



# Prevalence Of Impaired Fasting Glycemia (IFG) And Its Associated Factors Among The Malaysian Adult Population : Findings From National Health and Morbidity Survey (NHMS) 2019

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## Introduction

- Impaired Fasting Glycaemia (IFG) occurs when a person's blood glucose levels are raised, but not high enough to classify as Diabetes Mellitus. It is defined as Fasting Blood Glucose (FBG) of 5.6 - 6.9mmol/L but the exact range varies depending on the guidelines.
- Individual with IFG are more likely to develop T2DM as well as an increased risk of cardiovascular disease (1).
- This study was conducted in order to learn more about the undiagnosed diabetic cases that contribute to cardiovascular complications.

## Objective

To determine the prevalence of Impaired Fasting Glycemia (IFG) among adults aged 18 years old and above in Malaysia and its associated factors.

## Methodology

### Study design

- A community-based, cross sectional study (2).
- Two staged stratified cluster sampling.
- Data collection : 14<sup>th</sup> July to 2<sup>nd</sup> October 2019.

### Survey materials

- Structured pre-tested questionnaire.
- Validated and calibrated clinical assessment tools.

### Sample selection

- 18 years old and above.
- 13 states and 3 federal territories.
- 6183 respondents were selected.

### Statistical analysis

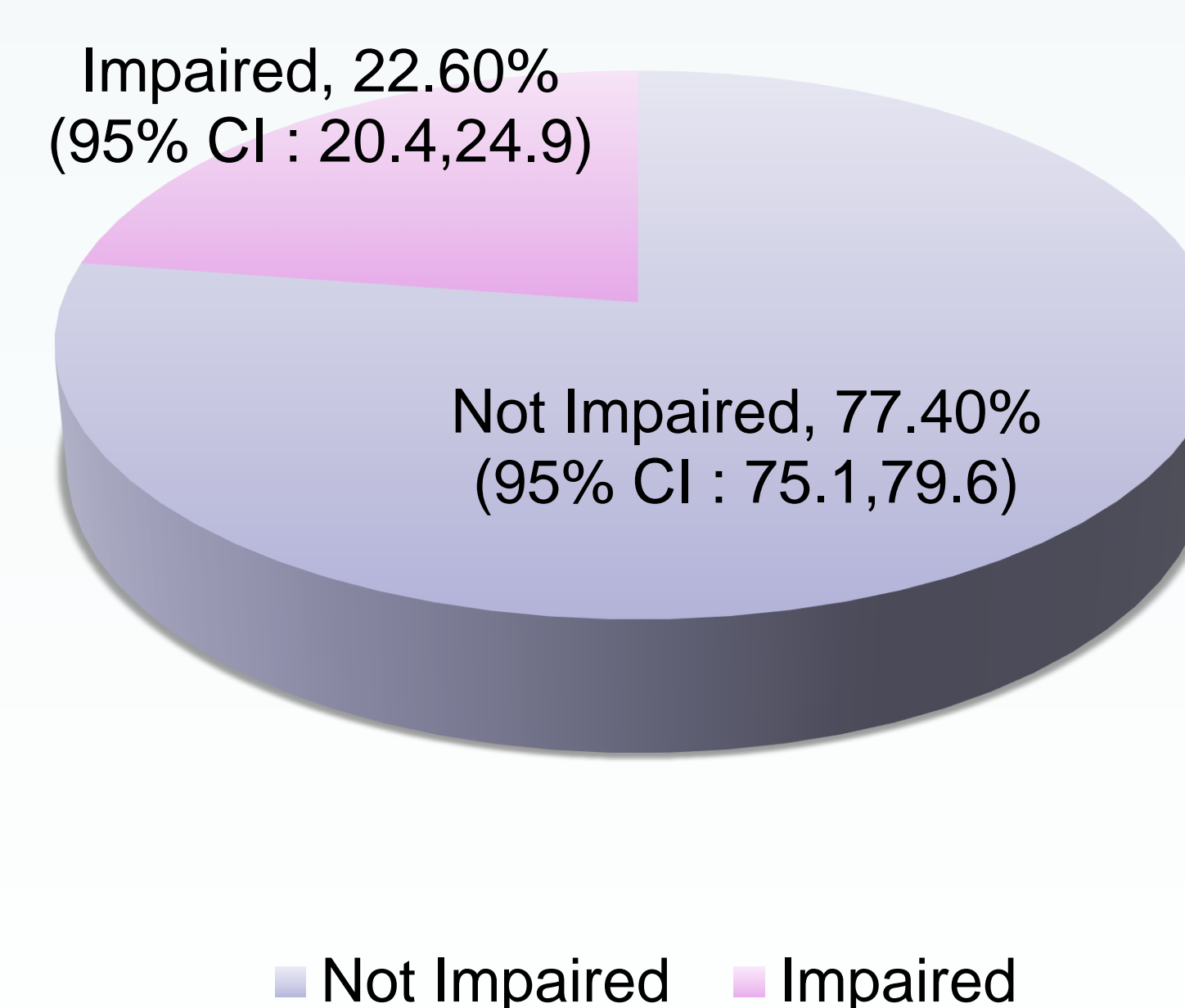
- Socio-demographic characteristics was determined using descriptive analysis.
- Multiple Logistic Regression Analysis.
- P<0.05 was considered statistically significant.

## Results

**Table 1 : Socio-demographic Characteristics.**

Characteristic / Category	n	%
<u>Locality</u>		
Urban	3739	60.5
Rural	2444	39.5
<u>Sex</u>		
Male	2842	46.0
Female	3341	54.0
<u>Age group</u>		
18-39	2928	47.7
40-59	2008	32.5
≥ 60	1247	20.2
<u>Ethnicity</u>		
Malay	3938	63.7
Chinese	710	11.5
Indian	302	4.9
Others	1233	19.9
<u>Marital status</u>		
Unmarried	2148	34.7
Married	4035	65.3
<u>Education status</u>		
No education / Primary education	1717	27.8
Secondary education	2929	47.4
Tertiary education	1522	24.6
<u>Household income</u>		
Bottom 40	3944	63.8
Middle 40	1422	23.0
Top 20	495	8.0

**Figure 1 : Overall Prevalence**



**Table 2: Factors associated with Impaired Fasting Glycemia (IFG).**

Characteristics / Category	OR (95% CI)	P value	aOR (95% CI)	P value
<u>Locality</u>				
Urban	1.11 (0.86, 1.44)	0.414	1.06 (0.80, 1.40)	0.692
Rural	1.00 (ref)		1.00 (ref)	
<u>Sex</u>				
Male	0.89 (0.74, 1.09)	0.268	0.99 (0.79, 1.25)	
Female	1.00 (ref)		1.00 (ref)	
<u>Age group</u>				
18-39	1.00 (ref)		1.00 (ref)	
40-59	1.46 (1.19, 1.79)	<0.001	1.17 (0.93, 1.47)	0.175
<b>≥ 60</b>	<b>1.79 (1.41, 2.27)</b>	<b>&lt;0.001</b>	<b>1.51 (1.01, 2.06)</b>	<b>0.011</b>
<u>Ethnicity</u>				
Malay	1.11 (0.66, 1.86)	0.702	1.13 (0.66, 1.94)	0.656
Chinese	1.18 (0.67, 2.10)	0.569	0.99 (0.55, 1.81)	0.989
Indian	0.69 (0.39, 1.21)	0.195	0.66 (0.38, 1.17)	0.158
Others	1.00 (ref)		1.00 (ref)	
<u>Marital status</u>				
Unmarried	1.00 (ref)		1.00 (ref)	
<b>Married</b>	<b>1.58 (1.30, 1.95)</b>	<b>&lt;0.001</b>	<b>1.46 (1.16, 1.84)</b>	<b>0.001</b>
<u>Education status</u>				
No education / Primary education	1.16 (0.86, 1.57)	0.311	1.04 (0.73, 1.48)	0.828
Secondary education	1.34 (1.05, 1.70)	0.018	1.15 (0.89, 1.49)	0.279
Tertiary education	1.00 (ref)		1.00 (ref)	
<u>Household income</u>				
Bottom 40	1.34 (0.92, 1.97)	0.134	1.34 (0.89, 2.04)	0.165
Middle 40	1.00 (ref)		1.00 (ref)	
Top 20	1.17 (0.78, 1.75)	0.444	1.16 (0.75, 1.79)	0.510



Adults 60 years & older had **1.5** times greater chance of having IFG



Married people was at least **1.4** times more likely to have IFG

## Discussion

- In other similar study, a cross-sectional study among 12000 households across India was done in 2017 and 2018, found that 24.5% of respondents had impaired fasting glucose levels (3).
- Using information from the Korea National Health and Nutrition Examination Survey from 2013 to 2016, a nationally representative survey of the Korean population revealed a prevalence of 25.3% impaired fasting glucose (4).
- Similar study was conducted in Malaysia in 2018, by obtaining data from NHMS 2015, showed a prevalence of 9.2% of undiagnosed Type 2 Diabetes Mellitus (5).
- The prevalence of IFG rises with age, with the age group of 60 and older having the highest frequency across the board.
- A cross-sectional study was conducted among 15 603 non-diabetic people in Hong Kong, to investigate the relationship between aging and plasma glucose levels. The results showed that plasma glucose levels increased significantly with age (6).
- Married individual had a greater incidence of IFG than unmarried people, as showed in multivariate analysis. Similar finding reported in NHMS 2015 (5).

## Conclusion

The prevalence of Impaired Fasting Glycemia (IFG) among adults aged 18 years old and above in Malaysia according to data obtained in 2019 was 22.6%, with age of 60 and above and married were the associated factors. Policies need to be tailored for more vigorous screening among this group for prompt treatment, diagnosis and treatment to prevent complications.

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