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# The Impact of Customers' Nutritional Awareness on Food Habits, Behaviors, and Choices in Fast Food Restaurants

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| Keywords | Abstract |
|---|---|
| 1. *Nutritional Awareness,*<br>2. *Food Habits;*<br>3. *Food Behaviors;*<br>4. *Food Choices;*<br>5. *Fast Food Restaurants.* | The study aims to investigate the effects of customers' nutritional awareness on food habits, behaviors, and choices in fast food restaurants. This study utilized a questionnaire for collecting data by random sample of fast food restaurants customers in Minia, Bani suef, and Fayoum governorates during the period (January to April 2024). A quantitative approach was applied. A total number of the 404 questionnaires were distributed to fast food restaurants customers. SPSS version 22.0 was used to analyze the data. The descriptive statistics (including frequency, percentage, standard deviation, mean, and rank) were used to evaluate the relative importance of the research variables. Correlation and regression used to test study hypotheses. The results showed that awareness significantly contributed to food behaviors, influencing customer habits and food choices. Healthy food habits are closely linked to nutritional awareness, with individuals with strong health habits tending to engage in healthier choices. Additionally, awareness significantly influenced food item choices, with individuals with high self-health awareness more likely to pay attention to nutritional information. The research recommended that fast food restaurants managers should work collaboratively to promote nutritional awareness, encourage healthier food behaviors, and address the complex challenges associated with diet-related health issues. |

## 1. Introduction

Nutritional awareness (NA) constitutes a fundamental aspect of educational processes across diverse societal groups and educational levels (Saliha, 2016). Sheded (2016) highlights that fast-food establishments often offer meals High-calorie meals with poor nutritional benefit, contributing to the prevalence of obesity and associated health issues. Understanding individuals' food preferences and consumption patterns is pivotal for fostering nutritional awareness (Eze et al., 2017). In the past decade, nutrition research and education have gained significant attention (Cardenas et al., 2019). As well as mortality rates and malnutrition-related illnesses tend to escalate in populations lacking essential knowledge about healthy dietary practices (Alnader, 2019). The rise in modern illnesses including cancer, heart disease, diabetes, and obesity, which are often linked to poor nutritional awareness and unhealthy dietary habits (Al Ghazaly et al., 2019). Furthermore, established eating habits and attitudes greatly influence the food choices that consumers make (Halabo et al., 2019). So the studies, including those by Asirvatham et al., (2019), have revealed a concerning trend: the proliferation of fast-food businesses correlates with increased obesity rates, with a significant portion of these establishments offering limited nutritious options.

For instance, findings from a study in Ireland revealed that young individuals exerted more control over their food choices outside the home, with a majority opting for less nutritious options despite the availability of healthier alternatives (Peters & Remaud, 2020). Nutrition education initiatives have been instrumental in this regard, raising individuals' awareness about their dietary habits and fostering positive changes in food behaviors (Abdo, 2020). However, despite various efforts, many countries still grapple with widespread illiteracy regarding nutrition, irrespective of individuals' educational backgrounds (Almoallem, 2021). To aid individuals in making healthier food choices, various resources like food pyramids such as the food guide pyramid, My pyramid, and My plate have been developed to provide foundational information (Khairunnisa, 2022).

The shortage of consumer awareness with relation to the nutritional content of meals, particularly those consumed outside the home, contributes significantly to weight gain (Ensaff, 2021). Consequently, there is a growing recognition of the need to reform the food offerings in restaurants to enhance diet quality and decrease excessive energy consumption, and foster healthier food habits among consumers (Abdelmawgoud et al., 2020). Green (2016) advocates for future research endeavors aimed at reaching groups having a lesser level of awareness and utilization of wholesome food instructions. Shanks (2017) emphasizes the importance of improving the food supply to include nutritional education and information, thereby contributing to the reduction of disparities in obesity, overweight, and nutrition-related chronic diseases. Similarly, Roy and Alassadi (2021) propose that forthcoming studies should investigate the influence of food labels in menus on customers' selections and consumption behaviors, focusing on potential challenges and opportunities to innovate solutions that align with nutritional and health aspirations.

In line with these recommendations, researchers' pilot study, which was conducted to evaluate nutritional awareness among restaurant customers of various demographics, provide valuable insights. Findings from this pilot study reveal alarming patterns, including the high spread of FF consumption, despite significant awareness regarding its adverse health effects. Although a substantial percentage of individuals recognize the benefits of healthy meals, actual consumption rates remain relatively low, possibly contributing to the prevalence of food-related diseases. Additionally, a

concerning proportion of individuals do not prioritize reading food labels, potentially exacerbating nutritional challenges.

As health concerns continue to escalate, there is a pressing need for food menus to provide comprehensive nutritional information to assist consumers in making informed food selections (Filimonau et al., 2017; Noone & Cachia 2020). Eze et al. (2017) emphasize the need to address hazardous eating patterns, such as excessive fast-food consumption and irregular meal timings, through enhanced nutritional awareness initiatives. Furthermore, food education plays a significant role in shaping individuals' awareness and eating habits, highlighting the importance of targeted interventions (Halabo et al., 2019). Jia et al. (2023) underscore the importance of nutritional education, particularly for restaurant patrons, to address challenges associated with portion sizes and nutrient content in prepared foods. Considering the substantial impact of poor nutritional awareness on health outcomes, future studies should delve deeper into the eating behaviors and nutritional awareness of various occupational groups, as recommended by Sanchi and Borges (2019).

Building on previous research findings, this research aims to evaluate the level of food awareness between fast-food restaurant customers to examine its impact on their food habits, behaviors, and menu item choices. The research includes the following objectives:

1- Evaluating the nutritional awareness levels among customers of fast food restaurants.
2- Evaluating the food habits, behaviors, and menu items choices of FF restaurant consumers.
3- Measuring the impact of the level of nutritional awareness on the food habits, behaviors and menu items choices among customers of fast food restaurants.
4- Identifying the differences between the demographic characteristics (Age groups and educational level) of the study sample and the study variables (level of nutritional awareness, food habits, behaviors, and choices of menu items) among customers of fast food restaurants.

### 1.1. Research Hypotheses:

**H1:** There is a statistically significant effect of level of nutritional awareness on food behaviors.

**H2:** There is a statistically significant effect of level of nutritional awareness on food habits.

**H3:** There is a statistically significant effect of level of nutritional awareness on food items choices.

## 2. Literature Review:

### 2.1. Nutritional awareness:

The importance of NA in promoting fundamental life skills, forming eating habits, and promoting societal well-being in a variety of socioeconomic circumstances is highlighted by Saliha (2016). Moreover, Abdelmawgoud et al. (2020) highlights the multifaceted determinants influencing young people's nutritional awareness, including gender, socioeconomic status, educational attainment, health status, and employment type so nutritional awareness stands as a cornerstone within the realm of establishments offering food and beverage services, encompassing hotels and restaurants alike. Nutritional awareness was defined by Almoallem (2021) as the comprehension and application of information concerning food and proper nutrition in daily life, nutritional awareness is cultivated through habitual practices that seamlessly integrate healthy behaviors into individuals' routines.

Chrisman and Ríos (2019) propose the utilization of the healthy food index as a metric for evaluating nutritional awareness, focusing on dietary quality as a key indicator. So societal behaviors, as observed in Assiut Governorate, reflect a concerning increase in adolescents' reliance on fast food as a daily dietary staple, posing significant health implications for both individuals and communities (Elzohry et al., 2021). Furthermore, the lack of knowledge regarding meal content, particularly outside the home environment, emerges as a significant contributor to the escalating rates of weight gain observed in populations (Ensaff, 2021). Studies examining food behavior norms, such as those referenced by Rahamat et al., (2022), underscore the intricate interplay between health knowledge and customer intentions, emphasizing the integral role of nutritional awareness in shaping dietary choices.

Nutritional awareness intertwines closely with individuals' knowledge levels, shaping their attitudes and actions regarding food habits (Eze et al., 2017). The dissemination of nutrition education serves as a catalyst for enhancing nutritional knowledge, prompting shifts in food behaviors and trends (Abdo, 2020). Recognized as an educational endeavor, nutritional awareness endeavors to modify behavior through the acquisition of knowledge, skills, and attitudes (Almoallem, 2021). Jia et al. (2021) argued that nutrition education was the process of translating nutrition-related health facts into behavioral patterns at the individual and societal levels, applying educational approaches to teach the person how to protect themselves against nutritional diseases. Tools like food pyramids serve as invaluable resources, offering foundational guidance to aid individuals in making informed, health-conscious food choices (Chrisman & Ríos, 2019).

Research, including that conducted by Shapu et al., (2023) underscore the substantial increase in awareness following nutrition education initiatives. Encouraging individuals to consider food choices across various food groups and construct nutritious meals fosters healthy eating habits from a young age (Culliford et al., 2023). The MyPyramid menu chart emerges as an effective tool for imparting guidance on food pattern modifications and supporting weight management efforts (Morgan-Bathke, 2023). The transformation of healthy practices into ingrained habits underscores the pivotal role of habits in shaping consumer behavior patterns (Elzohry et al., 2021; Ahmed, 2023). However, reliance on nutritionists and advertisements for nutritional guidance remains limited, as observed by Quaidoo et al. (2018). Evaluating the sources of nutrition information and awareness reveals varied channels of influence, with the internet, family, friends, and media platforms playing significant roles (Almoallem, 2021).

## 2.2. Food Habits and Behaviors:

Food habits, as defined by Sobhy (2019), encapsulate a repertoire of dietary practices and recurring actions that individuals undertake in managing food, encompassing decisions on selection, preparation, and cooking methods. These habits are intricately linked with eating behaviors, serving as foundational elements that shape individuals' awareness, beliefs, and subsequent actions concerning food (Saliha, 2016). Indeed, habits manifest as persistent engagements in particular actions, often surpassing the malleability of individual behaviors themselves (Hussin et al., 2018). Salah (2021) distinguishes between habit and behaviors, noting that while behavior can be subject to change based on personal and health-related interests, habits represent ingrained actions that resist alteration. Elzohry et al. (2021) emphasize the pivotal role of habits in steering consumer behavior within the food domain.

Healthy food habits are indicative of an individual's level of nutritional awareness, with those exhibiting strong health habits more inclined towards consuming

nutritious foods (Loebnitz & Grunert, 2018).These habits, ingrained over time, reflect not only individual preferences but also broader societal behaviors, including the proliferation of fast food culture and promotional activities targeting young consumers (Deepika & Reddy, 2018; Al-Ghazaly et al., 2019). So habits as underscored by Al Ghazaly et al. (2019) and Peters & Remaud (2020), wield considerable influence over customers' decision-making processes when selecting meals.

Gender, social status, education level, and exposure to chronic illnesses such as obesity and diabetes emerge as pivotal determinants shaping eating behavior (Nasir & Tahir, 2017). Furthermore, culture and social trends have a significant part in formatting individual behaviors, highlighting the need to foster healthy habits conducive to diverse eating patterns (Kim et al., 2018; Asher et al., 2022). The significance of FB extends beyond individual preferences to encompass broader health implications, particularly concerning chronic diseases arising from daily dietary choices (Ahmed, 2023).

In response to escalating health concerns, there has been a growing imperative to provide educational information for nutrition on menus, both to inform consumers and encourage good FCs (Filimonau et al., 2017). The inclusion of calorie information has shown promise in reducing the consumption of high-calorie meals, signaling a positive shift towards healthier eating behaviors (Jeong & Ham, 2018). Nutritional labeling on menus has emerged as a strategic approach to mitigate improper food behaviors out the home (Fernandes et al., 2019). The provision of such information aids customers in understanding the nutritional value of meals, facilitating informed decision-making (Roy & Alassadi, 2021). Moreover, menu labeling has been associated with promoting healthier habits, directing customers towards nutritious options, particularly in fast-food establishments (Kerins et al., 2020; Rahamat et al., 2022).

### 2.3. Choice of menus items:

Customers' choices of menu items are deeply intertwined with their food habits, preferences, and nutritional awareness, as highlighted by Anzman-Frasca et al. (2017) and Abdo (2020). These factors serve as primary influencers guiding individuals towards selecting meals that align with their lifestyle choices and health goals. Nutritional awareness emerges as a crucial determinant shaping food selection and consumption patterns, underscoring its significance in promoting healthier living (Bennett et al., 2022).Moreover, cultural influences and ingrained food habits play pivotal roles in shaping customers' purchasing decisions, as noted by Aly (2019). The interplay between cultural norms and individual preferences underscores the complexity of food choices, wherein factors beyond mere nutrient content contribute to decision-making processes (Atanasova et al., 2022; Al Kandari, 2022).

Participants in studies, such the one by Kim et al. (2018), have reported that the availability of healthier menu items positively impacts their ability to regulate weight, alter behavioral perspectives, and enhance overall health and self-confidence. This highlights the importance of offering diverse and nutritious options to cater to varying customer needs and preferences.

### 2.4. The impact of Nutritional Awareness on food behaviors, Habits, and Choices:

As noted by Deepika and Reddy (2018), one can assess an individual's level of nutritional awareness by looking at their eating patterns. Individuals with heightened self-health awareness, as noted by Loebnitz and Grunert (2018), are more inclined to pay greater attention to diet-related information. Al-Ghazaly et al. (2019) found that customers with robust health habits tend to engage in congruent behaviors, opting for healthier food options. Elareed and Senosy (2019) provide a guide of the effect of food awareness on FB, highlighting its significance in promoting healthier habits. Peters and

Remaud (2020) emphasize the pivotal role of habits in shaping consumer behavior, particularly when it comes to meal selection. The consequences of insufficient awareness extend to elevated rates of malnutrition disorders and adverse health outcomes, underscoring the urgent need for targeted education and intervention programs (Bansah, 2022). Factors such as gender, socioeconomic status, and cultural influences contribute to variations in nutritional knowledge, as observed by El Asemy et al. (2020) and Jeslin & Astina (2023).

Low food awareness often leads individuals to prioritize sensory experience over nutritional considerations when making food choices, as highlighted by Lessa et al. (2017). Perceptions of taste often deter individuals from selecting healthier foods, underscoring the need for interventions to address taste perceptions and enhance food awareness (Lessa et al., 2017). Motivation also plays a crucial role, with consumers driven by health-conscious intentions more likely to opt for nutritious options (Loebnitz & Grunert, 2018). Social influences, such as suggestions from friends and family, further shape menu selections (Su and Lu, 2018). Nevertheless, heightened awareness empowers individuals to make informed dietary choices that support their overall health and well-being (Sanchi & Borges 2019). Roy and Alassadi (2021) emphasize the preference for healthier menu items among consumers has a priority nutrition and health. Figure 1 illustrates the conceptual framework suggested by the researchers.
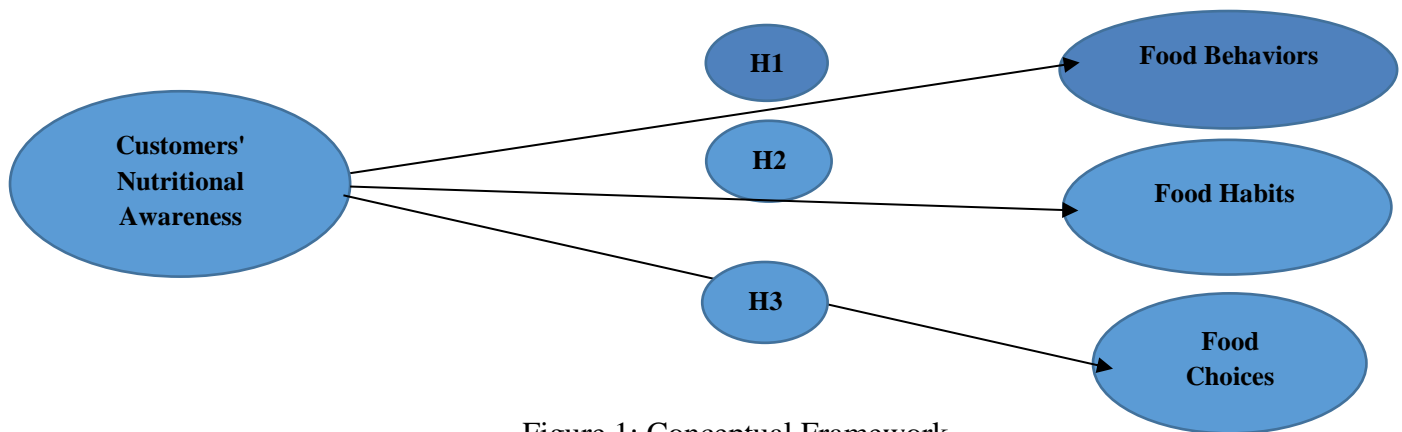


Figure 1: Conceptual Framework

## 3. Methodology

The research employed a quantitative approach, the researchers distributed 450 questionnaires in the research population. The valid was 404 questionnaires and the invalid was 46 questionnaires. The response rate was 89.77 %. The research focused on the fast food restaurants (e.g., Kentucky Fried Chicken, Pizza Hut, Bazooka Fried Chicken, MacDonald's, Burger King, Prego, Freaka, Set- elsham, Ozi, Ali baba, Lamera, And Casabella) in North Upper Egypt region, Fayoum, Beni Suef, and Minia governorates, due to similarities in geographical location, income level, educational background, and cultural factors. This study's metrics were all derived from previous research projects. In order to ensure that the items measured the research variables and that the language and item descriptions were updated, a panel of five professionals and academics evaluated the initial questionnaire.

The questionnaire comprised five main sections. The first section gathered personal data, including age, gender, governorate, educational level, monthly income, and sources of nutritional information, along with knowledge about different food pyramids. Second sections assessed the level of nutritional awareness. It was measured using a scale adapted from Din et al., 2012, Saliha, 2016, Al Ghazaly et al, 2019, Almoallem, 2021, and Elzohry et al., 2021. Third section concluded the healthy and

unhealthy food habits. This habit was measured using the scale adapted from Din et al., 2012, Saliha, 2016, and Elzohry et al., 2021. Fourth section evaluated customers' food behavior. This behavior was measured using the scale adapted from Dillen et al., 2006, Din et al., 2012, Hakli et al., 2016, and Saliha ,2016. Fifth sections assessed the factors influencing food choices, such as preference for fast food restaurants and menu items. Food choices were measured using the scale adapted from Din et al., 2012, Elzohry et al., 2021, and Rahamat et al., 2022. Responses were measured using five-point Likert scales, ranging from strongly agree to strongly disagree.

Data analysis was conducted using SPSS version 22.0, employing descriptive statistics such as frequency, percentage, standard deviation, mean, and rank to assess the research variables' relative importance. The researchers utilized the linear regression analyses to test the research hypotheses. Before the main data collection, a pilot study involving 60 questionnaires was conducted to assess the questionnaire's reliability, validity, and determine the appropriate sample size. The pilot study aimed to refine the questionnaire and ensure its effectiveness in capturing the intended data accurately.

### 3.1. Data validity

This research used many techniques to extreme the validity of its tool. Content validity was tested by a panel of five academic experts in the hospitality management field. Factor analysis was employed to apply exploratory validity in order to reinforce the components. According to Fabrigar, et al. (1999) the extraction loading should be more than 0.6. (See table 1).

Table (1): Factor Analysis of Research Variables

| The Axes | No. of statements | Extraction |
|---|---|---|
| Nutritional Awareness | 9 | 0.967 |
| Food Behaviors | 13 | 0.969 |
| Food Habits | 9 | 0.959 |
| Food Choices | 29 | 0.819 |
| The Overall | 60 | 0.995 |

### 3.2. Data Reliability

The technique most commonly used in research to evaluate internal consistency is the computation of the alpha coefficient. Cronbach's alpha level of above 0.7 is considered reliable (Hair et al., 2019). The Overall Cronbach's Alpha exceeded 0.9 for the 64 variables; this means that all variables were excellent and reliable (See table 2).

Table (2): Reliability Analysis of Research Variables

| The Axes | No. of statements | Alpha Coefficient |
|---|---|---|
| Nutritional Awareness | 9 | 0.701 |
| Food Behaviors | 13 | 0.734 |
| Food Habits | 9 | 0.710 |
| Food Choices | 29 | 0.842 |
| **The Overall** | **60** | **0.897** |

### 3.3. Research Sampling

This research used the Thompson formula to obtain the appropriate sample size of the guests from the hotels in the research population, where the population size is infinite or unknown (Thompson, 2012; Lohr, 2021), as the following:

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2}$$

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2} = 384.16$$

Where: Z: Standard Degree (Z = 1.96 at Sig. Level of 0.05). $\hat{p}$: Sample Proportion and Neutral ($\hat{p}$ = 0.5). Ɛ: Maximum Allowed Error (Ɛ = 0.05 at Sig. Level of 0.05). $n$: Size of Sample ($n$ = 385). When the previous values are entered into the Thompson formula, the appropriate size of sample for this research was 385 participants. The researchers distributed 450 questionnaires in the research population. The valid was 404 questionnaires and the invalid was 46 questionnaires. The response rate was 89.77 %.

# 4. Results and Discussion

## 4.1. The sample characteristics

Table (3): The sample characteristics (Personal Data)

| Variables | Responses | Frequency | Percent | Rank |
|---|---|---|---|---|
| Gender | Male | 157 | 38.9 % | 2 |
| | Female | 247 | 61.1 % | 1 |
| | **Total** | **404** | **100 %** | **--** |
| Age Group | Less than 20 years | 49 | 12.1 % | 3 |
| | From 20 to less than 40 years | 253 | 62.6 % | 1 |
| | From 40 to 60 years | 70 | 17.3 % | 2 |
| | More than 60 years | 32 | 7.9 % | 4 |
| | **Total** | **404** | **100 %** | **--** |
| Governorate | Minia | 139 | 34.4 % | 2 |
| | Bani Suef | 164 | 40.6 % | 1 |
| | Fayoum | 101 | 25 % | 3 |
| | **Total** | **404** | **100 %** | **--** |
| Education Level | Below average qualification | 14 | 3.5 % | 5 |
| | Middle qualification | 70 | 17.3 % | 2 |
| | Above average qualification | 56 | 13.9 % | 3 |
| | High qualification | 234 | 57.9 % | 1 |
| | Postgraduate | 30 | 7.4 % | 4 |
| | **Total** | **404** | **100 %** | **--** |
| Monthly Income | Less than 2000 L.E | 141 | 34.9 % | 1 |
| | From 2000 to Less than 4000 L.E | 137 | 33.9 % | 2 |
| | More than 4000 to 6000 L.E | 91 | 22.5 % | 3 |
| | More than 6000 L.E | 35 | 8.7 % | 4 |
| | **Total** | **404** | **100 %** | **--** |
| The sources of nutritional information | Family | 98 | 14.9 % | 5 |
| | Friends | 104 | 15.8 % | 4 |
| | Nutrition experts | 155 | 23.5 % | 1 |
| | Nutrition posters | 42 | 6.4 % | 6 |
| | Media | 107 | 16.2 % | 3 |
| | Social media sites | 144 | 21.9 % | 2 |
| | Internet | 8 | 1.2 % | 7 |
| | Reading | 1 | 0.2 % | 8 |
| | **Total** | **659** | **100 %** | **--** |
| The information about the food pyramids for dietary needs | My pyramid | 179 | 33.8 % | 2 |
| | My plate | 222 | 42 % | 1 |
| | Food guide pyramid | 128 | 24.2 % | 3 |
| | **Total** | **529** | **100 %** | **--** |

As declared in table 3, the females are (61.1%), whilst only (38.9%) are males. The age category between 20: less than 40 years old represents the highest percent of the customers sample with (62.6 %), and between 40:60 years old comes in second place with (17.3 %). Respondents from Bani Suef Governorate represents (40.6 %), followed by Minia (34.4 %), and Fayoum (25 %). In terms of educational level, the majority (57.9 %) has High qualification, whilst 17.3 % have a Middle qualification, (13.9 %) Above average qualification, (7.4 %) Postgraduate, and (3.5 %) have below average qualification. In terms of the Monthly Income, (68.8%) less than 4000 L.E; (22.5%) from 4000: 6000 L.E, and (8.7 %) more than 6000 L.E. Also, the customers' sample was asked the sources of nutritional information; the highest percent came from Nutrition experts with (23.5%), followed by social media sites (21.9%), media (16.2%), friends (15.8%), family (14.9%), and nutrition posters (6.4%). Finally, the customers' sample was asked the information about the food pyramids for dietary needs; the highest percent came from My Plate with (42%), My Pyramid (33.8%), and Food guide pyramid (24.2%).

## 4.2. The results of descriptive analysis

Table (4): The Customers' Nutritional Awareness in Fast Food Restaurants

| Statement | Mean | SD | Sig. | Rank |
|---|---|---|---|---|
| I think that choosing healthy foods is influenced by my level of nutritional awareness, which is significant. | 4.37 | 0.874 | 0.000 | 1 |
| Nutritional awareness and implementing nutritious behaviors are related, in my opinion. | 4.36 | 0.795 | 0.000 | 2 |
| I believe that plant foods are richer in vitamins than animal foods. | 3.63 | 1.164 | 0.000 | 8 |
| A balanced diet is one that is rich in a sufficient amount of nutrients. | 4.27 | 0.961 | 0.000 | 3 |
| I believe that malnutrition results from a lack of food that a person eats and its insufficient quantity and quality. | 4.10 | 1.025 | 0.042 | 5 |
| I think soft drinks help digestion. | 2.93 | 1.327 | 0.000 | 9 |
| I try to obtain nutritional information about diet, calories, and nutritional education from credible sources on social media related to fast food restaurants. | 3.70 | 1.157 | 0.000 | 7 |
| I am well versed in healthy nutritional information. | 3.79 | 1.042 | 0.000 | 6 |
| I think providing nutritional information on the menu is important to me. | 4.16 | 0.973 | 0.001 | 4 |
| The Overall | 3.92 | 0.490 | 0.002 | -- |

Mean = Mean of the customers' nutritional awareness, SD = Standard Deviation, Sig. = Significance Degree of one-sample T-Test, and Rank = Rank of Mean.

The study's assessment of customers' nutritional awareness in fast food restaurants, as depicted in Table 6, reveals several significant insights. Respondents overwhelmingly acknowledge the importance of nutritional awareness in influencing their healthy food choices, with a mean score of 4.37, indicating a high level of agreement. Similarly, the belief in a relationship between nutritional awareness and adopting healthy behaviors also ranks highly, with a mean of 4.36. Participants strongly agree on the significance of a balanced diet rich in sufficient nutrients (mean of 4.27) and the importance of providing nutritional information on menus (mean of 4.16). There is moderate agreement on understanding malnutrition's causes (mean of 4.10) and self-assessed knowledge of healthy nutrition (mean of 3.79). However, beliefs about the superiority of plant foods in vitamin content (mean of 3.63) and the credibility of nutritional information from social media related to fast food (mean of 3.70) show more variability. Interestingly, the misconception that soft drinks aid digestion has the lowest agreement (mean of 2.93). This result consists with Saliha (2016) who highlights

nutritional awareness as essential life skills for forming good food habits. Moreover, nutrition education promotes knowledge and changes food habits, aiming to modify behavior and protect against nutritional diseases (Abdo, 2020). Overall, the data reflects a robust awareness of nutritional issues, though some misconceptions and areas for improvement remain, highlighting the need for ongoing education and clear nutritional information in fast food contexts.

Table (5): The Customers' Food Habits in Fast Food Restaurants

| Statement | Mean | SD | Sig. | Rank |
|---|---|---|---|---|
| I believe that a healthy diet is linked to following healthy eating habits. | 4.58 | 0.676 | 0.000 | 1 |
| I make sure to eat breakfast daily. | 4.07 | 1.040 | 0.152 | 2 |
| I stick to the three main meals a day. | 3.65 | 1.187 | 0.000 | 5 |
| I am interested to know the nutritional value of fast food before I eat it. | 3.63 | 1.255 | 0.000 | 6 |
| I eat fast food even though I know its harmful effects. | 3.48 | 1.323 | 0.000 | 7 |
| I eat fast food at least once a week. | 3.38 | 1.313 | 0.000 | 9 |
| I observe healthy nutritional values in my meals. | 3.78 | 1.068 | 0.000 | 3 |
| I can control and adhere to my diet outside the home. | 3.45 | 1.202 | 0.000 | 8 |
| I eat vegetables as a daily snack. | 3.73 | 1.114 | 0.000 | 4 |
| The Overall | 3.74 | 0.574 | 0.000 | -- |

Mean = Mean of the customers' food habits, SD = Standard Deviation, Sig. = Significance Degree of one-sample T-Test, and Rank = Rank of Mean.

As shown in table 5, the most effective variables were, "I believe that a healthy diet is linked to following healthy eating habits." (M=4.58, SD=0.676), "I make sure to eat breakfast daily." (M= 4.07, SD= 1.040). On the other hand, "I observe healthy nutritional values in my meals." (M=3.78, SD=1.068). Additionally, "I eat vegetables as a daily snack." (M=3.73, SD=1.114). Furthermore, the least effective variables were "I eat fast food at least once a week." (M=3.38, SD=1.313). On the other hand, "I can control and adhere to my diet outside the home." (M=3.45, SD=1.202). As well as the overall mean of the above variables was (3.74) with a standard deviation of (0.574). This result indicated that a healthy diet is linked to following healthy eating habits, such as eating breakfast daily, having three meals daily, and eating fast food at least once a week even though its harmful effects. These results agreed with the fact that healthy food habits are closely linked to a person's level of nutritional awareness ( Deepika & Reddy, 2018), with individuals exhibiting strong health habits tending to engage in healthier food choices (Al-Ghazaly et al., 2019). Healthy food habits are indicative of an individual's level of nutritional awareness, with those exhibiting strong health habits more inclined towards consuming nutritious foods (Loebnitz & Grunert, 2018). Eze et al. (2017) emphasize the need to address hazardous eating patterns, such as excessive fast-food consumption and irregular meal timings, through enhanced nutritional awareness initiatives.

Table (6): The Customers' Food Behavior in Fast Food Restaurants

| Statement | Mean | SD | Sig. | Rank |
|---|---|---|---|---|
| I believe that a healthy diet is linked to following healthy eating behaviors. | 4.58 | 0.673 | 0.000 | 1 |
| I am trying to lose weight by skipping some meals | 3.18 | 1.318 | 0.000 | 13 |
| I reduce foods rich in animal oils and fats. | 3.71 | 1.131 | 0.000 | 6 |
| I prefer to eat fruits every day in my meals. | 4.14 | 0.989 | 0.005 | 2 |
| I pay attention to see the ingredients of nutritional foods before buying them. | 3.69 | 1.149 | 0.000 | 7 |
| I don't use sugar in a lot of my drinks. | 3.52 | 1.311 | 0.000 | 10 |
| I think the nutritional information helps me determine my nutritional intake when I'm eating at a restaurant. | 3.91 | 1.019 | 0.080 | 3 |
| I eat whatever I like regardless of whether the food is healthy or unhealthy. | 3.67 | 1.316 | 0.000 | 8 |
| I eat sweets and tea or coffee after meals. | 3.28 | 1.338 | 0.000 | 11 |
| I eat in small dishes. | 3.59 | 1.061 | 0.000 | 9 |

| | | | | |
|---|---|---|---|---|
| I replace grilled foods instead of fried foods. | 3.83 | 1.082 | 0.002 | 4 |
| I eat whole wheat bread instead of white bread. | 3.76 | 1.161 | 0.000 | 5 |
| I eat a lot of sweets and bakery. | 3.23 | 1.307 | 0.000 | 12 |
| The Overall | 3.69 | 0.496 | 0.000 | -- |

Mean = Mean of the customers' food behavior, SD = Standard Deviation, Sig. = Significance Degree of one-sample T-Test, and Rank = Rank of Mean.

As shown in table 6, the most effective variables were, "I believe that a healthy diet is linked to following healthy eating behaviors." (M=4.58, SD=0.673), I prefer to eat fruits every day in my meals." (M= 4.14, SD= 0.989). On the other hand, "I think the nutritional information helps me determine my nutritional intake when I'm eating at a restaurant." (M=3.91, SD=1.019). Additionally, "I replace grilled foods instead of fried foods." (M=3.83, SD=1.082). Furthermore, the least effective variables were "I am trying to lose weight by skipping some meals." (M=3.18, SD=1.318). On the other hand, "I eat a lot of sweets and bakery." (M=3.23, SD=1.307). As well as the overall mean of the above variables was (3.69) with a standard deviation of (0.496). This result indicated that healthy diet is linked to following healthy eating behaviors such as eat fruits every day in my meals, determine nutritional intake when I'm eating at a restaurant, replace grilled foods instead of fried foods. Moreover, some customers following unhealthy behaviors such as, trying to lose weight by skipping some meals and eat a lot of sweets and bakery. The result consists with Peters and Remaud (2020) that nutritional awareness plays a significant role in influencing customer behavior when selecting meals. Nutritional labeling on menus has emerged as a strategic approach to mitigate improper food behaviors outside the home (Fernandes et al., 2019). The inclusion of calorie information has shown promise in reducing the consumption of high-calorie meals, signaling a positive shift towards healthier eating behaviors (Jeong & Ham, 2018).

Table (7): The Customers' Food Choices in Fast Food Restaurants

| Statement | Mean | SD | Sig. | Rank |
|---|---|---|---|---|
| I go to fast food restaurants a lot every week. | 3.14 | 1.438 | 0.000 | 24 |
| I prefer distinguished fast food restaurants in terms of customer reviews on social networks. | 3.40 | 1.179 | 0.000 | 22 |
| I choose what is useful and healthy from fast food. | 3.72 | 1.083 | 0.000 | 18 |
| I think carefully about the health consequences of my food choices. | 3.66 | 1.164 | 0.000 | 20 |
| I would like fast food restaurants to provide menus with calories and nutritional value for each menu item. | 3.87 | 1.162 | 0.024 | 14 |
| I am very interested in reading nutritional information while choosing an item from a restaurant menu. | 3.61 | 1.119 | 0.000 | 21 |
| I believe that the availability of nutritional information in menus encourages me to choose healthy foods. | 4.07 | 1.003 | 0.138 | 5 |
| I can change my unhealthy choices if there is information on healthy items in menus. | 4.06 | 1.002 | 0.234 | 6 |
| I select menu items according to the lowest priced items. | 3.73 | 1.185 | 0.000 | 17 |
| I select menu items according to the most expensive items. | 2.94 | 1.185 | 0.000 | 26 |
| I select menu items according to the items that contain less fat. | 3.91 | 1.134 | 0.125 | 12 |
| I select menu items according to the items that contain more fat. | 2.55 | 1.268 | 0.000 | 27 |
| I select menu items according to the items I have tried before. | 4.05 | 1.141 | 0.384 | 7 |
| Pizza is the most chosen item from fast food menu items. | 3.88 | 1.267 | 0.055 | 13 |
| Crepe is the most chosen item from fast food menu items. | 3.78 | 1.270 | 0.001 | 16 |
| Sandwiches are the most chosen item from fast food menu items. | 3.87 | 1.147 | 0.022 | 14 |
| Desserts are the most chosen item from fast food menu items. | 3.40 | 1.399 | 0.000 | 22 |
| Ice cream is the most chosen item from fast food menu items. | 3.81 | 1.227 | 0.003 | 15 |
| Salads are the most chosen item from fast food menu items. | 3.99 | 1.192 | 0.835 | 9 |
| Soft drinks are the most chosen item from fast food menu items. | 3.04 | 1.489 | 0.000 | 25 |
| I prefer to choose fast food restaurants according to general atmosphere. | 3.93 | 1.181 | 0.239 | 11 |
| I prefer to choose fast food restaurants according to food quality. | 4.31 | 0.962 | 0.000 | 1 |

| | | | | |
|---|---|---|---|---|
| I prefer to choose fast food restaurant according to quality and speed of service. | 4.25 | 0.959 | 0.000 | 2 |
| I prefer to choose fast food restaurants according to the appropriate prices. | 4.03 | 1.082 | 0.581 | 8 |
| I prefer to choose fast food restaurant according to variety of food items. | 4.14 | 1.013 | 0.007 | 4 |
| I prefer to choose fast food restaurant according to publicity and advertisement. | 3.35 | 1.266 | 0.000 | 23 |
| I prefer to choose fast food restaurants according to cleanliness of the place. | 4.15 | 1.139 | 0.007 | 3 |
| I prefer to choice fast food restaurants according to general design (decoration). | 3.69 | 1.247 | 0.000 | 19 |
| I prefer to choice fast food restaurants according to discounts on prices. | 3.95 | 1.213 | 0.413 | 10 |
| The Overall | 3.73 | 0.491 | 0.000 | -- |

Mean = Mean of the customers' food choices, SD = Standard Deviation, Sig. = Significance Degree of one-sample T-Test, and Rank = Rank of Mean.

As shown in table 7, the most effective variables were, "I prefer to choose fast food restaurants according to food quality." (M=4.31, SD=0.962), "I prefer to choose fast food restaurants according to quality and speed of service." (M= 4.25, SD= 0.959), "I prefer to choose fast food restaurants according to the cleanliness of the place." (M=4.15, SD=1.139), "I prefer to choose fast food restaurants according to the variety of food items." (M=4.14, SD=1.013), "I believe that the availability of nutritional information in menus encourages me to choose healthy foods." (M=4.07, SD=1.003), On the other hand, "I can change my unhealthy choices if there is information on healthy items in menus." (M=4.06, SD=1.002). Additionally, "I select menu items according to the items I have tried before." (M=4.05, SD=1.141). Furthermore, the least effective variables were "I select menu items according to the items contain more fat." (M=2.55, SD=1.268). On the other hand, "I select menu items according to the most expensive items." (M=2.94, SD=1.185). As well as the overall mean of the above variables was (3.73) with a standard deviation of (0.491). This result indicated that customer's choice fast food restaurant according to food quality, quality and speed of service, cleanliness of the place, variety of food items, nutritional information in menus, and choose items they have tried before. On the other hand, some customers choose food items which contain more fat, most expensive items, and Soft drinks are the most chosen item from fast food menu items. This results agreed with Abdo (2020) and Anzman-Frasca et al. (2017) that customers' choices of menu items are deeply intertwined with their food habits, preferences, and nutritional awareness. These factors serve as primary influencers guiding individuals towards selecting meals that align with their lifestyle choices and health goals. This result consists with Loebnitz and Grunert, 2018 who stated that individuals with high self-health awareness are more likely to pay attention to nutritional information. Moreover, perceptions of taste and preferences can influence customers' choices, posing barriers to selecting healthy foods (Lessa et al., 2017).

### 4.3. Differences between demographic data (age groups and educational level) with respect to the research variable

Table (8): The Differences between Age Groups and Education Levels with `Respect to the Customers' Nutritional Awareness in Fast Food Restaurants

| Variable | Age Groups | | Education Levels | |
|---|---|---|---|---|
| | F | Sig. | F | Sig. |
| Customers' Nutritional Awareness | 2.026 | 0.110 | 4.716 | 0.001 |

Table 8 presents the analysis of differences in customers' nutritional awareness in fast food restaurants across age groups and education levels. The results indicate a significant difference in nutritional awareness based on education levels (F = 4.716, p = 0.001), suggesting that individuals with different levels of education exhibit varying degrees of nutritional awareness. However, no significant difference was found across age groups (F = 2.026, p = 0.110), indicating that age does not play a significant role in determining nutritional awareness in this context. These findings underscore the

importance of education in shaping nutritional awareness and suggest that targeted educational interventions may be effective in improving nutritional knowledge and behaviors among consumers in fast food settings. This result consists of the fact that nutrition education promotes nutritional knowledge by making people aware of their food habits and changing food trends and behaviors (Abdo, 2020).

Table (9): Least Significant Difference Test (LSD) between Education Levels conceding the Customers' Nutritional Awareness in Fast Food Restaurants

| Dependent Variable | (I) Education Levels | (J) Education Levels | Mean Difference | Sig. |
|---|---|---|---|---|
| Awareness | Below average qualification | Middle qualification | - 0.128 | 0.362 |
| | | Above average qualification | - 0.425* | 0.003 |
| | | High qualification | - 0.226 | 0.088 |
| | | Postgraduate | - 0.395* | 0.012 |
| | Middle qualification | Below average qualification | 0.128 | 0.362 |
| | | Above average qualification | - 0.297* | 0.001 |
| | | High qualification | - 0.097 | 0.137 |
| | | Postgraduate | - 0.266* | 0.012 |
| | Above average qualification | Below average qualification | 0.425* | 0.003 |
| | | Middle qualification | 0.297* | 0.001 |
| | | High qualification | 0.199* | 0.006 |
| | | Postgraduate | 0.030 | 0.779 |
| | High qualification | Below average qualification | 0.226 | 0.088 |
| | | Middle qualification | 0.097 | 0.137 |
| | | Above average qualification | - 0.199* | 0.006 |
| | | Postgraduate | - 0.168 | 0.071 |
| | Postgraduate | Below average qualification | 0.395* | 0.012 |
| | | Middle qualification | 0.266* | 0.012 |
| | | Above average qualification | - 0.030 | 0.779 |
| | | High qualification | 0.168 | 0.071 |

The Least Significant Difference (LSD) test examined differences in customers' nutritional awareness in fast food restaurants across various education levels. Significant mean differences were observed between specific pairs of education levels. Notably, individuals with above average qualifications showed lower nutritional awareness compared to those with below average qualifications (mean difference = -0.425, p = 0.003), and those with postgraduate qualifications demonstrated lower awareness than those with below average qualifications (mean difference = -0.395, p = 0.012). Additionally, significant differences were found between middle and above average qualifications, as well as between high and above average qualifications. These results underscore the influence of education level on nutritional awareness, suggesting the need for targeted educational interventions to address varying levels of knowledge and promote healthier food choices among customers in fast food establishments.

Table (10): The Differences between Age Groups and Education Levels with `Respect to the Customers' Food Habits in Fast Food Restaurants

| Variable | Age groups | | Education levels | |
|---|---|---|---|---|
| | F | Sig. | F | Sig. |
| Customers' Food Habits | 1.685 | 0.170 | 1.718 | 0.145 |

Table 10 presents an analysis of the differences in customers' food habits in fast food restaurants concerning age groups and education levels. The results indicate that there are no significant differences in customers' food habits across age groups (F = 1.685, p = 0.170) or

education levels (F = 1.718, p = 0.145). This suggests that neither age nor education level significantly influences food habits in fast food restaurant settings, based on the variables examined in this study. These findings imply that other factors beyond age and education level may have a stronger impact on customers' food habits in fast food environments, warranting further investigation into additional contributing factors. This result consists of the fact that Individual behaviors vary based on cultural and social context, with gender, social status, education level, and exposure to chronic illnesses being significant factors impacting eating behavior (Nasir & Tahir, 2017; Kim et al., 2018). Nutritional awareness and education programs are crucial for managing dietary habits, identifying health issues, malnutrition diseases, and unhealthy eating habits, and treating them through healthy lifestyle practices (Abdo, 2020).

Table (11): The Differences between Age Groups and Education Levels with `Respect to the Customers' Food Behavior in Fast Food Restaurants

| Variable | Age groups | | Education levels | |
|---|---|---|---|---|
| | F | Sig. | F | Sig. |
| Customers' Food Behavior | 1.458 | 0.225 | 2.296 | 0.059 |

Table 11 presents an analysis of the differences in customers' food behavior in fast food restaurants concerning age groups and education levels. The results indicate that there are no significant differences in customers' food behavior across age groups (F = 1.458, p = 0.225). However, there is a marginally significant difference in food behavior across education levels (F = 2.296, p = 0.059), suggesting that education level may have a slight influence on food behavior in fast food restaurant settings. Further exploration may be warranted to understand the specific ways in which education level impacts food behavior and to identify potential interventions to promote healthier choices among customers in fast food environments.

Table (12): The Differences between Age Groups and Education Levels with `Respect to the Customers' Food Choices in Fast Food Restaurants

| Variable | Age groups | | Education levels | |
|---|---|---|---|---|
| | F | Sig. | F | Sig. |
| Customers' Food Choices | 4.009 | 0.008 | 2.416 | 0.048 |

Table 12 provides an analysis of the differences in customers' food choices in fast food restaurants concerning age groups and education levels. The results reveal significant differences in food choices across age groups (F = 4.009, p = 0.008), indicating that age has a notable influence on the types of food customers select in fast food establishments. Additionally, there are significant differences in food choices across education levels (F = 2.416, p = 0.048), suggesting that education level also plays a role in shaping food choices. These findings underscore the importance of considering both age and education level when designing strategies to promote healthier food options and behaviors among customers in fast food settings. This result consists of the fact that a low level of nutritional awareness was caused by cultural and social factors, as well as people's attitudes and beliefs regarding healthy food choices (El Asemy et al., 2020). Further research may be necessary to understand the specific factors driving these differences and to develop targeted interventions to address them effectively.

Table (13): Least Significant Difference Test (LSD) between age groups conceding the Customers' Food Choices in Fast Food Restaurants

| Dependent variable | (I) education levels | (J) education levels | Mean Difference | Sig. |
|---|---|---|---|---|
| Food Choices | Less than 20 years | From 20 to less than 40 years | 0.233$^*$ | 0.002 |
| | | From 40 to 60 years | 0.105 | 0.246 |
| | | More than 60 years | 0.243$^*$ | 0.028 |
| | From 20 to less than 40 years | Less than 20 years | - 0.233$^*$ | 0.002 |
| | | From 40 to 60 years | - 0.128 | 0.050 |
| | | More than 60 years | 0.009 | 0.914 |
| | From 40 to 60 years | Less than 20 years | - 0.105 | 0.246 |
| | | From 20 to less than 40 years | 0.128 | 0.050 |
| | | More than 60 years | 0.138 | 0.182 |
| | More than 60 years | Less than 20 years | - 0.243$^*$ | 0.028 |
| | | From 20 to less than 40 years | - 0.009 | 0.914 |
| | | From 40 to 60 years | - 0.138 | 0.182 |

The Least Significant Difference (LSD) test was employed to analyze differences in customers' food choices across various age groups in fast food restaurants. Significant mean differences were observed between specific pairs of age groups. Notably, individuals aged less than 20 years exhibited different food choices compared to those aged between 20 and 40 years (mean difference = 0.233, p = 0.002) and those aged more than 60 years (mean difference = 0.243, p = 0.028). Conversely, individuals aged more than 60 years had different food choices compared to those aged less than 20 years (mean difference = -0.243, p = 0.028). These findings underscore the influence of age on customers' food preferences in fast food contexts and suggest the importance of tailored interventions to address age-specific dietary needs and promote healthier eating habits.

Table (14): Least Significant Difference Test (LSD) between education levels conceding the Customers' Food Choices in Fast Food Restaurants

| Dependent variable | (I) education levels | (J) education levels | Mean Difference | Sig. |
|---|---|---|---|---|
| Food Choices | Below average qualification | Middle qualification | 0.132 | 0.354 |
| | | Above average qualification | - 0.061 | 0.673 |
| | | High qualification | 0.086 | 0.519 |
| | | Postgraduate | 0.252 | 0.111 |
| | Middle qualification | Below average qualification | - 0.132 | 0.354 |
| | | Above average qualification | - 0.194$^*$ | 0.027 |
| | | High qualification | - 0.045 | 0.491 |
| | | Postgraduate | 0.119 | 0.262 |
| | Above average qualification | Below average qualification | 0.061 | 0.673 |
| | | Middle qualification | 0.194$^*$ | 0.027 |
| | | High qualification | 0.148$^*$ | 0.042 |
| | | Postgraduate | 0.313$^*$ | 0.005 |
| | High qualification | Below average qualification | - 0.086 | 0.519 |
| | | Middle qualification | 0.045 | 0.491 |
| | | Above average qualification | - 0.148$^*$ | 0.042 |
| | | Postgraduate | 0.165 | 0.081 |
| | Postgraduate | Below average qualification | - 0.252 | 0.111 |
| | | Middle qualification | - 0.119 | 0.262 |
| | | Above average qualification | - 0.313$^*$ | 0.005 |
| | | High qualification | - 0.165 | 0.081 |

The Least Significant Difference (LSD) test was employed to evaluate differences in customers' food choices within various education levels in fast food restaurants. Significant mean differences were noted between specific pairs of education levels. Notably, individuals with

middle qualifications displayed differing food choices compared to those with above average qualifications (mean difference = -0.194, p = 0.027), and those with above average qualifications exhibited differing food choices compared to those with high qualifications (mean difference = 0.148, p = 0.042) and postgraduate qualifications (mean difference = 0.313, p = 0.005). These findings underscore the impact of education level on food preferences, suggesting the necessity for tailored interventions to address educational disparities and promote healthier dietary selections across diverse educational backgrounds in fast food environments.

### 4.4. Test of Hypotheses

H1 of the research aimed to test whether there is a statistically significant effect of the level of nutritional awareness on food behaviors. To evaluate this hypothesis, the researchers utilized linear regression analyses, specifically focusing on linear regression coefficients. H1: There is statistically significant effect of level of nutritional awareness on food behaviors.

Table (15): Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.527[a] | 0.278 | 0.276 | 0.42271 |

a. Predictors: (Constant), Awareness

The Model Summary, presented in Table 15, indicates that the predictor variables collectively accounted for a significant proportion of the variance in food behaviors (R = 0.527, R Square = 0.278, Adjusted R Square = 0.276). The standard error of the estimate was found to be 0.42271. These findings suggest that the level of nutritional awareness has a meaningful impact on food behaviors, supporting H1.

Table (16): ANOVA Model

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 27.655 | 1 | 27.655 | 154.769 | 0.000[b] |
| | Residual | 71.832 | 402 | 0.179 | | |
| | Total | 99.487 | 403 | | | |

a. Dependent Variable: Behavior          b. Predictors: (Constant), Awareness

Table 16 presents the ANOVA model to assess the impact of the level of nutritional awareness on food behaviors. The regression model accounts for a significant portion of the variance in food behaviors, as evidenced by the significant F-statistic (F = 154.769, p < 0.001). This indicates that the predictor variable, awareness (level of nutritional awareness), significantly contributes to explaining the variation in food behaviors. This analysis provides further support for H1, indicating a statistically significant effect of the level of nutritional awareness on food behaviors. Therefore, based on the findings, hypothesis 1 (H1) was accepted. The result consists with Peters and Remaud (2020) that nutritional awareness plays a significant role in influencing customer behavior when selecting meals.

Table (17): Regression Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.604 | 0.170 | | 9.444 | 0.000 |
| | Awareness | 0.534 | 0.043 | 0.527 | 12.441 | 0.000 |

a. Dependent Variable: Behavior

Table 17 shows the regression coefficients indicating a significant relationship between nutritional awareness and food behaviors. The coefficient for awareness is 0.534, indicating that an increase in awareness leads to a 0.534 unit increase in food behaviors. This supports the hypothesis that higher awareness leads to more favorable food behaviors. To test H1, which examines whether there is a statistically significant effect of the level of nutritional awareness on food item behaviors, the researchers utilized linear regression coefficient analysis.

To test H2, which examines whether there is a statistically significant effect of the level of nutritional awareness on food habits, the researchers employed linear regression analysis.

### Table (18): Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.590[a] | 0.348 | 0.346 | 0.46477 |

a. Predictors: (Constant), Awareness

As presented in Table 18, indicates that the predictor variables collectively accounted for a significant portion of the variance in food habits (R = 0.590, R Square = 0.348, Adjusted R Square = 0.346). The standard error of the estimate was found to be 0.46477. The inclusion of the constant and awareness as predictors in the model suggests that nutritional awareness plays a substantial role in explaining food habits, thereby supporting the hypothesis that the level of nutritional awareness indeed has a statistically significant effect on food habits. This result consists of the fact that healthy food habits are closely linked to a person's level of nutritional awareness (Deepika & Reddy, 2018), with individuals exhibiting strong health habits tending to engage in healthier food choices (Al-Ghazaly et al., 2019).

### Table (19): ANOVA Model

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 46.329 | 1 | 46.329 | 214.477 | 0.000[b] |
| | Residual | 86.835 | 402 | 0.216 | | |
| | Total | 133.164 | 403 | | | |

a. Dependent Variable: Habits          b. Predictors: (Constant), Awareness

Table 19 presents the ANOVA model to further analyze the impact of the level of nutritional awareness on food habits. The regression model accounted for a significant amount of variance in food habits, as indicated by the significant F-statistic (F = 214.477, p < 0.000). This suggests that the predictor variable, awareness (level of nutritional awareness), significantly contributed to explaining the variation in food habits. This analysis provides further support for H2, indicating a statistically significant effect of the level of nutritional awareness on food habits. Therefore, based on the findings, hypothesis 2 (H2) was accepted.

### Table (20): Regression Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.037 | 0.187 | | 5.553 | 0.000 |
| | Awareness | 0.691 | 0.047 | 0.590 | 14.645 | 0.000 |

a. Dependent Variable: Habits

Table 20 shows the regression coefficients relating nutritional awareness and food habits. The coefficients indicate a significant effect of awareness on food habits, with a 0.691 unit increase for every one-unit increase. The standardized coefficient (Beta) for awareness is 0.590, indicating its importance in explaining variation in food habits.

To test H3, which examines whether there is a statistically significant effect of the level of nutritional awareness on food item choices, the researchers utilized linear regression coefficient analysis.

Table (21): Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.384[a] | 0.147 | 0.145 | 0.45422 |

a. Predictors: (Constant), Awareness

The Model Summary, displayed in Table 21, indicates that the predictor variables collectively accounted for a significant proportion of the variance in food item choices (R = 0.384, R Square = 0.147, Adjusted R Square = 0.145). The standard error of the estimate was found to be 0.45422. These findings suggest that the level of nutritional awareness has a statistically significant impact on food item choices, providing evidence against H3.

Table (22): ANOVA Model

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 14.334 | 1 | 14.334 | 69.478 | 0.000[b] |
| | Residual | 82.938 | 402 | 0.206 | | |
| | Total | 97.273 | 403 | | | |

a. Dependent Variable: Choices          b. Predictors: (Constant), Awareness

Table 22 presents the ANOVA model to evaluate the impact of the level of nutritional awareness on food item choices. The regression model demonstrates a significant amount of variance in food item choices, indicated by the significant F-statistic (F = 69.478, p < 0.001). This suggests that the predictor variable, awareness (level of nutritional awareness), significantly contributes to explaining the variation in food item choices. This analysis provides strong evidence against H3, indicating a statistically significant effect of the level of nutritional awareness on food item choices. Therefore, based on the findings, hypothesis 3 (H3) was accepted. This result consists of Loebnitz and Grunert, 2018 who stated that individuals with high self-health awareness are more likely to pay attention to nutritional information. Moreover, perceptions of taste and preferences can influence customers' choices, posing barriers to selecting healthy foods (Lessa et al., 2017).

Table (23): Regression Coefficients

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.225 | 0.182 | | 12.196 | 0.000 |
| | Awareness | 0.385 | 0.046 | 0.384 | 8.335 | 0.000 |

a. Dependent Variable: Choices

Table 23 shows regression coefficients indicating a significant relationship between nutritional awareness and food item choices. A one-unit increase in awareness leads to an increase in food item choices by approximately 0.385 units. The standardized coefficient (Beta) for awareness is 0.384, indicating its importance in explaining variation in food item choices. Overall, indicating that higher levels of nutritional awareness are associated with more favorable food item choices.

## 5. Conclusion and Practical Implications

The research underscores the pivotal role of nutritional awareness in shaping individuals' food behaviors, habits, and choices, particularly in the context of fast food consumption. Previous

studies have consistently demonstrated that heightened nutritional awareness correlates with healthier dietary practices and more informed decision-making regarding food selection. Customers who possess a deeper understanding of nutritional principles are inclined to prioritize healthier options, thereby contributing to overall well-being. Conversely, individuals with limited nutritional awareness may inadvertently engage in behaviors that compromise their health, such as frequent consumption of high-calorie, low-nutrient foods commonly found in fast food establishments.

A critical aspect illuminated by the research is the significant influence of food habits and behaviors on meal selections. These habits, shaped by various factors including personal preferences, cultural influences, and environmental cues, play a crucial role in determining individuals' dietary patterns. Healthy food habits are associated with positive health outcomes, while unhealthy behaviors, such as excessive fast food consumption, are linked to an increased risk of chronic diseases. Understanding and addressing the underlying drivers of these behaviors are essential steps in promoting healthier eating habits and mitigating the adverse effects of poor dietary choices.

Menu labeling emerges as a promising strategy to empower consumers and guide them towards healthier food choices. By providing transparent information about the nutritional content of menu items, labeling initiatives enable customers to make more informed decisions when ordering meals. Research suggests that menu labeling can positively influence customers' food choices, leading to increased awareness and selection of healthier options. Encouraging food establishments, particularly fast food restaurants, to adopt menu labeling practices can contribute to improved dietary behaviors and public health outcomes.

In addition to individual factors, cultural and social influences play a significant role in shaping food behaviors and choices. Recognizing and addressing these influences are crucial for developing effective nutrition education interventions. Tailoring educational initiatives to align with cultural norms and preferences can enhance their relevance and effectiveness, ultimately fostering healthier eating habits within diverse communities. Furthermore, advocating for policy interventions, such as mandatory menu labeling regulations and initiatives to improve the nutritional quality of food offerings in restaurants, can create an enabling environment for healthier food choices.

Moving forward, continued research and evaluation are imperative to assess the effectiveness of nutritional education interventions and menu labeling initiatives. Longitudinal studies can provide insights into the sustained impact of these interventions on customer behaviors, habits, and overall public health outcomes. By leveraging evidence-based strategies and ongoing research findings, restaurants managers can work collaboratively to promote nutritional awareness, encourage healthier food behaviors, and address the complex challenges associated with diet-related health issues. Based on the findings and implications of the research, several recommendations emerge for fast food restaurants managers, policymakers, and public health advocates:

- **Nutritional Education Initiatives:** Implement comprehensive nutritional education programs aimed at enhancing public awareness and understanding of healthy dietary practices. These initiatives should target diverse demographic groups and incorporate culturally relevant content to maximize effectiveness.
- **Menu Labeling Mandates:** Advocate for the implementation of menu labeling regulations in food service establishments, including fast food restaurants. Mandatory menu labeling provides consumers with transparent information about the nutritional content of menu items, empowering them to make informed choices.
- **Promotion of Healthy Food Environments:** Encourage food establishments to prioritize the availability and promotion of healthy food options, including low-calorie, nutrient-dense alternatives, alongside traditional menu offerings. This can

be achieved through partnerships with suppliers, menu diversification, and promotional campaigns.

- **Support for Research and Evaluation:** Invest in longitudinal studies and evaluations to assess the long-term impact of nutritional education initiatives and menu labeling policies on consumer behaviors and health outcomes. Continued research is essential for identifying effective strategies and refining interventions over time.
- **Community Engagement and Advocacy:** Engage local communities in initiatives promoting healthy eating habits and nutritional awareness. Collaborate with community organizations, schools, and healthcare providers to raise awareness, provide resources, and facilitate behavior change at the grassroots level.
- **Policy Development and Implementation:** Advocate for evidence-based policies that promote healthy food environments, such as zoning regulations to limit the density of fast food outlets in neighborhoods and incentives for food establishments to offer healthier menu options.
- **Public-Private Partnerships:** Foster collaboration between government agencies, non-profit organizations, and private sector restaurants managers to address nutrition-related challenges comprehensively. Public-private partnerships can leverage resources, expertise, and networks to maximize impact and reach diverse populations effectively.
- **Investment in Consumer Empowerment:** Empower consumers to make informed food choices by providing accessible and understandable nutritional information through diverse channels, including digital platforms, educational materials, and community outreach initiatives.
- **Training and Capacity Building:** Provide training and capacity-building opportunities for food service professionals to enhance their knowledge of nutrition, menu planning, and customer engagement. Equipping frontline staff with the skills to promote healthy eating can facilitate positive behavior change among consumers.
- **Continuous Improvement and Adaptation:** Adopt a continuous improvement approach to nutrition initiatives, regularly assessing their effectiveness, soliciting feedback from stakeholders, and adapting strategies based on emerging evidence and best practices. By implementing these recommendations collaboratively, restaurants can contribute to creating environments that support healthier food choices, improve nutritional awareness, and ultimately, enhance public health outcomes related to diet-related diseases.

## 6. Limitation and future research

While our research offers valuable insights into nutritional awareness, food behaviors, habits, and menu choices among fast food consumers, certain limitations should be acknowledged. Firstly, reliance on self-reported data may introduce biases like social desirability bias, impacting the accuracy of responses on dietary habits. Additionally, a cross-sectional design limits establishing causal relationships, warranting longitudinal studies. Moreover, the study's focus on specific regions may limit generalizability, necessitating replication in diverse contexts. Future research could employ longitudinal designs, qualitative inquiries, and comparative studies across demographics and regions to address these limitations and advance understanding. Experimental studies exploring innovative strategies and environmental interventions, such as menu labeling regulations, can further inform evidence-based interventions for promoting public health and well-being.

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# تأثير الوعي الغذائي للعملاء على العادات والسلوكيات والاختيارات الغذائية في مطاعم الوجبات السريعة

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تهدف الدراسة إلى استكشاف تأثير الوعي الغذائي لدى العملاء على العادات والسلوكيات والخيارات الغذائية في مطاعم الوجبات السريعة. استخدمت هذه الدراسة استبيانًا لجمع البيانات من خلال عينة عشوائية من عملاء مطاعم الوجبات السريعة في محافظات المنيا وبني سويف والفيوم خلال الفترة (من يناير إلى أبريل 2024). تم تطبيق النهج الكمي. تم توزيع 404 استبيان على عملاء مطاعم الوجبات السريعة. تم استخدام برنامج SPSS الإصدار 22.0 لتحليل البيانات. تم استخدام الإحصائيات الوصفية (مثل التكرار والنسبة المئوية والانحراف المعياري والمتوسط والرتبة) لتقييم الأهمية النسبية لمتغيرات البحث. يستخدم الارتباط والانحدار لاختبار فرضيات الدراسة. وأظهرت النتائج أن الوعي ساهم بشكل كبير في السلوكيات الغذائية، والتأثير على عادات العملاء واختياراتهم الغذائية. ترتبط العادات الغذائية الصحية ارتباطًا وثيقًا بالوعي الغذائي، حيث يميل الأفراد الذين يتمتعون بعادات صحية قوية إلى الانخراط في خيارات صحية أكثر. بالإضافة إلى ذلك، أثر الوعي بشكل كبير على اختيارات المواد الغذائية، حيث من المرجح أن يهتم الأفراد الذين لديهم وعي عالٍ بالصحة الذاتية بالمعلومات الغذائية. وأوصى البحث بأن يعمل مديرو مطاعم الوجبات السريعة بشكل تعاوني لتعزيز الوعي الغذائي، وتشجيع السلوكيات الغذائية الصحية، ومعالجة التحديات المعقدة المرتبطة بالقضايا الصحية المتعلقة بالنظام الغذائي.

*الكلمات المفتاحية:* الوعي الغذائي؛ العادات الغذائية؛ السلوكيات الغذائية؛ اختيار الاطعمة؛ مطاعم الوجبات السريعة.