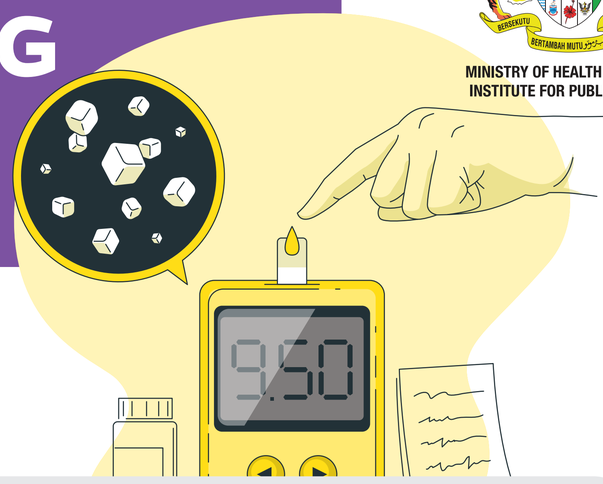
PREVALENCE OF IMPAIRED FASTING GLUCOSE AND ASSOCIATED RISK FACTORS AMONG MALAYSIAN ADULT POPULATION:

A COMPARISON BETWEEN WHO AND ADA CRITERIA

MINISTRY OF HEALTH MALAYSIA
INSTITUTE FOR PUBLIC HEALTH

Murnizar Mokhtar, Nor Azian Mohd Zaki, Nurul Huda Ibrahim

Centre for Nutrition Epidemiology Research, Institute for Public Health, National Institute of Health



INTRODUCTION

Impaired fasting glucose (IFG) is a condition when a person's blood glucose level is above the normal range, but below the diagnostic cut-off for a formal diagnosis of diabetes mellitus. It is defined as fasting blood glucose (FBG) of 5.6 - 6.9mmol/L but the exact range varies depending on the organization. The WHO and ADA criteria are the two most often used criteria to determine IFG.

OBJECTIVE

To compare the prevalence of IFG among adults aged 18 years old and above and its associated risk factors between the American Diabetes Association (ADA) and World Health Organization (WHO) criteria.

METHODOLOGY

- Data was obtained as part from the NHMS 2019
- Study design : A complex study design, with two stage stratified cluster sampling among targeted population in Malaysia.
- Sample selection : Adults aged 18 years old and above with fasting capillary blood glucose (FBG) readings of ≤6.9mmol/L, except those known to have diabetes
- 2 criteria of IFG definition involved :
  - o American Diabetes Association (ADA) criteria : FBG 5.6 - 6.9mmol/L
  - o World Health Organization (WHO) criteria : FBG 6.1 – 6.9mmol/L
- Statistical analysis :
  - o Descriptive analysis was used to determine sociodemographic characteristics
  - o Complex sampling design method was used to determine prevalence
  - o Multiple Logistic Regression analysis was used to identify associated factors

RESULTS

1. Socio-demographic characteristics

LOCALITY

Urban	Rural
N:3739	N:N : 2444
60.5%	39.5%

SEX

Male	Female
N:2842	N:3341
46.0%	54.0%

AGE GROUP

18-39	40-59	≥ 60
N:2928	N:2008	N:1247
47.4%	32.4%	20.2%

ETHNICITY

Malay	Chinese	Indian	Others
N:3938	N:710	N:302	N:1233
63.7%	11.5%	4.9%	19.9%

MARITAL STATUS

Unmarried	Married
N:2148	N:4035
34.7%	65.3%

EDUCATIONAL STATUS

No education /Primary Education	Secondary Education	Tertiary Education
N:1717	N:2929	N:1522
27.8%	47.5%	24.7%

HOUSEHOLD INCOME GROUP

Bottom 40	Middle 40	Top 20
N:3944	N:1422	N:495
67.3%	24.3%	8.4%

2. Prevalence of Impaired Fasting Glucose

42.8%	22.6%
ADA Criteria	WHO Criteria

3. Factors associated with Impaired Fasting Glucose

ADA CRITERIA

ETHNICITY	Malay	aOR : 1.52 (95%CI : 1.17, 1.98)
MARITAL STATUS	Married	aOR : 1.40 (95%CI : 1.16, 1.69)
AGE GROUP	40-59	aOR : 1.47 (95%CI : 1.19, 1.81)
	≥ 60	aOR : 1.71 (95%CI : 1.29, 2.27)

WHO CRITERIA

MARITAL STATUS	Married	aOR : 1.46 (95%CI : 1.17, 1.84)
AGE GROUP	≥ 60	aOR : 1.51 (95%CI : 1.01, 2.06)

DISCUSSION

- Similar studies using WHO criteria included Khaing A, et al (2017)[1], Singh AK, et al (2012)[2] and Orazumbekova B, et al (2022)[3], while other studies using ADA criteria included Ali A, et al (2020)[4], Yan X, et al (2017)[5] and Bavuma CM, et al (2022)[6].
- Obesity, age, ethnicity, educational attainment, and hypertension were the associated factors with IFG, according to a similar study conducted in Malaysia using data from the NHMS 2015[7]. WHO criteria were employed in this study.
- Both criteria demonstrated a strong correlation between IFG and the married group, and this finding was supported by a related study in 2018[7].
- The relationship between hyperglycaemia and ageing is frequently disputed, largely because of physiological factors such insufficient insulin production and less hepatic sensitivity to insulin's activity in reducing glucose output. Studies that showed age as associated factor was Yan X, et al (2017)[5], Orazumbekova B,et al (2022)[3].

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CONCLUSION

It is crucial to consider the associated factors, such as age and marital status, while doing a diabetic screening. Early screening for diabetes should be performed annually in those with risk factors especially adults aged 40 and above.

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