

Environmentally Friendly Food in Malaysia: An Overview

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Abstract

Humans require healthy and high-quality foods to obtain adequate nutrition to lead a better life. Food consumption has a substantial environmental impact since it emits greenhouse gases, which cause global warming and climate change. A shift in consumer behavior towards sustainable foods could be a more practical strategy to significantly reduce this impact. Therefore, the objective of this study is to ascertain the current status of Malaysians' food preferences and the factors that contribute to the consumption of environmentally friendly food in Malaysia. The articles selected for this study were obtained from sources like PubMed, Scopus, Science Direct, and Google Scholar that focus on Malaysia's sustainable food consumption over five years, from 2020 to 2024. This review showed that the majority of Malaysians have a low consumption of fruits and vegetables. Race, age, and economic background are sociodemographic factors, whereas habits and lifestyles, such as health concerns, are personal factors that have a substantial impact on Malaysians' purchase of environmentally friendly food. In conclusion, the concept of environmentally friendly food can help ensure that the selected foods are safer, have minimal impact on the environment, and are expected to foster a healthier lifestyle for current and future generations in Malaysia.

Keywords: Environmentally Friendly Food, Environmental Impacts, Consumption Factors, Healthy Lifestyle, Malaysia.

Introduction

Environmentally friendly food products help maintain the balance of nature by reducing the level of environmental pollution. An environmentally friendly food system is founded on the notion that the demands of the present food supply must be satisfied through greater production and processing without endangering environmental sustainability, including

meeting the capacity of future generations (Çakmakçı et al., 2023). In place of "eco-friendly," "sustainable," or "environmentally responsible," the phrase "green" is widely employed, even though all of these notions relate to actions that are desirable and healthy for the environment (Woo and Kim, 2019). According to the World Health Organization (2019), a sustainable diet is the selection of safe, healthy, nutritionally adequate food while preserving the importance of biodiversity and ecosystems, having low environmental pressure and impact, and being culturally acceptable, accessible, fair, and economically affordable. In line with the Malaysia Dietary Guidelines (2020), which explained that a healthy meal must be balanced, moderate, and varied, which demonstrates a meal needs to be balanced in each food group to have a sufficient nutrient for the body to function. As part of the Malaysian Healthy Plate, which is composed of half vegetables and half fruits, one-quarter carbohydrates, one-quarter protein, and meals should be eaten in moderation within the recommended serving size provided by the Malaysia Ministry of Health.

In Malaysia, food products can be considered environmentally friendly when a food product has an organic logo on the packaging such as the Good Manufacturing Practices (GMP) logo and the Good Agricultural Practices (GAP) logo (Phuah et al., 2018). The Good Manufacturing Practice (GMP) is provided by the Malaysian Ministry of Health under the Food Safety and Quality Programme that administers the GMP scheme. The Good Agricultural Practices (GAP) logo and the Malaysian Organic Certification Scheme, known as myORGANIC are administered by the Malaysian Ministry of Agriculture and Food Security. This eco-friendly logo is thought to have a greater impact on the food industry's potential, delivering additional health benefits while also being environmentally beneficial, as it can enhance customer awareness when purchasing food goods.

The findings align with a substantial body of research indicating consumers value sustainable food quality certification, particularly in China. This shows that independent certification's trust-building attributes may assist consumers in making dietary decisions that reduce agricultural greenhouse gasses emissions by rewarding positive environmental changes in agriculture via consumer willingness to pay (WTP) for proven sustainable practices (Cisternas et al., 2024). A study in Japan also mentioned that environmental knowledge about concrete labels and certification had a positive impact on food consumption (Morais et al., 2024).

This is backed by Choi et al. (2024) a study that has been conducted in Korea overall the prevalence of food labeling awareness, understanding of food labeling, and use of food labeling demonstrates a trend that continues to increase from 2019 to 2022 during the COVID-19 pandemic compared to the previous year, indicating that there is a decrease in awareness of green food labels. Consumers would rather cook at home than dine out or purchase food online because of the quarantine during the pandemic. Food labeling may have become more widely understood and used due to this behavioral change. This demonstrates that when people adopt a healthier lifestyle concerning physical or environmental health, they become more attentive to food labeling because they are more concerned about the contents of the food they wish to purchase. This implies that customers are becoming more conscious of how food production affects the environment. It differs slightly from a study by Tan and Cheng (2024) which found that only a small percentage of participants knew about the detrimental impacts of a meat-based diet on the environment and human health, indicating a low acceptance rate for environmentally friendly food in Malaysia. Thus, this

study aims to determine the current state of Malaysians' food choices and the factors that support the country's consumption of environmentally friendly foods.

Methodology

A study of related literature was conducted in a series of phases before selecting research studies for inclusion in this review. First, a general keyword search was performed to find pertinent articles from several electronic databases that are available in university libraries. These databases included ScienceDirect (<https://www.sciencedirect.com>), Scopus (<https://www.scopus.com>), and PubMed (<https://www.ncbi.nlm.nih.gov/pubmed/>), which are scientific databases with an enormous amount of information on the subject of study. The search for research information in this database was limited from 2020 to 2024, which concentrated on the previous five years only, to ensure the quality of the discussion focusing on research on the latest food choices in Malaysia. The keywords search was carried out with the following search terms: “environmentally friendly food in Malaysia”, “green food products in Malaysia”, “organic food products in Malaysia” combined with “factors affecting environmentally friendly food consumption in Malaysia”, and “Malaysia environmentally friendly food consumption trend”. Based on the recommendations of Finfgeld-Connett (2013), references to retrieved articles were searched repeatedly until they were saturated. The foundation of this data saturation strategy is the concept of informative redundancy (Saunders et al., 2018). 16 peer-reviewed journal publications were taken from the sources mentioned above. All government reports and conference proceedings are eliminated from the total number of articles that have been chosen because the research design employed in the chosen papers is a survey study. Only ten articles out of the total number of publications were identified to be directly related to the study's area of interest. Lastly, all of these articles were separated into two sections which are environmentally friendly food consumption current studies in Malaysia and factors that influence environmentally friendly food consumption in Malaysia.

Findings and Discussion

Current study of environmentally friendly food consumption in Malaysia.

A study by Zin et al. (2022) found that vegetables such as garlic and onions are often consumed regularly among Malaysian adults. Meanwhile, Malaysians devoured a lot of fruit, including oranges, watermelons, bananas, and guavas. In contrast, research by Lo et al. (2022) found that 99.8% of participants only consumed an average of 0.84 servings of fruits and vegetables daily, falling short of the required five servings per day. Approximately 46.4% of participants reported no changes in the intake before the Covid-19 outbreak. Similar findings have been found, with over 95% of Malaysian adults failing to consume appropriate fruits and vegetables (Kee et al. 2023). This is supported by a finding by Cheong et al. (2023) that there is a low consumption of fruits and vegetables among Malaysian adults compared to other countries like Thailand which have five servings of fruits and vegetables daily.

According to a survey conducted in Sarawak by Cheah et al. (2023), university students ate the most cereal, followed by animal products such as meat and eggs, while legumes, nuts, and seeds as their least favorite food group. The average daily consumption of fish and seafood by participants in the Klang Valley in 2021 was 122g, which is similar to the results of another national survey conducted in 2016 about the same amount (147g) (Van Goh et al., 2021; Ahmad et al., 2016). A study in Sabah showed that 43.6% of the respondents consumed

1 to 3 times per week of chicken meat followed by 38.2% consumed around 4 to 6 times per week is supported by Tan and Cheng (2024) that chicken is the most common type of protein consumed in Malaysia.

Despite substantial improvements in the younger generation in Malaysia prioritizing healthy food intake, multiple studies have shown that the Malaysian community still consumes meat as the primary source of protein in their daily diet. According to Lee and Muda (2019), the average serving of meat consumed among Malaysian adults was relatively high with two to three servings per day. This study is supported by data from the FAO that demonstrate a global trend towards higher protein intake or a dietary shift towards more meat and poultry and less carbohydrate consumption (FAO, 2020).

Environmentally friendly food consumption factors.

Several factors influence environmentally friendly food consumption in Malaysia including age, race, income, geographical location, health concerns, and price as shown in Table 1 below.

i. Age

There are studies conducted in Malaysia to describe the diversity of food selection factors for Malaysians of various age groups. A study (Zin et al. 2022) found a substantial correlation between age groups and the amount of fruit consumption. Research on fish consumption and seafood products revealed that older adults consumed noticeably more fish than younger adults (Ahmad et al. 2016).

ii. Race

A study on the relationship between race and fruit consumption frequency found that there is a substantial difference between racial groups Zin et al. (2022). Chinese consumed significantly more animal protein than the Malay while the Indians consumed the least. A study in Klang Valley showed that the Chinese consumed significantly less fish and seafood than both Malay and Indian ethnic groups (Von Goh et al. 2021). This is further supported by Prescott et al. (2002), who found that in a survey of Malaysian customers, Malays favored convenient access to the food they would purchase.

iii. Income

A study conducted in Penang revealed a strong correlation between income and the choice to eat local fruits. It is due to the abundance of premium local fruits, that households with higher incomes are more likely to eat local fruits (Omar et al. 2023).

iv. Geographical location

Geographical location is a factor that contributes to the high consumption of environmentally friendly food. A youth study conducted in Sarawak revealed that the three types of accommodations differed in terms of the number of fruits, seafood, legumes, nuts, seeds, milk, and milk products consumed (Cheah et al. 2023). This is supported by Von Goh et al. (2021) showed that the participants who lived in the coastal area consumed more fish and seafood followed by the participants who live in rural and participant reside in urban areas.

v. Health concerns

Health concerns have a significant relationship with green food consumption patterns. A study showed a moderate to strong correlation between consumers' health consciousness and their willingness to adopt a plant-based diet (Nor et al. 2024). According to Prescott et al. (2002), Chinese preferred health concerns, natural ingredients, and weight control in the selection of food that will be purchased. This is supported when high awareness of health awareness is very helpful and creates awareness among the younger generation, especially students to consume green food products (Sulaiman and Janai, 2017).

vi. Price

Price was the most frequently highlighted factor influencing food purchase decisions. According to a study conducted in Malaysia with B40 participants, 59.5 percent of participants said that food that was rich in nutrients and reasonably priced was affordable (Eng et al. 2022). A study conducted in Malaysia's Central and Southern regions revealed that although consumers are inclined to buy organic eggs and are aware of their importance, the biggest barrier to their purchase of organic food is the high cost of organic products (Idrus et al. 2023).

Table 1

Summary of Malaysia's Environmentally Friendly Food Consumption Factors

Factors	Food types	Authors	Findings
Race	Vegetable (Garlic and Onion)	Zin et al. (2022)	A significant association in the frequency of vegetables and fruit consumption between race categories.
Age	Fish; Fruits	Zin et al. (2022)	Older people consumed significantly more fish and vegetables compared with younger generation.
Income	Fruits	Omar et al. 2023	Households with high incomes are more likely to consume local fruits because there is an abundant supply of high-quality local fruits.
Geographical Location	Fish and seafood; legumes, nuts and seeds; milk and milk products, and fruits	Cheah et al. 2023	A significant difference in the dietary intake between the university students who stayed in college dormitories and at home with their families, particularly with fish and seafood; legumes, nuts, and seeds; milk and dairy products; and fruits.
Price	Fruits; eggs	Omar et al. 2023; Eng et al. 2022; Idrus et al. 2023	An increase in the price will decrease the consumption decision of local fruits.
Health Concern	Fruits, Vegetables, Seeds and Nuts	Nor et al. 2024	There is an association between consumers' health consciousness towards consumption of plant-based diets.

There are some gaps in this review, compared to the study by Kim and Zailani (2024) showed that environmental attitudes encouraged consumers to consume plant-based meat products and be keen toward more sustainable consumption. Regarding environmental attitude, the

results of the analysis show that consumers understand that plant-based meat is one of the main methods to reduce environmental pollution and will decrease the impact of global warming from farming. According to the findings of this study, Koreans understand the concept of food's influence on the environment, and as a result, they are more likely to pick plant-based foods that have a lower environmental impact than red meat. When this study's findings are applied to the context of purchasing environmentally friendly food in Malaysia, it is discovered that Malaysians are more inclined to choose food that is more concerned with physical health rather than prioritizing environmental sustainability. This statement is supported by the growing trend of buying more environmentally friendly food as a result of consumers' increasing awareness of food safety and health concerns, as organic food items are free of chemicals that can harm or create adverse effects on consumers (Mohamad et al., 2014). The most recent study, however, which is based on preliminary research up to 2022, reveals discrepancies that indicate Malaysians' decision to purchase organic food is impacted by both health and environmental concerns as well as their assessment of the product's value (Jaffery and Annuar, 2022).

There are some similarities in the factors that influence consumers in choosing environmentally friendly food, especially from a financial point of view and the price of green food items. A study by Weng et al. 2022 backed this when the analysis's conclusions demonstrated that customers base their purchases of green, high-quality, and Halal chicken meat on their views of price conscience, trust, and healthy content. Price-conscious consumers have a favorable attitude toward organic and Halal chicken meat because they may believe the meat is of good quality, which is consistent with the current study's findings. This is contradicted by Ganesh et al. (2021) who found that gender, age, number of people in households, ethnicity, education background, employability, and monthly income have no association ($p>0.05$) with consumers' knowledge of green foods.

Based on the findings above, it can be seen that several factors have influenced the Malaysian community in deciding to buy environmentally friendly food. These determinants consist of individual factors, product attributes, and social factors. The category of individual factors can be divided into three sub-factors which are psychological factors, sociodemographic factors, and habits or lifestyles. For this category, the theory of planned behaviour (TPB) by Ajzen (1991) is the backbone of the purchasing factor of environmentally friendly food in Malaysia. Based on this previous study, demographic factors such as age, race, and household income influence the decision to buy environmentally friendly food. In addition, habits and lifestyle factors concerning health are also determinants for buying green food. As for product attributes, price is one of the concerns of Malaysians in deciding to buy environmentally friendly food. Thus, the theory of planned behaviour was used in this study to investigate the factors influencing consumers' intention to buy environmentally friendly food products in Malaysia.

The theory of planned behavior is one of the theories that focus on the psychological level that influences consumer factors when purchasing environmentally friendly food. In addition to the review of this study, previous research has demonstrated that psychological factors, such as attitudes, subjective norms, and perceived behavioral control, are categorized under the broad umbrella of personal factors and influence consumers' intentions to purchase environmentally friendly food. For example, a study by Alam et al. (2020) was done to

determine the factors affecting sustainable food consumption behavior among Malaysians, and an extension of the theory of planned behavior (TPB) was used as the framework of the study. The structural TPB model demonstrates that attitudes, subjective norms, and perceived behavioural control significantly influence the consumption intention of organic food, subsequently predicting actual consumption.

The theory of planned behavior, which explains consumer behavior, is the one that is most frequently utilized. Hence, addressing these psychological factors is crucial in promoting sustainable food choices among Malaysian adults (Amalina et al. 2024). This is supported by a finding among the low-income group in Malaysia showed that there are four main determinants of behavioural intention with relevance to sustainable food consumption of low-income group which are attitude towards purchasing sustainable food products, perceived barriers in purchasing sustainable food products, knowledge in environmental and sustainability and personal norms towards sustainable food consumption (Mohamed Shariff, 2010). A study by Shen et al. 2020 also corroborates extended models of the theory of planned behavior in the context of sustainable food consumption, that attitude, subjective norms, and perceived behavioral control were most strongly positively correlated with a purchase intention of environmentally friendly food.

Recommendation and Conclusion

Several recommendations can be suggested to promote environmentally friendly food which as the use of information dissemination methods, especially through social media which is easier to use nowadays. Simple reading materials, particularly infographics, and internet campaigns can be used to spread knowledge about eco-friendly food varieties and their effects on both human health and the environment. Governments and policymakers can better illustrate the advantages of environmentally friendly food purchase practices by supplying reliable information. The Malaysian government, through the Ministry of Agriculture and the Ministry of Health, has launched the green label MyOrganic for organic food products sold in Malaysia as part of its efforts to gradually introduce healthier eating to all of society. The purpose of this designation is to encourage food manufacturers to upgrade their current products to more environmentally friendly options. In addition, retailers and businesses can utilize this eco-friendly label to enhance their products. Certified environmental impact labels should be used by industry participants to persuade customers to select sustainable foods. Customers should be able to read green food labels, and they will be more mindful about the foods they consume. The knowledge of this green food label should be educated by the government and non-government organizations as one of the constructive initiatives to educate people to buy food with a positive impact on the environment.

Beyond that, the government should be more active in promoting local food products to customers. This is critical in balancing Malaysians' food preferences, particularly among the younger generation, so that they are more likely to choose local food. For example, the government might implement a price control regulation on locally produced foods, such as local fruits, to boost the sale of local fruits in the Malaysian market. Aside from that, early exposure to environmentally friendly food, particularly during early education at school, is critical for raising the younger generation's knowledge of environmental care through the food sources that they utilize daily. Finally, community support is critical to ensuring that

customers understand the benefits of environmentally friendly food. Governments and non-governmental organizations must collaborate with communities to support local food programs that encourage and promote environmentally friendly food for social and environmental health.

In conclusion, the findings showed that depending on several factors, the younger generation in Malaysia has a lower consumption of fruits and vegetables in their daily food intake. Environmentally friendly food consumption in Malaysia is influenced by sociodemographic characteristics, including age, gender, and ethnicity. The change in consumer behavior towards more sustainable and climate-friendly food-buying patterns may be a more practical way to significantly reduce greenhouse gas emissions (GHG) around the world. In light of this, it is anticipated that a community's understanding of environmentally friendly food would aid in ensuring that certain foods and nutrients are safer, have a minimal impact on the environment, and support both present and future generations' pursuit of a healthy lifestyle.

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