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Factors influencing preventive self-care behaviors to avert Diabetes Mellitus among Thai Buddhist Monks, Thailand: A Cross-sectional Study

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ABSTRACT

A cross-sectional study was conducted to investigate factors related to self-care behavior for diabetes mellitus prevention among 393 Thai Buddhist monks in the upper northeastern region of Thailand. Data were collected using questionnaires and analyzed using descriptive statistics, including percentages, means, minimums, maximums, and standard deviations. Relationships between factors related to self-care behaviors among Buddhist monks were analyzed using bivariate analysis (chi-square test) and multivariate analysis (binary logistic regression). The findings demonstrated that significant factors included age under 35 years (AOR=5.34, 95% CI=2.02-14.14), eating two meals per day (AOR=2.99, 95% CI=1.33-6.76), self-management (AOR=6.51, 95% CI=3.52-12.02), access to health information and health services (AOR=0.26, 95% CI=0.15-0.47), and making correct health decisions (AOR=1.98, 95% CI=1.04-3.78). These factors were significantly related to self-care behaviors among Buddhist monks ($p < 0.05$). The study concludes that improving health literacy among Thai Buddhist monks, particularly those under 35 years of age, is crucial for effective T2DM prevention. Targeted health education programs can significantly enhance their self-management skills, enable them to make informed health decisions, and encourage the adoption of better self-care and consumption behaviors.

Key words:
health literacy; health behavior; Buddhist monk; monastic; diabetes mellitus

INTRODUCTION

Diabetes Mellitus (DM) is a chronic, non-communicable disease that is a significant public health problem worldwide, impacting people's lives and health expenditures.[1] It arises from high blood sugar levels over a prolonged period, posing a risk of severe cardiovascular complications. The World Health Organization reported that diabetes is responsible for 1 in every 10 deaths globally.[2] The number of diabetes patients continues to rise globally, with an estimated 537 million people suffering from diabetes in 2024, and is projected to increase to 784 million by 2045.[3]

In Thailand, the prevalence and mortality rates of diabetes have been consistently increasing each year. From 2017 to 2021, the incidence rates were 1,344.95, 1,439.04, 1,528.91, 1,541.59, and 1,504.08 per 100,000 population, respectively, while the mortality rates were 22.00, 21.90, 25.30, 25.10, and 24.50 per 100,000 population.[4] In the upper northeastern region, the incidence rates were found to be increasing as well, with rates of 13.67, 14.39, 15.56, and 16.40 per 100,000 population from 2017 to 2021.[4]

The report from Priest Hospital revealed that DM has the second highest prevalence rate among Thai Buddhist monks, and the incidence has shown a consistent increase from 2020 to 2023: 641.49, 843.58, 965.04, and 1,829.59 per 100,000 population. Additionally, in the upper northeastern region of Thailand, incidence rates among Thai Buddhist monks have also been rising, with rates of 1.17, 1.27, 1.26, and 1.27 per 100,000 population.[5]

DM is affected by personal factors; for instance, age plays a significant role. Individuals over 50 are more likely to develop diabetes compared to their younger counterparts.[5] Additionally, genetics contribute, with a family history of the disease increasing the risk of DM. Interestingly, sex may also be a factor, with some studies suggesting females might have a higher risk than males.[6,7] Underlying health conditions can also contribute to diabetes development. High blood pressure and high cholesterol are known risk factors. Being overweight or obese, categorized by a BMI exceeding 23 kg/m,[2] significantly increases one's susceptibility.[8-11]

Additionally, lifestyle choices significantly impact diabetes risk. A diet high in sugar, salt, and fat, coupled with insufficient intake of fruits and vegetables, can create a high risk of contracting diabetes. Chronic stress and insufficient sleep can also disrupt hormones and contribute to the problem[12]. Smoking[13] and excessive alcohol consumption further elevate the risk by damaging the pancreas, an organ crucial for insulin production.[14]

Diabetes mellitus can appear in anyone, regardless of gender, and also appears in Buddhist monks. Buddhist monks have different lifestyles from those of the general populace. They lack the opportunity to access health services and are not exposed to health promotion because they have to perform daily religious duties and spend time helping the laity face life challenges.[15] Monks are considered to be a critical group of people in Buddhism. They are the center of the Buddhist mind and follow Buddhist principles as a way of life. Monks are, therefore, essential in passing on the traditions and culture of Buddhism, developing moral and ethical learning, developing society, being good role models for the community by taking care of their health and the environment, and developing the community's well-being.[16] The Thai Ministry of Public Health aims to enhance health literacy alongside health promotion to positively influence health behavior.

They have established guidelines aligned with the National Sangha Health Charter, which encourages Buddhist monks to prioritize their health and share basic health knowledge with their communities[17]. Health literacy, as defined by the World Health Organization is the ability to access, understand, and utilize health information effectively, and plays a crucial role in improving health behaviors and outcomes.[18,19] Studies in the USA have shown that a significant portion of the population has inadequate health literacy, which is linked to lower health-related quality of life,[20] particularly among chronic disease patients like those with diabetes.[21]

In 2021, the Department of Health conducted a survey on the health behaviors of monks in the upper northeastern region of Thailand. The findings indicate that monks demonstrate a fair level of dietary consumption and engage in fair levels of physical exercise.[22] Another study reported that monks in the upper northeastern region of Thailand possess a fair level of health literacy (77.75%).[23] However, a review of relevant literature on improving health literacy among monks reveals scarce information or research to support initiatives aimed at enhancing their health literacy and encouraging improvements in their self-care behaviors for diabetes prevention. Consequently, many monks have been unable to change their health behaviors, largely due to knowledge offerings that focus on specific content but lack health literacy assessment.[17] Therefore, studying the problems and factors related to the self-care behavior of monks to prevent diabetes mellitus in the upper northeastern region of Thailand is important and of interest. The results of this research will provide vital information that can be applied to diabetes prevention and serve as guidelines to reduce new diabetes cases among Thai Buddhist monks in the long term and sustainably.

METHODOLOGY

Study design and participants

A descriptive cross-sectional study was used to evaluate the association between health literacy and health behavior regarding diabetes mellitus prevention among 23,261 Thai Buddhist monks in the upper northeastern region of Thailand. It was conducted from August 2022 to October 2022. The sample size was calculated by using a formula for descriptive studies $(n = NZ^2_{\alpha/2} [p (1-p)] / [e2 (N-1)] + [Z2\alpha/2 \, p (1-p)])^{24}$ with N = 23,261 monks, $Z_{a/2} = 1.96$, and e^2 is the allowed tolerance, which was 0.05; p is the proportion of monks at risk of diabetes in the upper northeastern region of Thailand, which was 0.37. 10% was added to the sample size to prevent potential loss to follow up. The study sample consisted of 393 Thai Buddhist monks.

Inclusion criteria included monks aged 20 years and older residing in the upper northeastern region for at least 6 months, having good mental health with no issues related to vision or hearing, no serious illnesses or complications, and proficiency in speaking, listening, reading, and writing Thai. Exclusion criteria applied to monks who were seriously ill, bedridden, or receiving palliative care.

This research was conducted using multi-stage sampling to obtain a representative sample of the population and followed these steps:

1) The seven districts were selected randomly from each province using stratified random sampling across the seven provinces in the upper northeastern region, namely Udon Thani, Loei, Nong Khai, Nong Bua Lamphu, Bueng Kan, Sakon Nakhon, and Nakhon Phanom.

2) Calculation of the sample proportion from each province

3) Randomly selecting temple names in each district that have been pre-selected from the temple registry: Simple random sampling was used by drawing lots from the list of temples and selecting all

monks who meet the inclusion criteria in all selected temples. Temples were drawn by lot until the required number of monk participants was obtained, according to the predetermined proportion.

Materials and Measurements

The research instrument used in this study was a questionnaire. The questionnaire, administered by researchers, covered demographic characteristics, health literacy, and self-care behaviors.

Demographic characteristics: Personal information and health data (15 questions), i.e., age, the time spent as a monk, secular education level, religious education level, Sangha administrative position, weight, height, waistline, number of meals eaten per day, blood sugar level, blood pressure level, smoking history, underlying disease, health check ups, and family health history.

Health literacy: Health literacy was measured by the responses to 48 questions, covering such areas as cognitive ability, the access to health information and health services, communication skill, self-management, exposure to health information media, making correct health decisions for diabetes prevention in terms of diet, health maintenance, physical activity, and proper rest. The responses to the questions were evaluated using the Likert scale, measuring the level of health literacy of the respondents and the health literacy for diabetes prevention in terms of diet, health maintenance, physical activity, and proper rest.

Evaluation of the responses led to a health literacy score, which was sorted into three levels determined by a calculated range. This range was found by subtracting the lowest score from the highest, then dividing the difference by the number of levels (in this case, 3), resulting in (5-1)/3 = 1.33. These levels were defined as follows: a poor level (1.00 to 2.33), a moderate level

(2.34 to 3.67), and a high level (3.68 to 5.00).[25]

The total score after evaluating the health literacy level of each monk indicated that a score of less than 70% signified an insufficient level of health literacy, while a score of 70% or higher signified a sufficient level of health literacy.[26]

Self-Care Behavior: The self-care behavior of Buddhist monks was measured using 24 questions, including questions about the self-care behavior of monks regarding regular exercise, balanced diet, monitoring blood sugar, maintaining a healthy weight, avoiding sugary drinks, limiting processed foods, taking prescribed medication, getting regular check-ups, and managing stress. The questions used the Likert rating scale, divided into 5 levels of choice for the responses, according to frequency of practice.

Evaluation of the responses led to a self-care behavior score, which was sorted into three levels determined by a calculated range. This range was determined by subtracting the lowest score from the highest, then dividing the difference by the number of levels (in this case, 3), resulting in (5-1)/3 = 1.33. These levels were defined as follows: a poor level (1.00 to 2.33), a moderate level (2.34 to 3.67), and a high level (3.68 to 5.00).[25]

The total score after evaluating the self-care behavior level of each monk indicated that a score of less than 70% signified a poor level of self-care behavior, while a score of 70% or higher signified a good level of self-care behavior.[26]

Research instrument validation

This study employed three experts to assess the content validity of an 87-item questionnaire. The questionnaire was concise and divided into three parts: 15 items on participant characteristics, 48 items on health literacy, and 24 items on health behaviors. The findings revealed that the questionnaires exhibited strong content

validity, as indicated by an Index of Item-Objective Congruence (IOC) score of over 0.50 for each item. Additionally, the reliability analysis demonstrated high internal consistency, with a Cronbach's alpha score of 0.99 for the health literacy section, 0.86 for the health behavior section, and an overall score of 0.98 for the entire questionnaire.

Data collection

1) A letter requesting permission to collect data was composed and sent to the Provincial Public Health Office in seven provinces.

2) Researchers communicated with the provincial authorities, directors of community hospitals, and district public health offices to outline the study's objectives and methods.

3) Research assistants in each province underwent training on data collection methods and utilized simple random sampling techniques.

4) Research assistants visited the selected sites to explain the research objectives, obtain consent, and secure signed consent forms from participants.

5) Questionnaires were distributed to the selected group of Buddhist monks.

6) Research assistants conducted follow-ups to retrieve the questionnaires after a designated period, ensuring correctness and completeness. In cases of incomplete or missing data, additional follow-ups were conducted to gather the necessary information.

7) The obtained data, comprising 393 sets, underwent scrutiny for accuracy, completeness, and credibility. Subsequently, the data were coded and recorded.

Statistical analysis

Descriptive statistics, including percentages, and frequencies were applied for categorical variables while minimums, maximums, means, and standard deviations were used for the continuous variables. All analyses were performed using SPSS 25.

Bivariate analysis employed Chi-square tests to examine the association between each independent variable and self-care behavior levels among Buddhist monks.

Multivariate analysis utilized binary logistic regression to explore factors related to self-care behaviors among Buddhist monks. The Hosmer-Lemeshow test was employed to assess model fit, and its non-significance (p-value > 0.05) indicated that the model was appropriate for analysis and the data were sound. Factors identified as significantly associated with health behaviors in the bivariate analysis (p-value ≤ 0.25) and those identified as potentially relevant based on the literature review were included in the multivariate analysis.[27] Adjusted odds ratios (AOR) and their 95% confidence intervals (CI) were computed using binary logistic regression with backward elimination. All statistical tests were two-tailed, and a significance level of 0.05 (p-value ≤ 0.05) was used for data analysis.

RESULTS

Demographic characteristics

Based on the analysis of personal characteristics of 393 Buddhist monks, several findings were observed. Firstly, the majority of participants were aged 35 years or older, accounting for 92.88% of the sample. The average age was found to be 51.58 ±13.65 years. Most of them (56.23%) had been in monastic life for less than 10 years. On average, the duration of their monastic life was 10.22 ±7.99 years.

In terms of secular education, 92.37% of the participants had an education below the graduate level. Regarding religious education, most of the monks (72.26%) had not attained the level of master. Additionally, the majority of the participants were regular monks (68.96%). It was observed that 50.40% of the monks

had a body mass index (BMI) lower than 23.00 kg/m².

Regarding eating habits, 88.04% of the monks consumed two meals per day. Furthermore, 54.96% of the participants had a blood sugar level lower than 100 milligrams per deciliter, while the average blood sugar level was 101.08 mg/dL. In terms of blood pressure, 58.27% of the participants had a systolic blood pressure level higher than 120 mmHg.

The majority of participants (76.59%) were non-smokers. Regarding health conditions, 87.02% of the monks did not have any underlying diseases, and 80.66% did not have a family history of diabetes. Additionally, 90.84% of the participants received annual health check-ups, as indicated in Table 1.

Table 1. Demographic characteristics of participants (n = 393)

Personal Characteristics	Number of Participants	Percentage
Age (years)		
< 35	28	7.12
≥ 35	365	92.88
Mean = 51.58, S.D. = 13.65, Min = 20, Max = 88		
Duration of monastic life (years)		
< 10	221	56.23
≥ 10	172	43.77
Mean = 10.22, S.D. = 7.99, Min = 1, Max = 37		
Secular Education Level		
< Graduate	363	92.37
Graduate and over	30	7.63
Religious Education Level		
≤ Master Class Theologian	284	72.26
> Master Class Theologian	109	27.74
Sangha Administrative Position		
Yes	122	31.04
No	271	68.96
BMI (kg/m^2)		
< 23.00	189	50.40
≥ 23.00	195	49.60
Meals		
1 meal a day	47	11.96
2 meals a day	346	88.04
Fasting Blood Sugar Level (mg/dl)		
< 100	216	54.96
≥ 100	177	45.04
Mean = 101.08, S.D. = 22.71, Min = 66, Max = 303		
Systolic Blood Pressure (mmHg)		
≤ 120	164	41.73

Personal Characteristics	Number of Participants	Percentage
> 120	229	58.27
Diastolic Blood Pressure (mmHg)		
≤ 80	263	66.92
> 80	130	33.08
Smoking History		
Smoking	92	23.41
Non-smoking	301	76.59
Underlying Diseases		
Yes	51	12.98
No	342	87.02
Health Check-ups		
Yes	357	90.84
No	36	9.16
Family History		
Having direct relatives with Diabetes.	76	19.34
Having no direct relatives with Diabetes.	317	80.66

[1]SD: standard deviation, [2]BMI: Body Mass Index, [3]Min: Minimum, [4]Max: Maximum

Health literacy of Buddhist monks

The health literacy regarding diabetes prevention of Buddhist monks was divided into six components. It was found that the health literacy component concerning health information media was the lowest, at a mean of 2.52± 0.65, followed by communication skill at a mean of 3.31±0.91 as shown in Table 2.

However, the interpretation of the comprehensive health literacy level for diabetes prevention, with regard to the six components, showed that Thai monks were more than 50% more likely to have an insufficient level of comprehensive health literacy regarding diabetes prevention, as shown in Table 3.

Table 2. Health literacy level with 6 components for diabetes prevention of participants

Health literacy	Mean	Standard Deviation	Level
Cognitive	3.50	0.74	Moderate
Access to health information and health service	3.34	0.73	Moderate
Communication skill	3.31	0.91	Moderate
Self-management	3.64	0.72	Moderate
Health information media literacy	2.52	0.65	Moderate
Making correct health decisions	3.75	0.69	High

Table 3. Health literacy level of the overall 6 components interpretation of participants.

Health Literacy	Number (Person)	Percentage
Sufficiency	166	42.24
Insufficiency	227	57.76
Total	393	100.00

Self-care behaviors of Buddhist monks

The findings demonstrated that the self-care behaviors for diabetes prevention among Buddhist monks classified by aspect were low in maintaining a healthy weight, with a mean of 2.21±1.36, followed by maintaining a balanced diet at a mean of 2.83±1.12 as shown in Table 4. The interpretation of comprehensive self-care behaviors for diabetes prevention among monks in the upper northeastern region of Thailand showed that Thai monks were more than 90% more likely to have a good self-care behavior for diabetes prevention, as shown in Table 5.

Table 4. Self-Care Behavior for Preventing Diabetes

Self-care behavior	Levels of Self-Care Behavior			
	Frequency	mean	SD.	Level
Regular exercise	3-4 times a week	3.64	1.28	Moderate
Balanced diet	Daily	2.83	1.12	Moderate
Monitoring blood sugar	Daily	3.54	1.24	Moderate
Maintaining healthy weight	Regularly	2.21	1.36	Poor
Avoiding sugary drinks	Daily	3.15	1.25	Moderate
Limiting processed foods	Regularly	3.06	1.09	Moderate
Taking prescribed medication	As directed	3.35	1.59	Moderate
Getting regular check-ups	Yearly	3.65	1.31	Moderate
Managing stress	Regularly	3.35	1.38	Moderate

Table 5 The level of self-care behavior in diabetes prevention among Buddhist monks

Self-care Behavior	Number (Person)	Percentage
Good Behavior	370	94.15
Not Good Behavior	23	5.85
Total	393	100.00

The factors related to self-care behaviors

Bivariate analysis using the Chi-square test found that age group, duration of monastic life, number of meals per day, education, access to health information and health services, self-management, and making correct health decisions were statistically significantly associated with self-care behaviors. Consequently, all these factors were included in the multivariate analysis.

A multivariate correlation analysis with backward binary logistic regression was conducted to investigate factors related to self-care behavior. The analysis revealed that being under 35 years old, eating two meals per day, having sufficient access to health information and health services, and having insufficient self-management and decision-making were statistically significant factors associated with poor self-care behavior among Buddhist monks, as detailed below:

Demographic characteristics and self-care behaviors

Age correlated with self-health care behavior for diabetes prevention with a statistically significant level of 0.001. Buddhist monks aged under 35 had a poor self-care behavior level, which was 5.34 times higher than those aged 35 years and over.

Eating behavior correlated with self-care behavior for diabetes prevention with a statistically significant level of 0.008. Monks who ate two meals a day had a poor self-care behavior level, which was 2.99 times higher than those who ate one meal daily.

Health literacy and self-care behaviors

Literacy related to access to health information and services correlated with self-care behaviors for diabetes prevention at a statistically significant level of 0.001. Buddhist monks with insufficient literacy in accessing health information and services exhibited a poor self-care behavior level, which was 0.26 times lower than those with sufficient literacy.

Health literacy for self-management correlated with self-care behaviors for diabetes prevention at a statistically significant level of 0.001. Buddhist monks with insufficient health literacy for self-management exhibited a not-good self-care behavior level, which was 6.51 times higher than those with sufficient health literacy for self-management.

Making correct health decisions correlated with self-care behavior for diabetes prevention with a statistically significant level of 0.038. Buddhist monks with an insufficient level of making correct health decisions had a not-good self-care behavior level, which was 1.98 times higher than those with a sufficient level of making correct health decisions. The correlation of related factors is shown in Table 6.

Table 6. Bivariate and Multivariate analysis investigating the factors related with self-care behaviors among Thai Buddhist monks

Factors	Poor Health behavior n (%)	Good Health behavior n (%)	Bivariate Analysis		Multivariate Analysis		
			OR	p-value	Adjusted. OR	p-value	95%CI
Age							
< 35 years	20 (11.70)	8 (3.60)	3.54	0.002*	5.34	0.001*	2.02 to 14.14
35 years and over	151 (88.30)	214 (96.40)	1				
Meals/day							
1 meal per day	10 (5.80)	37 (16.70)	1	0.001*	2.99	0.008*	1.33 to 6.76
2 meals per day	161 (94.20)	185 (83.30)	0.32				
Access to health information and health services							
Insufficient	133 (59.91)	90 (52.63)	1.34	0.149	0.26	< 0.001*	0.15 to 0.47
Sufficient	89 (40.09)	81 (47.37)	1				
Self-Management							
Insufficient	166 (74.78)	58 (33.92)	5.78	<0.001*	6.51	< 0.001*	3.52 to 12.02
Sufficient	56 (25.22)	113 (66.08)	1				
Making correct health decisions							
Insufficient	160 (72.07)	80 (46.78)	2.94	<0.001*	1.98	0.038*	1.04 to 3.78
Sufficient	62 (27.93)	91 (53.22)	1				

BMI:Body Mass Index; OR: Odds Ratio; 95% CI: 95% Confidence Interval; * = p-value <0.05
Hosmer-Lemeshow test Chi^2 = 7.88, p-value = 0.247, Nagelkerke R^2 = 0.34, Overall percentage = 73.00

DISCUSSION

The main purpose of this study was to examine the association between demographical characteristics, health literacy, and self-care behaviors for diabetes prevention among Thai Buddhist monks in the upper northeastern region of Thailand. The results of this study demonstrate that diabetes risk behaviors increased in the Buddhist monks according to demographical characteristics, such as being aged under 35 years, eating 2 meals daily, having insufficient health literacy, including insufficient literacy of access to health information, literacy of self-management, literacy of health information media, and insufficient literacy of making correct health decisions as per the following.

The association between demographic characteristics and self-care behaviors

The results of this study indicated that Buddhist monks under the age of 35 exhibited poorer self-care behaviors compared to those aged 35 and over. Normally, the elderly are at a higher risk of contracting diabetes due to declining health, reduced organ function, and limited physical activity. This risk is particularly pronounced for Buddhist monks, as their daily routines and lifestyle differ from the general population because monks adhere strictly to the precepts of Buddhism. However, younger monks might not be as familiar with the monastic lifestyle and Buddhist precepts, which may contribute to their poor self-care behaviors and increased risk of diabetes. These findings contrast with a study conducted in Germany, which indicated that increasing age was associated with a higher risk of type 2 diabetes.[23] Similarly, a study in Lebanon found no significant difference in the practice scores of diabetic patients based on age.[28]

The eating behaviors of Thai Buddhist monks provide valuable insight into the relationship between meal frequency and health risks, particularly diabetes. Monks who ate two meals a day demonstrated poorer eating habits compared to those who ate only one meal daily. This observation is consistent with the broader understanding that a higher frequency of meals can increase the risk of diabetes. Monks who limited themselves to one meal a day may be more health-conscious and adhere more strictly to Buddhist dietary precepts. Their reduction in meal intake and avoidance of sugary beverages suggests a deliberate effort to maintain better health.[22] This behavior reflects a deeper understanding of the link between diet and health outcomes, highlighting the role of mindful eating practices in disease prevention. Furthermore, the WHO's stance on health literacy emphasizes its importance in diabetes prevention. Monks with higher health literacy are likely to adopt healthier eating behaviors and engage in physical activities that mitigate the risk of diabetes. This correlation underscores the necessity of improving health literacy to foster better dietary habits and enhance overall health.[30] Therefore, the study of Thai Buddhist monks' eating behaviors underscores the significance of meal frequency, health literacy, and adherence to dietary precepts in preventing diabetes. By examining these factors, we can better understand how mindful eating and informed health choices contribute to improved health outcomes.

The study found no statistically significant correlation between various factors, such as the duration of monastic life, education, Sangha administrative position, BMI, smoking, underlying disease, health check-ups, family history, and self-care behaviors to prevent diabetes. This suggests that these variables do not independently influence the monks' self-care behaviors aimed at diabetes prevention. One possible explanation for this lack of correlation is that the participants in the study shared similar characteristics across both groups of self-

care behaviors. This homogeneity might have masked any potential differences that could have been observed in a more diverse sample. It indicates that factors other than those studied might play a more significant role in influencing self-care behaviors among Thai Buddhist monks. Interestingly, the study's results differ from some previous research findings. For instance, earlier studies indicated that current smoking was associated with health behaviors among individuals with prediabetes while education level did not show a significant association [29,30]. This discrepancy highlights the complexity of factors influencing health behaviors and suggests that the context and population under study can significantly affect outcomes. The unique lifestyle and communal living conditions of monks might lead to different patterns of health behavior compared to the general population.

The association between health literacy and health behaviors

The results of this study confirm that health literacy is strongly statistically significant as it relates to the self-care behaviors among Thai Buddhist monks. These results are similar to Saber Han-A Cho et al.,[31] who reported that oral health literacy was significantly related to a higher level of oral health behaviors among North Korean defectors. Also, previous studies have reported that all dimensions of health literacy influenced the health-related quality of life (HRQL) among patients with type 2 diabetes mellitus (T2DM) in Iran,[19] and low health literacy affected health behaviors, especially physical activities and sleep behavior, among adults with prediabetes in the US.[30] However, this study found that the health behaviors of Thai Buddhist monks were affected by the dimensions of health literacy as outlined below.

The findings of this study reveal an intriguing relationship between access to health information and services and self-care behaviors among Buddhist monks. Contrary to expectations, monks with less access exhibited fewer poor self-care behaviors. This could be attributed to the structured and disciplined nature of their monastic lifestyle, which inherently promotes certain health behaviors regardless of access to external health information. Moreover, the routine practices and adherence to Buddhist precepts likely play a significant role in maintaining their health. Another possible explanation is that monks with better access to health information and services may not fully leverage this knowledge in their daily lives, possibly due to a reliance on traditional practices or a lack of integration of modern health practices into their routines. These insights underscore the need for tailored health education programs that consider the unique lifestyle and cultural context of Buddhist monks to effectively improve their health literacy and self-care practices.

The study's findings reveal a critical gap in health literacy of self-management among Buddhist monks, particularly those with lower levels of health literacy. Monks with inadequate self-management literacy showed higher incidences of poor self-care behaviors, underscoring the importance of improving health literacy to foster better health outcomes. A significant factor contributing to this issue could be the age of the participants, as many were elderly and might not be familiar with modern health management practices. This unfamiliarity may hinder their ability to integrate contemporary self-care techniques into their daily routines, despite the disciplined nature of monastic life. Addressing this gap requires tailored health education programs that consider the unique lifestyle and

cultural context of the monks, focusing on bridging the gap between traditional practices and modern health management strategies. Enhancing self-management literacy can empower monks to adopt more effective health behaviors, ultimately improving their overall well-being.

With regard to making correct health decisions, monks with a not-good level of making correct health decisions had a not-good health behavior level of 1.95 times that of Buddhist monks with a good level of making correct health decisions. A good level of making correct health decisions was consistent with the report of Kanitchat Wuttisaksakul[32], which explored factors affecting the health behavior of Buddhist monks in Fang District, Chiang Mai Province, Thailand. It was found that factors such as age, underlying disease, and methods of treatment when ill affected the health behavior of Buddhist monks at a statistically significant level of 0.05.

CONCLUSION

In conclusion, improving health literacy among Thai Buddhist monks, especially those under 35 years of age, is crucial for effective T2DM prevention. Targeted health education programs can significantly enhance their self-management skills, enable them to make informed health decisions, and adopt better self-care and consumption behaviors. Implementing these strategies will contribute to better overall health outcomes and the prevention of T2DM within this unique population.

ETHICAL APPROVAL

This research was approved regarding human research ethics by the Human Research Ethics Committee, Mahasarakham University, with accreditation number 273-216/2565. All Buddhist monks in the sample were informed of the purpose of this study and signed a voluntary informed consent form to participate in the study, and could decline participation at any time. The data collected will be kept confidential, respondents will not be identified, and results will be presented only as an overview. All methods were carried out under relevant guidelines and regulations.

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