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The Connection Between Dietary Awareness and Eating Behavior in Thai-Peranakan Seniors: A Study of Members of the Thai Peranakan Association

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Abstract

Objective: This study explored the relationship between dietary awareness and eating behavior among Thai-Peranakan senior citizens.

Methods: Using a cross-sectional design, we sampled 94 individuals aged 60 and above (mean age=66.56), all of whom were members of the Thai Peranakan Association. This group included both males and females who met the inclusion criteria of having normal communication and memory abilities. Data were gathered through structured interviews and analyzed with Spearman's Correlation.

Results: Personal factors such as living status and family income significantly influenced the eating behavior of Thai-Peranakan senior citizens at the 0.01 level. The Spearman's correlation showed significant relationships among accurate self-assessment and eating behavior, with correlation coefficients (r) of 0.29 at the 0.05 level.

Conclusions: Personal factors and dietary awareness, specifically accurate self-assessment, are pivotal in shaping the eating behavior of Thai-Peranakan senior citizens. Enhancing these aspects can lead to better eating behavior and overall well-being among this demographic.

Keywords: awareness, dietary, eating bahaviors, senior

Introduction

The global population has recently surpassed 7.8 billions, with approximately 962 million individuals aged 60 and over, representing 14% of the total population. In the Association of Southeast Asian Nation (ASEAN) region, several countries are recognized as aging societies, where the senior citizens population exceeds 10%. Notably, Singapore and Thailand have senior citizens populations exceeding 20%. In Thailand, approximately 65.06 million people reside, with those aged 60 and over accounting for 20.08% of this demographic.[1]

Dietary habits among older adults are influenced by various factors, including underlying health conditions, solitary eating habits, and limited access to nutrient-rich food options.[2-4] These dietary patterns significantly contribute to the increased risk of malnutrition, particularly among low-income individuals and those with chronic illnesses. Furthermore, reduced physical activity and limited social interaction can lead to depression, diminishing interest in food and exacerbating nutritional deficiencies.[5] A critical challenge in addressing these issues is the lack of nutritional knowledge and awareness. Research, including studies by Beelen *et al.,*[6] highlights the significant relationship between nutrition knowledge and dietary intake. A descriptive cross-sectional study by Rungsiyanont S and Sakoolnamarka SS[7] focused on older adults in Samut Prakan and Nakhon Nayok.[8] Their research found that personal factors like income, education level, and living with family positively influenced older adults' eating behavior.

This issue is particularly relevant for the Peranakan community, also known as Baba-Nyonya, an ethnic group that blends Chinese and Malay cultures, primarily found in Malaysia, Singapore, Indonesia, and Thailand. Their distinctive traditional attire and unique language, Baba Malay, reflect their cultural identity. The Peranakan's rich cultural heritage is also showcased in their cuisine, which combines ingredients and flavors from both Chinese and Malay traditions. Signature dishes like laksa and nasi lemak feature complex cooking techniques such as braising, steaming, and stir-frying, often with a wide variety of spices.[9-12]

While these dishes are flavorful, they often contain unhealthy nutrients–saturated fats, sodium, and sugar–that can negatively impact health when consumed in excess. For example, laksa, nasi lemak, and ayam buah keluak are high in fats, increasing the risk of heart disease, while sambal, babi pongteh, and asam pedas are rich in sodium, contributing to high blood pressure. Desserts like kueh lapis and pengat pisang are high in sugar, raising the risk of diabetes and weight gain. Deep-fried foods, such as keropok and spring rolls, add unhealthy fats and excess calories. Despite these health risks, these dishes are favored for their rich flavors, quick preparation, cultural significance, and affordability. Healthier alternatives, like grilled fish, sayur lodeh, and gado-gado, are often perceived as less satisfying and require more preparation time.[13,14]

In Thailand, the Peranakan community is concentrated in coastal provinces like Phuket, Phang Nga, and Trang, where their mixed Thai-Chinese heritage, strongly influenced by Hokkien traditions, is most prominent. Focusing on Thai-Peranakan seniors is crucial to understanding how cultural and socioeconomic factors influence their dietary habits. As they balance preserving traditional food practices with adapting to modern lifestyles, these seniors offer a valuable case study in the intersection of cultural preservation and health challenges. Their dietary choices highlight the complexities of maintaining traditional eating habits while addressing contemporary health concerns.

This study was designed to foster inclusivity in health research, ensuring that the experiences and needs of diverse communities were considered in the development of effective health strategies. Addressing the unique challenges faced by Peranakan seniors enabled a more holistic approach to nutrition education and intervention. Additionally, initiatives to preserve and promote Peranakan traditions, such as cultural and historical learning centers, played a vital role in maintaining this heritage as an integral part of Thailand's identity.[15]

Proper nutrition is crucial for aging populations, enhancing quality of life and preventing age-related health issues. Improving dietary awareness can lead to healthier eating behaviors, reducing the risk of malnutrition and related health problems. This research provided valuable insights for policymakers and health programs aimed at supporting Peranakan seniors while preserving their cultural heritage.

The "Nine Dietary Guidelines," established by the Nutrition Division of the Department of Health and Mahi-

dol University in 1999, provided a framework for promoting healthy eating choices.[16] Additionally, Goleman's Mixed Model of Emotional Intelligence helped enhance self-awareness and decision-making in dietary behaviors, empowering Peranakan seniors to make informed choices while appreciating their cultural significance.[17] This study investigated the correlation between dietary awareness and eating behavior among Thai-Peranakan seniors, filling gaps in nutritional knowledge and guiding health interventions.

Given the unique culinary heritage of the Peranakan community, it was essential to explore how traditional food practices influenced dietary choices. This understanding helped identify areas for targeted health interventions

Objective

This study aimed to explore how Thai-Peranakan senior citizens' nutrition awareness influenced their eating behavior

Materials and Methods

Study design

This study was a cross-sectional study was approved by the Ethics Committee for Research on Humans and Animals, Srinakharinwirot University, with the approval number SWUEC671089 prior to data collection.

Sample size calculation

The study population consisted of 168 adults aged 60 years or older, all of whom were members of the Thai Peranakan Association. This group included both males and females who met the inclusion criteria, which were as follows:

Inclusion criteria:

1. Participants did not have any chronic conditions that affect their ability to eat, such as diabetes, hypertension, liver disease, kidney disease, gastrointestinal disorders, or arthritis.

2. Participants did not have any physical or mental impairments that prevent them from caring for themselves, including those who have lost both arms or legs, those with depression or psychiatric disorders, or those with visual impairments.

3. Participants were willing to take part in the study.

Exclusion criteria:

1. Individuals who were unable to choose or prepare their own food, such as those residing in nursing homes.

2. Individuals whose relatives or caregivers select and prepared their meals without the person having a say in the menu.

3. Individuals who had dietary restrictions or limited food intake due to health conditions or physician instructions.

In the end, 94 individuals were contacted and agreed to participate in the study.

Data collection procedure

Before collecting data, training was provided to interviewers on methods and the use of the interview form. A preliminary test was conducted with a similar group to the sample to refine the questionnaire. The data was collected through direct interviews with the sample, organized via the Thai Peranakan Association. The researcher, along with village Public Health Volunteers (PHVs), conducted 20-minute interviews. The questionnaire was crafted using culturally appropriate language and terminology to ensure participants fully understood and accurately responded. The questions focused on foods and eating behavior specific to the Thai Peranakan culture.

Instruments

Data collection: Data was collected using an interview questionnaire designed in Thai, covering three main aspects:

Personal factors: Closed-ended questions gathered basic information such as gender, highest education level, family income, and living arrangements with family (5 items).

Nutrition awareness: This section was based on Goleman's Mixed Model of Emotional Intelligence Theory[16], with adaptations from research by Sakoolnamarka and Rungsiyanont.[7,8] Questions focused on three key areas: Emotional awareness (10 items), Accurate self-assessment (9 items), and Self-confidence (7 items). Each question was rated on a 5-point scale: Very much = 5, Much = 4, Moderate = 3, Little = 2, Very little = 1, Not at all = 0. Scores for negatively worded questions were reversed to maintain consistency. Therefore, a higher score indicates the presence of healthy nutrition awareness behavior, while a lower score indicates unhealthy

nutrition awareness

Eating behavior: The eating behavior questionnaire aligned with the "Nine Food-Based Dietary Guidelines" from the Department of Nutrition, Ministry of Public Health, and the Institute of Nutrition at Mahidol University.[16] This ensured a comprehensive assessment of the participants' dietary habits. The questions were crafted using culturally appropriate language and terminology to facilitate understanding, focusing on foods and dietary practices unique to the Thai-Peranakan culture, such as halal dietary laws and traditional foods, enhancing relevance and accuracy. The questionnaire consisted of 12 items: 6 items reflecting positive behaviors and 6 items reflecting negative behaviors, measuring the frequency of eating behavior among older adults over a specified period. Therefore, a higher score indicates the presence of healthy eating behavior, while a lower score indicates unhealthy eating behavior

The scoring interpretation for nutrition awareness and eating behavior consisted of five levels as follows:

Very low (0-1.0): Indicates a very poor understanding of nutrition.

Low (1.01-2.00): Participants in this range have limited awareness or suboptimal eating behavior

Moderate (2.01-3.00): Shows average awareness and behaviors.

High (3.01-4.00): Reflects good awareness and generally healthy eating practices.

Very high (4.01-5.0): Indicates excellent awareness and eating behavior.

Data analysis

The normal distribution of the mean scores for dietary awareness and eating behavior was assessed using Skewness and Kurtosis statistics. Dietary awareness scores for all three aspects showed Skewness and Kurtosis values between -1.00 and 1.00, indicating a non-normal distribution.

Statistical methods used:

Descriptive statistics:

Percentage was used to describe the proportion of the sample in each category of data.

Mean was used to calculate the average scores for each item, providing an overview of the data.

Inferential statistics:

Mann-Whitney U Test was used to test differences in mean scores between independent groups, such as gender, living with family, and eating behavior.

Kruskal-Wallis H Test was used to test differences in mean scores between groups with more than two categories, such as highest education level, total family income, and eating behavior.

Spearman's correlation was used to analyze the relationship between two variables, specifically the relationship between the three components of dietary awareness and eating behavior.

Data quality control

To ensure the internal consistency reliability of the questionnaire, assessments were conducted. Three experts verified content validity and appropriateness of wording, ensuring an Index of Item-Objective Congruence (IOC) of at least 0.50 for all items. Reliability was further evaluated by administering the questionnaire to a similar population aged 50-59 years, involving 30 individuals. The Cronbach's alpha coefficient for each section exceeded 0.70, indicating good reliability.

Additionally, interviewers underwent a calibration process to ensure consistent administration of the questionnaire. This included standardized training sessions to familiarize them with the content and structure, enabling effective and uniform interviews.

Results

From the sample of 94 senior citizens aged 60 years and above, 34 were male (36.17%) and 60 were female (63.83%), with an average age of 66.56 years. And most age 60-69 (87.23%) with the majority (87.23%) falling within the 60-69 age range.

The majority had a highest education level of primary school or below (56 individuals, 59.57%), and most had a monthly income of 25,001 THB or above (44 individuals, 46.81%). Additionally, 83 individuals (88.30%) were living with family members, as shown in Table 1

1.1 Emotional awareness

The survey results showed that the overall emotional awareness score was at a moderate level, averaging 2.91 points. This indicates that respondents are somewhat aware of the emotional factors influencing their food choices, but may not consistently apply this awareness in their daily eating behavior. Respondents scored very high in feeling guilty about eating junk food (4.40 points) and in enjoying eating with others (4.02 points). Conversely,

Table 1: Personal factors of the population.

Demographic data	Amount	Percentage (%)
Gender		
Male	34	36.17
Female	60	63.83
Education		
Primary school and under	56	59.57
Secondary school	17	18.10
High school and above	21	22.33
Family income		
Under 10,000 THB	9	9.57
10,001 - 25,000 THB	41	43.62
25,001 - or above	44	46.81
Living status		
Live alone	11	11.70
Live with others	83	88.30
Total	**94**	**100**

Table 2: Emotional awareness in population.

Items	Mean	SD	Interpret
You are not guilty for not finishing a meal	2.84	1.15	Moderate
You feel good when finishing drinks after a meal	2.84	1.01	Moderate
It's alright not to eat the meal on time	2.58	1.23	Moderate
You are guilty after consuming unhealthy food	3.48	0.97	High
You are feeling guilty for having a leftover meal	3.04	1.05	High
You feel good when get to eat as much as you like	1.32	0.55	Low
You are contented when having soft drinks as when you feeling thirsty/hungry	2.70	1.31	Moderate
You love to eat with others	4.02	1.15	Very high
It's alright to eat unhealthy food which you like	1.88	1.56	Low
You feel guilty for eating junk foods	4.40	0.99	Very high
Total	**2.91**	**0.90**	**Moderate**

Table 3: Accurate self-assessment in population.

Items	Mean	SD	Interpret
You will not stop eating until you feel full even though you have already had a lot.	1.98	1.02	Low
You do realize that you are not able to chew on hard food.	4.18	0.63	Very high
You eat tempting desserts even when you recognize that it is not good for your health.	2.96	1.26	Moderate
You are willing to eat dislike vegetables	3.66	0.92	High
You are able to recognize when you are full	3.48	0.71	High
You do recognize your ability to consume spicy food	3.46	0.73	High
You are able to indicate the healthy food portions in your daily consumption	3.30	0.76	High
You are able to indicate the unhealthy food portions in your daily consumption	3.36	0.80	High
You are able to estimate the energy from each meal	2.92	0.97	Moderate
Total	**3.25**	**0.73**	**High**

the lowest scores were recorded for feeling alright about eating unhealthy food they liked (1.88 points) and feeling good about eating as much as they wanted (1.32 points), as detailed in Table 2.

1.2 Accurate self-assessment

The results showed that the overall accurate self-assessment score was at a high level, averaging 3.25 points, suggesting that senior citizens generally had a good understanding of their own abilities and limitations related to self assessment. They scored highest in recognizing their inability to chew hard food (4.18 points). Most of the results were at a high level, with the lowest score being in their tendency to continue eating until they felt full, even if they had already consumed a lot (1.98 points), as detailed in Table 3.

1.3 Self-confidence

Overall self-confidence scores were at a high level, averaging 3.46 points. the respondents generally view themselves as capable and competent in managing challenges. They showed the highest confidence in ensuring their meals are healthy (3.82 points) and in eating enough fruits and vegetables daily (3.76 points). The lowest score, though still high, was in their ability to guide others on the risks and benefits of meals (3.06 points), as detailed in Table 4.

The assessment of eating behavior showed that the overall eating behavior score was at a high level, averaging 3.44 points, indicating that respondents generally exhibit healthy eating behaviors. Senior citizens scored very high in eating properly washed and cooked food (4.60 points). They also scored very high in drinking water and beverages from trustworthy sources (4.28 points), avoiding alcoholic drinks (4.22 points), and eating more than three meals a day (4.20 points). The lowest score was observed in the consumption of rich, cheesy, mellow, or savory foods, as detailed in Table 5.

The personal factors data were analyzed alongside the average scores for dietary awareness in three areas: emotional awareness, accurate self-assessment, and self-confidence, as well as the eating behavior of senior citizens. The analysis utilized the Mann-Whitney U Test and Kruskal-Wallis H Test. The findings revealed that personal factors such as family income and living status significantly influenced eating behavior (p=0.01) and accurate self-assessment (p<0.05). Additionally, family income significantly impacted both accurate self-assessment (p=0.01) and emotional awareness (p=0.01). Senior citizens with higher incomes and stronger social support systems such as living with other family members were likely to exhibit better eating behavior.

The data were analyzed to determine the relationships between the variables using Spearman's correlation. This involved examining the average scores for personal awareness of nutrition in three areas–emotional awareness, accurate self-assessment, and self-confidence and the eating behavior of senior citizens. The analysis revealed that accurate self-assessment was the only aspect of dietary awareness significantly correlated with eating behavior at the 0.05 level. The correlation coefficients (r) ranged from 0.29, indicating a low positive correlation, as shown in Table 7. However, the mean difference test across different groups did not yield statistically significant results. Thus, accurate self-assessment of eating habits showed a weak but significant positive correlation with eating behavior.

Discussion

This study demonstrates that personal factors, such as living status and family income, significantly influence the eating behavior of Thai-Peranakan senior citizens across all aspects at the 0.01 level. Additionally, accurate self-assessment significantly impacts their eating behavior at the 0.05 level. It was found that Thai-Peranakan senior citizens who are more aware of their dietary needs tend to make healthier food choices, which positively influence their overall eating behavior, aligning with global research findings.

The report titled "The Influence of Income and Prices on Global Dietary Patterns" by the USDA's Economic Research Service investigates how income and prices influence dietary habits worldwide.[18] It highlights that worldwide changes in eating habits contribute to a rise in obesity and related noncommunicable diseases, particularly in low- and middle-income countries. Another study[19] examines how family income influences eating behavior, emphasizing that lower-income families often face challenges in maintaining healthy eating habits due to financial constraints.

Research by Sakoolnamarka SS and Rungsiyanont S[20], found that personal factors like family income and living status, were significant positive relation (p<0.01) to eating behavior. Similarly, a study published in BMC

Table 4: Self-confidence in population.

Items	Mean	SD	Interpret
You assure that you have ability to make healthy food choices for yourself	3.20	0.80	High
You assure that you have ability to make healthy food suggestions for your family	3.62	0.90	High
You assure that you eat with confident that your meals are healthy.	3.82	0.77	High
You assure that you eat enough fruits and vegetables on a daily basis	3.76	0.59	High
You assure that you have ability to guide others on risk and benefits of their meals	3.06	0.84	High
You assure that you have ability to control food portions in each meal	3.52	0.74	High
You mistrust of the food taste which was cooked by others	3.26	0.94	High
Total	**3.46**	**0.82**	**High**

Table 5: Eating behavior in population.

Items	Mean	SD	Interpret
Eat desserts; Thai traditional dessert, cake and pastries.	2.84	0.74	Moderate
Eat more than 3 meals a day.	4.20	0.76	Very high
Drink soda and soft drink.	3.38	1.05	High
Avoid alcohol beverages.	4.22	1.13	Very high
Eat vegetables and root vegetables.	3.12	1.15	High
Eat crunchy snacks; chips, potato chips, dried fruits.	3.22	1.38	High
Eat variety of foods that provide the five major nutrients.	3.42	0.91	High
Eat whole grains and whole grain products.	3.00	1.37	Moderate
Eat protein foods; egg(s), nuts, meat.	3.32	1.06	High
Eat rich cheesy, mellow or/and savory food.	1.72	1.31	Low
Drink water and drinks from trustworthy sources.	4.28	0.83	Very high
Eat properly washed and cooked food.	4.60	0.61	Very high
Total	**3.44**	**0.91**	**High**

Table 6: The relationship between personal factors, dietary awareness and eating behavior.

Personal factors	Statistic	1. Dietary Awareness			Eating behavior
		Emotional awareness	Accurate self-assessment	Self-confidence	
Gender	Mann-Whitney U Test	p=0.77	p=0.16	p=0.89	p=0.39
Education	Kruskal-Wallis H Test	p=0.65	p=0.30	p=0.24	p=0.69
Family income	Kruskal-Wallis H Test	p=0.31	***p*=0.04***	p=0.11	***p*=0.01***
Living status	Mann-Whitney U Test	***p*=0.01***	p=0.15	p=0.10	***p*=0.01***

Table 7: The relationship between dietary awareness and eating behavior, analyzed using Spearman's correlation to identify influencing factors within the population.

		Emotional awareness	Accurate self-assessment	Self-confidence	Eating behavior
Eating behavior	Correlation	0.11	0.29*	0.13	1
	Sig(2-tailed)	0.43	0.04	0.37	
	N	94	94	94	94
* Sig < 0.05					

Public Health[21] analyzed the association between lifestyle behaviors and life satisfaction among older adults in Thailand. This study found that living status, among other factors, significantly influenced eating behavior and overall life satisfaction.

In Europe, a study[22] explored how living status, specifically eating alone, influences eating behavior among older adults. It found that those who ate alone were less likely to eat three meals a day and had different food intake patterns compared to those who ate with others.

Accurate self-assessment is closely related to self-compassion, both of which are pivotal for mental well-being, addressing different aspects of self-perception and emotional response. A relevant study[23] explores how self-compassion impacts eating behavior, particularly under stress. The findings indicate that higher levels of self-compassion are associated with healthier dietary choices and reduced food cravings after stress.

Similarly, research by Sakoolnamarka SS and Rungsiyanont S[20,24], found that the three factors of nutritional awareness were significantly correlated with food consumption behaviors. Emotional awareness, including accurate self-assessment, showed a significant positive correlation (r=0.48 and 0.29, respectively, $p<0.01$).

These findings underscore the importance of considering cultural and socioeconomic factors in dietary interventions. Policymakers and healthcare providers should tailor programs to the specific needs of Thai-Peranakan senior citizens, incorporating cultural dietary practices and enhancing nutritional awareness through targeted self-assessment strategies. This holistic approach can improve the overall health and well-being of the elderly while preserving their rich cultural heritage.

To incorporate cultural and socioeconomic factors into dietary interventions for Thai-Peranakan senior citizens, it is essential to understand their unique traditions, food practices, and community dynamics. Interventions should respect and integrate culturally familiar ingredients, cooking methods, and communal dining habits, ensuring that programs are both practical and culturally acceptable. Engaging with the community through interviews and observations allows for a deeper understanding of their needs, while recognizing the role of family support in shaping eating behaviors. By tailoring programs to address both cultural preferences and socioeconomic challenges, such as income and food access, interventions can promote healthier eating behavior while preserving the cultural identity of the Thai-Peranakan community.

The relationship between demographic factors such as family income, living status, and dietary awareness aligns with findings from previous research. Studies have shown that individuals with higher socioeconomic status, including higher family income, tend to have better access to nutritional information and healthier food choices. Similarly, living status plays a crucial role in dietary habits. Seniors who live with family members often benefit from social support and encouragement to maintain healthy eating behaviors, whereas those living alone may experience challenges such as social isolation, limited resources, and reduced access to nutritious food, which can negatively affect their dietary awareness.

Recommendations for improving eating behavior among Thai-Peranakan senior citizens

To improve the eating behavior and overall well-being of Thai-Peranakan senior citizens while honoring their cultural heritage, several strategies can be implemented. Nutritional counseling through one-on-one sessions with culturally aware nutritionists can offer personalized guidance, aiding seniors in making healthier food choices. Family involvement is crucial, encouraging relatives to support and participate in meal planning and preparation. Incorporating healthy eating messages into cultural celebrations can highlight traditional yet nutritious dishes.

Additionally, developing engaging tools like games, quizzes, or apps can help seniors assess their eating habits and nutritional knowledge, providing immediate feedback and making learning enjoyable. Establishing support groups enables seniors to share experiences, challenges, and successes, enhancing motivation and providing practical advice. Together, these initiatives form a comprehensive approach to promoting a healthier lifestyle among Thai-Peranakan senior citizens.

Limitations

The sample of 94 participants was limited to members of the Thai-Peranakan Association, which was the primary indicator of Peranakan identity, as this community is defined by cultural practices, language, and customs rather than nationality or religion. While there may have been Peranakan individuals outside the Association, there

were no clear markers to identify them, making membership the most reliable criterion. This small, non-representative sample limited the generalizability of the findings. Additionally, self-reported data collected through interviews introduced potential biases, and the cross-sectional design prevented causal conclusions about the relationship between dietary awareness and eating behavior.

Recommendations for further study

Conduct longitudinal studies to establish causal relationships between dietary awareness and eating behaviors over time. This approach can help identify changes and trends in eating behavior among senior citizens. Additionally, implement and evaluate targeted interventions designed to improve dietary awareness and eating behaviors, such as educational workshops, counseling sessions, and interactive tools.

Compare the eating behavior of Thai-Peranakan senior citizens with those of other cultural groups within Thailand and Southeast Asia. These comparisons can provide insights into how cultural factors influence eating behavior, helping to tailor more effective, culturally-sensitive dietary interventions.

Conclusions

Dietary awareness factor, specifically accurate self-assessment, were significantly corelated with Thai-Peranakan senior citizens' eating behavior at the 0.05 level.

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Conflicts of Interest

The authors declare no conflict of interest.

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