



Food Literacy among Muslim Older Adults in Narathiwat Province, Thailand

Rohayoo Yuso¹, Phitaya Charupoonphol^{1,2}, Kamonmal Viratsretsin^{1,2}

¹ Graduate School, Western University, ² Ph.D., Graduate School, Western University, Thailand

*Correspondence: Phitaya Charupoonphol, Graduate School, Western University, Email: phphitaya@gmail.com

Received: 9 March 2026; Revised: 31 August 2026; Accepted: 31 August 2026

Abstract

Background: Food literacy is an important component of healthy ageing. Among Muslim older adults, food-related practices are also influenced by Islamic dietary principles. However, limited information is available on food literacy among Muslim older adults in Thailand. **Objective:** This study aimed to describe the characteristics and level of food literacy among Muslim older adults in Narathiwat Province, Thailand. **Methods:** A descriptive cross-sectional study was conducted among 383 Muslim older adults aged 60 years and over who were members of elderly clubs in Narathiwat Province. Data were collected using a structured questionnaire covering sociodemographic characteristics and food literacy indicators. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the data. **Results:** The overall level of food literacy was low (mean = 2.13 ± 0.76). Participants demonstrated high levels of food literacy in refusing unsafe food (3.17 ± 0.68), selecting food according to Islamic dietary principles (halal) (3.15 ± 0.66), choosing halal-certified food vendors (3.02 ± 0.72), and teaching children or family members to consume healthy food (3.02 ± 0.74). In contrast, media and food information literacy had the lowest overall score (1.46 ± 0.68). The lowest individual indicators were searching for food information using technology (1.28 ± 0.54), comparing information from multiple sources before making food decisions (1.29 ± 0.57), and consulting health professionals before changing their diet (1.38 ± 0.67). **Conclusions:** The results suggest that food literacy promotion should build on existing halal and cultural food practices while strengthening practical nutrition skills and the critical evaluation of food information. Culturally appropriate, community-based, and multichannel approaches involving families, health professionals, and community stakeholders may help support healthy food choices and healthy ageing among Muslim older adults.

Keywords: Food literacy, Muslim older adults, Halal food, Healthy ageing, Nutrition literacy, Narathiwat, Thailand

What was Known

- Food literacy involves multiple skills, including accessing, evaluating, communicating, and applying food and nutrition information.
- Islamic dietary principles influence food practices among Muslim populations.
- Older adults may experience challenges in accessing and evaluating health information, particularly through digital technologies.

What's New and Next

- Overall food literacy was low among Muslim older adults in Narathiwat Province.
- Muslim older adults demonstrated strengths in halal food practices and food safety but had low levels of media and food information literacy.
- The findings highlight a gap between culturally embedded food practices and broader food information and decision-making skills.
- Future studies should explore contextual factors and evaluate culturally tailored interventions to improve food literacy among Muslim older adults.

Introduction

Thailand has experienced rapid population ageing and entered a complete aged society in 2024. According to population registration data as of May 31, 2025, approximately 13.83 million people in Thailand were aged 60 years or older, accounting for 21.31% of the total population ⁽¹⁾. This demographic transition presents important public health challenges, particularly the increasing burden of chronic diseases and the need to promote healthy ageing among older adults.

Noncommunicable diseases (NCDs), including cancer, stroke, and ischemic heart disease, are among the leading causes of death in Thailand ⁽²⁾. Dietary behavior is an important modifiable factor in the prevention and management of NCDs. However, making healthy food choices requires more than simply having access to food. Individuals need to be able to access, understand, evaluate, and apply food-related information in their everyday lives. Inadequate food literacy may limit individuals' ability to make appropriate food choices and adopt healthy dietary practices. Food literacy encompasses the knowledge, skills, and competencies needed to make appropriate food choices,

prepare food, and maintain healthy dietary practices. Previous research in Thailand has highlighted the importance of strengthening food literacy to promote healthy dietary behaviors and prevent noncommunicable diseases ⁽³⁾.

The importance of food literacy may be particularly evident in culturally and religiously diverse communities. Narathiwat Province, located in Thailand's southern border region, has a predominantly Muslim population. Among Muslim communities, food practices are influenced not only by nutritional considerations but also by Islamic dietary principles and cultural traditions. These sociocultural factors underscore the importance of considering food literacy within the specific cultural and religious context of the population ⁽⁴⁾.

An important principle of Islamic dietary practice is the concept of Halalan Toyyiban, which refers to food that is permissible (halal) as well as wholesome, good, and beneficial (toyyib). Consequently, food choices among Muslim older adults may involve considerations of both religious requirements and nutritional quality. Understanding food literacy in this population therefore requires considering how older adults obtain, understand, evaluate, and apply food-related information within their religious and cultural context.

Muslim older adults in southern Thailand may face challenges in accessing and using health information because of factors such as limited educational opportunities, language and communication barriers, and the availability of health information that is culturally and religiously appropriate ⁽⁵⁾. However, limited information is available on food literacy among this population. Understanding their sociodemographic characteristics and level of food literacy is an important first step in identifying their current needs and informing the development of culturally appropriate health promotion strategies. Therefore, this study aimed to describe the characteristics of Muslim older adults and their level of food literacy in Narathiwat Province, Thailand. The findings provide a better understanding of food literacy among Muslim older adults within their cultural and religious context in southern Thailand.

Materials and Methods

Study design

This study employed a descriptive quantitative design to describe the characteristics and level of food literacy among Muslim older adults in Narathiwat Province, Thailand.

Population and Sample

The study population consisted of older adults who were members of elderly clubs in Narathiwat Province. Narathiwat Province comprises 13 districts, with a total of 162 elderly clubs and 21,239 registered older adult members ⁽⁶⁾.

The sample size was calculated using Daniel's formula (2010) with a 95% confidence level. An additional 10% was added to account for potential non-response, resulting in a required sample size of 383 older adults.

A multistage random sampling method was used to select participants. First, six districts were randomly selected from the 13 districts in Narathiwat Province. Elderly clubs within the selected districts were then identified for sampling. Participants were subsequently selected using proportional random sampling based on the number of elderly members in each selected elderly club.

The inclusion criteria were older adults aged 60 years or older who were members of the selected elderly clubs, identified as Muslims, and able to communicate and provide information for the study. Participants who were unable to complete the study questionnaire were excluded.

Data were collected using a structured questionnaire that included questions about participants' sociodemographic characteristics and food literacy. The mean score for each food literacy domain was used to classify food literacy levels into three categories: high (3.01–4.00), moderate (2.51–3.00), and low (1.00–2.50). Data were analyzed using descriptive statistics to summarize participants' sociodemographic characteristics and food literacy levels.

Results

Sociodemographic Characteristics of Participants

Table 1 presents the sociodemographic characteristics of the 383 Muslim older adult participants in Narathiwat Province. The majority of participants were female (69.45%), while males accounted for 30.55%. Most participants were aged 60–69 years (75.72%), with a mean age of 67.05 ± 4.05 years.

More than half of the participants had no formal education (52.74%), followed by primary education (31.59%), while only 15.67% had education beyond the primary level. Most participants lived with family members, particularly children (61.35%) and spouses (54.83%).

Regarding occupation, the majority were still working (88.25%), mainly in agriculture (56.13%). Most participants received financial support from government allowances for older adults (71.54%).

Health status indicated that the majority had chronic diseases (92.95%), particularly hypertension (71.54%), diabetes mellitus (55.87%), and hyperlipidemia (54.83%). In addition, most participants had never participated in public health volunteer training (81.98%), and more than half did not use information technology (55.87%).

Table 1 Sociodemographic Characteristics of Muslim Older Adults (n = 383)

Characteristics	Number (n)	Percentage (%)
Sex		
Male	117	30.55
Female	266	69.45
Age (n = 368)		
60-69 years	290	75.72
70-75 years	78	24.28
$\bar{X} \pm SD = 67.05 \pm 4.05$, Min–Max = 60 – 75 Years		
Marital status		
Married / Living with spouse	241	62.92
Widowed / Divorced / Separated	142	37.07
Highest education level		
No formal education	202	52.74
Primary education	121	31.59
Higher than primary education	60	15.67
Household members (multiple responses allowed)		
Spouse	210	54.83
Children	235	61.35
Relatives	78	20.36
Living alone	42	10.96
Number of household members		
1 person	5	1.30
2–3 persons	86	22.45
4–5 persons	180	46.99
≥6 persons	112	29.24

Table 2 Sociodemographic Characteristics of Muslim Older Adults (n = 383) (Cont.)

Characteristics	Number (n)	Percentage (%)
Occupation		
Currently employed	338	88.25
- Agricultural work	215	56.13
- Wage labor	123	32.11
Unemployed	45	11.75
Sources of income (<i>multiple responses allowed</i>)		
Government allowance for older adults	274	71.54
Income from spouse	258	67.36
Personal savings	175	45.69
Financial support from children	154	40.20
Financial support from relatives	141	36.81
Pension	15	3.91
Income sufficiency		
Adequate	274	71.54
Inadequate	14	3.65
Adequate with savings	95	24.80
Chronic diseases (<i>multiple responses allowed</i>)		
None	27	7.04
Have chronic diseases	356	92.95
Hypertension	274	71.54
Diabetes mellitus	214	55.87
Hyperlipidemia	210	54.83
Knee osteoarthritis	170	44.39
Others (gastritis, cardiovascular disease, kidney disease)	39	10.18
Participation in public health volunteer training		
Never attended	314	81.98
Previously Attended	69	18.01

Table 3 Sociodemographic Characteristics of Muslim Older Adults (n = 383) (Cont.)

Characteristics	Number (n)	Percentage (%)
Use of information technology		
Do not use	214	55.87
Basic use	135	35.24
Proficient use	34	8.87
Participation in community health activities		
No participation	274	71.54
Participation	109	28.45

Food Literacy Level among Muslim Older Adults

As shown in Table 2, the overall mean score for food literacy was 2.13 ± 0.76 , which was classified as low. Among the different domains, the participants demonstrated relatively higher levels of food literacy in food-related self-management and communication activities, particularly those related to halal food selection and food safety practices.

High Level

The highest mean score was observed in refusing unsafe food (Mean = 3.17 ± 0.68). Participants also showed strong adherence to Islamic dietary principles, as reflected in their selection of halal food (Mean = 3.15 ± 0.66). In addition, many participants preferred to purchase food from halal-certified vendors (Mean = 3.02 ± 0.72) and encouraged children or family members to consume healthy foods (Mean = 3.02 ± 0.74).

These findings highlight the strong influence of religious beliefs and family culture in shaping dietary behavior among Muslim older adults.

Moderate Level

Moderate levels of food literacy were observed in several behaviors related to communication and social interaction. Participants reported receiving nutrition information from public health personnel (Mean = 2.98 ± 0.72) and discussing healthy food with family members (Mean = 2.62 ± 0.74). They also recommended healthy eating practices to relatives or friends (Mean = 2.64 ± 0.76).

Participation in community nutrition activities (Mean = 2.56 ± 0.69) and selecting food based on nutritional value (Mean = 2.52 ± 0.73) were also found at moderate levels.

Table 2 Level of Food Literacy among Muslim Older Adults (n = 383)

Food Literacy Indicators	Mean $\pm$ SD
High Level	
Refusing unsafe food	3.17 $\pm$ 0.68
Selecting food according to Islamic dietary principles (halal)	3.15 $\pm$ 0.66
Choosing halal-certified food vendors	3.02 $\pm$ 0.72
Teaching children or family members to consume healthy food	3.02 $\pm$ 0.74
Moderate Level	
Receiving food and nutrition information from public health officers	2.98 $\pm$ 0.72
Avoiding foods that may worsen chronic diseases	2.70 $\pm$ 0.86
Recommending healthy eating practices to relatives or friends	2.64 $\pm$ 0.76
Discussing healthy food with family members	2.62 $\pm$ 0.74
Participating in community nutrition activities	2.56 $\pm$ 0.69
Communicating about food and health with health professionals	2.53 $\pm$ 0.91
Selecting food based on nutritional value	2.52 $\pm$ 0.73
Asking health professionals for advice on nutrition	2.34 $\pm$ 0.79
Using herbal or alternative food when necessary	2.36 $\pm$ 0.86
Food self-management (overall)	2.37 $\pm$ 0.79
Food communication (overall)	2.54 $\pm$ 0.79
Low Level	
Searching for food information using technology	1.28 $\pm$ 0.54
Verifying the credibility of online health information	1.99 $\pm$ 0.99
Comparing information from multiple sources before making food decisions	1.29 $\pm$ 0.57
Consulting health professionals before changing their diet	1.38 $\pm$ 0.67
Adjusting eating behavior after receiving health information	1.68 $\pm$ 0.78
Reading nutrition labels before purchasing food	2.02 $\pm$ 0.91
Media and food information literacy (overall)	1.46 $\pm$ 0.68
Access to food information (overall)	1.99 $\pm$ 0.75
Food decision-making (overall)	2.28 $\pm$ 0.80
Overall food literacy	2.13 $\pm$ 0.76

Low Level

Despite these strengths, several aspects of food literacy were found to be at low levels, particularly those related to media literacy and information access. Participants had limited ability to search for food information using technology (Mean = 1.28 ± 0.54) and verify the credibility of health information obtained from online sources (Mean = 1.99 ± 0.99).

Similarly, decision-making behaviors based on health information were relatively low, including consulting health professionals before changing dietary habits (Mean = 1.38 ± 0.67) and reading nutrition labels before purchasing food (Mean = 2.02 ± 0.91).

Discussion

This study described the characteristics and food literacy of Muslim older adults in Narathiwat Province, Thailand. Overall food literacy was low (mean = 2.13 ± 0.76), with considerable variation across domains. Participants demonstrated relatively high levels of food literacy related to food safety and Islamic dietary practices, but lower levels in accessing, evaluating, and applying food and nutrition information, particularly through technology. These findings support the multidimensional nature of food literacy, which includes knowledge, practical skills, decision-making, communication, and the ability to critically evaluate food-related information ⁽⁷⁻⁹⁾.

The highest scores were observed for refusing unsafe food (mean = 3.17 ± 0.68), selecting food according to Islamic dietary principles (halal) (mean = 3.15 ± 0.66), and choosing halal-certified food vendors (mean = 3.02 ± 0.72). These strengths may reflect the strong influence of religious and cultural practices on everyday food choices among Muslim older adults. The Islamic concepts of halal and toyyib emphasize that food should be permissible, wholesome, safe, and beneficial ⁽¹⁰⁾. Thus, familiar religious practices may be more consistently applied than food literacy skills that require individuals to seek and critically evaluate new information. However, halal food selection does not necessarily indicate a healthy diet. Healthy diets should also be adequate, balanced, moderate, diverse, and safe, while taking cultural and religious contexts into account ⁽¹¹⁾. Therefore, food literacy promotion should integrate nutritional quality with established halal practices.

Participants also showed relatively high food literacy in teaching children or family members to consume healthy food (mean = 3.02 ± 0.74), suggesting that family may be an important channel for sharing and reinforcing food-related knowledge and practices. In contrast, several skills related to food communication and self-management were only moderate, including receiving nutrition information from public health officers (mean = 2.98 ± 0.72), avoiding foods that may worsen chronic

diseases (mean = 2.70 ± 0.86), and discussing healthy food with family members (mean = 2.62 ± 0.74). These findings indicate opportunities to strengthen the translation of nutrition knowledge into everyday food practices.

The greatest limitations were observed in media and food information literacy (mean = 1.46 ± 0.68). Participants reported particularly low levels of searching for food information using technology (mean = 1.28 ± 0.54), comparing information from multiple sources (mean = 1.29 ± 0.57), and consulting health professionals before changing their diet (mean = 1.38 ± 0.67). In addition, the mean score for verifying the credibility of online health information was 1.99 ± 0.99 . Notably, 55.87% of participants reported not using information technology, which provides important context for these findings. However, because this study was descriptive, limited technology use should not be interpreted as a cause of low food literacy. Rather, these findings highlight the need for accessible nutrition information and communication approaches that consider older adults' digital abilities and preferences^(12–14).

Another important limitation was the low level of food literacy in reading nutrition labels before purchasing food (mean = 2.02 ± 0.91) and adjusting eating behavior after receiving health information (mean = 1.68 ± 0.78). These findings suggest that access to information alone may not be sufficient to change dietary practices. This is particularly relevant because 92.95% of participants had at least one chronic disease. Although no association between chronic disease status and food literacy was examined, strengthening practical food skills, such as reading nutrition labels, food selection, and culturally appropriate meal planning, may help older adults apply nutrition information in daily life^(7–8).

These findings have important implications for health promotion among Muslim older adults in southern Thailand. Interventions could build on existing strengths in halal food practices and food safety while incorporating evidence-based nutrition recommendations. The principles of Halalan Toyyiban may provide a culturally relevant framework for promoting both religiously appropriate and nutritionally healthy food choices^(10–11). Health professionals, families, community organizations, and religious or community leaders could support these efforts through face-to-face education, community activities, family involvement, simple printed materials, and appropriately designed digital resources. Technology may complement conventional approaches but should be adapted to the abilities and preferences of older adults⁽¹⁴⁾.

Overall, food literacy among Muslim older adults was not uniform across domains. Participants demonstrated strengths in food safety, halal food practices, and family-related food communication, but they had substantial limitations in accessing, evaluating, and applying contemporary food and nutrition information. Future interventions should therefore build on existing cultural and religious strengths while strengthening critical information skills and practical food-related decision-making.

Limitations

This study has several limitations. First, the study used a quantitative descriptive design and focused on describing the sociodemographic characteristics and levels of food literacy among Muslim older adults. Therefore, the findings should be interpreted descriptively and cannot be used to determine relationships, associations, or causal effects. Second, participants were recruited from elderly clubs in six selected districts of Narathiwat Province, which may limit the generalizability of the findings to Muslim older adults throughout the province. Third, food literacy was assessed using self-reported responses, which may be subject to recall and social desirability bias. Finally, the study did not include a qualitative component; therefore, the reasons and contextual factors underlying participants' food literacy practices could not be explored in depth.

Conclusion

In conclusion, Muslim older adults in Narathiwat Province demonstrated a low overall level of food literacy, with notable strengths in refusing unsafe food and selecting food according to Islamic dietary principles, but substantial limitations in accessing, evaluating, and applying food and nutrition information. These findings highlight the importance of developing culturally and religiously appropriate food literacy promotion strategies that build on existing halal food practices while strengthening critical information skills and practical food decision-making. Such approaches may contribute to healthier dietary practices and support healthy ageing among Muslim older adults in southern Thailand.

Ethical Approval Statement

Ethical approval for this study was obtained from the Human Research Ethics Committee of Western University, Thailand, prior to data collection. All procedures involving human participants

were conducted in accordance with the ethical standards for research involving human subjects. Written informed consent was obtained from all participants before participation in the study.

Author Contributions

RY, PC, and KV conceptualized and designed the study. RY conducted data collection and field coordination. PC contributed to research supervision, conceptual framework development, and manuscript preparation. KV contributed to methodological design, data analysis, and manuscript review. All authors read and approved the final manuscript prior to submission.

Acknowledgements

The authors would like to express their sincere gratitude to the Narathiwat Provincial Public Health Office, elderly club leaders, community leaders, and Muslim elderly participants in Narathiwat Province for their cooperation and valuable contributions to this research.

Source of Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflicts of Interest

The authors declare that they have no conflicts of interest. The authors also confirm that there are no financial, professional, or personal relationships that could have influenced the work reported in this study.

References

1. National Statistical Office, Ministry of Digital Economy and Society. The 2024 survey of the older persons in Thailand [Internet]. Bangkok: National Statistical Office; 2024 [cited 2026 Jun 30].
2. World Health Organization. Noncommunicable diseases [Internet]. Geneva: World Health Organization; 2025 [cited 2026 Jun 30]. Available from: <https://www.who.int/thailand/our-work/NCDs>
3. Youngiam W. Food and nutrition literacy: definitions and applications. J Public Health Health Naresuan University. 2021;3(3):1-15.

4. Ukraisa S, Phlainoi S, Phlainoi N, Kantamaturapoj K. Toward a new paradigm on food literacy and learning development in the Thai context. *Kasetsart J Soc Sci.* 2020;41:513-520. <https://doi.org/10.34044/j.kjss.2020.41.3.09>
5. Binbai S, Chiangkhong A. Health information seeking behaviors and development guidelines for Muslim elderly people in Pattani Province. *J Inf Learn.* 2024;35(3):25-37.
6. Narathiwat Provincial Public Health Office. Elderly population and elderly clubs in Narathiwat Province, 2024
7. Vidgen HA, Gallegos D. Defining food literacy and its components. *Appetite.* 2014;76:50-9. DOI:10.1016/j.appet.2014.01.010
8. Truman E, Lane D, Elliott C. Defining food literacy: a scoping review. *Appetite.* 2017;116:365-71. DOI:10.1016/j.appet.2017.05.007
9. Krause C, Sommerhalder K, Beer-Borst S, Abel T. Just a subtle difference? Findings from a systematic review on definitions of nutrition literacy and food literacy. *Health Promot Int.* 2018;33(3):378-89. DOI:10.1093/heapro/daw084
10. Alzeer J, Rieder U, Hauer R. Rational and practical aspects of halal and tayyib in the context of food safety. *Trends Food Sci Technol.* 2018;71:264-7. DOI:10.1016/j.tifs.2017.10.020
11. World Health Organization. Healthy diet [Internet]. Geneva: World Health Organization; 2026 Jan 26 [cited 2026 June 30]. Available from: <https://www.who.int/en/news-room/fact-sheets/detail/healthy-diet>
12. Oh SS, Kim KA, Kim M, Oh J, Chu SH, Choi J. Measurement of digital literacy among older adults: systematic review. *J Med Internet Res.* 2021;23(2):e26145. DOI:10.2196/26145
13. Xie L, Zhang S, Xin M, Zhu M, Lu W, Mo PKH. Electronic health literacy and health-related outcomes among older adults: a systematic review. *Prev Med.* 2022;157:106997. DOI:10.1016/j.ypmed.2022.106997
14. Shi Z, Du X, Li J, Hou R, Sun J, Marohabutr T. Factors influencing digital health literacy among older adults: a scoping review. *Front Public Health.* 2024;12:1447747. DOI:10.3389/fpubh.2024.1447747