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Towards Sustainable Food Systems: Exploring the impact of food allergies on health and well-being in university settings

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Abstract

Food allergies have a detrimental effect on the quality of life, economy, education, and can even be fatal. Food choice decisions among university-aged consumers with food allergies have been understudied. Therefore, this conceptual paper aims to investigate the impact of food allergies on the food choice behaviour of university students with food allergies. The implications of this research extend beyond academic circles. By providing a nuanced understanding of the interplay between food allergies and food choices, this conceptual paper calls for proactive measures to address the unique challenges faced by this demographic in navigating their dietary preferences within university settings.

Keywords: food allergy; food choice behaviour; university students

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1.0 Introduction

University students encounter many factors that can make it difficult for them to maintain a healthy diet and make good food choices. These factors may prevent them from following a balanced eating pattern, especially for those with food-related health problems. Food choice is described as the process by which individuals select, acquire, prepare, and consume foods in response to a variety of competing, reinforcing, and interacting influences (Karanja et al., 2022). Various types of environmental influences operate across multiple domains as three main factors influence food choices and eating behaviours at the intrapersonal level, social environment, physical environmental and societal level.

Food choice behaviour may be established during early childhood, influenced by intrapersonal factors, impacted by parental influence, and then influenced by peers and societal factors. Young people are more likely to change their food choices to adapt to the environment but, as they become older, their eating habits become less likely to change. Next, social environmental factors encompass the immediate social context in which university students make their food choices. These factors include interactions with peers, roommates, and close friends (Higgs & Ruddock, 2020). Then, physical environmental factors encompass the settings and environments in which university students make food choices. These factors include the availability of allergen-free food options on campus, the convenience of accessing safe food, and the presence of allergen labelling in food establishments. Last but not least, societal environmental factors extend beyond immediate social circles to encompass broader societal and cultural influences. Societal factors

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encompass distal and indirect factors that impact individuals, including mass media, advertising, social and cultural norms related to eating, as well as the systems involved in food production and distribution.

Apart from that, the health of individual consumers is significantly influenced by various factors, which in turn affect their food choices. Ziegler et al. (2021) stated that the degree of control or autonomy an adolescent has over food choices may be associated with other health outcomes, such as eating disorders, obesity and food allergies. Food allergy among university students creates a situation that is particularly hard because this is the time of life when many young adults become independent and spend less time under adult supervision (Hassan et al., 2020). This is because university students are responsible for their health, and the most important thing they need to do is be careful about the foods that they eat to avoid having a reaction caused by food allergies. As a result, university students start to share less of their daily activities with adults, making it harder for parents to monitor their children (Feng & Kim, 2019). Hence, they are more likely to engage in risky behavior, such as intentionally consuming goods labeled with the phrase "may contain," which has the potential to raise their risk of anaphylaxis (Laheri, 2019).

Moreover, there have been limited studies conducted on the factors that influence food choices among adolescents and it is important to conduct further research to gain a better understanding of the environmental and psychosocial factors that specifically affect the food choices of adolescents (Ziegler et al., 2021), particularly those who have food allergies. Lee et al. (2023) conducted qualitative investigations to explore the impact of food allergies on the food-related behaviors and quality of life of college students and they also identified the factors that influence the food choices made by this particular group of individuals. Other studies employed deductive thematic content analysis to identify themes and factors that influence the dietary behavior of adolescents and another study utilized a combination of focus group discussions and individual interviews. In addition, Lee et al. (2023) also suggested to address the existing research gaps, it is recommended to conduct a quantitative study in addition to the current qualitative exploratory research, which includes a limited sample size among college students with food allergies.

The study aims to investigate the multifaceted environmental and psychosocial factors influencing food choices among adolescents with food allergies in Malaysia, with the objective of contributing to a more comprehensive understanding and proactive management of food allergies within educational settings. This investigation is particularly vital in Malaysia, where research on food allergies remains scarce. Utilizing a secondary data approach through synthesis of the literature review will provide a deeper understanding of the topic, encompassing intrapersonal, social, physical environmental, and societal factors that influence food choices among students with food allergies. By delving into these factors, the study identifies valuable insights into the challenges faced by allergic students in navigating their dietary preferences, ultimately contributing to the proactive management of food allergies within Malaysian educational settings.

2.0 Literature Review

2.1 Intrapersonal factors influence food choice behavior among university students

The food choices made by university students were influenced by intrapersonal factors such as cooking skills, taste preference, eating habits, level of nutrition-related knowledge, culture, moods, self-efficacy, health and perceptions (Lee et al., 2023). This is because university years often represent the first time when young adults are no longer under the direct supervision of their parents or carers, and they become fully responsible for managing their allergies on their own. People also often develop habitual eating patterns that are influenced by their emotional state or current mood, resulting in varying food choices (Guiné et al., 2020). Apart from the academic challenges they face, many students find the process of selecting, purchasing, and preparing meals to be overwhelming and stressful (Mogeni & Ouma, 2022). University students with food allergies may exhibit poor self-management behaviors due to their general tendency towards risk-taking, rather than solely due to their food allergy.

During the adolescence phase, which is a crucial phase of human development as it marks the transition from childhood to adulthood, the taste of food is frequently mentioned as a significant factor in food choice. Food choices of students were influenced by their level of knowledge and perception regarding the health benefits of nutrition but, the majority of students had limited knowledge about the health benefits of nutritious food items (Kabir et al., 2018). Multiple studies have shown that university students tend to consume excessive amounts of fast food and sugar-sweetened beverages, while not consuming enough fruits, vegetables, and fiber it may lead to a diet that is high in processed and refined foods, which puts them at a greater risk of nutritional deficiencies (Laheri et al., 2023; Munt et al., 2017).

2.2 Social environmental factors have an influence on food choice behaviour among university students

Social environmental factors encompass the individuals and elements that directly influence students within their daily surroundings, including parents, siblings, teachers, and friends at school (Lee et al., 2023). For instance, parental food choices can significantly impact those of their children (Lee et al., 2023). Understanding the challenges faced by individuals with food allergies and their families while dining out is crucial for developing effective strategies to prevent exposure to potential food allergens. While it is recommended to entirely avoid foods with allergen labels, this may be feasible only for families able to afford specially marked allergen-free products (Lung, 2020).

Peer groups are pivotal in shaping adolescents' social relationships, which, in turn, influence their decision-making and consumption behaviors, including food choices (Ragelienė & Grønhoj, 2020). However, understanding and managing the behavior of others can be challenging for adolescents with food allergies, as their peers often lack awareness about the condition. Studies indicate that peers' attitudes significantly impact how adolescents with allergies feel about disclosing their condition, leading to potential hesitancy in openly discussing their food allergies (Newman et al., 2022).

2.3 Physical environmental factors have an influence on food choice behaviour among university students

A study from Lee et al. (2023), found that factors related to the physical environment, such as time played a significant role in the food choices made by university students with food allergies. The study of making choices under time constraints has gained significant attention, particularly due to the growing prevalence of individuals experiencing time limitations and the need to make immediate choices, particularly when it comes to selecting food options. During this period of transition, many students often find themselves simply lacking the time to prepare meals as they are often trying to balance their studies, work, social commitments, and the ongoing developmental changes that occur (Laheri et al., 2023). In a study by Deliens et al. (2014), some respondents indicated that they prefer to engage in activities other than cooking, particularly when they are preparing meals for themselves alone.

Adolescents also indicated that their hectic schedules force them to consume things from the school vending machine as a snack or as a meal replacement in between practices and meetings because the items are convenient and quick to get (Ziegler et al., 2021). Adolescents often have hectic schedules due to the demands of school, sports or recreational activities, and their social lives therefore, they tend to prefer quick and easy-to-prepare foods that require minimal cooking or clean-up (Daly et al., 2022).

2.4 Societal factors have an influence on food choice behaviour among university students

Societal factors exert a significant influence on individuals, families, peers, and communities, albeit often indirectly. These factors, including media, cultural and social norms, food production and distribution systems, as well as food accessibility and availability, can significantly shape people's eating habits. In today's digital age, many teenagers, including university students, rely on social media platforms such as TikTok, Facebook, and YouTube for meal inspiration, making them particularly susceptible to prevailing food trends showcased on these channels.

Prioritizing a well-balanced diet is crucial when making food choices. Unhealthy dietary habits, such as excessive consumption of junk food, meal skipping, and inadequate nutrient intake, can lead to various health issues, including food allergies. Research indicates a correlation between the consumption of unhealthy foods and extensive use of social and entertainment media, primarily due to increased snacking habits (Chung et al., 2021). Marketing strategies on these platforms often integrate with engaging and entertaining content, encouraging individuals to share these experiences with peers (Coates et al., 2019). However, the impact of social media and advertisements on the risk of developing adverse physical and mental health outcomes, including food allergies and overall well-being, may vary depending on the nutritional value of the products being promoted (Ayyıldız & Şahin, 2022).

2.5 Food Allergy Moderates the Relationship between Intrapersonal, Social Environmental, Physical Environmental, Societal Factors and Food Choice Behaviour

In this study, food allergy is conceptualized as a moderating variable between four key factors (intrapersonal, social environmental, physical environmental, and societal) and food choice behavior among university students. The environment plays a crucial role in either enabling or limiting individuals' ability to make food choices that are beneficial for their health and well-being. Individuals with food allergies face numerous challenges, including recurring physical symptoms from accidental allergen ingestion, social discrimination or stigma, difficulty finding safe foods, and the constant need to check food safety, all of which can significantly impact their ability to manage their allergies.

The relationship between factors influencing food choice and food choice behavior may vary based on food allergies, particularly in managing the food choices of university students affected by such allergies. Additionally, Lee et al.'s (2023) study, found that food allergies significantly impacted the food-related behaviors of university students, affecting them psychologically, socially, and financially. The presence of allergies can be influenced by both environmental and personal factors, which may, in turn, affect university students' food choice behavior. However, there is a lack of research on the moderating roles of food allergies (Mahmoud & Grigoriou, 2022). This highlights the need for further research to better understand how food allergies moderate the relationship between various factors and food choice behavior among university students.

3.0 Methodology

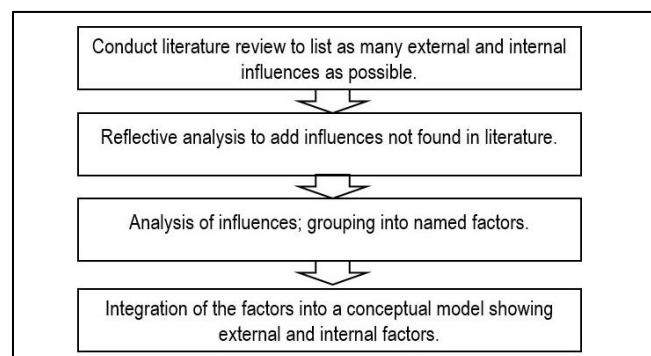


Fig. 1: A conceptual manuscript's methodology

(Source:) Adopted and adapted from Marek, M. (2014). *Research Study Manuscript Outline*. In *Conference: Spring*

A systematic review was conducted to synthesize existing literature on food allergies, dietary behaviors, and related factors among university students. The review encompassed a comprehensive search across academic databases, scholarly journals, and authoritative sources, including PubMed, Scopus, Web of Science, and Google Scholar. Keywords such as "food allergy," "university students," "dietary behavior," "nutritional intake," "psychological factors," "environmental influences," and "societal contexts" were combined using Boolean operators (AND, OR) to identify relevant studies. Inclusion criteria encompassed studies published within the past five years (2019-2024) that examined the prevalence of food allergies among university students, their dietary patterns, nutritional intake, psychological factors influencing food choices, environmental influences on dietary behaviors, and societal contexts impacting food allergy management. Exclusion criteria were applied to ensure the relevance and quality of selected literature. The development of a conceptual framework was guided by Marek's (2014) methodology for conceptual manuscript development, as illustrated in Figure 1.

4.0 Findings and Discussions

This section provides a summary of selected theories concerning food choice behavior from a Social Ecological Model (Bronfenbrenner, 1977) perspective, followed by frameworks that integrate these perspectives and analyze food choice behavior at multiple levels. The adaptation of theories and models to address related issues and concerns in various contexts is also discussed. The relationship between socio-ecological factors and health-related behaviors is critical, as certain socio-ecological factors are linked to health-promoting behaviors that can reduce the likelihood of an individual making unhealthy food choices (Aura et al., 2016). The Social Ecological Model offers a comprehensive approach to understanding the various factors influencing nutrition-related behaviors, surpassing other models that primarily focus on individual-level factors when examining health behavior and food choices (Kodish et al., 2019). Therefore, the Social Ecological Model (Bronfenbrenner, 1977) is suitable for explaining the factors influencing food behavior among university students.

The framework in Figure 2 is adopted and adapted from Lee et al. (2023), who also used the Social Ecological Model (Bronfenbrenner, 1977) as one of the theories in their study. The researcher identifies four distinct levels of determinants on an individual's food choices as the independent variable. These levels include intrapersonal factors, social environmental, physical environmental and societal factors. Whereas the dependent variable, food choice behavior, is also adopted from Lee et al. (2023). According to their study, there is a relationship between these factors; for example, parents' food choice behaviors can impact their children's food choices.

Additionally, the concept of food allergy is adapted from Mahmoud and Grigoriou (2022) as a moderator variable. Food allergy has the potential to affect both food choice behavior and the factors contributing to food choice, justifying its inclusion as a moderator variable in this study. Food allergies significantly impact meal preparation and family social activities, leading to increased stress levels for parents. Besides limiting dietary options, allergens necessitate the avoidance of certain foods, often without adequate replacements for essential nutrients. Given these considerations, food allergy was chosen as the moderator variable in this investigation.

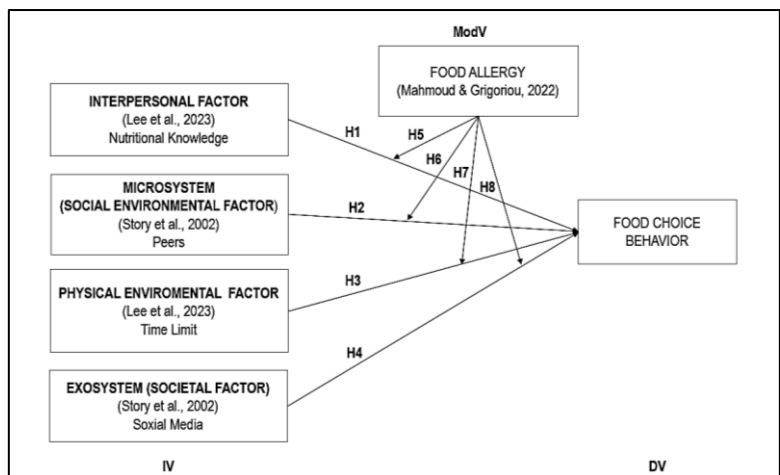


Fig. 2: Food Preference Determinants in University Students with Food Allergies

5.0 Conclusion and Future Research

In conclusion, this conceptual paper sheds light on the complex factors influencing food choice behavior among university students with food allergies, highlighting the importance of addressing these factors to enhance health and well-being, in line with Sustainable Development Goal (SDG) 3: Good Health and Well-being. Through a synthesis of existing literature and the development of a comprehensive conceptual framework, this study contributes to the broader discussion on health equity and access to safe, nutritious food choices for all individuals with food allergies. However, the study's reliance on secondary sources may introduce bias and limit the depth of analysis. Additionally, the focus on literature published from 2019 to 2024 may exclude relevant older studies, potentially impacting the comprehensiveness of the findings. Moreover, the study's primary focus on university students with food allergies may limit the generalizability of the results to other populations.

To address these limitations, future research should employ primary data collection methods and prioritize longitudinal investigations to monitor the health outcomes of university students with food allergies. Additionally, qualitative research can explore the social determinants of health that influence food choice behavior among this group, informing targeted interventions to reduce health disparities. Comparative studies across diverse cultural contexts and educational institutions can provide a global perspective on the prevalence and management of food allergies, supporting evidence-based policies and practices to improve health outcomes. Overall, research efforts should aim to advance progress towards achieving SDG 3 by promoting the health and well-being of all individuals, including university students with food allergies.

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Paper Contribution to Related Field of Study

The research expands academic understanding by exploring the intrapersonal, social, and physical environmental factors, as well as societal influences on food choices, all within the context of food allergies. This research adds to the body of knowledge concerning the influence of food allergies on food choice behavior, particularly among university students. By focusing on this demographic, it addresses an understudied area in the existing literature.

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