- Ministry of Human Resources
- Ministry of Finance
- Public health practitioners
- Non- Governmental Organizations working in health, education and social service sectors

**Purpose of this summary**

To address the high prevalence of undiagnosed diabetes, hypertension, and hypercholesterolaemia in Malaysia, and to propose recommendations for policymakers and programme implementers.

RESEARCH HIGHLIGHT serial number- pending

MOH number

The NCD Epidemic: Young and Undiagnosed

Issue

According to the World Health Organization (WHO), 17 million people die from a non-communicable disease(NCD) before the age of 70 each year (1). This means that people are dying during their economically productive years. And the vast majority of these premature NCD deaths occur in low and middle income countries (2).

Delayed diagnosis and treatment of NCDs not only causes adverse long term health effects, but also incurs additional financial costs (3). In Malaysia, the prevalence of undiagnosed diabetes, hypertension, and hypercholesterolaemia are concerning (4), which implores the implementation of innovative and effective multisectoral-based interventions.

Therefore, urgent creation and consensus of public health solutions are required to curb this silent epidemic because dying prematurely from preventable and treatable conditions should not be an acceptable status quo.

Key Messages

- The prevalence of undiagnosed diabetes, hypertension, and hypercholesterolaemia in Malaysia was 5.9% (1.3 million), 11.9% (2.7 million), and 18.1% (4.1 million) of adults, respectively.
- The largest proportion of individuals who **did not know** they were living with a NCD were in the **18-39 age group**.
- The implementation of multifaceted inter-ministerial interventions enacted through evidence-based policies, is imperative to curb the epidemic.



## Background

Non-communicable diseases (NCDs) kill 41 million people each year, equivalent to 74% of all deaths globally (5). In Malaysia, NCDs are prevalent among the general population in Malaysia (4), and regarded as a silent epidemic. This is because the diseases go undetected and therefore undiagnosed due to its asymptomatic nature in the initial stages of disease progression.

In response to the NCD crisis, the United Nations (UN) launched the Sustainable Development Goals (SDGs), with SDG target 3.4.1 aiming to reduce premature mortality from NCDs by one- third from 2015 to 2030 (6). The implementation of prevention and control strategies that aim to enhance early diagnosis and prompt treatment initiation for NCDs are essential to avoid the consequential clinical complications, such as cardiovascular diseases (7).

## Key Findings

- The proportion of undiagnosed NCDs were higher among the younger population.
- More than 60% of adults aged 18 to 39 years with diabetes, hypertension, or hypercholesterolaemia, did not know they were living with the disease.

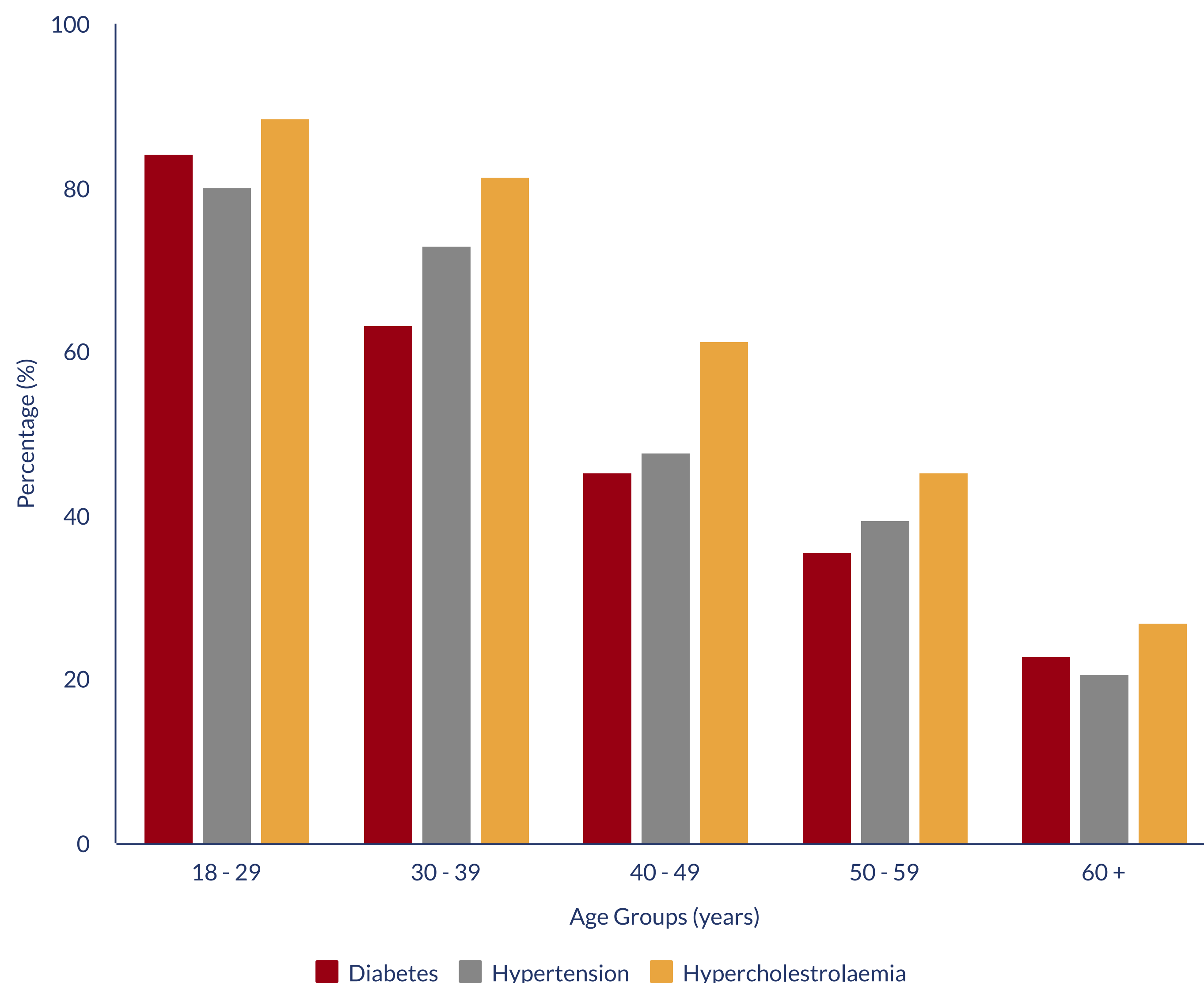


Figure 1: Proportions of undiagnosed NCDs by age groups

## Key Considerations For Policymaker

### Ministry of Health:

- To expand the age eligibility criteria to encompass adults aged 18 years and above across all screening programmes, aligning with the approach of the National Health Screening Initiative (NHSI) and Komuniti Sihat Pembina Negara (KOSPEN).
- To leverage the KOSPEN Wellness of Workers (WOW) by incorporating point-of-care testing (POCT) for blood cholesterol alongside the existing blood glucose and blood pressure screenings.
- To optimise the current MySejahtera mobile application by enabling interoperability and by including features for monitoring health metrics and storing personalised medical records. Additionally, the integration of an artificial intelligence powered conversational chatbot to assist users in seeking health screening advice and providing effective signposting should be considered.
- Introduce engaging national health promotion programmes that reward healthy living. For example, include a steps tracker function in the My Sejahtera application that allows users to earn health-points for staying active. These health-points can then be redeemed for rewards from participating sponsors or even negotiate better premium rates for personal medical insurance.

**Ministry of Education:** Ensure the provision of healthy food and drinks in school canteens, while simultaneously promoting awareness on nutritional value and calorie content.

**Ministry of Housing and Local Government:** Enhance the safety and design of pedestrian street paths and community parks, nudging people towards a more active lifestyle.

**Ministry of Communications:** To actively engage social media and targeted platforms to broadcast effective persuasive health messages aimed at behavioral change. For example, airing advertisements focused on the dangers of NCDs in cinemas before the movie begins.

**Ministry of Higher Education:** To integrate NCD screening into the medical examination requirements for university student admissions, with subsequent screenings recommended on an annual basis thereafter.

**Ministry of Human Resources:** Mandate employers to incorporate either complimentary or subsidised annual health screenings for their permanent employees as an integral component of the standard employment contract and benefits package.

**Ministry of Finance:** To introduce tax rebates for the purchase of self-monitoring devices such as digital blood pressure machines. Conversely, to impose taxes on unhealthy products, thereby generating revenue to fund health promotion campaigns.

### Summary of Action Points

- Implement the "whole-of-government" approach in tackling the NCD epidemic.
- Create environments that are conducive to encourage people to make healthier choices.
- Expand the screening age for diabetes, hypertension, and hypercholesterolaemia to include younger age groups in all existing and future health screening programmes.
- Enhance public health promotion through strategic media advertising.
- Incentivize healthy behaviour through tax rebates.
- Leverage on technology and gamification to increase health screening uptake and promote the adoption of healthy lifestyles among the general public.