Investigating the Relationship between Food Nutrition Literacy and Food Choices of College Students

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ABSTRACT

The main goal of this study was to investigate the relationship between food nutrition literacy and food choices. This study used a descriptive correlation design using quantitative research methods. There were 349 respondents which were the college students of a local college in Santo Tomas, Davao del Norte. The respondents were given two (2) sets of modified survey questionnaires. The findings showed that food nutrition literacy in terms of food and nutrition knowledge, access to and planning and selecting for food, preparing and marking food, and eating was manifested. College students' food choices in terms of healthy motivations, emotional motivations, economical and availability motivations, social and cultural motivations, environmental and political motivations, and marketing and commercial motivations were observed. As college students become more independent and adapt to university life, making food choices can be a major concern. In addition, because of their hectic schedules, stress, and new environment, college students might not eat appropriately. As a result, bad coping strategies, bad eating habits, and routine disruptions happen. This challenges the idea that making better food choices is a direct result of having greater levels of food nutrition literacy. The results of this study indicate the extensive nature of the relationship between food nutrition literacy and the food choices of college students. This study highlights that simply knowing about nutrition isn't enough for college students to make healthy choices. Further research is crucial to determine the factors influencing their food selections, paving the way for interventions that improve their diet, health, and well-being.

Keywords: Food Nutrition Literacy, Food Choices, College Students, Descriptive-Correlational, Philippines

INTRODUCTION

Food choices are defined as a sequential process. It involves the selection, acquisition, preparation, and consumption of food and beverages by individuals. This process is driven by the interaction of various factors that can either compete with or reinforce each other (Karanja et al., 2022; Blake et al., 2021; Rampalli et al., 2023). However, Malambe (2021) stated that food choices pose a considerable challenge for college students. Gaining independence often leads them to grab convenient meals from cafeterias or fast food, which are typically high in fat and carbohydrates. Moreover, college students may eat poorly due to the new environment, stress, and busy schedules. This disrupts routines, leads to unhealthy coping mechanisms, and makes unhealthy food choices (Sousa et al., 2020).

In Nepal, poor dietary practices among college students emerge as a prominent public health issue, influenced by factors such as the selection of unhealthy food options, the high expense of healthy foods, and the widespread availability of fast food (Dahal et al., 2022). In addition, a study conducted at New Mexico State University found that the availability of personal transportation can significantly impact college students' food choices. This limited mobility can restrict access to supermarkets, which are often associated with healthier food options (Martin & Cruz, 2020). Additionally, at King Saud University in Saudi Arabia, college students' food choices and consumption can be affected by the physiological and psychological changes brought on by stress (Mohamed et al., 2020). Furthermore, a study at Cornell University in the United States found that college students struggle with healthy eating due to time pressure, unhealthy snacks, stress, expensive healthy options, readily available

junk food, and social influences (Sogari et al., 2018). Moreover, a study at Kyung Hee University in South Korea stated that college students' preference for processed and meat-heavy diets to potential public health decline and environmental issues (Lee et al., 2022). Additionally, a study at Clemson University in South Carolina found that college students' food choices are no longer just about taste and health. Ethical, political, and environmental concerns are influencing their decisions, leading to boycotts based on social justice and animal welfare (Dawson et al., 2023).

In Los Baños, college students' diets, often leading to unhealthy choices, raise concerns about increased malnutrition and potential eating disorders like anorexia, bulimia, and binge eating (Ladigohon et al., 2021). In addition, In Northern Samar, college students at the University of Eastern Philippines typically purchase meals from street sellers due to a variety of factors, including accessibility, limited time, hectic schedule, convenience, affordability, and taste. The unhealthy behaviors of students have the potential to negatively impact both their academic performance and health (Irader & Ubane, 2022). Moreover, a study at Central Mindanao University, Bukidnon stated that college students' cultural heritage shapes their food choices, favoring familiar flavors while religious beliefs may restrict options like dairy, meat, or eggs for vegetarians (Arroyo et al. 2023).

In Cagayan de Oro, a study at the University of Science and Technology of Southern Philippines stated that college students lack knowledge about healthy food choices. This deficit in nutritional understanding could negatively impact their dietary habits. Financial constraints further exacerbate this issue. Foods high in fat and sugar are often more affordable, while those rich in essential nutrients tend to be more expensive. This economic disparity could disproportionately affect students with limited financial resources, potentially leading to poorer health outcomes (Namoco et al., 2021).

Browsing the internet for related literature, there are similar studies about food nutrition literacy and food choices of college students. A study by Doustmohammadian et al. (2022), that food literacy encompasses a set of competencies that empower individuals to critically evaluate information on food and nutrition. These competencies include deciphering food labels, adhering to safe food handling practices, utilizing healthy cooking techniques, following dietary guidelines, and making healthy food choices. Moreover, Lee, Kim, and Jung (2022), stated that awareness of food literacy and practical culinary abilities exert a significant impact on the capacity of young adults to make balanced food choices. Additionally, Jones and Adkins (2021) stated that there is a lack of research investigating the potential link between a user's nutrition literacy and their food choices within school-based food pantries rather than college students. There is an urgent need to address college students' bad eating practices regarding their food choices.

In this study, the researchers seek to determine how college students' nutrition knowledge influences their food choices. The study was disseminated to school administrators, instructors, students, and parents through posters and pliers, along with discussions about the relevance of the study. Providing them with pliers with information that could help them to maintain their food nutrition literacy for example, access to planning and selecting for food. School administrators should create and administer nutrition education programs exclusively for college students. Students should give pliers in campus organizations that focus on health, wellness, and nutrition so that they can increase their nutrition literacy and make healthier food choices, resulting in better health outcomes and academic performance. Parents can also benefit from having pliers to help them prepare food that is appropriate for their students.

Statement of the Problem

This study sought to determine how college students' food choices and food nutrition literacy related to each other.

Specifically, to address the following research questions.

1.   What is the level of food nutrition literacy of college students in terms of:

        1. food and nutrition knowledge;

        2 access to planning and selecting for food;

3 preparing and marking food; and

4 eating?

2. What is the level of food choices of college students in terms of:

1 healthy motivation;

2 emotional motivations;

3 economical and availability motivations;

4 social and cultural motivations;

5 environmental and political motivations; and

6 marketing and commercial motivations?

3. Is there any significant correlation between food nutrition literacy and food choices of college students?

Hypothesis

By the results of this study, which was conducted at a significance level of 0.05, there is no meaningful connection between college students' food choices and food nutrition literacy.

Theoretical Framework

The study was in line with the Tripartite Model of Health Literacy by Nutbeam (2000), which stated that food and nutrition literacy has been categorized into three levels: functional literacy, interactive literacy, and critical literacy (Doustmohammadian et al., 2020). The first level, functional literacy, focuses on the foundational skills necessary to grasp and utilize factual nutrition information. The second level, interactive literacy, builds upon this foundation by enabling individuals to not only understand information but also actively participate in communication regarding nutrition. Finally, critical literacy represents the most advanced level within this model. Individuals at this level possess the ability to critically evaluate the information they encounter about nutrition and take action to address any barriers hindering the achievement of a healthy diet (Zhang et al., 2022).

Furthermore, this study is anchored from Ajzen (1991) Theory of Planned Behavior, stating that all actions over which a person is capable of exercising self-control. The theory explains that behavioral accomplishment is dependent on both motivation (intention) and ability (behavioral control). Makiabadi, Kaveh, Asadollahi, and Ostovarfar (2018) stated that the Theory of Planned Behavior (TPB) stands out as a significant model within the field of food choice. This framework centers on the idea that individuals act somewhat like logical decision-makers. According to the TPB, people process information before engaging in a particular behavior, such as choosing what to eat. Crucially, this process of information processing can lead to changes in fundamental beliefs held by individuals. These evolving beliefs can then have a subsequent impact on their food choices. Moreover, Chilon-Troncos et al. (2023), stated that individuals with great nutrition knowledge are closely related to more positive attitudes toward healthy food choices. Understanding the benefits of a balanced diet, which comes with better nutrition literacy, influences people to view healthy eating and healthy food brands more favorably.

Conceptual Framework

The conceptual representation of the Descriptive that identifies the correlation between the independent variable and dependent variable was shown in figure 1.

The independent variables for college students' food nutrition literacy were displayed in the first box, which includes food and nutrition knowledge, access to and planning and selecting for food, preparing and marking food, and eating (Zhang et al., 2022).
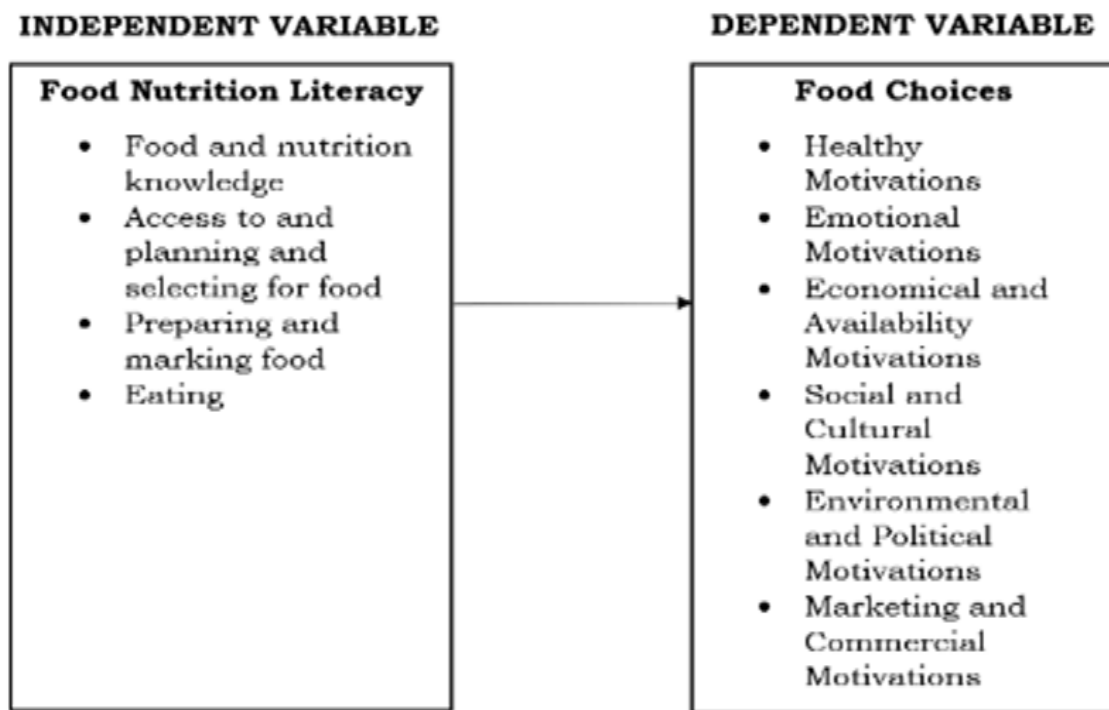
INDEPENDENT VARIABLE

Food Nutrition Literacy

- Food and nutrition knowledge
- Access to and planning and selecting for food
- Preparing and marking food
- Eating

DEPENDENT VARIABLE

Food Choices

- Healthy Motivations
- Emotional Motivations
- Economical and Availability Motivations
- Social and Cultural Motivations
- Environmental and Political Motivations
- Marketing and Commercial Motivations

Figure 1. Conceptual Paradigm of the Study

The dependent variables for food choices were displayed on the second box and consist of healthy motivations, emotional motivations, and economic and availability motivations, social and cultural motivations, environmental and political motivations, marketing and commercial motivations (Ferrao et al., 2019).

METHODOLOGY

The research design, research topic, research instrument, data collection process, and data and information related to the association between food nutrition literacy and food choices of Santo Tomas, Davao del Norte college students were presented in this chapter. Additionally, the statistical methods applied in this investigation were presented in this chapter.

Research Design

The descriptive correlational research approach was applied in this study, in which this method was used to measure associations between variables with varying levels of measurement. In accordance with Aprecia et al. (2022), a descriptive correlational research design aims to describe the characteristics of two or more variables and assess the nature and strength of the relationship between them. In addition, Bhandari (2023) stated that a correlational research design examines the natural associations between variables without the researcher actively manipulating or controlling them. This study also utilized the quantitative method to quantify the level of food nutrition literacy and food choices of college students of Santo Tomas, Davao del Norte. According to Sreekumar (2023), using a quantitative research approach, the numerical data was collected and analyzed. This data was employed to describe the characteristics of variables, and predict, or establish causal relationships between these variables. Furthermore, the quantitative research approach offers the capability to determine trends and averages, predict, assess causal relationships, and extrapolate results to broader populations (Bhandari, 2020).

Research Subject

The respondents to this study were 349 students from Santo Tomas College of Agriculture, Sciences and Technology. This study used a stratified random sampling procedure to select respondents from the students of

Santo Tomas College of Agriculture, Sciences and Technology. To determine the population size, the researchers considered the Raosoft calculator. Out of 3,727 general populations based on the total population of active students in five (5) departments. Department A consisted of 727 students; Department B consisted of 1,133; Department C consisted of 1,221; Department D consisted of 70; and Department E consisted of 576. Only 349 were randomly selected based on the computation of the Raosoft calculator. Stratified random sampling was used when a population has a variety of qualities and researchers want to ensure that every attribute is correctly represented in the sample. This protects against biases such as covert bias throughout the research procedure and enhances the study's validity and generalizability (Thomas, 2020). The purpose of choosing this location was to assess the effectiveness of the study of food nutrition literacy and food choices.

Table 1

Distribution of Respondents

School	Population	Sample	Percentage
Department A	727	68	20%
Department B	1,133	106	30%
Department C	1,221	114	33%
Department D	70	7	2%
Department E	576	54	15%
Total	**3,727**	**349**	**100%**

Research Instrument

The researchers used two (2) adapted-modified survey questionnaires to ascertain the connection between food nutrition literacy and food choices. The questionnaire in this study was adapted from the study of Zhang et al. (2022), "Development and Validation of a Food and Nutrition Literacy Questionnaire for Chinese Adults" and from the study of Ferrao et al. (2019), "Development of A Questionnaire to Assess People's Food Choices Determinants."

Food Nutrition Literacy Questionnaire (FNLQ). The questionnaire for the independent variable was the Food Nutrition Literacy Questionnaire by Zhang et al. (2022). This questionnaire consists of 20 questions with four (4) indicators which were food and nutrition knowledge with (5) items, access to and planning and selecting for food with (5) items, preparing and marking food with (5) items, and eating with (5) items. This study used five-point Likert scales of food nutrition literacy of college students with their respective means as follows.

Range	Descriptive Equivalent	Interpretation
4.20 – 5.00	Very High	Food Nutrition Literacy is much manifested.
3.14 – 4.19	High	Food Nutrition Literacy is manifested.
2.60 – 3.39	Moderate	Food Nutrition Literacy is moderately manifested.
1.80 – 2.59	Low	Food Nutrition Literacy is less manifested.
1.00 – 1.79	Very Low	Food Nutrition Literacy is least manifested.

Food Choices Questionnaire (FCQ). The questionnaire for the dependent variable was the Food Choice Questionnaire by Ferrao et al. (2019). This questionnaire consists of 55 questions with (6) indicators which were the healthy motivations with (11) items, emotional eating with (10) items, economical and availability with (8)

items, social and cultural motivations with (11) items, environmental and political motivations with (8) items, and marketing and commercial motivations with (7) items. This study used a five-point Likert Scale of food choices of college students with their respective means as follows.

Range	Descriptive Equivalent	Interpretation
4.20 – 5.00	Very High	Food Choices is much observed.
3.14 – 4.19	High	Food Choices is observed.
2.60 – 3.39	Moderate	Food Choices is moderately observed.
1.80 – 2.59	Low	Food Choices is less observed.
1.00 – 1.79	Very Low	Food Choices is least observed.

Statistical Treatment of Data

The data computation and hypothesis testing at the alpha 0.05 level of significance were conducted with the statistical instruments listed below.

Mean. The mean refers to the arithmetic average of a quantitative data set (Eads, 2023). This was employed to ascertain the level of food nutrition literacy and food choices of college students.

Pearson r. The Pearson correlation coefficient (r) serves as the most prevalent method for quantifying the strength and direction of a linear correlation (Turney, 2022). This was used to determine the significant correlation between food nutrition literacy and food choices of college students.

RESULTS AND DISCUSSIONS

The analysis and interpretation of data on food nutrition literacy and food choices that were collected from Santo Tomas College of Agriculture, Sciences, and Technology students were presented in this chapter. The data organization was predicated upon the problem description found in Chapter 1.

Level of Food Nutrition Literacy in terms of Food and Nutrition Knowledge

The degree of food and nutrition literacy as represented by the knowledge of food and nutrition was found in Table 2. The second item (2) "I am aware that eating a sensible diet is crucial to preserving health and preventing illness" has the highest mean of 4.51, which was descriptively similar to extremely high, as the table illustrates. The study revealed that item five (5) "I cook for myself, going out to eat less, and having family meals" has the lowest mean of 4.38, which was the descriptive equivalent of "very high." This demonstrated how well-versed in food and nutrition knowledge people are in terms of food literacy.

As measured by a score of 0.62, the standard deviation of the food and nutrition literacy level was close to the mean. This demonstrated that college students received consistent answers for this metric. The findings showed that people followed a healthy diet consistently throughout their lives, made their food, ate less frequently, and shared meals with their families. They also knew the main nutritional qualities, sources, and classification of the foods they ate, and they chose a healthy diet and enjoyed it.

Table 2 Level of Food Nutrition Literacy in terms of Food and Nutrition Knowledge

Items	Mean	SD	Descriptive Equivalent
1. I am aware that maintaining a healthy diet is important at all ages.	4.39	0.66	Very High

2. I am aware that eating a sensible diet is crucial to preserving health and preventing illness.	4.51	0.56	Very High
3. I am aware of the major nutritional qualities, sources, and classifications of food.	4.46	0.61	Very High
4. I eat well and maintain a healthy diet.	4.43	0.61	Very High
5. I cook for myself, going out to eat less, and having family meals.	4.38	0.68	Very High
Average	**4.43**	**0.62**	**Very High**

The results showed in the study of Inghram (2019) that college students who possess a sufficient understanding of nutrition are more likely to adopt healthy eating habits. This knowledge empowers them to effectively analyze nutritional information, health claims, and labels found on food products. Furthermore, the study indicated a positive awareness of healthy dietary practices. The concept of balanced nutrition and the food pyramid as a dietary guide. Moreover, college students often prioritize breakfast and healthy eating habits. Students who consistently eat healthy breakfasts may exhibit improved academic performance, reflected in higher grades and exam scores (Khan et al., 2022). Furthermore, students who are well-informed about nutrition tend to consume fewer unhealthy fats linked to cardiovascular disease. A strong understanding of healthy eating habits can empower students to make informed choices about their diet, ultimately reducing their risk of heart-related problems (Xi, 2019).

Level of Food Nutrition Literacy in terms of Access to Planning and Selecting for Food

The degree of planning and accessibility of food selection related to food nutrition knowledge was reflected in Table 3. As can be seen from the table, item one (1) "I am able to select restaurants and grocery shops that are clean and safe" received the highest mean score of 4.57, which was interpreted as extremely high. The results showed that item five (5) "I can able to choose healthy food and fortified food correctly", has the lowest mean (4.46), which was descriptively similar to very high. This indicates that access to meal planning and selection was a manifestation of food nutrition literacy.

Additionally, the overall means standard deviation of 0.59 indicates that the understanding of food nutrition in terms of planning and choosing meals was not far from the mean. This demonstrated that college students' answers on this indicator were consistent. The findings showed that selecting clean and safe food outlets and dining establishments was closely watched; evaluating food quality and selecting fresh, healthful food was scrutinized; reading and comprehending food nutrition labels was observed; paying attention to health and nutrition information was observed; correctly identifying and applying the appropriate information was observed; and selecting healthful and fortified food was correctly observed.

Table 3 Le Level of Food Nutrition Literacy in terms of Access to Planning and Selecting for Food

Items	Mean	SD	Descriptive Equivalent
1. I am able to select restaurants and grocery shops that are clean and safe.	4.57	0.56	Very High
2. I am competent in determining food quality and selecting wholesome, fresh foods.	4.49	0.58	Very High
3. I can able to read and understand food nutrition labels.	4.54	0.55	Very High
4. I can pay attention to nutrition and health information, identifying, and applying the right information.	4.47	0.63	Very High
5. I can able to choose healthy food and fortified food correctly.	4.46	0.63	Very High
Average	**4.51**	**0.59**	**Very High**

The result was supported by the study of Serrem et al. (2021), which said that a positive assessment was revealed regarding the students' understanding and sentiment towards food safety. An impressive eighty percent (80%) demonstrated adequate knowledge of food safety and hygiene principles. Furthermore, a commendable seventy percent (70%) exhibited a positive attitude towards maintaining sanitary practices when handling food. Moreover, college students appreciate the fundamental role that nutritious food plays in achieving a balanced diet and maintaining a healthy lifestyle (Rozekhi et al., 2019). Furthermore, college students often possess a baseline understanding of nutritional principles. This allows them to navigate and interpret the information presented on food labels. This ability to decipher nutritional content empowers students to make more informed dietary choices (Abudu et al., 2022).

Level of Food Nutrition Literacy in terms of Preparing and Marking Food

Table 4 displayed the degree of food nutrition literacy concerning cooking and food preparation. As can be seen in the table, item number five (5) "I can prepare a variety of foods, such as grains, fruits and vegetables" has the highest mean at 4.53, which was descriptively similar to very high. Moreover, the second item (2) "I can able to match food rationally" has the lowest mean (4.32), which was descriptively similar to "very high." This demonstrated the manifestation of food nutrition literacy in terms of meal preparation and labeling.

Table 4 Level of Food Nutrition Literacy in terms of Preparing and Marking Food

Items	Mean	SD	Descriptive Equivalent
1. I can able to estimate food portion size.	4.35	0.70	Very High
2. I can able to match food rationally.	4.32	0.65	Very High
3. I can able to store, prepare, process and cook food in an appropriate manner.	4.46	0.64	Very High
4. I prepare meals on demand, eating in a civilized manner, and eliminating waste.	4.44	0.62	Very High
5. I can prepare a variety of foods, such as grains, fruits and vegetables.	4.53	0.59	Very High
Average	**4.42**	**0.64**	**Very High**

At 0.64, the standard deviation of the food nutrition literacy level about food preparation and labeling was close to the mean. This highlighted the fact that the respondents' responses were consistent. The findings showed that college students can estimate portion sizes to prevent overindulgence and food waste, they can match foods intelligently, they know how to store, prepare, and cook food safely, they can make meals on demand, they follow table etiquette, they prioritize preventing food waste, and they can make a variety of foods.

Based on the results, students expressed greater confidence in their ability to execute cooking techniques compared to their confidence in food budgeting and meal planning. This finding aligns with previous research suggesting a tendency for individuals to feel more confident in practical skills (cooking techniques) as opposed to conceptual skills (food budgeting and meal planning) (Kunzler, 2019). Furthermore, a high proportion of the subjects (80%) indicated that they regularly utilize recipes and incorporate various herbs and spices into their cooking. Encouragingly, a similarly strong majority (over 80%) of the college students demonstrated proficiency in identifying basic culinary techniques such as dicing and sautéing (Czup, 2020).

Level of Food Nutrition Literacy in terms of Eating

The degree of food nutrition literacy regarding eating was displayed in Table 5. As can be seen from the table, item four (4) "I respect different cultures and pay attention to table manners" has the highest mean at 4.60, which was descriptively similar to extremely high. Additionally, item one (1) "I eat right quantity of fish, poultry, eggs, lean meat, and adequate milk and beans" received the lowest descriptive equivalent of "very high," at 4.20. This demonstrated the manifestation of food nutrition literacy in terms of eating.

With a score of 0.69, the standard deviation of the degree of food nutrition literacy in terms of eating was close to the mean. This highlighted how consistently the respondents' responses were given. The findings showed that college students respect different cultures and practice proper table etiquette; they eat regularly and have a good breakfast; they limit their intake of salt, oil, sugar, and alcohol; they balance their eating and movement; and they measure and assess their weight regularly.

The result was supported by the study of Jalil et al. (2019), who found that college students are interested in reducing their meat consumption. However, they indicated that this would be more likely if there were a wider variety of plant-based options available. In other words, tastier and more diverse plant-based meals would make it easier for students to eat less meat. Moreover, college students' dietary choices can significantly influence their ability to maintain a healthy Body Mass Index (BMI). Specific food items, such as sweetened beverages, have been identified as strong predictors of normal weight status. This suggests that prioritizing healthy eating habits is an important factor for college students seeking to maintain a healthy weight (Jeyapaul et al., 2023). Furthermore, the lower consumption of salt observed among college students may be attributable to a two-pronged approach by the university. Educational programs focusing on the negative effects of salt intake and hypertension could raise student awareness and influence their food choices. Furthermore, faculty oversight of campus canteens might be contributing to this trend by promoting healthier food options or deterring students from overconsumption (Biswas et al., 2020).

Table 5 Level of Food Nutrition Literacy in terms of Eating

Items	Mean	SD	Descriptive Equivalent
1. I eat right quantity of fish, poultry, eggs, lean meat, and adequate milk and beans.	4.20	0.73	Very High
2. I consume less salt and less oil, controlling sugar, and limiting wine.	4.21	0.76	Very High
3. I consume regular meals and having a good breakfast.	4.27	0.69	Very High
4. I respect different cultures and pay attention to table manners.	4.60	0.52	Very High
5. I balance eating and movement, measure and evaluate my weight regularly.	4.30	0.74	Very High
Average	**4.31**	**0.69**	**Very High**

Summary of Food Nutrition Literacy

The overview of food nutrition literacy was shown in Table 6. The table indicates that the greatest mean of 4.51 was obtained by Access to Planning and Selecting for Food. It was discovered that the indicator of eating has the lowest mean, 4.31, which was the descriptive equivalent of very high. The findings demonstrated how informed college students were on food and nutrition.

The finding was supported by a recent study by Qi et al. (2023) that food nutrition literacy has emerged as a critical factor influencing dietary choices.

Table 6 Summary on the Level of Food Nutrition Literacy

Indicators	Mean	SD	Descriptive Equivalent
1. Food and Nutrition Knowledge	4.43	0.62	Very High
2. Access to Planning and Selecting for Food	4.51	0.59	Very High
3. Preparing and Marking Food	4.42	0.64	Very High

4. Eating	4.31	0.69	Very High
Overall	**4.42**	**0.64**	**Very High**

There was a link between an individual's level of food literacy and their ability to select healthy options. College students who exhibited higher levels of food literacy gravitated towards healthier choices, such as vegetable and fruit salads, while demonstrating a decreased preference for less nutritious options like spicy hot pots. Moreover, college students with stronger food literacy skills tend to choose healthier foods. This leads to better overall health and a lower risk of diet-related diseases. In short, knowing about food choices makes a big difference in college students' well-being (Boariu et al., 2024). Furthermore, college students' dietary choices impact long-term health. Equipping them with food nutrition literacy empowers informed food decisions. Universities can promote healthy eating through a supportive environment with diverse options and impactful campaigns (Gao et al., 2023).

Level of Food Choices in terms of Healthy Motivations

Table 7 presents the number of meal choices that were chosen with consideration for health. The highest mean, 4.44, was found for item eight (8) "It is crucial for me to consume food that keeps me healthy" as the table shows. This was descriptively equivalent to very high. The item with the lowest mean (4.25), which was descriptively similar to very high, was item six (6) "I consume less foods that contain additives" according to the results. This implied that health was a consistent consideration when making food selections.

Table 7 Level of Food Choices in terms of Healthy Motivations

Items	Mean	SD	Descriptive Equivalent
1. I have serious concerns regarding with the hygiene and safety of the food I eat.	4.41	0.66	Very High
2. It is crucial for me that my diet is low in fat.	4.32	0.72	Very High
3. I typically eat a balanced, healthful diet.	4.32	0.71	Very High
4. It is critical that I get plenty of vitamins and minerals from my regular diet.	4.35	0.70	Very High
5. I eat less foods that may raise my cholesterol.	4.36	0.69	Very High
6. I consume less foods that contain additives.	4.25	0.76	Very High
7. I consume fewer processed foods, because of their lower nutritional quality.	4.38	0.67	Very High
8. It is crucial for me to consume food that keeps me healthy.	4.44	0.60	Very High
9. I eat less foods that can elevate my blood sugar.	4.36	0.65	Very High
10. I never eat foods with GMO.	4.42	0.64	Very High
11. I find it crucial that I limit the amount of sugar in my diet.	4.43	0.66	Very High
Average	**4.37**	**0.68**	**Very High**

Moreover, the total standard deviation of 0.68 indicates that meal choices made with healthy intentions are not too far from the norm. This demonstrated that college students received consistent answers for this metric. College students prioritize food safety and hygiene, aim for a low-fat diet, maintain a healthy and balanced diet, prioritize getting essential vitamins and minerals, restrict foods that raise cholesterol, choose foods with fewer additives and less processing, consume nutritious foods to support overall health and well-being, limit foods that may spike blood sugar, avoid genetically modified organisms, and consume less sugar overall.

The result was supported by the study of Francis et al. (2022) that a significant portion of college students

incorporate dietary supplements into their routines. It is crucial to emphasize that the inherent safety and effectiveness of these products were contingent upon consuming them at the recommended dosages.

Moreover, A survey of college students found that most recognized the importance of limiting sugar intake for their health. Some students even reported actively trying to reduce their daily sugar consumption, particularly focusing on added sugars within meals they prepare themselves. This indicates an awareness of healthy eating habits among this population (Santana et al., 2022).

Furthermore, knowing about healthy eating (nutrition knowledge) helps college students choose better foods. Interestingly, students who knew about healthy eating and also felt confident in their ability to follow a healthy diet (diet self-efficacy) ate more healthy foods. This suggests that both knowing what to eat and believing you can follow a healthy diet are important for college students (Cao et al., 2023).

Level of Food Choices in terms of Emotional Motivations

Table 8 displayed the degree to which eating decisions were influenced by emotional motivation. The table shows that the item (9) "For me, food serves as an emotional consolation" got the highest mean (4.53), which was regarded as an exceptionally high description. The item with the lowest mean, 4.29, was item six (6) "When I feel lonely, I console myself by eating", which was the descriptive equivalent of "very high." It appeared from this that the meal choices were often observed in terms of their emotional motivation. Additionally, based on overall means, the standard deviation of 0.63 indicates that food choices was not far from the norm when considering emotional factors. According to the findings, respondents to this indication were consistently college students. The findings showed that college students use food as a coping mechanism for stress, as a means of controlling their weight, as a means of staying alert, as a means of relaxation or mood enhancement, as a means of fulfilling their boredom, as a means of preventing weight gain, and as a source of cravings for sweets when they were depressed.

Table 8 Level of Food Choices in terms of Emotional Motivations

Items	Mean	SD	Descriptive Equivalent
1. I find that eating reduces stress.	4.46	0.63	Very High
2. I typically consume foods that aid with weight management.	4.30	0.69	Very High
3. I frequently eat foods that help me stay awake and focused, such coffee, coke, and energy drinks.	4.50	0.60	Very High
4. I often consume foods that helps me relax a lot.	4.52	0.58	Very High
5. Food makes me feel good.	4.45	0.63	Very High
6. When I feel lonely, I console myself by eating.	4.29	0.71	Very High
7. I eat more when I have nothing to do.	4.46	0.64	Very High
8. It is important for me to eat less than usual when I gain weight.	4.45	0.63	Very High
9. For me, food serves as an emotional consolation.	4.53	0.59	Very High
10. When I'm depressed, my appetites for sweets increase.	4.37	0.65	Very High
Average	**4.43**	**0.63**	**Very High**

The result was supported by the study of Ilić et al. (2023) that the influence of emotions on dietary choices was undeniable. A particularly noteworthy example lies within the college student population. This group demonstrably makes food selections based on emotional motivations, particularly seeking comfort through their dietary choices. In other words, their food choices were driven by a desire to alleviate negative emotions or

enhance positive ones. Moreover, emotional eating can be linked to attempts at improving both physical and psychological well-being. Individuals who engage in emotional eating may do so to manage their body weight (Ljubičić et al., 2023). Furthermore, dietary intake of prebiotics and probiotics may be linked to mental health in college students. The findings suggest a promising role for these supplements in potentially reducing symptoms of stress, anxiety, and depression. Consuming foods rich in probiotics and prebiotics improved mental well-being (Suri et al., 2022).

Level of Eating Behaviors in terms of Food Responsiveness

Table 9 represented the variety of food options in terms of cost and accessibility. The item with the highest mean, item six (6) "I usually buy food that is easy to prepare" has a 4.46, which was the descriptive equivalent of very high on the table. Regarding the significance of being able to buy food from local stores close to one's home or place of employment, item two (2) "It is important that the food I eat can be bought in shops close to where I live or work" has the lowest mean of 4.39, indicating a very high descriptive equivalent, according to the study. This implied that the availability and affordability of the meals were regularly taken into account while selecting them.

Table 9 Level of Food Choices in terms of Economical and Availability Motivations

Items	Mean	SD	Descriptive Equivalent
1. I usually choose food that has a good quality/price ratio.	4.45	0.60	Very High
2. It is important that the food I eat can be bought in shops close to where I live or work.	4.39	0.61	Very High
3. The main reason for choosing a food is its low price.	4.42	0.62	Very High
4. I choose the food I consume, because it is easy and convenient to purchase.	4.45	0.58	Very High
5. I usually buy fresh food and cook it myself.	4.40	0.65	Very High
6. I usually buy food that is easy to prepare.	4.46	0.59	Very High
7. I usually buy food that it is on sale.	4.40	0.63	Very High
8. I prefer to buy food that is ready to eat or pre-cooked.	4.42	0.59	Very High
Average	**4.42**	**0.61**	**Very High**

Moreover, the total standard deviation of 0.61 indicates that meal selections was not too far from the mean when considering availability and cost considerations. This demonstrated that college students received consistent answers for this metric. The findings showed that college students buy food that was reasonable in terms of both quality and price; they also eat food that was easily accessible from their places of employment or residence; they buy fresh food and prepare it themselves; and they buy food that was ready to eat or already prepared.

The finding was in line with the study conducted by Berhanu et al. (2023) that the economic and logistical realities surrounding food significantly influence dietary choices. Price, affordability, and availability all emerge as critical determinants of what people consume. Moreover, college students exhibit distinct dietary tendencies. Due to the demands of their academic pursuits and busy schedules, they gravitate towards convenient and time-saving options. The palatability of the food also plays a significant role in their dietary choices, favoring items that were considered enjoyable to consume (Choi, 2022). Furthermore, college students who possess greater confidence in their cooking skills were inclined to cook more often. Likewise, the act of cooking more frequently leads to an improvement in perceived culinary abilities among college students (Soldavini & Berner, 2021).

Level of Food Choices in terms of Social and Cultural Motivations

Based on social and cultural considerations, Table 10 displayed the amount of food selected. The highest mean

of 4.51, which was the descriptive equivalent of extremely high, was assigned to item one (1) "Meals are a time of fellowship and pleasure" in the table, which highlights that meals are a time for company and enjoyment. Item three (3) "I find it significant that the food I consume is what I used to eat as a child" has the lowest mean of 4.28, or "very high," according to the study. This indicates that social and cultural factors were consistently noted as influencing food choices.

Further evidence that the food choice was close to the mean in terms of social and cultural motives comes from the total standard deviation of 0.63. This demonstrated that respondents to this indication were college students. Results showed that college students enjoy eating meals with friends and family, that it's important to them that the food they eat was similar to what they ate as children, that they choose their food based on what their peers and family eat, that they prefer to eat alone during meals, that seasonal variations affect their food choices, that they have certain foods that they were used to, that their diet was based on family tradition, that they like to try new foods that they were not used to, and that they eat food.

The finding was in line with the study conducted by Amore et al. (2019) on college students indicated that social media has become a significant source of information regarding healthy eating habits. This trend is exemplified by students following health bloggers for inspiration in their dietary choices. Some students even commented on the growing popularity of health-focused content on social media, suggesting it has become a prevalent trend. Moreover, college student's food choices were significantly influenced by their partner's eating habits. Students who partner with someone who prioritizes healthy eating tend to adopt healthier dietary patterns themselves, exhibiting a more substantial shift towards nutritious options than those paired with individuals who make unhealthier food choices (Gligorić et al., 2021). Furthermore, compared to meals eaten alone, those shared with others were associated with increased intake of vegetables, red meat, fish, legumes, milk, and interestingly, sugar-sweetened beverages. Conversely, nut consumption appeared to be lower during social meals. The social context may influence dietary patterns among college students (Maugeri et al., 2022).

Table 10 Level of Food Choices in terms of Social and Cultural Motivations

Items	Mean	SD	Descriptive Equivalent
1. Meals are a time of fellowship and pleasure.	4.51	0.59	Very High
2. I tend to eat more when I have company.	4.47	0.58	Very High
3. I find it significant that the food I consume is what I used to eat as a child.	4.28	0.69	Very High
4. I eat certain foods because other people (my colleagues, friends, family) also eat it.	4.44	0.63	Very High
5. I prefer to eat by myself.	4.40	0.64	Very High
6. I choose the foods I eat, because it fits the season.	4.40	0.63	Very High
7. I eat certain foods because I am expected to eat them.	4.45	0.61	Very High
8. My diet is determined by my family tradition.	4.45	0.67	Very High
9. I like to try new foods to which I am never accustomed.	4.36	0.69	Very High
10. I usually eat food that is trendy.	4.44	0.61	Very High
11. I am comfortable to eat food that I am accustom to.	4.39	0.63	Very High
Average	**4.42**	**0.63**	**Very High**

Level of Food Choices in terms of Environmental and Political Motivations

The extent to which environmental and political factors affected dietary choices was displayed in Table 11. As shown in the table, the responses pertaining to items five (5) and seven (7), respectively, express the preference for food produced in a manner that upholds animal rights, and the avoidance of restaurants that do not have a

policy of recovering food surplus has obtained the highest mean of 4.47, denoting a very high descriptive level. The study found that the fourth item (4) "It is important to me that the food I eat comes from my own place" has the lowest mean of 4.32, or "very high." This showed that the motivation for dietary choices was influenced by political and environmental factors.

In addition, the overall standard deviation of 0.62 indicates that dietary decisions made for political and environmental reasons tend to be close to the mean. This demonstrated that college students' responses to this indication were consistent. The findings showed that college students consume food that was packaged or prepared in an environmentally friendly manner, pay attention to serving sizes to prevent food waste, are curious about the food's origin and value it when it comes from their region, they are concerned about the treatment of animals and people in the production process, they steer clear of establishments without programs to recover excess food, and they choose minimally impactful foods.

Table 11 Level of Food Choices in terms of Environmental and Political Motivations

Items	Mean	SD	Descriptive Equivalent
1. It is important to me that the food I eat is prepared/packed in an environmentally friendly way.	4.46	0.61	Very High
2. When I cook, I have in mind the quantities to avoid food waste.	4.46	0.59	Very High
3. When I consume or buy food, I am interested about the place of origin.	4.38	0.66	Very High
4. It is important to me that the food I eat comes from my own place.	4.32	0.68	Very High
5. I prefer to eat food that has been produced in a way that animals' rights have been respected.	4.47	0.60	Very High
6. I choose foods that have been produced in countries where human rights are never violated.	4.44	0.59	Very High
7. I avoid going to restaurants that never have a recovery policy of food surplus.	4.47	0.61	Very High
8. I prefer to buy foods that comply with policies of minimal usage of packaging.	4.38	0.65	Very High
Average	**4.42**	**0.62**	**Very High**

Furthermore, college students were exhibiting a growing awareness of the importance of sustainable eating practices. It indicates a positive association between educational level and knowledge of sustainable nutrition. In other words, as individuals progress through higher education and gain a deeper understanding of this topic, they were more likely to adopt and integrate sustainable healthy eating behaviors into their daily lives (Arslan & Alatas, 2023).

Level of Food Choices in terms of Marketing and Commercial Motivations

Table 12 displayed the degree to which economic and marketing motivations impact food choices. Based on the descriptive equivalent of extremely high, the third item (3) "I usually buy food that spontaneously appeals to me (e.g. situated at eye level, appealing colors, pleasant packaging)" has the highest mean, 4.42, as shown in the table. Items seven (7) "I try to schedule my shopping for when I know there are promotions or discounts" were found to have the lowest mean (4.25), which was the descriptive equivalent of very high. This implied that commercial and marketing goals were the primary considerations when choosing meals.

Moreover, the aggregate means' standard deviation of 0.66 indicates that food choices were quite close to the

mean in terms of marketing and commercial incentives. This demonstrated that college students' answers on this indicator were consistent. The findings showed that college students were influenced by marketing and visually appealing packaging, tend to buy items that catch their attention or were recognizable from commercials, were label-conscious and choose healthful options over hyped-up products, and consider brand names when making food selections. Price was also a significant consideration, as students frequently hunt for sales and promotions.

The result provides support by the study of Kalog et al. (2022) that factors influencing college students' food choices revealed the significant influence of advertisement, taste, price, familiarity, and appearance. Interestingly, the study found that the internet emerged as the dominant source of food advertisements on the University for Development Studies campus. Television was also identified as another important source influencing students' food choices. Moreover, A recent study involving college students looked at how they respond to health claims in advertisements. The findings showed that students liked ads that explained the health benefit and also included other relevant information. They felt this extra info added value and made the ad more helpful. In addition, some students said they preferred ads that encouraged them to read the product label for even more details (González-Díaz et al., 2020). Furthermore, product packaging serves as a critical element in influencing college students' purchasing decisions. Several key aspects contribute to this effect, including the color scheme employed, the material chosen for the packaging itself, the overall design aesthetic, the size of the packaging, and its physical shape. These characteristics all play a significant role in capturing the attention of college students and ultimately persuading them to select a particular product (Sukri et al., 2023).

Table 12 Level of Food Choices in terms of Marketing and Commercial Motivations

Items	Mean	SD	Descriptive Equivalent
1. When I go shopping, I am influenced by marketing campaigns.	4.31	0.68	Very High
2. I eat what I eat, because I recognize them from advertisements or have seen it on TV.	4.36	0.64	Very High
3. I usually buy food that spontaneously appeals to me (e.g. situated at eye level, appealing colors, pleasant packaging).	4.42	0.64	Very High
4. When I go shopping, I prefer to read food labels rather than to believe in advertising campaigns.	4.40	0.65	Very High
5. Food advertising campaigns increases my desire to eat certain foods.	4.41	0.61	Very High
6. Brands are important to me when making food choices.	4.41	0.67	Very High
7. I try to schedule my shopping for when I know there are promotions or discounts.	4.25	0.71	Very High
Average	**4.37**	**0.66**	**Very High**

Summary of Food Choices

The summary of meal options was shown in Table 13. As the table demonstrates, the descriptive equivalent of extremely high was obtained by the Emotional Motivations, which has the highest mean of 4.43. Findings showed that the indicator with the lowest mean, 4.37, and the descriptive equivalent of very high were Healthy Motivations and Marketing and Commercial Motivations. The findings showed that eating habits were closely monitored among college students.

The result was supported by the study of Skalkos et al. (2023) that there were ten key factors, known as food choice motives, that influence what students eat. These go beyond just taste and include health, convenience, how the food looks and smells, its nutritional value, and even ethical concerns. Students consider weight control,

mood, and how familiar we were with the food. Price and shopping habits also play a role in college students' final decisions. In addition, within a university dining environment, student selection of food prioritizes taste. Following taste in importance were the factors of food availability and then price (Li et al., 2022).

Table 13 Summary on the Level of Food Choices

Indicators	Mean	SD	Descriptive Equivalent
1. Healthy Motivations	4.37	0.68	Very High
2. Emotional Motivations	4.43	0.63	Very High
3. Economical and Availability Motivations	4.42	0.61	Very High
4. Social and Cultural Motivations	4.42	0.63	Very High
5. Environmental and Political Motivations	4.42	0.62	Very High
6. Marketing and Commercial Motivations	4.37	0.66	Very High
Overall	**4.41**	**0.64**	**Very High**

Correlation Between Food Nutrition Literacy and Food Choices

Food choices and food nutrition literacy have a substantial positive link, as Table 14 shown. Specifically, the null hypothesis was reflected since the total r-value was 0.740 and the p-value was less than 0.05 at 0.001. It indicated a strong correlation between meal choices and knowledge of food nutrition. It suggested that college students' knowledge of food nutrition has a major and advantageous influence on their dietary decisions. This implies that dietary choices increase with food nutrition literacy.

Table 14 Significance of the Relationship Between Food Nutrition Literacy and Food Choices

Variables Correlated	r	p-value	Decision on H_0	Decision on Relationship
Food Nutrition Literacy and Food Choices	0.740	0.001	Rejected	Significant

Furthermore, the result confirmed Mostafazadeh et al. (2024) stated that nutrition literacy can be conceptualized as a multidimensional competency encompassing knowledge, comprehension, and the ability to acquire, utilize, critically evaluate, and effectively communicate information about food and nutrition to promote optimal food choices and health. Conversely, limited nutrition literacy hinders informed food selection, potentially leading to poorer food choices. Additionally, Trieste and Bazzani (2020) stated that there is an association between higher levels of food literacy and individuals making healthier food choices. Furthermore, food and nutrition literacy encompasses the interconnectedness of personal food choices with dietary well-being, environmental impact, and economic factors, promoting informed decision-making within a sustainable food system (Stanley et al., 2022).

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary of Findings

1. The level of food nutrition literacy had a total mean of 4.42 with a descriptive equivalent of very high. It obtained an overall standard deviation of 0.64.

2. The level of food choices had an overall mean of 4.41 and had a very high descriptive equivalent. It obtained an overall standard deviation of 0.64.

3. The relationship between food nutrition literacy and food choices presented a positive correlation with a p-

value of 0.001 which was lower than the level of significant 0.05 the result indicated the rejection of the null hypothesis. Conversely, the degree of correlation between the two variables exhibits a moderately positive connection, as indicated by the r-value of 0.740.

Conclusions

1. The level of Food Nutrition Literacy was very high. This indicates that the food choices of college students in Santo Tomas College of Agriculture, Sciences and Technology appeared. The study's findings suggest that college students' food choices were significantly influenced by their knowledge of food nutrition. It was one of the most important factors resulting in increased food choices. The result of the analysis showed that access to planning and selecting for food has the highest factor in food nutrition literacy, followed by preparing and marking food and eating.

2. The Level of Food Choices was very high. The result of this study showed that the food choices of college students depend on several factors, including healthy motivations, emotional motivations, marketing and commercial motivations, economical and availability motivations, environmental and political motivations, and social and cultural motivations. The results of the study showed that a variety of criteria, including healthy motivations, emotional motivations, marketing and commercial motivations, economic and availability motivations, environmental and political motivations, and social and cultural motivations, influence college students' food choices. College students' food choices are important for their well-being as well as their capacity to avoid stress.

3. Food choices and food nutrition literacy were significantly correlated. It means, the higher the food nutrition literacy, the higher the food choices of college students. Based on the result of this study, the relationship of food nutrition literacy and food choices of college students found significant.

Recommendations

1. The level of food nutrition literacy and food choices of college students must remain high. The school administration should support college students with the resources they need to actively participate in the school community's promotion of nutrition literacy and proper eating behaviors. Create and administer nutrition education programs exclusively for college students. These workshops should cover concepts including the significance of balanced nutrition, budget meal planning, understanding food labels, and making healthy choices.

2. The recommendation is to incorporate food and nutrition literacy into the Food and Service Management (FSM) curriculum, given the shown correlation between food literacy and making healthful choices. Instructors are recommended to incorporate a well-being culture into the program by teaching students how to make nutritious food choices and to incorporate this into the syllabus revision process.

3. Students are encouraged to participate in campus organizations focused on health, wellness, and nutrition, and attend seminars and symposiums on the topic. This will increase their nutrition literacy and empower them to make healthier food choices, resulting in better health outcomes and academic performance.

4. Students in college are advised to consume fresh fruits, vegetables, and meats rather than processed or canned goods, which frequently have additional salt. It is further advised that the choice of baking, steaming, grilling, and sautéing with minimum oil over frying will be practiced.

5. The association between dietary choices and nutrition literacy is something that future researchers are encouraged to look into more.

REFERENCES

1. Karanja, A., Ickowitz, A., Stadlmayr , B., & McMullin , S. (2022). Understanding Drivers of Food Choice in Low- and Middle-Income Countries: A Systematic Mapping Study. Global Food Security.
2. Blake, C., Frongillo, E., Warren, A., Constantinides, S., Rampalli, K., & Bhandari, S. (2021). Elaborating the Science of Food Choice for Rapidly Changing Food Systems in Low-and Middle-

Income Countries. Global Food Security. https://www.sciencedirect.com/science/article/pii/S2211912421000134

3. Rampalli, K. K., Blake, C. E., Frongillo, E. A., & Montoya, J. (2023). Why Understanding Food Choice is Crucial to Transform Food Systems for Human and Planetary Health. BMJ Global Health. https://gh.bmj.com/content/8/5/e010876.abstract

4. Malambe, L. Sizolwethu. (2021). An Exploration of Factors That Influence Food Choices Among Students of the University of KwaZulu-Natal, Howard College Campus, Durban, South Africa. DSpace Repository. https://researchspace.ukzn.ac.za/items/968f0ccf-a627-402a-95b4-94c17b506f98

5. Sousa, B., Pacheco, C., Pereira, C., & Batalha, M. (2020). Factors Influencing Healthy Food Choices of University Students: Fatores que Influenciam a Escolha de Comida Saudável nos Estudantes Universitários. ResearchGate. https://www.researchgate.net/publication/340239197_Factors_influencing_healthy_food_choices_of_university_students_Fatores_que_influenciam_a_escolha_de_comida_saudavel_nos_estudantes_universitarios

6. Dahal, M., Basnet, A., Khanal, S., Baral, K., & Dhakal, S. (2022). Gender Difference in Food Choice and Eating Practice and Their Association with Health among Students of Kathmandu, Nepal. Journal of Obesity. https://www.hindawi.com/journals/jobe/2022/2340809/

7. Martin, S., & Cruz, C. (2020). The Nutrition Environment, Food Choices And Body Image Among College Students. Journal of Social Health. https://socialhealthjournal.ust.edu.ph/wp-content/uploads/2020/08/26-38-Article-4_JOSHV3l2.pdf

8. Mohamed, B. A., Mahfouz, M. S., & Badr, M. F. (2020). Food Selection Under Stress Among Undergraduate Students in Riyadh, Saudi Arabia. Psychology Research and Behavior Management. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7053809/

9. Sogari, G., Velez-Argumedo, C., Gomez, M., & Mora, C. (2018). National Center for Biotechnology Information. MDPI. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6315356/pdf/nutrients-10-01823.pdf

10. Lee, Y., Kim, T., & Jung, H. (2022). Effects of University Students' Perceived Food Literacy on Ecological Eating Behavior Towards Sustainability. MDPI. https://www.mdpi.com/2071-1050/14/9/5242

11. Dawson, P., Martinez-Dawson, R., Northcutt, J., Armstrong, S., Babb, H., Beasley, W., Couture, J., Dorn, S., Graber, J., Dow, A., Harness, J., Nichols, M., Smith, C., Sonefelt, K., & Tietz, S. (2023). Political Ideology Affects College Student Eating Habits. Food & Nutrition Journal. https://www.gavinpublishers.com/article/view/political-ideology-affects-college-student-eating-habits

12. Ladigohon, M. C., Orca, M. F., & Parco, J. (2021). A Study on Media Utilization and Preference for Food and Nutrition Information of Selected College Students in the University of the Philippines Los Baños. Journal of Human Ecology. https://ovcre.uplb.edu.ph/journals-uplb/index.php/JHE/article/view/529

13. Irader, G. G., & Ubane, S. C. (2022). Insights on UEP'S Food Selling Policy: Level of Significant Relationship between Food Consumption Pattern, Health and Safety, and Knowledge on the Basic Food Groups among the Students in the University of Eastern Philippines Main Campus. Asian Journal of Education and Social Studies. https://journalajess.com/index.php/AJESS/article/view/507

14. Arroyo, R., Ramos, J., Ugsod, A., Pangan, C., Copina, P., Modesto, I., Quiapan, M., Llamas, T., Etulle, M., & Cabus, C. (2023). Level of Food Preferences among College Students of Central Mindanao University. IJARSCT. https://ijarsct.co.in/Paper14008.pdf

15. Namoco, R. A., Abecia, A. L., & Pailagao, R. O. (2021). A Decision Support System for Optimizing Nutrient in Daily Lunch Intake Among College Students in Cagayan de Oro City, Philippines Using Linear Programming. SRS Journal. https://sciresol.s3.us-east-2.amazonaws.com/IJST/Articles/2021/Issue-45/IJST-2021-1457.pdf?fbclid=IwAR3LVNGeULagfWkLl0DilG-H6gKtm31FmaPURVCwOCYDLmXERsIo6aidD6E

16. Doustmohammadian, A., Omidvar, N., Keshavarz-Mohammadi, N., Eini-Zinab, H., Amini, M., & Abdollahi, M. (2022). The Association and Mediation Role of Food and Nutrition Literacy (FNLIT) with Eating Behaviors, Academic Achievement and Overweight in 10–12 Years Old Students: A Structural Equation Modeling. BioMed Central. https://nutritionj.biomedcentral.com/articles/10.1186/s12937-022-00796-8

17. Lee, Y., Kim, T., & Jung, H. (2022). The Relationships between Food Literacy, Health Promotion Literacy and Healthy Eating Habits Among Young Adults in South Korea. MDPI. file:///C:/Users/user/Downloads/foods-11-02467.pdf

18. Jones, C., & Adkins, K. (2021). Nutrition Literacy, Food Preference, and Food Choices Within a School-Based Choice Food Pantry. Taylor & Francis Online. https://www.tandfonline.com/doi/abs/10.1080/19320248.2021.1873882

19. Nutbeam, D. (2000). Health Literacy as a Public Health Goal: A Challenge for Contemporary Health Education and Communication Strategies into the 21st Century. OUP Academic. https://academic.oup.com/heapro/article/15/3/259/551108

20. Ogot, N. (2021). Metrics for Identifying Food Security Status. Food Access - an overview | ScienceDirect Topics. https://www.sciencedirect.com/topics/nursing-and-health-professions/food-access

21. Doustmohammadian, A., Omidvar, N., & Shakibazadeh, E. (2020). School-Based Interventions for Promoting Food and Nutrition Literacy (FNLIT) in Elementary School Children: A Systematic Review Protocol. BioMed Central. https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-020-01339-0

22. Zhang, Y., Zhang, Z., Xu, M., Aihemaitijiang, S., Ye, C., Zhu, W., & Ma, G. (2022). Development and Validation of a Food and Nutrition Literacy Questionnaire for Chinese Adults. Nutrients, 14(9), 1933. https://doi.org/10.3390/nu14091933

23. Ajzen, I. (1991). The Theory of Planned Behavior. Boston University. https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/BehavioralChangeTheories3.html

24. Makiabadi, E., Kaveh, M., Asadollahi, A., & Ostovarfar, J. (2018). Development and Validating of a Quest for Predicting Nutrition Literacy Promoting Behavior Based on the Theory of Planned Behavior in Southern Iran, 2017. Nutrition & Food Security Research Center. https://publish.kne-publishing.com/index.php/JNFS/article/view/2312/3374

25. Chilon - Troncos, R., García-Salirrosas, E., Escobar-Farfán, M., Millones-Liza, D., & Villar-Guevara, M. (2023). Predicting Willingness to Consume Healthy Brand Foods Using the Theory of Planned Behavior: The Role of Nutritional Literacy. Frontiers. file:///C:/Users/user/Downloads/fnut-11-1353569.pdf

26. Zhang, Y., Sun, Q., Zhang, M., Mo, G., & Liu, H. (2022). Nutrition Literacy Measurement Tool with Multiple Features for Chinese Adults. SAGE JOURNALS. https://journals.sagepub.com/doi/pdf/10.1177/03795721211073221

27. Ferrao, C., Guiné, R., Correia, P., Ferreira, M., Duarte, J., & Lima, J. (2019). Development of A Questionnaire to Assess People's Food Choices Determinants. Taylor & Francis Online. https://www.tandfonline.com/doi/abs/10.1080/19320248.2021.1873882

28. Aprecia, N., Barrera, G., Cuares, K., Cuison, M., Lazaro, M., Pat-i, K., & Sayson, Y. (2022). A Descriptive Correlational Study on the Physical Environment and Perceived Academic Performance of STEM Online Learners. Animo Repository. https://animorepository.dlsu.edu.ph/cgi/viewcontent.cgi?article= 1178&context=conf_shsrescon

29. Bhandari, P. (2023). Correlational Research | When & How to Use. Scribbr. https://www.scribbr.com/methodology/correlational-research/

30. Sreekumar, D. (2023). What is Quantitative Research? Definition, Methods, Types, and Examples. Researcher.Life . https://researcher.life/blog/article/what-is-quantitative-research-types-and-examples/

31. Bhandari, P. (2020). What Is Quantitative Research? | Definition, Uses & Methods. Scribbr. https://www.scribbr.com/methodology/quantitative-research/

32. Thomas, L. (2020). Stratified Sampling: Definition, Guide & Examples. Scribbr. https://www.scribbr.com/methodology/stratified-sampling/

33. Eads, A. (2023). What Is the Mean? How To Calculate It (With Examples). Indeed. https://www.indeed.com/career-advice/career-development/how-to-calculate-the-mean

34. Turney, S. (2022). Pearson Correlation Coefficient (r) | Guide & Examples. Scribbr. https://www.scribbr.com/statistics/pearson-correlation-coefficient/#:~:text=The%20Pearson%20correlation%20coefficient%20(r,Correlation%20type

35. Inghram, V. (2019). Nutritional Knowledge and Behaviors of Undergraduate Students. eGrove.

https://egrove.olemiss.edu/hon_thesis/1238/

36. Khan, S. I., Zada, R., & Ismael, D. (2022). Effect of Healthy Eating Habits on the Academic Performance of Graduating Students. ResearchGate. https://www.researchgate.net/publication/362822635_Effect_of_Healthy_Eating_Habits_on_the_Academic_Performance_of_Graduating_Students

37. Xi, E. (2019). Health and Nutrition Knowledge Among College Students. Scholar Works. https://scholarworks.calstate.edu/downloads/5999n546w

38. Serrem, K., Illés, C. B., Serrem, C., Atubukha, B., & Dunay, A. (2021). Food Safety and Sanitation Challenges of Public University Students in a Developing Country. Food science & nutrition. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8358354/

39. Rozekhi, N. A., Hussin, S., Salmi, N. S., & Bashir, M. A. A. (2019). Influences on College Students in Making Nutritious Food Choice. ResearchGate. https://www.researchgate.net/publication/332430918_Influences_on_College_Students_in_Making_Nutritious_Food_Choice

40. Abudu, J., Kizzie-Hayford, N., Essuman, E. K., & Ampofo, J. (2022). Relevance of Food Labels among Selected Students at the University of Cape Coast, Ghana. ResearchGate. https://www.researchgate.net/publication/363307258_Relevance_of_Food_Labels_among_Selected_Students_at_the_University_of_Cape_Coast_Ghana

41. Kunzler, A. (2019). Determining the Need for Meal Preparation Education in First-Year University Students. DigitalCommons@USU. https://digitalcommons.usu.edu/honors/425/

42. Czup, A. (2020). The Impact of Cooking Knowledge, Attitude, Behavior, and Food Security Status on Diet Quality of College Students at the University of Maine. The University of Maine. https://digitalcommons.library.umaine.edu/etd/3268/

43. Jalil, A., Tasoff, J., & Bustamante, A. (2019). Eating to Save the Planet: Evidence from a Randomized Controlled Trial Using Individual-Level Food Purchase Data. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3444642

44. Jeyapaul, S., Kalia Perumal, R., & Chellathurai, A. (2023). Impact of Healthy Food Consumption Practice on Normal BMI among College Girls. International journal of science and healthcare research. https://www.academia.edu/110276251/Impact_of_Healthy_Food_Consumption_Practice_on_Normal_BMI_among_College_Girls?uc-sb-sw=84973344

45. Biswas, J., Haque, M. M., Mahbub, Md. S., Nurani, R. N., Shah, N. A., Barua, L., Banik, P. C., Faruque, M., & Zaman, M. M. (2020). Salt Intake Behavior among the Undergraduate Students of Bangladesh University of Health Sciences. ResearchGate. https://www.researchgate.net/publication/343813057_Salt_intake_behavior_among_the_undergraduate_students_of_Bangladesh_University_of_Health_Sciences

46. Qi, Q., Sun, Q., Yang, L., Cui, Y., Du, J., & Liu, H. (2023). High Nutrition Literacy Linked with Low Frequency of Take-out Food Consumption in Chinese College Students. BioMed Central. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-16078-9

47. Boariu, S. M., Scutariu, A. M., Pintilei, D. R., Tarcea, M., Guiné, R. P. F., & Ferreira, M. (2024). Food Literacy Assessment of a Sample of Romanian Higher Education Students. MDPI. https://www.mdpi.com/2071-1050/16/3/1034

48. Gao, T., Duan, Y., Qi, Q., Mo, G., Han, S., Liu, H., & Zhang, M. (2023). Nutrition Literacy Differs Based on Demographics among University Students in Bengbu, China. Frontiers. https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2023.1113211/full

49. Francis, T., Veeraraghavan, V., & Kavitha, G. (2022). Awareness of Vitamin and Mineral Supplements among College Students. Original Article. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9836153/pdf/JAPTR-13-320.pdf

50. Santana, I. P., Scapin, T., Rodrigues, V. M., Bernardo, G. L., Uggioni, P. L., Fernandes, A. C., & Proença, R. P. da C. (2022). University Students' Knowledge and Perceptions About Concepts, Recommendations, and Health Effects of Added Sugars. Frontiers in nutrition. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9218564/

51. Cao, J., Wang, K., Shi, Y., Pan, Y., Lyu, M., Ji, Y., & Zhang, Y. (2023). Effects of Personal and Interpersonal Factors on Changes of Food Choices and Physical Activity among College Students. PLOS ONE. https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0288489

52. Ilić, A., Dizdarić , D., & Sarić , M. M. (2023). Motivations Associated with Food Choices among Adults

from Urban Setting. ResearchGate. https://www.researchgate.net/publication/374162466_Motivations _Associated_with_Food_Choices_among_Adults_from_Urban_Setting

53. Ljubičić, M., Sarić, M. M., Klarin, I., Rumbak, I., Barić, I. C., Ranilović, J., Dželalija, B., Sarić, A., Nakić, D., Djekic, I., Korzeniowska, M., Bartkiene, E., Papageorgiou, M., Tarcea, M., Černelič-Bizjak, M., Klava, D., Szűcs, V., Vittadini, E., Bolhuis, D., & Guiné, R. P. F. (2023). Emotions and Food Consumption: Emotional Eating Behavior in a European Population. National Library of Medicine. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9957014/

54. Suri, M., Sabharwal, V., Kaushik, P., Joshi, A., Aayushi, & Aggarwal, S. (2022). Association of Prebiotic and Probiotic Food Consumption with Depression, Anxiety and Stress among College Going Students. The Indian Journal of Nutrition and Dietetics. https://informaticsjournals.com/index.php/ijnd/article/view/28714

55. Berhanu, H., Gebremichael, B., Roba, K. T., Moges, S., & Gebremedhin, M. (2023). Drivers of Food Choice Among College Students in Addis Ababa, Ethiopia: A Structural Equation Model. Nutrition and Dietary Supplements. https://www.dovepress.com/drivers-of-food-choice-among-college-students-in-addis-ababa-ethiopia--peer-reviewed-fulltext-article-NDS

56. Choi, J. (2022). A Pilot Study on RTE Food Purchasing and Food-Related Behaviors of College Students in an Urbanized Area. International journal of environmental research and public health. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8953631/

57. Soldavini, J., & Berner, M. (2021). Characteristics Associated with Cooking Frequency among College Students. International Journal of Gastronomy and Food Science. https://www.sciencedirect.com/science/article/abs/pii/S1878450X21000020?fr=RR-2&ref=pdf_download&rr=8833ba0249bf9891

58. Amore, L., Buchthal, O. V., & Banna, J. C. (2019). Identifying Perceived Barriers and Enablers of Healthy Eating in College Students in Hawaii: A Qualitative Study Using Focus Groups . SpringerLink. https://link.springer.com/article/10.1186/s40795-019-0280-0

59. Gligorić, K., White, R. W., Kıcıman, E., Horvitz, E., Chiolero, A., & West, R. (2021). Formation of Social Ties Influences Food Choice: A Campus-Wide Longitudinal Study. Cornell University. https://arxiv.org/abs/2102.08755

60. Maugeri, A., Magnano San Lio, R., Favara, G., La Rosa, M. C., La Mastra, C., Riela, P. M., Guarnera, L., Battiato, S., Barchitta, M., & Agodi, A. (2022). Impact of Eating Context on Dietary Choices of College Students: Evidence from the HEALTHY-UNICT Project. MDPI. https://www.mdpi.com/2072-6643/14/20/4418

61. Arslan, N., & Alatas, H. (2023). The Relationship Between Sustainable Nutrition and Healthy Food Choice: A Cross-Sectional Study. Scispace. https://typeset.io/papers/the-relationship-between-sustainable-nutrition-and-healthy-2tcrskrx

62. Kalog, G. L. S., Kasim, F., Anyebuno, B., Tei, S., Kubuga, C. K., Mogre, V., & Aryee, P. A. (2022). Food Advertisement Influences Food Decision Making and not Nutritional Status: A Study among University Students in Ghana. BioMed Central. https://bmcnutr.biomedcentral.com/articles/10.1186/s40795-022-00571-2

63. González-Díaz, C., Vilaplana-Aparicio, M. J., & Iglesias-García, M. (2020). How Is Functional Food Advertising Understood? An Approximation in University Students. Nutrients. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7692513/

64. Sukri, S., Hong, W. Y., Malek, F. A., & Abdullah, T. M. K. (2023). The Influence of Product Packaging on Students' Purchasing Intention. ResearchGate. https://www.researchgate.net/publication/368461233_The_Influence_of_Product_Packaging_on_Students'_Purchasing_Intention

65. Skalkos, D., Kalyva, Z. C., & Kosma, I. S. (2023). The Impact of the COVID-19 Pandemic on College Students' Food Choice Motives in Greece. MDPI. https://www.mdpi.com/2071-1050/15/13/9865

66. Li, X., Braakhuis, A., Li, Z., & Roy, R. (2022). How Does the University Food Environment Impact Student Dietary Behaviors? A Systematic Review. Frontiers in nutrition. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9090611/

67. Mostafazadeh, P., Jafari, M. J., Mojebi, M. R., Nemati-Vakilabad, R., & Mirzaei, A. (2024). Assessing the Relationship Between Nutrition Literacy and Eating Behaviors among Nursing students: A Cross-Sectional Study. BioMed Central. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-

023-17468-9

68. Trieste, L., Bazzani, A., Amato, A., Faraguna, U., & Turchetti, G. (2020). Food Literacy and Food Choice – A Survey-Based Psychometric Profiling of Consumer Behaviors. British Food Journal. https://www.emerald.com/insight/content/doi/10.1108/BFJ-09-2020-0845/full/html

69. Stanley, K. C., Harrigan, P. B., Serrano, E. L., & Kraak, V. I. (2022). A Systematic Scoping Review of the Literacy Literature to Develop a Digital Food and Nutrition Literacy Model for Low-Income Adults to Make Healthy Choices in the Online Food Retail Ecosystem to Reduce Obesity Risk. Obesity Reviews, 23(4). https://doi.org/10.1111/obr.13414