



Investigating the Motivational and Influencing Factors on Choosing Food Items for Healthy and Quality Eating by Citizens of Tabriz, Iran

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ABSTRACT

Given the increasing prevalence of nutrition-related diseases, choosing suitable food items for different age groups has become a critical concern in modern societies. Food choices are influenced by a combination of individual characteristics, social context, and cultural factors. Understanding these determinants can help policymakers design more effective interventions to promote healthy eating behaviors among the population. This study aimed to identify key nutritional factors and examine the motivations underlying food selection, as well as to investigate the factors affecting the purchase and consumption of food items among residents of Tabriz, Iran. In this descriptive cross-sectional study, 209 valid and reliable questionnaires, developed by the researchers, were randomly administered to volunteer citizens of Tabriz. The collected data were analyzed across multiple domains, including nutritional knowledge, healthfulness of food, cost, weight management, sensory appeal such as appearance and taste, natural ingredients, ease of preparation, accessibility, and the reputation of the producer. Demographic analysis revealed that the majority of participants were female (61%), with a mean age of 36.53 ± 7 years, and most were married. About 60% of respondents had education levels above a master's degree, and 32.5% reported an income range of 20–40 million IRR. Occupation was found to significantly influence both price ($p=0.046$) and health considerations ($p=0.006$), with housekeeping also showing significant effects on these two factors. Education had a significant impact on price ($p=0.001$) and weight management ($p=0.004$), while occupational category affected price ($p=0.004$) and weight control ($p=0.002$). Income level showed a significant association with price ($p=0.040$) and health ($p=0.011$). Among the factors studied, price, health, and ease of cooking emerged as the most influential determinants of food choices, whereas the sense of cheerfulness had the least impact. The researcher-designed questionnaire demonstrated high validity, indicating that it can effectively be used to assess motivational and influencing factors in food selection in Iran.

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Introduction

A well-balanced diet has been shown to enhance overall health and increase lifespan. Consuming nutritious foods not only supports individual well-being but also promotes the health and lifestyle of future generations (1). Understanding how people select their food and the factors that influence these choices is crucial from both social and public health perspectives. Social and cultural contexts play

a significant role in shaping eating behaviors (2, 3).

Globally, dietary patterns have shifted from traditional diets rich in fiber, seeds, fruits, and vegetables toward diets high in fats, sugars, salt, and highly processed foods. Such changes have contributed to the rising prevalence of health issues including type 2 diabetes, hypertension, stroke, and cancer (4). This transition is particularly evident in developing countries experiencing

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urbanization and adopting Western eating habits as part of modernization efforts (5, 6). In the Middle East, and Iran specifically, dietary patterns are undergoing rapid transformation. Beyond issues of food insecurity and hunger, Iran faces a swift nutritional transition alongside a growing burden of chronic diet-related disorders. Urbanization and lifestyle changes, particularly in major cities, serve as warning signs for the increasing prevalence of metabolic diseases (7).

Food choices are shaped by a combination of factors. Biological influences include hunger, appetite, and taste preferences. Psychological factors such as mood, stress, and feelings of guilt also play a role. Practical considerations such as access to food, educational level, and available time affect decisions, while social influences—culture, family, and peer groups—further guide eating behavior. Economic considerations including cost, income, and food availability, as well as personal attitudes, beliefs, and nutritional knowledge, also significantly impact dietary choices (8). Diet and nutrition directly affect an individual's health, meaning that food choices can have beneficial or harmful effects. To explore the reasons behind consumer food decisions, Steptoe, Pollard, and Wardle developed the Food Choice Questionnaire (FCQ), a widely used tool for assessing motivations behind dietary selection (9, 10). The Food Choice Questionnaire (FCQ) consists of 36 items designed to assess both healthy and less healthy aspects of food selection. It is structured into several subscales, including health, mood—further divided into enhancing mood and managing stress—convenience, which addresses ease of preparation and accessibility, sensory appeal encompassing appearance, taste, smell, and texture, natural content focusing on the absence of additives or artificial ingredients, price, weight control emphasizing low-calorie and low-fat options, familiarity, and ethical considerations such as food origin and environmentally friendly packaging. Each

subscale contains between three and six items. The questionnaire explores participants' food selection behaviors, with responses recorded on a four-point scale. While the FCQ has been translated into multiple languages, this study represents its first adaptation into Farsi, incorporating modifications to align with the local context. The main objectives were to identify key nutritional factors, understand the motivations driving food choices, and examine the factors influencing the purchase and consumption of food items among residents of Tabriz.

Materials and Methods

Participants and Study Design

This research was conducted to examine food-related behaviors among residents of Tabriz, East Azerbaijan Province, Iran. A total of 209 individuals aged 19 to 57 years who were responsible for purchasing family meals participated in the study. The research was carried out in 2020. Individuals were excluded if they were pregnant or lactating, followed a vegetarian or strict weight-loss diet, or had medical conditions such as diabetes, hypertension, hyperlipidemia, cancer, a history of gastrointestinal surgery, or were taking certain medications. Participants were randomly recruited through social media and invited to join the study. Before completing the online questionnaire, the study objectives and procedures were explained to all participants.

Sample Size

For factor analysis and structural equation modeling, a recommended sample size is 5–10 participants per variable. Given that the questionnaire included 26 items, the minimum and maximum required sample sizes ranged from 130 to 260 individuals. In this study, 209 completed questionnaires were collected and analyzed. Table 1 presents the demographic characteristics of the participants.

Table 1. Demographic information of the participant

Variable		frequency (%)	SD ± Mean Score
Age	19-29	35 (16.7 %)	36.53 ± 7.07
	30-39	112 (53.6%)	
	40-49	53 (25.4 %)	
	50-59	9 (4.3 %)	
	Height		169.48 ± 9.71
	Weight		74.91 ± 15.92
BMI	Under 18.5	4 (1.9 %)	25.97 ± 4.5
	25-18.25	94 (45 %)	
	26-30	74 (11.5 %)	
	31-35	24 (11.5 %)	
	40-36	9 (4.3 %)	
	Over 40	2 (1 %)	
Gender	Male	80 (38.3 %)	
	Female	129 (61.7 %)	
Marital Status	Married	144 (68.9 %)	
	Single	65 (31.1 %)	
Occupation	Employee	159 (76.1 %)	
	Housekeeper	50 (23.9 %)	
Education	Under High School Diploma	3 (1.4 %)	
	High School Diploma	18 (8.6 %)	
	Associate's Degree	7 (3.3 %)	
	Bachelor's Degree	48 (23 %)	
	Master's Degree	64 (30.6 %)	
	Ph.D. and Higher	69 (33 %)	
Income (million in IRR)	Under 20	50 (23.9 %)	
	20-40	68 (32.5 %)	
	40-60	52 (24.9 %)	
	Over 60	39 (18.7 %)	

Study Questionnaire

This study utilized a questionnaire originally developed by Dikmen (11) and adapted it for use within the Iranian context. The survey collected demographic information, including gender, marital status, employment status, education level, type of academic program, income, and age. Participants also reported their weight and height, which were used to calculate Body Mass Index (BMI) in kg/m² by dividing weight by the square of height in meters.

The main questionnaire included four initial questions regarding bran, protein, calories, and preservatives. Additionally, it contained 22 questions covering various subscales: The health dimension captured the extent to which individuals prioritized nutritional benefits when selecting foods. The mood dimension was divided into two components: one set of items examined how food contributes to improving emotional well-being, while another focused on the role of food in managing stress, together covering nine questions. Convenience encompassed items related to the simplicity of food preparation and the accessibility of desired products. Sensory appeal reflected preferences linked to taste, appearance, aroma, and texture.

Natural content focused specifically on the avoidance of additives or artificial ingredients. Price was assessed through questions addressing the importance of cost considerations. Weight control motivations were evaluated by exploring preferences for foods that are low in calories and fat. Several recent studies have employed 5- or 7-point Likert scales (ranging from 1 = not important at all to 5 or 7 = extremely important) to assess the importance of each item (12-14).

In the present study, the FCQ was assessed using a 4-point Likert scale, ranging from 1 (not important) to 4 (extremely important). The questionnaire was translated from English into Persian by nutrition epidemiologists and several faculty members from the University of Tabriz's Faculties of Pharmacy and Nutrition. Based on expert feedback, the original 36 items were streamlined and reduced to 22 questions.

Determining Validity and Reliability

To assess the reliability of the questionnaire, 15 participants completed the survey. Internal consistency was evaluated using Cronbach's alpha and the intraclass correlation coefficient (ICC). The alpha values suggested by AZ (15) were used as a benchmark: values below 0.7 were considered unsatisfactory, 0.5-0.7

indicated moderate reliability, and values above 0.7 were deemed acceptable. In this study, Cronbach's alpha was calculated for each component related to food purchase behavior, with all factors demonstrating acceptable reliability exceeding 0.7. The ICC was 0.823, indicating satisfactory reliability. Additionally, the structural validity of each factor was examined through confirmatory factor analysis (CFA) (15).

Statistical Analysis

Data analysis was performed using SPSS version 23 and AMOS 24.0. The internal consistency of the questionnaire was assessed using Cronbach's alpha, with a threshold of 0.70 considered acceptable. Test-retest reliability was evaluated through the intraclass correlation coefficient (ICC), with values above 0.80 indicating excellent agreement.

Ethical Considerations

The study received approval from the Ethics Committee of Tabriz University of Medical Sciences (ethics code: 1399/436). All participants provided informed consent before taking part in the study by signing a consent form.

Results

Table 1 presents the demographic information of the participants. The age distribution is as follows: 35 participants (16.7%) are between 19 and 29 years old, 112 participants (53.6%) are between 30 and 39 years old, 53 participants (25.4%) are between 40 and 49 years old, and 9 participants (4.3%) are between 50 and 59 years old. The average height of the participants is 169.48 cm with a standard deviation of 9.71 cm, while the average weight is 74.91 kg with a standard deviation of 15.92 kg. Regarding Body Mass Index (BMI), 4 participants (1.9%) fall under the category of under 18.5, with an average BMI of 25.97 and a standard deviation of 4.5. Participants with a BMI between 18.5 and 25 account for 94 (45%), those with a BMI between 25 and 30 are 74 (11.5%), and those with a BMI between 30 and 35 also make up 11.5%. There are 9 participants (4.3%) with a BMI over 35, and 2 participants (1%) have a BMI over 40. In terms of gender, 80 participants (38.3%) are male, and 129 participants (61.7%) are female. Marital status data shows that 144 participants (68.9%)

are married, while 65 participants (31.1%) are single. Regarding occupation, 159 participants (76.1%) are employees, and 50 participants (23.9%) are housekeepers. Educational attainment reveals that 3 participants (1.4%) have education under a high school diploma, 18 participants (8.6%) hold a high school diploma, 7 participants (3.3%) have an associate's degree, 48 participants (23%) have a bachelor's degree, 64 participants (30.6%) possess a master's degree, and 69 participants (33%) have a Ph.D. or higher. Lastly, income distribution in million IRR shows that 50 participants (23.9%) earn under 20 million, 68 participants (32.5%) earn between 20 and 40 million, 52 participants (24.9%) earn between 40 and 60 million, and 39 participants (18.7%) earn over 60 million.

Table 2 presents the impact of different demographic variables on specific components of food choices, including price, health, and weight control. For occupation, both price ($p=0.046$) and health ($p=0.006$) are significantly influenced. Housekeeping, as an occupation, also significantly affects price ($p=0.046$) and health ($p=0.006$). Education impacts price ($p=0.001$) and weight control ($p=0.004$). Occupational group affects price ($p=0.004$) and weight control ($p=0.002$). Income level has a significant effect on price ($p=0.040$) and health ($p=0.011$). All significant values are denoted with a p -value less than 0.05.

Table 2. The effect of demographic variables on the components of food choices

Variable	Information	Price	Health	Weight Control
Gender				
Marital Status				
Age Group				
Occupation	*0.046	*0.006		
Housekeeping	*0.046	*0.006		
Education	*0.001		*0.004	
Occupational Group	*0.004			0.002
Income Level	*0.040	0.011		

* $p < 0.05$

As is clear from the overall factor analysis model, the factors "price", "health" and "ease of cooking" played the most important role in food selection, and "mood or sense of well-being" had the least importance among the choices. In the overall model, the CFI value of 0.75 was obtained, which indicates a relatively good model.

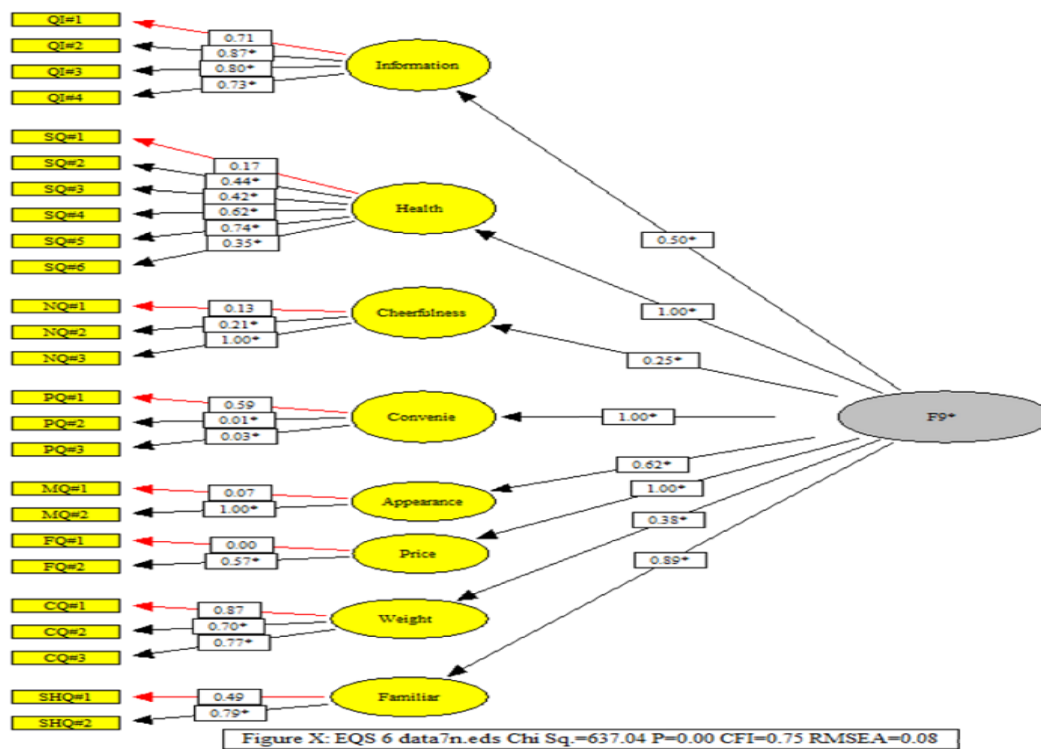


Figure 1. General factor analysis model

The structural equation diagram above shows the relationship between the BMI variable and the weight factor. The result indicates that body mass index plays a very small role in choosing foods with a view to weight control for the people participating in the study. To further study the effect of body mass index with the weight control component, we draw a scatter diagram between

these two variables. The results obtained are similar to the relationship model of body mass index with the health component. That is, people in the slightly obese group have the least importance to the weight control component in choosing foods. While the importance of weight control is greater for thin or very obese people.

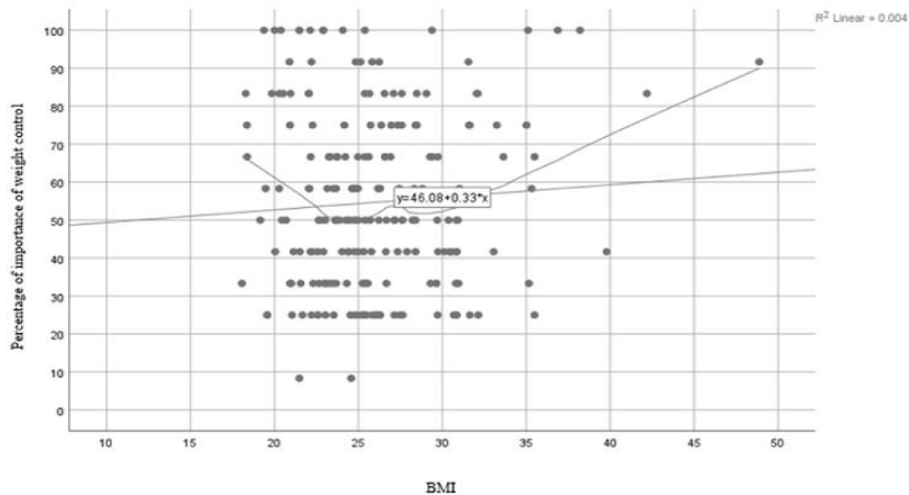


Figure 2. Scatter plot of the effect of body mass index on the weight control component

Table 3. The questions in the questionnaire are distributed in Eight different sections as follows:

Section 1- Nutritional information:
Q1- How much information did you have about the definition of the bran before reading the questionnaire?
Q2- How much information did you have about the definition of protein before reading the questionnaire?
Q3- How much information did you have about the definition of calories before reading the questionnaire?
Q4- How much information did you have about the definition of preservative before reading the questionnaire?
Section 2- Health
SQ1- On a normal shopping day, how important is the <u>bran content of food</u> (bread, rice, biscuits...) in your choice?
SQ2- How important is it for you to purchase useful food for teeth and bones? (Example: calcium and vitamin D content of milk and other foods)
SQ3- How important is the absence of fast food (sausage, hamburger, etc.) in your purchase?
Section 3- Sense of vitality
NQ1- The food that I choose to buy should cheer me up and help me deal with stress.
NQ2- The foods that I choose to buy are energetic.
NQ3- The food that I choose to buy will make me feel better.
Section 4- Availability and convenience of food
PQ1- How important is it for you to purchase food that is time-consuming to be prepared? (Example: chopped or whole chicken, canned beans or raw beans)
PQ2- How important is it for you to purchase food that can be cooked and prepared easily?
PQ3- How important is it for you to be close to your place of residence or work to access food?
Section 5- Appearance and taste
MQ1- How important is the taste of food in your choice? (Example: special taste of fish)
MQ2- How important is the pleasant appearance and texture of food in your choice?
Section 6- Price
FQ1- How important is the price of food to you?
FQ2- The food I purchase should be <u>worth the money</u> that I pay for it.
Section 7- Weight control
CQ1- The food that I purchase should be low in calories (not fattening) and help me control my weight.
CQ2- The food that I purchase should be low fat
CQ3- The food that I purchase must have the <u>necessary information</u> about the number of calories, fat, protein, and carbohydrates.
Section 8- Familiarity and reputation:
SGQ1- When choosing food, how important is the reputation of the manufacturing plant to you?
SHQ2- How important is the expiration date of food to you?

Discussion

Nutrition has become a prominent concern in modern society due to disparities in per capita food consumption across different socioeconomic groups (16). Adequate nutrition is fundamental to public health, as it supports human growth, development, and proper functioning within society. However, factors such as environmental conditions, technological progress, socioeconomic status, cultural influences, and historical context all affect dietary patterns. Additionally, nutrition is closely linked to biological characteristics such as age, gender, and health status (17). Eating behaviors are shaped by biological, psychological, social, and cultural factors through a variety of mechanisms (18).

Families play a central role in daily decisions related to resource allocation, food budgeting, diet, health, and emotional care, as well as the nutritional needs of women and children, which in turn affects demand for food, healthcare, education, clothing, and other essential goods

and services (19). Across the nation, households allocate a significant portion of their income to food. Through their consumption and spending habits, families influence not only food production and consumption but also related products and services on a daily basis, with these actions being determined by multiple factors (20).

The findings indicate that this study is the first to validate the Farsi version of the FCQ questionnaire and examine the reasons behind food choices among residents of Tabriz. The evaluation included assessments of the questionnaire's validity, reliability, and internal consistency. Results showed satisfactory validity and reliability, with Cronbach's alpha for each component influencing food purchases exceeding 0.7. Factor analysis confirmed that the model was well-suited for all components related to successful food selection and purchasing.

The present study is the first to validate the Farsi version of the FCQ and examine the reasons behind food choices among residents of Tabriz. Assessments included questionnaire validity,

reliability, and internal consistency, all of which were satisfactory. Cronbach's alpha for each component affecting food purchases exceeded 0.7, and factor analysis indicated that the model appropriately represented all significant food choice and purchase factors.

In the nutrition knowledge scale, protein received the highest ranking. Among individual items, SQ4—"How important is it for you to purchase healthy and beneficial food?"—scored the highest, while SQ1—"On a typical shopping day, how relevant is the bran content of foods such as bread, rice, or biscuits in your choice?"—scored the lowest. These results suggest that although participants prioritize health, their scientific understanding of nutrition remains limited, with many aspects, such as the differences between regular and bran bread, perceived with uncertainty. This highlights the need for cultural and educational initiatives to improve dietary knowledge. Demographic variables also affected components of food choice, with education level showing a positive association with health, reflecting residents' interest in health-related dietary information. Another critical factor shaping food selection was price and consumers' purchasing power. The findings indicate that participants were more sensitive to food cost than quality, underscoring the challenges posed by rising prices and declining purchasing power within the community (21). Household income is a critical determinant of food security, alongside families' nutritional knowledge and the ability to allocate resources to obtain and distribute the most suitable foods among household members (22). Food security is attained when households have adequate resources to select and prepare foods that provide sufficient and nutritious components to support the proper functioning of the body's cells and organs (23). The study revealed a strong relationship between occupation, income, and the price factor in food purchases, highlighting the importance of prioritizing food security to safeguard the population. In societies affected by poverty, challenges such as theft, crime, and social deviance may arise as access to adequate food becomes a pressing concern. Moreover, children raised under poor and nutritionally inadequate conditions are more likely to encounter difficulties in adulthood and struggle to fulfill personal and social responsibilities (24, 25).

These challenges are interconnected: inadequate employment and poor nutrition limit productivity, reducing wealth creation and worsening living conditions. Furthermore, insufficient nutrition among the younger generation can negatively impact cognitive development, intelligence, and creative potential (26).

Haghighian-Roodsari et al. (2020) conducted a study aimed at developing and validating a tool to measure the main factors affecting food choices among Iranian adults. Using a sequential exploratory mixed-method approach, they first conducted a qualitative study to identify dimensions and components of food choice. Based on these findings and the 36-item FCQ, they developed the initial version of the Food Choice Determinants Questionnaire (FCDQ). Face, content, and construct validity were assessed, with exploratory factor analysis (EFA) employed to evaluate construct validity. Internal consistency for each major construct was measured using Cronbach's alpha. After the validation process, a 60-item questionnaire was finalized, achieving an overall content validity index (CVI) of 0.69, reflecting acceptable validity. Cronbach's alpha values for the six primary constructs indicated satisfactory reliability, leading the authors to conclude that the FCDQ is a valid and reliable tool for assessing food choice determinants in adults and can be effectively used to design interventions aimed at improving dietary habits (27).

Safavizadeh et al. (2019), investigated key factors influencing food selection among consumers in Yazd, Iran. In this cross-sectional study, 500 participants were divided into four groups of 125 to assess variations in food choice behaviors. Data were analyzed using SPSS version 16. Results revealed that brand was the most influential factor across all groups, while awards and lotteries were considered least important. Price emerged as the most critical factor in urban areas, with higher significance among men. The study concluded that brand, price, and the physical and emotional attributes of food significantly shape consumer behavior and purchasing decisions. These findings emphasize the importance of considering sociocultural and economic factors when designing policies and interventions to improve food choices and public health outcomes (17).

The findings of this study can be utilized to inform and educate the public, encouraging them to make more informed choices when purchasing food, with the ultimate goal of promoting greater selection of nutritious options.

Conclusion

The results of this study highlight that food choices in the population of Yazd are significantly shaped by demographic factors such as occupation, education level, and income. Among the key components examined—price, health, and weight control—price emerged as the most influential factor, particularly among individuals with lower income and those in certain occupational groups like housekeepers. This suggests that financial constraints can lead to prioritizing cost over nutritional quality, potentially resulting in less healthy dietary habits. Health considerations were also found to be significantly influenced by occupation and income, indicating that individuals with better economic stability may be more health-conscious in their food choices. Moreover, weight control as a determinant was strongly associated with education level, implying that individuals with higher educational attainment may have greater awareness of nutritional issues and are more likely to make informed dietary decisions. These findings collectively suggest that socioeconomic status not only affects access to food but also shapes the motivations behind food selection, such as the emphasis on price versus health or weight management. Given these insights, several recommendations can be made. First, public health policies and nutritional education programs should be tailored to address the specific needs and limitations of lower-income and less-educated populations. The high focus of the sample on highly educated individuals means that the demographic composition of the participants does not fully reflect the broader reality that exists in society, which reduces the generalizability of the findings and makes it possible that the results only reflect the behavioral and cognitive patterns of a specific group. Subsidizing healthy foods or providing financial incentives for purchasing nutritious items could mitigate the dominance of price as a barrier to healthy eating. Additionally, integrating nutritional education into public outreach programs, especially in workplaces and community centers, could improve awareness

about the importance of balanced diets, particularly among those with limited formal education. Employers and local governments should collaborate to promote access to affordable, healthy food options in both urban and rural areas. Finally, considering the impact of occupation on health-related food choices, workplace wellness programs should include components focused on dietary behavior and access to healthy food. By addressing the socioeconomic and educational disparities identified in this study, targeted interventions can be designed to encourage healthier food choices across all segments of the population.

Declarations

Acknowledgment

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Authors' Contributions

MT initiated the project. MN, VSZ and FM designed the project. MT led the knowledge elicitation, data collection, analysis, and interpretation. MT, MN, and MK led the manuscript writing. All authors have reviewed and approved the final manuscript.

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Consent for Publication

Not applicable.

Conflict of Interest

We confirm no known conflicts of interest considering this study.

Competing interests

The authors declare that they have no competing interests.

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