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A Cross-Sectional Study on the Health Profile and Nutritional Status of Adults at Risk of Type 2 Diabetes Mellitus in Kuala Nerus, Terengganu

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Abstract

Surprisingly, 541 million people have impaired glucose tolerance (IGT) worldwide[1]. Prediabetes has been associated with an elevated risk of composite cardiovascular disease, coronary heart disease, stroke and all-cause mortality[2] as well as an increased risk of type 2 diabetes mellitus (T2DM) than normal glycaemia[1]. In Malaysia, the undiagnosed diabetes prevalence has increased[3]. Health profile and nutritional status play a crucial role in prediabetes development. However, there is a scarcity of related health profile characteristics and nutritional status data in Kuala Nerus, Terengganu.

This cross-sectional study aimed to identify the health profile and nutritional status of adults at risk of T2DM in Kuala Nerus, Terengganu. A total of 30 respondents at moderate and high risk of T2DM (Finnish Type 2 Diabetes Risk Assessment Tool (FINDRISC) score > 4) aged 18 to 59 years old were recruited from Kuala Nerus using a convenience sampling method. Information on socio-demographic, anthropometric, fasting plasma glucose (FPG) level, clinical profile, FINDRISC score, dietary intake, and physical activity level were obtained. The data were analyzed using IBM SPSS system version 21.0 and Nutritionist Pro™ software (Version 7.0.0, Axxya Systems). A descriptive statistic was used to present all outcomes. The continuous data were described as mean ± standard deviation (SD) whereas for categorical variables, the data were reported as the number of frequency and percentage.

The respondents (mean age: 36.1 ± 8.7 years) were predominantly female (76.7%), Malay (96.7%), married (43.3%), with tertiary education (60.0%), and employed (83.3%) with a monthly income ranging below RM 1000. Half of the respondents were from the obese class I category. However, they had a normal FPG (5.6 ± 0.5 mmol/L) and were normotensive with a normal heart rate. Also, they had an average FINDRISC score of 6.3 ± 1.8. The respondents had excessive energy, fat, vitamin C, and selenium intake with insufficient dietary fibre, vitamin A, E, and K, calcium, and magnesium intake. Most of them (63.3%) were minimally active.

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Table 1: Respondents' characteristics (n =30)

Parameters	Mean ± SD	n (%)
Age (years)	36.1 ± 8.7	
Gender		
Male		7 (23.3)
Female		23 (76.7)
Ethnicity		
Malay		29 (96.7)
Non-Malay		1 (3.3)
Marital Status		
Single		9 (30.0)
Married		13 (43.3)
Widowed/Divorced		8 (26.7)
Educational level		
No formal education		0 (0.0)
Primary level		1 (3.3)
Secondary level		11 (36.7)
Tertiary level		18 (60.0)
Employment status		
Employed		25 (83.3)
Unemployed		5 (16.7)
Monthly household income (RM)		
≤ RM1000		15 (50.0)
RM1000-RM2300		11 (36.7)
RM2301-RM5599		3 (10.0)
≥RM5600		1 (3.3)
Capillary FPG (mmol/L)	5.6 ± 0.5	
FINDRISC score	6.3 ± 1.8	
Moderate risk (4-6 points)		17 (56.7)
High risk (≥ 7 points)		13 (43.3)

FPG: Fasting Plasma Glucose; FINDRISC: Finnish Type 2 Diabetes Risk Assessment Tool

The mean energy intake of this study was in accord with Malaysian Adult Nutrition Survey (MANS) 2003 (2097 kcal) and MANS 2014 (2123 kcal) after excluding under-reporters [3]. The National Health Morbidity Survey (NHMS) 2019 stated that 25.1% of Malaysian adults were physically inactive which was slightly higher than the current study finding. On the contrary, a higher percentage (80.0%) of the study respondents were physically active than 74.9% as reported by NHMS (2019) [4].

It is vital to determine the health profile and nutritional status, which can provide important information for planning future cost-effective T2DM preventive strategies. This is because a strategic method of primary prevention for T2DM is by managing risk factors through lifestyle modification.

Keywords
Health profile, Nutritional status, At risk of type 2 diabetes mellitus

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