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Introduction

Health literacy plays a crucial part in type 2 diabetes mellitus (T2DM) patients to make appropriate health decisions and engage in self-care activities that will subsequently determine their health outcomes. High health literacy is linked with greater diabetes specific knowledge, better self-efficacy and self-care behaviors. Hence, it is believed that a patient with sufficient health literacy will have a good body mass index (BMI) value. Thus, this study aim to determine the association between health literacy and body mass index (BMI) among T2DM patients in Hospital USM.

Methodology

DATA COLLECTION

- **Purposive sampling technique**
- **Recruit 96 subjects**
- **Interview administered questionnaire**
10 minutes
- **Brief about study and subject's right of refusal**
To provide informed consent
- **Obtain sociodemographic data, weight and height**
From medical folder
- **Answer Malay version of the European Health Literacy Survey Questionnaire 16 (HLS-EU-Q16)**
16 items of 4-point Likert scale

Methodology

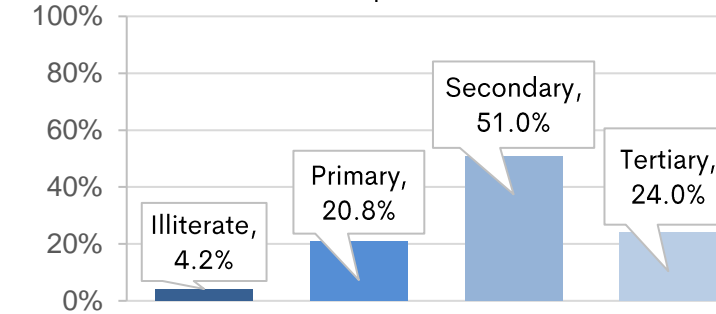
DATA ANALYSIS

The association between health literacy (categorical variable) and BMI (numerical variable) was tested using Kruskal Wallis Test as the data were not normally distributed whereas Mann Whitney test was used to compare health literacy levels and BMI at significance level of 0.05 and 95% CI.

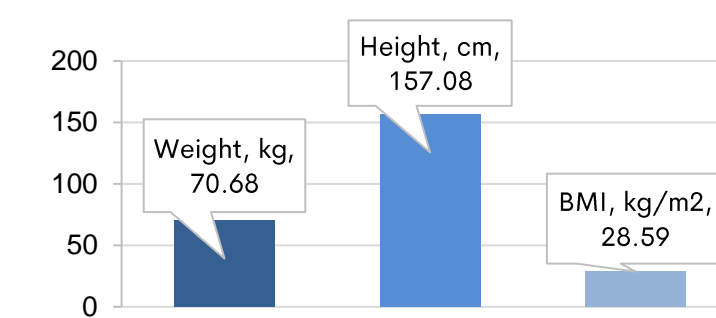
Results

58 subjects (60.4%) had sufficient health literacy whereas the mean BMI was 28.59 kg/m² (SD=6.17) which was classified within the overweight category. Meanwhile, a significant association was found in median BMI with three health literacy levels (p=0.01), and it was contributed between the problematic and sufficient health literacy groups (p=0.009, < 0.05). The median BMI value of the sufficient health literacy group (median=28.38, IQR=6.02) was significantly higher than the problematic health literacy group (median=25.38, IQR=7.52) as indicated in Table 1.

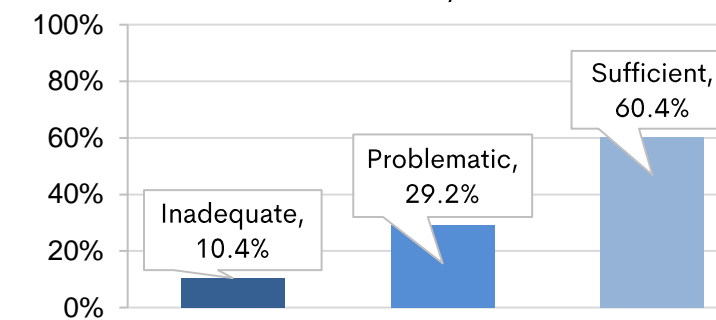
Educational status of T2DM patients in Hospital USM



Mean anthropometry measurements



Health literacy level



Variable	Health literacy level	n	Median (IQR)	Kruskal-Wallis H (df)	p-value ^a
BMI value	Inadequate	10	28.73 (6.11)	9.14 (2)	0.01
	Problematic	28	25.38 (7.52)		
	Sufficient	58	28.38 (6.02)		

^aTested using Kruskal Wallis Test
^{*}Post hoc with Bonferroni's correction:
 Inadequate vs. Problematic, P = 0.183, Inadequate vs. Sufficient, P = 3.00, Problematic vs. Sufficient, P = 0.009

Table 1 Association between health literacy and BMI

References

- Azreena, E., Suriani, I., Muhamad, H. J., & Fuziah, P. (2016). Factors associated with health literacy among type 2 diabetes mellitus patients attending a government health clinic, 2016. *International Journal of Public Health and Clinical Sciences*, 3(6), 50-64.
- Bayati, T., Dehghan, A., Bonyadi, F., & Bazrafkan, L. (2018). Investigating the effect of education on health literacy and its relation to health-promoting behaviors in health center. *Journal of Education and Health Promotion*, 7(1), 127. doi:10.4103/JEHP.JEHP_65_18
- James, D. C. S., Harville, C., Efunbunmi, O., & Martin, M. Y. (2015). Health literacy issues surrounding weight management among African American women: a mixed methods study. *Journal of Human Nutrition and Dietetics*, 28(s2), 41-49. doi:10.1111/JHN.12239

Discussion

- The majority of the subjects had sufficient health literacy which may be due to good educational backgrounds, as 51.0% and 24.0% of the subjects were at secondary and tertiary levels, respectively. This is because a greater level of education is more likely to engage in health-seeking behavior and critical thinking, resulting in more access to health information and improved health literacy (Bayati et al., 2018; Azreena et al., 2016).
- The significant difference in BMI value contributed by the comparison between the problematic and sufficient health literacy groups was inconsistent with previous studies.
- It was expected that low health literacy will have difficulties in maintaining a healthy weight as they were lacking the necessary skills to obtain, comprehend, appraise and utilize the health information appropriately (James et al., 2015).
- It is believed that other stronger determinant factors could have more impact to the BMI of T2DM patients, such as dietary behavior and physical activity.

Conclusion

The findings of this study indicate that health literacy may be a predictor of BMI, but there might be other stronger determinants that could influence BMI. Hence, it is recommended that further studies be conducted to elucidate the relationship and improve the health outcomes of T2DM patients.

Methodology

INCLUSION CRITERIA

- ✓ Diagnosed with T2DM for at least 1 year duration
- ✓ At least 4 weeks on Diabetes Mellitus treatment (oral hypoglycaemic tablets or insulin or both)
- ✓ Aged 18 years old and above
- ✓ Either outpatient or inpatient of Hospital USM
- ✓ Able to speak and understand Malay language

Methodology

EXCLUSION CRITERIA

- ✓ Diagnosed with T1DM or gestational diabetes mellitus
- ✓ Wheelchair-bound, bed-ridden, or in Intensive Care Unit (ICU)
- ✓ Diagnosed with severe psychiatric problems such as schizophrenia, bipolar disorder, Alzheimer's disease, psychosis, or dementia and is currently under follow-up of psychiatric clinic (obtained from medical folder)
- ✓ T2DM patient undergoing all form of dialysis