

Nutrition Literacy and Dietary Behavior Among Malaysian Adults

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Background: Nutrition literacy, a subset of health literacy, is increasingly recognized by public health authorities when designing nutrition education and promotion strategies. Higher levels of nutrition literacy are associated with healthier, higher-quality diet choices, which may help reduce the risk of non-communicable diseases. However, the relationship between different dimensions of nutrition literacy and dietary behavior remains unclear. This study aims to examine sociodemographic differences in nutrition literacy dimensions and dietary behavior among Malaysian adults and to explore the relationship of nutrition literacy dimensions with dietary behavior.

Methods: A total of 653 Malaysian adults (mean age: 29.42 ± 11.28 years) were recruited through online social networks between February 18 to August 25, 2022 for this online cross-sectional study. Participation was anonymous, voluntary, and based on informed consent.

Results: Nutrition literacy dimensions were affected by age, gender, relationship status, and education level whereas dietary behavior was affected by ethnicity and education level. Higher scores in the “obtain”, “analyze”, and “apply” dimensions of nutrition literacy were significantly associated ($p < 0.05$) with higher dietary behavior scores.

Conclusion: This study highlights the need for targeted nutrition education interventions to enhance nutrition literacy and promote healthier dietary behavior among Malaysian adults.

Keywords: dietary behavior, nutrition literacy, nutrition information

Introduction

Nutrition literacy refers to the degree to which individuals can obtain, understand, analyze, appraise, and apply nutrition-related concepts and information necessary for making appropriate daily dietary decisions that promote better health and well-being.^{1,2} It is a domain of health literacy, and individuals with higher health literacy were associated with healthier lifestyle behaviors and better health outcome.³ Nutrition literacy is often referred to as “health literacy applied in the nutrition field”.⁴ It is gaining increasing attention from health authorities, especially in the design of health promotion strategies.

Most studies reported that nutrition literacy measurement tools encompass various domains (eg cognition and skills) or dimensions (eg obtain, understand, analyze, appraise, and apply).^{4,5} Some early studies assessed nutrition literacy using general health literacy questionnaires, which led to a broader range of nutrition literacy dimensions being reported.^{4,6} The dimensions of nutrition literacy are recognized as key determinants of nutritional status and dietary behaviors at the individual level.⁷ Both unbalanced and insufficient nutritional intake are major public health concerns in Malaysia,⁸ closely related to poor nutrition literacy and unhealthy dietary behavior.⁹ Furthermore, individuals with low nutrition literacy are at a heightened risk of diet-related non-communicable diseases, including hypertension, cardiovascular disease, and diabetes.⁹

Malaysian dietary patterns and diet-related behaviors have undergone significant transitions over the past decades. There has been a shift from traditional diets to more convenient, prepared, and processed foods, which are characterized by high levels of salt, fat, and animal products, along with low intakes of vegetables and fruits.¹⁰ The Malaysian Food

Pyramid was revised in 2020 to better guide Malaysians in making healthier food choices. In the latest Malaysian Food Pyramid, the vegetables and fruits group replaces the carbohydrate food group as the base of the pyramid, indicating that Malaysian adults should eat more vegetables and fruits in their daily diet.^{11,12} Dietary behavior encompasses the acquisition, preparation, and consumption of nutritious food influence the ability of individuals to maintain a healthy diet.¹³ Unhealthy dietary behaviors, such as low intake of vegetables, fruits, whole grains, and dairy products, as well as excessive consumption of fat, sugar, and salt, can have lasting negative effects on health outcomes. It was estimated that nearly one in every five deaths globally was attributed to poor dietary behavior.⁴

Nutrition literacy plays a crucial role in shaping healthy dietary behaviors among individuals.^{2,5} The immediate goal of nutrition education is to enhance nutrition literacy, which can subsequently lead to improved diet quality.¹⁴ Previous studies on nutrition literacy have focused on various subgroups of the population in the United States,¹⁵ Portugal,¹⁶ Turkey,¹ Taiwan,⁵ Palestine,¹⁷ and China.² Nevertheless, there is a lack of research examining the nutrition literacy of Malaysian adults. Higher levels of nutrition literacy were associated with healthier and higher-quality diet choices,² which may help reduce the risk of non-communicable diseases. However, the relationship between the dimensions of nutrition literacy and dietary behaviors is not yet well understood. This study aimed to examine sociodemographic differences in nutrition literacy dimensions and dietary behavior among Malaysian adults and explore the relationship of nutrition literacy dimensions with dietary behavior.

Theoretical Framework

The Theory of Planned Behavior (TPB) is a framework used to predict and explain human behavior, including dietary behavior.¹⁸ According to TPB, behavior of individuals are determined by attitude toward the behavior, subjective norm, and perceived behavioral control.¹⁹ Attitude toward the behavior refers to the degree of evaluation or judgement, whether favorable or unfavorable, that individuals hold toward that behavior.²⁰ Individuals with higher nutrition literacy tend to better understand the benefits of nutrition information, such as a balanced diet, which positively influenced their attitudes toward healthy dietary behavior.²⁰ Subjective norm refers to the social pressure of individuals to perform or not perform a specific behavior.¹⁸ It also encompasses the judgments and perceptions, whether positive or negative, of individuals or groups who believe the person should engage in a specific behavior. The intention to change nutrition-related behavior was significantly influenced by subjective norms.²⁰ These norms were shaped by personal perceptions, which were affected by previously acquired and understood nutrition knowledge.²⁰ Meanwhile, perceived behavioral control refers to the ease or difficulty for individuals to apply a certain behavior.¹⁸ Individuals with greater ease of access to nutrition information had higher levels of nutritional literacy and were able to justify their decisions even when external pressures opposed healthy dietary behaviors.²⁰

Methods

Study Design

This cross-sectional study was conducted via an online survey hosted on Google Forms, targeting Malaysian citizens aged 18 and above. Pregnant and lactating women, athletes, and individuals following specific diets were excluded. Sample size was estimated using the single proportion formula,²¹ with a 95% confidence interval, a 5% margin of error, and a 50% population proportion. The minimum required sample size was 384. However, a total of 653 responses were collected during the data collection period (February 18 to August 25, 2022) through platforms such as Facebook, LinkedIn, Instagram, and X (Twitter).

Participation was voluntary, and respondents were informed before starting the survey that all data collected would remain anonymous and be used solely for research purposes. To prevent multiple responses, a mandatory selection box was included on the first page of the Google Form. This box required participants to consent to participation, confirm that they did not meet any exclusion criteria, and verify that they were completing the survey for the first time. This study received approval from UTAR Scientific and Ethical Review Committee (Reference number: U/SERC/31/2022) and was conducted in accordance with the ethical guidelines of the Declaration of Helsinki.

Instrument

The self-administered English language questionnaire consisted of three sections, namely sociodemographic information, nutrition literacy scale, and multi-dimensional healthy-dietary behavior (MDHDB) scale. The sociodemographic section included five questions on age, gender, ethnicity, relationship status, and highest educational level.

The eight-item nutrition literacy scale, as described by Liao et al,⁵ was used to assess the nutrition literacy of the respondents. This scale evaluated self-reported difficulties in obtaining understanding, analyzing, appraising, and applying nutrition-related information to promote health and well-being. Responses were rated on a 4-point Likert scale ranging from 1 (very difficult) to 4 (very easy). The key measurements associated with each dimension of nutrition literacy is summarized in Table 1. The overall Cronbach's alpha value of the nutrition literacy scale was 0.873, indicated good internal consistency and reliability.

Dietary behavior was assessed using the 13-item MDHDB scale.⁵ The serving sizes in the original scale were based on the Dietary Guidelines for Taiwanese. In this study, the serving sizes were modified according to the Malaysian Dietary Guidelines 2020.¹² Respondents rated their dietary behavior over the past week on a 5-point Likert scale, ranging from 0 (0 days per week) to 4 (7 days per week). Higher scores indicated healthier dietary behavior. The overall Cronbach's alpha value of the MDHDB scale was 0.809, indicated good internal consistency and reliability. Both the nutrition literacy scale and the MDHDB scale were reviewed by three nutrition experts to ensure content validity and was pilot-tested with 30 respondents to ensure clarity, relevance, and accessibility.

Statistical Analysis

Data were analyzed using IBM Statistical Package for Social Sciences (SPSS) version 27. Continuous variables were assessed for normality, and those with absolute skewness values within ± 2 and kurtosis values within ± 7 were considered normally distributed.^{11,22} Descriptive statistics were used to compute the mean and standard deviation for continuous data, while frequency and percentage were used for categorical data. Sociodemographic differences in nutrition literacy and dietary behavior among Malaysian adults were examined using independent t-tests or one-way analysis of variance (ANOVA), followed by Tukey's post hoc test. Effect size between two groups was measured using Cohen's *d*, whereas effect size between more than two groups was measured using Cohen's *f*.²³ Multivariate regression analysis was conducted to assess the relationship between nutrition literacy dimensions (obtain, analyze, understand, appraise, and apply) and dietary behavior. Statistical significance was set at $p < 0.05$.

Results

Sociodemographic Characteristics

Table 2 shows the sociodemographic properties of the respondents. A total of 653 respondents with an average age of 29.42 ± 11.28 years participated in this study. The majority of the respondents were female (57.9%), Chinese (46.6%), and single (71.2%). The highest educational attainment among respondents was an undergraduate degree (56.0%), followed by pre-university education (25.0%), secondary school education (11.3%), postgraduate degree (6.0%), and primary school education (1.7%).

Table 1 Nutrition Literacy Dimensions

Dimension	Measurement
Obtain	The ability to search for and acquire nutrition information
Understand	The ability to comprehend general nutrition information
Analyze	The ability to evaluate and interpret nutrition information in a given context
Appraise	The ability to assess and judge nutrition information based on personal needs
Apply	The ability to integrate nutrition information into daily life

Note: Data from Liao et al.⁵

Table 2 Sociodemographic Properties of the Respondents

Variable	Mean $\pm$ SD/n (%)
Age	29.42 $\pm$ 11.28
Gender	
Male	275 (42.1)
Female	378 (57.9)
Ethnicity	
Malay	192 (29.4)
Chinese	304 (46.6)
Indian	150 (23.0)
Others	7 (1.1)
Relationship status	
Single	465 (71.2)
Married	180 (27.6)
Divorced/Widow	8 (1.2)
Highest educational level	
Primary school	11 (1.7)
Secondary school	74 (11.3)
Pre-university	163 (25.0)
Undergraduate degree	366 (56.0)
Postgraduate degree	39 (6.0)

Sociodemographic Differences in the Nutrition Literacy Dimensions

The sociodemographic differences in the five dimensions of nutrition literacy scores are shown in Table 3. The “obtain” scores of young adults (5.83 ± 1.23) and middle-aged adults (5.73 ± 1.31) were significantly higher ($p < 0.05$) than those of older adults (4.83 ± 1.59) whereas the “understand” and “analyze” scores of young adults (5.54 ± 1.32 and 2.73 ± 0.71 , respectively) were significantly higher ($p < 0.05$) than those of older adults (4.67 ± 1.37 and 2.12 ± 0.72 , respectively). The “obtain” and “understand” scores of females (5.89 ± 1.25 and 5.63 ± 1.32 , respectively) were significantly higher ($p < 0.05$) than males (5.66 ± 1.26 and 5.25 ± 1.38 , respectively). The “understand” and “analyze” scores of respondents who were single (5.57 ± 1.32 and 2.75 ± 0.69 , respectively) were significantly higher ($p < 0.05$) than the married counterparts (5.23 ± 1.39 and 2.58 ± 0.74 , respectively). In terms of educational level, respondents with pre-university (5.74 ± 1.17), degree (5.91 ± 1.25), and postgraduate degree (6.10 ± 1.37) education had significantly higher ($p < 0.05$) “obtain” scores than those of primary school education (4.64 ± 1.21). Additionally, respondents with degree and postgraduate education had significantly higher ($p < 0.05$) “obtain” scores than those with secondary school education. The “understand” scores of respondents with degree (5.58 ± 1.38) was significantly higher ($p < 0.05$) than those with secondary school education (5.07 ± 1.37). Meanwhile, respondents with pre-university (2.74 ± 0.68) and degree (2.74 ± 0.71) had significantly higher ($p < 0.05$) “analyze” scores than respondents with primary school education (2.09 ± 0.54). Respondents with a degree also had significantly higher ($p < 0.05$) “analyze” scores than those with secondary school education (2.47 ± 0.69).

Sociodemographic Differences in the Dietary Behavior

The sociodemographic differences in dietary behavior scores are presented in Table 4. The dietary behavior score of Malay respondents (29.02 ± 8.18) was significantly higher ($p < 0.05$) than that of Chinese respondents (26.44 ± 7.78). Meanwhile, respondents with postgraduate degrees (30.90 ± 10.27) had significantly higher ($p < 0.05$) dietary behavior scores compared to those with secondary school education (26.34 ± 7.83) and primary school education (21.55 ± 10.09).

Regression Analysis

Sociodemographic factors could confound the relationship between nutrition literacy dimensions and dietary behavior. Hence, those categorical variables with $p < 0.05$ in Table 3, including gender, relationship status, and education levels,

Table 3 Sociodemographic Differences in the Nutrition Literacy

Variable	Obtain			Understand			Analyze			Appraise			Apply		
	Mean $\pm$ SD	t/F (p-value)	ES*	Mean $\pm$ SD	t/F (p-value)	ES*	Mean $\pm$ SD	t/F (p-value)	ES*	Mean $\pm$ SD	t/F (p-value)	ES*	Mean $\pm$ SD	t/F (p-value)	ES*
Age**		3.877 (0.021)	0.11		4.860 (0.008)	0.12		5.424 (0.005)	0.13		2.931 (0.054)	0.10		2.990 (0.051)	0.10
Young adults	5.83 $\pm$ 1.23 ^a			5.54 $\pm$ 1.32 ^a			2.73 $\pm$ 0.71 ^a			5.15 $\pm$ 1.31			2.69 $\pm$ 0.75		
Middle-aged adults	5.73 $\pm$ 1.31 ^a			5.21 $\pm$ 1.45 ^{ab}			2.59 $\pm$ 0.71 ^{ab}			5.19 $\pm$ 1.24			2.68 $\pm$ 0.68		
Old adults	4.83 $\pm$ 1.59 ^b			4.67 $\pm$ 1.37 ^b			2.12 $\pm$ 0.72 ^b			4.25 $\pm$ 1.06			2.17 $\pm$ 0.72		
Gender		2.344 (0.019)	0.19		3.478 (<0.001)	0.28		1.780 (0.076)	0.14		0.629 (0.530)	0.05		-0.216 (0.829)	-0.02
Male	5.66 $\pm$ 1.26			5.25 $\pm$ 1.38			2.64 $\pm$ 0.74			5.10 $\pm$ 1.31			2.67 $\pm$ 0.74		
Female	5.89 $\pm$ 1.25			5.63 $\pm$ 1.32			2.74 $\pm$ 0.70			5.17 $\pm$ 1.29			2.69 $\pm$ 0.74		
Ethnicity		0.775 (0.508)	0.06		0.495 (0.686)	0.04		1.922 (0.125)	0.10		0.499 (0.683)	0.04		0.673 (0.569)	0.05
Malay	5.89 $\pm$ 1.02			5.43 $\pm$ 1.28			2.73 $\pm$ 0.67			5.20 $\pm$ 1.19			2.69 $\pm$ 0.68		
Chinese	5.79 $\pm$ 1.31			5.50 $\pm$ 1.39			2.69 $\pm$ 0.75			5.08 $\pm$ 1.33			2.65 $\pm$ 0.75		
Indian	5.68 $\pm$ 1.38			5.44 $\pm$ 1.37			2.65 $\pm$ 0.70			5.17 $\pm$ 1.38			2.71 $\pm$ 0.78		
Others	6.00 $\pm$ 2.00			6.00 $\pm$ 1.53			3.29 $\pm$ 0.49			5.43 $\pm$ 0.98			3.00 $\pm$ 0.82		
Relationship status		2.762 (0.064)	0.09		4.266 (0.014)	0.11		4.040 (0.018)	0.11		0.836 (0.434)	0.05		1.510 (0.222)	0.07
Single	5.86 $\pm$ 1.22			5.57 $\pm$ 1.32 ^a			2.75 $\pm$ 0.69 ^a			5.18 $\pm$ 1.32			2.71 $\pm$ 0.75		
Married	5.63 $\pm$ 1.32			5.23 $\pm$ 1.39 ^b			2.58 $\pm$ 0.74 ^b			5.03 $\pm$ 1.25			2.60 $\pm$ 0.69		
Divorced/Widow	5.38 $\pm$ 1.92			5.13 $\pm$ 1.55 ^{ab}			2.50 $\pm$ 0.93 ^{ab}			5.13 $\pm$ 1.36			2.63 $\pm$ 1.19		
Educational level		6.599 (<0.001)	0.20		3.942 (0.004)	0.16		4.390 (0.002)	0.16		0.658 (0.621)	0.06		1.261 (0.284)	0.09
Primary school	4.64 $\pm$ 1.21 ^a			4.45 $\pm$ 1.29 ^{ab}			2.09 $\pm$ 0.54 ^a			4.73 $\pm$ 1.19			2.37 $\pm$ 0.67		
Secondary school	5.32 $\pm$ 1.24 ^{ac}			5.07 $\pm$ 1.37 ^a			2.47 $\pm$ 0.69 ^{ac}			4.99 $\pm$ 1.21			2.59 $\pm$ 0.72		
Pre-university	5.74 $\pm$ 1.17 ^{bc}			5.45 $\pm$ 1.15 ^{ab}			2.74 $\pm$ 0.68 ^{bc}			5.18 $\pm$ 1.19			2.76 $\pm$ 0.74		
Degree	5.91 $\pm$ 1.25 ^b			5.58 $\pm$ 1.38 ^b			2.74 $\pm$ 0.71 ^b			5.15 $\pm$ 1.34			2.67 $\pm$ 0.73		
Postgraduate degree	6.10 $\pm$ 1.37 ^b			5.62 $\pm$ 1.68 ^{ab}			2.72 $\pm$ 0.89 ^{ac}			5.26 $\pm$ 1.62			2.69 $\pm$ 0.89		

Notes: Values with different superscript letters (a-c) within each variable indicate statistically significant differences at $p < 0.05$. *ES: Effect size. The effect sizes for the independent *t*-test were analyzed using Cohen's *d*, while the effect sizes for the one-way ANOVA were analyzed using Cohen's *f*. ** Young adults: 18–39 years old, middle-aged adults: 40–59 years old, and old adults: ≥ 60 years old.

Table 4 Sociodemographic Differences in the Dietary Behavior

Variable	Eating Behavior		ES*
	Mean $\pm$ SD	t/F (p-value)	
Age**		2.975 (0.052)	0.10
Young adults	27.27 $\pm$ 8.08		
Middle-aged adults	29.32 $\pm$ 8.00		
Old adults	27.83 $\pm$ 7.60		0.03
Gender		0.323 (0.747)	
Male	27.51 $\pm$ 8.05		
Female	27.72 $\pm$ 8.11		0.15
Ethnicity		4.579 (0.003)	
Malay	29.02 $\pm$ 8.18 ^a		
Chinese	26.44 $\pm$ 7.78 ^b		
Indian	28.33 $\pm$ 8.32 ^{ab}		
Others	26.29 $\pm$ 6.90 ^{ab}		0.07
Relationship status		1.480 (0.228)	
Single	27.35 $\pm$ 8.22		
Married	28.45 $\pm$ 7.74		
Divorced/Widow	25.50 $\pm$ 7.07		0.15
Highest educational level		3.711 (0.005)	
Primary school	21.55 $\pm$ 10.09 ^a		
Secondary school	26.34 $\pm$ 7.83 ^a		
Pre-university	27.56 $\pm$ 7.55 ^{ab}		
Degree	27.76 $\pm$ 7.93 ^{ab}		
Postgraduate degree	30.90 $\pm$ 10.27 ^b		

Notes: *ES: Effect size. The effect sizes for the independent t-test were analyzed using Cohen's *d*, while the effect sizes for the one-way ANOVA were analyzed using Cohen's *f*. Values with different superscript letters (a-b) within each variable indicate statistically significant differences at $p < 0.05$. ** Young adults: 18–39 years old, middle-aged adults: 40–59 years old, and old adults: ≥ 60 years old

Table 5 Regression Analysis of Nutrition Literacy Dimensions and Dietary Behavior

	Dietary Behavior Scores				
	B	SE	β	t	p-value
Obtain	0.928	0.292	0.144	3.176	0.002
Understand	0.469	0.281	0.079	1.669	0.096
Analyze	1.387	0.539	0.123	2.571	0.010
Appraise	0.492	0.320	0.079	1.536	0.125
Apply	1.446	0.524	0.132	2.756	0.006

Notes: Adjusted for age, gender, relationship status, and education. $R = 0.436$, $R^2 = 0.190$, $R^2_{\text{Adjusted}} = 0.179$, $F = 16.80$, $p\text{-value} = <0.001$.

were dummy coded. The reference categories for gender relationship status, and education levels were female, single, and undergraduate, respectively. Results from regression analysis (Table 5) revealed that after controlling for age, gender, relationship status and education, respondents with higher “obtain”, “analyze”, and “apply” scores were associated with higher dietary behavior scores.

Discussion

Nutrition literacy is associated with the nutritional status of individuals. It also plays a crucial role in preventing and controlling diet-related chronic diseases. The present study involved Malaysian adults from different age groups through

online recruitment, with the majority of respondents being females and young adults. Similarly, in an online nutrition literacy survey conducted among Palestinians, the majority of respondents were also females and young adults.¹⁷

The study by Gao et al² found that the “understand” and “apply” scores of students aged 22 to 27 years were greater than those aged 16 to 21 years. Meanwhile, our study found that the “understand”, “obtain”, and “analyze” scores of young adults were higher than those of older adults. A previous study examined the nutrition comprehension of adults aged 18 to 80 years found that comprehension accuracy declined with age.²⁴ Older adults were less likely than younger adults to be aware of nutrition information, such as food guide messaging from the government.²⁵ Nowadays, nutrition information is easily accessible through various sources. The better understanding and interpretation of nutrition information among younger adults, compared to older adults, could be attributed to their preferred sources of nutrition information. Online resources and dietitians were the preferred sources among young adults, whereas health professionals who were not dietitians were the primary sources among older adults.^{26,27} Young people also find it easier to access the internet to search for information on nutrition and healthy habits.¹⁶ The lower acquisition of nutrition information among older adults may be due to age-related impairment in vision, cognition, and hearing.^{7,28}

An earlier study demonstrated that the nutrition literacy of females was greater than that of males.²⁸ Our present study showed that females had higher “obtain” and “understand” scores than males. This could be due to gender differences in attitudes toward learning and reading. Females were more likely to acquire nutrition information and paid more attention to dietary intake than males.⁷

The study by Li et al⁹ indicated that the food and nutrition literacy scores of married individuals were higher than those of unmarried individuals. However, our study demonstrated that the “understand” and “analyze” scores of respondents who were single were higher than those of married ones. Single individuals might have more time to focus on their health and may be more proactive in understanding and evaluating nutrition information. Further research should explore the factors influencing the nutrition literacy dimensions of married and unmarried individuals.

Dietary behavior refers to all aspects related to eating habits, food choices, and dietary intake.²⁹ Our study indicated that the Malay respondents demonstrated healthier dietary behaviors compared to Chinese respondents. In Malaysia, different ethnic groups exhibit distinct food preferences, cooking methods, and eating habits. While most of the existing literature focuses on gender differences in dietary energy and nutrient intakes among Malaysian adults,^{11,30} there is a limited number of studies exploring dietary behavior differences across ethnic groups. One study focusing on Malay and Chinese young adults aged 18 to 27 found that Malays preferred wheat-based foods such as bread and pasta, whereas Chinese favored noodles and porridges.³¹

Education plays a vital role in healthier dietary behavior by empowering the ability of individuals to access, comprehend, and apply health-related information.³ The findings of the present study indicated that individuals with postgraduate degrees exhibited healthier dietary behaviors compared to those with secondary or primary school education. This aligns with the findings of Sandri et al,³² who reported that a higher level of education was strongly associated with a higher healthy nutrition index. Individuals with higher education typically have better access to educational resources such as webinars, videos, books, and podcasts on nutrition and health, resulting in a deeper understanding and more reliable information. Increased awareness of the importance of long-term health may motivate individuals to adopt healthier habits and make informed dietary and lifestyle choices based on evidence and scientific knowledge.³²

Previous studies indicated significant differences in nutrition literacy scores based on educational backgrounds.^{9,16} Our study demonstrated that the “obtain”, “understand”, and “analyze” scores of respondents with undergraduate degrees were higher than those of respondents with only secondary education. The adoption of proper food habits for health and wellbeing largely depends on knowledge of individuals. Moreover, individuals with higher education typically develop stronger critical thinking skills and cognitive abilities,² which are crucial for evaluating complex nutrition information.

Individuals with good nutrition literacy were more likely to follow dietary guidelines and adopt healthier dietary behaviors.⁵ Our study found that Malaysian adults with higher scores in the “obtain”, “analyze”, and “apply” dimensions were associated with higher dietary behavior scores. Previous research found that adults who obtained diet and nutrition information from reliable sources were more likely to modify their dietary behaviors,³³ leading to positive dietary changes. This suggests that individuals who interpret nutrition information from reliable sources as truthful and trust the information they receive are more likely to adopt healthier dietary behaviors based on that information. Moreover, many individuals

struggle to apply healthy dietary behavior due to limited or flawed nutrition information acquired from sources lacking scientific expertise in nutrition and driven by commercial interests rather than health-related objectives.^{1,34} Meanwhile, our findings indicated that higher scores in the “understand” and “appraisal” dimensions were not associated with higher dietary behavior scores. Almansour et al³⁵ reported that nutritional knowledge can only slightly contribute to the adoption of healthier dietary behavior. This suggests that while understanding general nutrition information is necessary, it may not be sufficient for adopting healthier dietary behavior. Other factors such as cultural background, food availability, cost, religious practices, body image perception, family and social network could also influence dietary behavior of individuals.^{36–38} Hence, a higher ability to judge nutrition information may not necessarily lead to healthier dietary behavior.

The findings of this study should be interpreted in light of several limitations. Firstly, the study population consisted predominantly of young Chinese adults recruited through online social networks. This limits the generalizability of the findings to the broader Malaysian adult population, particularly older adults. Secondly, dietary behavior may also be influenced by social and structural factors, such as cultural practices, food availability, economic status, and peer influence. Thirdly, sociodemographic variables such as income and geographical location, which may confound the relationship between nutrition literacy dimensions and dietary behavior, were not included in the questionnaire. Future studies could explore the mediating roles of individual nutrition literacy dimensions in the relationship between socio-demographic parameters and dietary behaviors.

Conclusion

This study highlights the critical role of nutrition literacy in shaping dietary behavior among Malaysian adults. The dimensions of nutrition literacy were influenced by age, gender, relationship status, and education level, whereas dietary behavior was affected by ethnicity and educational level. Malaysian adults with higher “obtain”, “analyze”, and “apply” scores were associated with higher dietary behavior scores. Targeted nutrition education interventions that enhance behavioral aspects of literacy, such as the ability to search for, interpret, and integrate nutritional information, could play a pivotal role in promoting healthier dietary habits among Malaysian adults.

Data Sharing Statement

The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

Ethical Approval

This study received approval from UTAR Scientific and Ethical Review Committee with reference number of U/SERC/31/2022.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Disclosure

The authors report no conflicts of interest in this work.

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