Research Article

Dietary Knowledge, Attitudes, Practices and their Association with Demographic Factors in Type 2 Diabetes Patients

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ABSTRACT

The study aimed to assess dietary Knowledge, Attitude, And Practice (KAP) among Type 2 Diabetes Mellitus patients at Hospital Pakar USM (HPUSM), and their associations with demographic characteristics. The study used a cross-sectional design with a convenience sampling method, and the analysis included responses from 118 participants. Their dietary KAP and demographic characteristics were assessed using an adapted and translated questionnaire based on the ADA Diabetes Self-Management Assessment Research Tool (D-SMART) and the University of Michigan Diabetes Research and Training Centre's KAP questionnaire. The questionnaire was translated and pilot-tested among 10% of the study population to ensure clarity and understanding. Minor adjustments were made based on participant feedback. The mean age of the 118 participants was 58.0±13.3 years, with 40.7% men and 59.3% women. The vast majority of participants possessed favourable attitudes (91.5%), good dietary knowledge (84.7%), and good practice (72.9%). Specifically, the mean scores for dietary knowledge, attitude, and practice were 41.8±9.4, 5.4±1.1, and 5.3±1.6, respectively. Bivariate analyses indicated significant associations between education level and knowledge (p=0.007) and attitude (p=0.009) but not practice (p=0.942). Multivariate Analysis of Variance (MANOVA) demonstrated a significant multivariate association between education level and the combined KAP scores, Pillai's Trace=0.182, p=0.001. The remaining demographic variables were not significantly associated with the combined KAP scores in the multivariate model (p>0.05).The results of the study indicate that, despite the fact that the majority of participants had favourable dietary knowledge, attitudes, and practices, education level significantly influenced knowledge and attitude scores. This underscores the importance of providing ongoing and targeted dietary education, particularly for individuals with lower educational attainment, to facilitate more effective dietary management among those with Type 2 Diabetes Mellitus (T2DM).

INTRODUCTION

Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder characterized by hyperglycaemia resulting from a progressive loss of insulin secretion on the background of insulin resistance (American Diabetes Association 2022). Diabetes was among the top 10 causes of death globally in 2021, with a substantial rise in mortality rates since 2000, according to the World Health Organisation (WHO) (WHO 2021). The effective management of T2DM necessitates a multifaceted approach that encompasses lifestyle modifications such as dietary alterations, increased physical activity, and behavioural interventions coupled with pharmacological treatment when warranted (Patel *et al.* 2024). Research indicates that diets rich in whole grains, vegetables, fruits, legumes, and nuts, while low in refined grains, sugars, and processed foods, enhance glycaemic control and metabolic outcomes (Jing *et al.* 2023;

Johannesen *et al.* 2020). Nevertheless, patients' dietary Knowledge, Attitudes, and Practices (KAP) shapes food behaviour and influences disease management, so impacting adherence to dietary guidelines (Bano *et al.* 2017; Han *et al.* 2020; Sami *et al.* 2020). Demographic factors such as age, income, and education level also shape patients' dietary knowledge, attitudes, and practices (Habib & Durrani 2018).

Although KAP is vital for diabetes treatment, few studies in Malaysia have looked at the relationship between dietary KAP and demographic factors among T2DM sufferers. International studies report generally low dietary KAP levels among diabetic populations (Ansari *et al.* 2019). Additionally, better dietary practices have been associated with higher education levels (Olatona *et al.* 2019). The American Diabetes Association (2020) claims that while reducing refined carbohydrates and added sugars, effective medical nutrition therapy emphasises on whole, minimally processed foods and non-starchy vegetables. The objective of this investigation is to investigate the demographic characteristics of T2DM patients at Hospital Pakar USM (HPUSM), as well as their dietary KAP levels. Its aim is to ascertain whether there are substantial associations between dietary KAP and variables such as gender, age, educational level, and income. It is posited that these demographic factors are significantly associated with the variations in dietary KAP among the patients.

This research endeavours to improve comprehension of dietary behaviour among patients with T2DM and to facilitate the creation of nutrition education that is specifically tailored to their needs. Healthcare professionals may implement interventions that are more personalised and effective in order to enhance dietary adherence and prevent complications by identifying demographic groups with lower levels of dietary knowledge, attitude, or practice. The findings provide valuable insights for the improvement of Medical Nutrition Therapy (MNT) and also contribute to the development of future research and policy in the Malaysian healthcare context.

METHODS

Design, location, and time

This investigation implemented a cross-sectional design and was conducted at Hospital Universiti Sains Malaysia (Hospital USM) in Kubang Kerian, Kelantan, Malaysia, from September 2022 to January 2023 (Note: The hospital has since been renamed Hospital Pakar USM, HPUSM). The Human Research Ethics Committee (JePEM) USM granted ethical approval (Reference number: USM/JePEM/22060440). Participants were Malaysian aged 18 years or older who had being diagnosed as T2DM and were receiving care at diabetes-related outpatient clinics or inpatient wards within the hospital. The study excluded individuals with Type 1 Diabetes Mellitus, gestational diabetes, or physical or psychiatric conditions that could potentially complicate participation.

Sampling

In this study, convenience sampling was implemented. The sample size was determined using the single proportion formula with a 5% precision level and a 95% confidence level (Z=1.96). The anticipated population proportion (p) was 0.07, as indicated by a study conducted in Ahmedabad, Western India, by Patel *et al.* (2012), which reported a 7% prevalence of Type 2 Diabetes Mellitus (T2DM) patients with no education level who did not consume a diabetic diet. Applying the formula, $n = \left[\frac{Z}{\Delta}\right]^2 p\,(1-p)$, (n=sample size, z=value representing the desired confidence level, p=anticipated population proportion and Δ=precision (0.05), the calculated sample size was 100. The sample size was increased to 120 participants to accommodate a potential 20% dropout rate.

Data collection

After receiving ethical approval, data collection was implemented. After providing participants with an information sheet and consent form, the questionnaire was administered and took approximately ten minutes to complete. The questionnaire was distributed in hard copy format, and the researcher provided assistance to participants as required. To ensure participant confidentiality, the completed questionnaires were securely stored in a closed folder accessible only to the researchers.

The questionnaire was translated into Bahasa Malaysia and underwent content review for clarity and cultural relevance. One expert in dietetics reviewed the content to ensure its appropriateness for the study population. A pilot test involving 10% of the target population was

conducted to assess the comprehensibility of the items. Minor wording adjustments were made based on feedback received. Formal psychometric validation was not conducted.

The research tool used in this study was adapted from Ntaate (2015), which included a modified version of the ADA Diabetes Self-Management Assessment Research Tool (D-SMART) and questions from the University of Michigan Diabetes Research and Training Centre's attitude, knowledge, and practice questionnaire. Experts in the field of dietetics examined the tool to make sure it would be relevant in the Malaysian setting and made some adjustments to fit local preferences. Overall, the questionnaire consist of 4 sections including: Section A: Demographic characteristics; Section B: Dietary knowledge; Section C: Dietary attitude; and Section D: Dietary practice.

Section A: Demographic characteristics. Participants provided personal information such as their age, gender, ethnicity, education level, employment status, income, duration of disease diagnosis, and current therapy.

Section B: *Dietary knowledge.* This section evaluated participants' understanding of T2DM, including its causes, complications, recommended foods, and food preparation. There were 12 questions, and the answers were "Yes," "No," or "Don't know." The correct answers received 5 points, while the incorrect answers received 0. Participants who scored 50% or higher were considered to have good knowledge, whereas those who scored less than 50% were considered to have poor knowledge.

Section C: *Dietary attitude.* This section measured participants' attitudes towards managing their diet for T2DM. Participants answered 6 questions on a Likert scale ranging from "strongly agree" to "strongly disagree." Statements were designed with a positive or negative direction; positive attitudes were scored as correct if participants agreed, and negative statements were reverse-scored. Participants with 4 or more correct answers were considered to have a good attitude, while those with fewer were considered to have a poor attitude.

Section D: Dietary practice. This section evaluated participants' dietary practices related to T2DM management. There were 8 questions with a Likert scale ranging from "not at all" to "very frequently." Responses reflecting desirable dietary behaviors were classified as correct,

while others were considered incorrect. Reverse scoring was applied when necessary. Participants with 5 or more correct answers were considered to have good dietary practices, while those with fewer were considered to have poor practices.

Data analysis

The data for this study was analysed using IBM SPSS version 28.0. Descriptive statistics were used to summarise demographic characteristics, dietary knowledge, dietary attitude, and dietary practices, with categorical data shown as frequencies (percentages) and numerical data shown as means and Standard Deviations (SD). The Shapiro-Wilk test was used to evaluate the normality of continuous variables before conducting inferential analyses. In order to account for the non-normal distribution of some continuous variables, a one-way MANOVA was conducted to evaluate the association between demographic characteristics and the combined KAP scores. Given the presence of assumption violations, such as non-normality and variance inequality across groups, Pillai's Trace was utilised as the primary multivariate test statistic due to its tolerance for these deviations as compared to other alternative such as Wilks' Lambda.The assumptions for MANOVA, including multivariate normality, homogeneity of variance-covariance matrices (evaluated using Box's M test), and absence of multicollinearity, were tested, although some were not fully met. Consequently, the results were interpreted with caution. Following the MANOVA, bivariate ANOVAs were conducted to identify specific dependent variables contributing to significant multivariate effects. A p-value of less than 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

Demographic characteristics

The study included 118 T2DM patients from HPUSM. Their mean age was 58.0±13.3 years. Nearly half of participants (49.1%) aged over 60 years, representing the largest age group. Most participants were female (59.3%) and of Malay ethnicity (91.5%). Regarding education level, secondary education was most common (66.1%). The highest proportion were unemployed (49.1%), followed by retirees (26.3%). A vast majority (89.0%) had a household income below RM4,850, placing them in the B40

category according to the Department of Statistics Malaysia (DOSM), Household Income and Basic Amenities Survey Report 2019 (DOSM 2020). In terms of disease duration, over half (57.6%) had lived with T2DM for more than five years. As for diabetes management, the most common treatment was a combination of oral medication and insulin (47.5%), while the least common was diet modification only (7.6%). Table 1 presents the detailed sociodemographic and medical history.

This study's T2DM population was predominantly composed of older adults, women, and Malays, reflecting trends reported in previous Malaysian research (Tan & Ng 2023). Most participants held secondary education or less, and approximately half were unemployed or pensioners, with many coming from low-income households (Jusoh *et al.* 2018). Despite having lived with T2DM for over five years, many patients still required both oral medication and insulin, and few used diet modification, which suggests poor glycaemic control and limited lifestyle changes. This is consistent with Malaysian findings that longer diabetes duration is linked to poor glycaemic control (Amsah *et al.* 2022).

Dietary knowledge, attitude and practice among T2DM patient at HPUSM

The mean score for dietary knowledge was 41.8±9.4 out of 60, with 84.7% of participants exhibiting good dietary knowledge. The dietary attitude was characterised by a mean score of 5.4±1.1 out of 6, with 91.5% of participants had a positive attitude. The mean score for dietary practice was 5.3±1.6 out of 8, with 72.9% of participants demonstrating effective dietary practice.

Summary of responses to dietary knowledge, attitude, and practice items among T2DM patients

Table 2, Table 3 and Table 4 summarise the item-level responses for dietary knowledge, attitude, and practice among T2DM patients. Most knowledge items were answered correctly by over 60% of respondents, indicating good general knowledge, although notable weaknesses were observed in K3 (19.5%) and K7 (49.2%). Attitude responses showed a generally positive outlook, with a high proportion of participants agreeing or strongly agreeing with most items,

Table 1. Demographic characteristics among T2DM patients at HPUSM

Demographic characteristics (n=118)	n (%)
Age (years old) (Mean±SD)	58.0±13.3
Age (years old)	
18–30	4 (3.4)
31–50	27 (22.9)
51–60	29 (24.6)
>60	58 (49.1)
Gender	
Male	48 (40.7)
Female	70 (59.3)
Ethnicity	
Malay	108 (91.5)
Chinese	9 (7.6)
Indian	1 (0.9)
Educational level	
Primary	13 (11.0)
Secondary	78 (66.1)
Tertiary	27 (22.9)
Employment status	
Employed	29 (24.6)
Unemployed (including housewives)	58 (49.1)
Retired	31 (26.3)
Monthly income (Mean±SD)*	1,831.53±1,833.43
B40 (<RM4,850)	105 (89.0)
M40 (RM4,851–RM10,970)	13 (11.0)
T20 (>RM10,971)	0 (0.0)
Duration of disease diagnosed (Mean±SD)	8.21±6.69
Less than 1 year	21 (17.8)
1–5 years	29 (24.6)
More than 5 years	68 (57.6)
Current therapy type	
Diet only	9 (7.6)
Oral medicine only	53 (44.9)
Oral medicine and insulin	56 (47.5)

T2DM: Type 2 Diabetes Mellitus; HPUSM: Hospital Pakar USM :B40: Below Income; M40: Middle Income; T20: High Income; *Household income classification as stated by DOSM (2020); RM: Ringgit Malaysia

Table 2. Distribution of responses for knowledge questions among T2DM patients at HPUSM

No	Knowledge questions (n=118)	% Answered correctly	% Answered incorrectly
1.	Does unsweetened fruit juice raise your blood sugar?	73 (61.9%)	45 (38.1%)
2.	The diabetes diet is a healthy diet for most people	89 (75.4%)	29 (24.6%)
3.	Glycosylated Haemoglobin (HbA1c) is a test that measures your average blood glucose level in the past week	23 (19.5%)	95 (80.5%)
4.	Orange juice has more fat in it than low fat milk	94 (79.7%)	24 (20.3%)
5.	A 500 g of chicken has more carbohydrate in it than 500 g of potatoes	85 (72.0%)	33 (28.0%)
6.	Diet is not important to control my diabetes	80 (67.8%)	38 (32.2%)
7.	A can of diet soft drink can be used for treating low blood glucose levels	58 (49.2%)	60 (50.8%)
8.	Eating too much sugar and sweet food is a cause of diabetes mellitus	96 (81.4%)	22 (18.6%)
9.	Numbness and tingling may be symptoms of nerve disease	109 (92.4%)	9 (7.6%)
10.	The way I prepare my food is as important as the foods I eat	97 (82.2%)	21 (17.8%)
11.	Diabetes diet consists of mainly specially prepared foods	102 (86.4%)	16 (13.6%)
12.	Maintaining a healthy weight isn't important in the management of diabetes	74 (62.7%)	44 (37.3%)

T2DM: Type 2 Diabetes Mellitus; HPUSM: Hospital Pakar USM

though neutral responses were more frequent for A3 to A5. Practice responses varied widely, with some behaviours such as P5 being frequently practiced, while others like P2 and P8 were rarely performed, reflecting inconsistent application of practice.

These results are corroborated by research conducted by Ntaate (2015) in Uganda, who found that T2DM patients possessed a positive attitude and adequate knowledge. Similarly, Adam *et al.* (2021) in Sudan found that over half of the patients possessed a high level of dietary knowledge. In China, Hu *et al.* (2021) also reported poor dietary knowledge and practice, with only moderate attitudes observed among participants. These findings suggest that in some regions, patients demonstrate acceptable levels of knowledge and attitude. Conversely, Bano *et al.* (2017) in Pakistan found that 81% of patients exhibited poor knowledge and 56.5% had negative dietary attitudes. Likewise, Ansari *et al.* (2019) emphasised that T2DM patients in Saudi Arabia exhibited poor mean knowledge scores and negative dietary patterns. These contrasting results may reflect differing cultural contexts, education levels, or healthcare access. These discrepancies could result from differences in questionnaire types, sample sizes, and the classification of dietary knowledge, attitude, and practice between studies.

Association between demographic characteristics and dietary knowledge, attitude and practice among T2DM patients at HPUSM

Education level was significantly associated with knowledge p=0.007 and attitude scores p=0.009, but not with practice (p=0.942) (Table 6). This indicates that only the dependent variables of dietary knowledge and attitude were significantly affected by education level in the follow-up ANOVAs. Participants with tertiary education had the highest mean knowledge score (K-score) (45.2±8.4) followed by those with secondary (41.7±8.3) and primary (35.4±11.1) education. Pillai's Trace indicated a significant overall multivariate effect for education level on the combined KAP scores (Pillai's Trace=0.182, p=0.001). Other variables, including gender, age group, ethnicity, employment status, monthly income, disease duration, and current therapy, showed no significant association with any of the KAP domains (all multivariate p>0.05). Even though females had higher knowledge scores (Mean=42.64, SD=8.37) than males (Mean=40.52, SD=10.68), the difference was

Table 3. Distribution of responses for attitude statements among T2DM patients at HPUSM

No	Attitude statements (n=118)	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.	Dietary instructions should be written out even if the diabetic patient is illiterate. Someone at home should be available to interpret it for him/her	48 (40.7%)	52 (44.1%)	11 (9.3%)	3 (2.5%)	4 (3.4%)
2.	I know what parts of controlling my diet as part of management of diabetes I'm satisfied with	34 (28.8%)	42 (35.6%)	36 (30.5%)	6 (5.1%)	0 (0.0%)
3.	I know what parts of controlling my diet as part of management of diabetes I'm ready to change	34 (28.8%)	33 (28.0%)	37 (31.4%)	13 (11.0%)	1 (0.8%)
4.	I can motivate myself to manage my diet	28 (23.7%)	36 (30.5%)	46 (39.0%)	7 (5.9%)	1 (0.8%)
5.	I know enough about myself as a person to make dietary choices that are right for me	23 (19.5%)	39 (33.1%)	46 (39.0%)	9 (7.6%)	1 (0.8%)
6.	I know the barriers to managing my diet as part of my management of diabetes	28 (23.7%)	52 (44.1%)	24 (20.3%)	12 (10.2%)	2 (1.7%)

T2DM: Type 2 Diabetes Mellitus; HPUSM: Hospital Pakar USM

Table 4. Distribution of responses for practice questions among T2DM patients at HPUSM

Practice questions (n=118)	0 (Not at all)	1	2	3	4	5	6	7 (Very frequently)
1. In the past 1 week how often have you missed or skipped meals?	47 (39.8%)	13 (11.0%)	15 (12.7%)	12 (10.2%)	11 (9.3%)	7 (5.9%)	3 (2.5%)	10 (8.5%)
2. In the past 1 week how often have you overeaten (eaten more than you know you should)?	73 (61.9%)	22 (18.6%)	10 (8.5%)	4 (3.4%)	1 (0.8%)	5 (4.2%)	–	3 (2.5%)
3. In the past 1 week how often have you eaten high fat foods like fried chicken?	9 (7.6%)	3 (2.5%)	25 (21.2%)	27 (22.9%)	18 (15.3%)	5 (4.2%)	5 (4.2%)	26 (22.0%)
4. Please circle the number that indicates how able you are to fit dietary management into your life in a positive manner.	6 (5.1%)	7 (5.9%)	7 (5.9%)	13 (11.0%)	25 (21.2%)	30 (25.4%)	22 (18.6%)	8 (6.8%)
5. How much do you involve your family in helping you follow a meal plan?	6 (5.1%)	8 (6.8%)	1 (0.8%)	1 (0.8%)	12 (10.2%)	27 (22.9%)	40 (33.9%)	23 (19.5%)
6. How empowered are you to control/avoid sweets or limit fatty foods?	9 (7.6%)	8 (6.8%)	21 (17.8%)	18 (15.3%)	12 (10.2%)	12 (10.2%)	22 (18.6%)	16 (13.6%)
7. How often do you eat only that which is available or only what you can afford irrespective of content?	7 (5.9%)	12 (10.2%)	23 (19.5%)	21 (17.8%)	32 (27.1%)	15 (12.7%)	7 (5.9%)	1 (0.8%)
8. How often does diabetes interfere with or prevent you from doing your normal daily activities?	48 (40.7%)	1 (0.8%)	6 (5.1%)	3 (2.5%)	9 (7.6%)	21 (17.8%)	21 (17.8%)	9 (7.6%)

T2DM: Type 2 Diabetes Mellitus; HPUSM: Hospital Pakar USM

not statistically significant (p=0.230). Likewise, differences in KAP scores among various age groups, employment statuses, and income levels were not statistically significant (Table 5).

In terms of knowledge, this finding is partially corroborated by Ntaate (2015), who indicated no significant correlation with sex, age, or employment status, while education and marital status were linked to knowledge. In contrast to our findings, Bano *et al.* (2017) and Adam *et al.* (2021) reported significant associations between gender and knowledge, and income, respectively, which were not significant in our analysis. Supporting our findings, Han *et al.*

Table 5. Association between demographic characteristics and KAP scores among T2DM patients

Demographic variable	MANOVA (Combined KAP)	Knowledge	Attitude	Practice
Gender	0.381	0.230	0.705	0.625
Age group	0.521	0.942	0.432	0.278
Ethnicity	0.829	0.932	0.693	0.496
Education level	0.001*	0.007*	0.009*	0.942
Employment status	0.327	0.975	0.114	0.358
Monthly income	0.342	0.052	0.726	0.659
Disease duration	0.648	0.920	0.726	0.737
Current therapy	0.461	0.966	0.993	0.967

KAP: Knowledge, Practice, Attitude; T2DM: Type 2 Diabetes Mellitus; Statistical analysis conducted using General Linear Model (GLM); Pillai's Trace was used as the primary multivariate test statistic due to assumption violations; Univariate F-tests are reported for each dependent variable; *Significance threshold set at $p<0.05$

(2020) also identified a significant link between education and nutrition knowledge in study conducted in Singapore. Furthermore, although education level and health literacy are distinct constructs, Azizi *et al.* (2022) emphasized that higher health literacy is associated with improved dietary behaviours, better BMI control, and more effective diabetes management. This finding highlights the broader role of knowledge-related factors in T2DM care. These inconsistencies among studies may be attributed to variations in population characteristics, sampling methods, and the manner in which dietary knowledge was evaluated or classified. This may suggest that, within the HPUSM setting, consistent patient education efforts may be promoting equitable access to dietary knowledge across most demographic groups, though differences still exist based on educational background.

In relation to attitude, this study's findings indicate a significant association between educational levels and dietary attitudes among T2DM patients at HPUSM, reflecting global patterns identified by Ponzo *et al.* (2017) and Sami *et al.* (2020), which demonstrate that higher educational levels are linked to enhanced dietary attitudes. This indicates that patients with higher education levels may possess improved access to information, promoting favourable dietary behaviours. Such results highlight the need of giving patients, especially those with lower educational levels, specific and easily available educational interventions to improve their dietary

control of diabetes. Interestingly, contrasting studies from Sudan (Adam *et al.* 2021) and Uganda (Ntaate 2015) revealed no such link, implying that cultural, healthcare system, and maybe socio-economic settings could shape how education shapes dietary attitudes. These variations demand a deeper investigation of contextual elements, so stressing the need of region-specific strategies for dietary education and diabetes management to guarantee that every patient, from all educational backgrounds, has equal access to knowledge that could greatly affect their health outcomes.

With regard to practice, the findings of the study indicated that, in contrast to numerous earlier investigations, dietary practices were not significantly associated with demographic factors such as gender, age, ethnicity, educational level, and income among T2DM patients at HPUSM. However, educational level was significantly associated with both dietary knowledge and attitude. This contrasts with findings from Patel *et al.* (2024), Habib (2018), and Adam *et al.* (2021), which identified factors such as income, education, and age as influential in shaping dietary practices. These discrepancies may be attributed to differences in cultural context (e.g., variations in food beliefs, traditional diets, and social norms surrounding meal preparation and eating habits), healthcare systems (such as the accessibility of nutrition counseling, availability of diabetes education programs, and patient engagement strategies) and methodological

variations across studies. While some research has suggested a link between dietary knowledge and practice (Kim & Hur 2021), our findings did not support this relationship. This may suggest that non-demographic or psychological factors play a more significant role in translating knowledge into behavioral change. The results highlight that although most demographic variables were not predictive of dietary KAP, education level remains a key determinant of dietary knowledge and attitude. This underscores the importance of targeted nutrition education strategies, especially for individuals with lower educational backgrounds, to improve diabetes self-management regardless of other socio-demographic factors.

These findings indicate that although demographic characteristics may not consistently predict dietary practices among T2DM patients at HPUSM, education level is a significant factor affecting dietary knowledge and attitudes. This may be because individuals with higher education often have better access to health information, and they tend to score higher in knowledge and attitude. Education level may also relate to other demographic factors such as income or employment, although this study did not explore those relationships directly. The findings highlight the necessity for continuous, accessible, and culturally relevant nutrition education initiatives aimed at fostering attitudinal transformation, particularly among individuals with lower educational attainment. Furthermore, more research and application of structured healthcare interventions in levelling access to dietary knowledge should help to guarantee consistency in diabetes management results. Future studies should seek to grasp the psychological and contextual elements outside of demographics affecting dietary behaviour. Qualitative methods and longitudinal studies could offer more profound insights into the obstacles and incentives that T2DM patients encounter when adopting healthier diets. Thereby influencing intervention strategies that are more personalised and effective.

CONCLUSION

This study revealed that T2DM patients in HPUSM generally had good dietary Knowledge, Attitude, and Practice (KAP), with more than 70% scoring above half on dietary-related questions.

Among the demographic variables examined, only education level showed a significant association with both dietary knowledge and attitude. No significant associations were found between various demographic characteristics such as age, gender, ethnicity, employment status, income, disease duration, and therapy type with knowledge and dietary attitude. In addition, none of the demographic characteristics were significantly associated with dietary practice. These results underline the need of concentrating on educational interventions to improve dietary attitudes, particularly for patients with lower educational levels. To improve T2DM management, more study is required to investigate the elements affecting dietary practices and the interaction among them, especially non-demographic or behavioral influences.

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