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# Food Waste Management and Awareness: A survey among Bandar Puncak Alam Residents' Community

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### Abstract

The escalating food waste issue, notably in Malaysia, prompted this study. The objectives aimed to assess Bandar Puncak Alam residents' knowledge and awareness, understand waste management behaviors, explore current food waste practices, and evaluate concerns about food waste issues. Utilizing questionnaires distributed among 152 residents via convenience sampling, the study revealed robust awareness and commitment to environmental sustainability. However, a notable gap was identified in the understanding of optimal food waste management methods. Despite high awareness levels, there is a need for enhanced education on effective food waste handling in Bandar Puncak Alam.

Keywords: Food waste management, awareness, Bandar Puncak Alam

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### 1.0 Introduction

Food waste in Malaysia has become a significant issue with staggering amounts being produced on a daily basis. In 2021, the Solid Waste Management and Public Cleansing Corporation (SW Corp) reported that out of the 38,000 tons of domestic waste generated daily, a staggering 17,000 tons were comprised of food waste and the quantity tends to increase by 15 to 20 percent during festive seasons (Zainal, 2021). Food waste encompasses both food loss and wastage. Food loss refers to any food that is lost due to spoilage or deterioration, while food wastage is a broader term that includes any food that is wasted. In the context of households, food wastage can be categorized into two types: residual waste and recyclable waste. Residual waste, which is the most critical type, is harmful and difficult to dispose of properly (EU Fusions, 2016).

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Unlike other waste categories, food waste does not receive special treatment in Malaysia. It is generally grouped together with municipal solid waste management, even though it constitutes approximately 60 percent of the total municipal solid waste (Kathirvale et al., 2004). This alarming statistic highlights the urgent need to implement effective food waste management practices among households in Malaysia. Therefore, the study aims to identify the level of consumers' awareness on food waste and the management of food waste in Bandar Puncak Alam, Selangor.

Bandar Puncak Alam is a relatively recent suburban development area located in the state of Selangor. Suburban areas like Puncak Alam are often situated on the outskirts of cities and towns, providing residents with a quieter and more spacious living environment compared to the bustling city centers. One key feature of suburban areas is the abundance of green spaces. These areas often incorporate parks, gardens, and natural landscapes into their design. Therefore, Bandar Puncak Alam is chosen for the study likely because the focus of greenery and need to be preserve as it contributes to a more environmentally friendly and aesthetically pleasing atmosphere, which can be beneficial for residents' quality of life.

## 2.0 Literature Review

Recent research has shed light on consumer behavior in relation to food waste, revealing an increasing awakening to the importance of food waste reduction. research conducted in China by Lang et al., (2020) exposed a general lack of awareness regarding food waste recycling among restaurant owners. Similarly, Nunkoo et al., (2021) in their study uncovered participants' views of food waste included feeling guilt toward wasting food however, environmental awareness still lacking. However, recent a study in Malaysia and Indonesia conducted by Phooi et al., (2022) and Purwanto et al., (2023) uncovered a distinct trend among Malaysians and Indonesians, demonstrating a strong awareness of food waste. In Malaysia, more than 70 percent of respondents expressed feelings of guilt associated with wasting food, recognizing that it signifies not only a loss of financial resources but also a squandering of valuable natural resources such as water.

The study conducted by Phooi et al. (2022) reveals that Malaysians hold the belief that events such as weddings or special occasions significantly contribute to food waste. This phenomenon can be attributed to the increasing demand for extravagant food options, which necessitates a larger food supply for these gatherings. Unlike earlier times when food was perceived as a precious resource, it is no longer considered as such by the general population. Consequently, Malaysians often unintentionally order excessive amounts of food, struggling to find a balance between their desires and actual needs, particularly during events like weddings or bereavements. Furthermore, there is a tendency among individuals to showcase their social status by creating elaborate menus for these occasions. Interestingly, Liang et al. (2021) suggests that Macau shares similar circumstances to Malaysia, potentially due to its high living standards and low environmental consciousness. The elevated standard of living in Macau has also contributed to a rise in overall food waste. However, it is important to note that household income may not be the sole determining factor in assessing food waste, as there are various other factors at play.

Various methods can be employed to handle food waste, ranging from donation for feeding people to repurposing as animal feed, composting, anaerobic digestion, and disposal in landfills or combustion facilities (United States Environmental Protection Agency, 2023). Recent research has provided valuable insights into the management of food waste in different regions. In Taiwan, Liang et al. (2021) discovered that separate food waste collection and treatment facilities garnered the highest support among respondents as an effective approach to managing food waste. This highlights the importance of having dedicated infrastructure and systems in place to handle food waste. Similarly, Flores et al., (1999) emphasized the significance of categorizing food waste based on its type, such as beverages, meat, cereals, fish, and fruits. In Malaysia, Phooi et al. (2022) identified different food waste management approaches practiced by Malaysians, with common methods including disposal in regular dustbins, feeding animals, and composting. Ongoing research, as highlighted by Paritosh et al., (2017), focuses on exploring various approaches for processing and managing food waste, with anaerobic digestion emerging as an environmentally friendly and promising solution. Therefore, achieving significant reductions in food waste necessitates both technological advancements along the food value chain and educational initiatives targeting consumer behavior, promoting sustainable consumption, and healthy lifestyles (Al-Obadi, Ayad, Pokharel, & Ayari, 2022). While there are numerous approaches available to address food waste, their effectiveness ultimately depends on raising awareness among individuals. Without such awareness, these approaches may prove futile and fail to effectively reduce food waste.

Previous studies have brought attention to the alarming lack of consumer awareness regarding food waste. This lack of understanding becomes evident during significant events like weddings and special occasions, where food waste tends to occur despite the availability of various methods to address it.

## 3.0 Methodology

The study utilized a descriptive research design to examine the management and awareness of food waste within the community of Bandar Puncak Alam residents. Descriptive research design aims to provide a detailed account of a phenomenon or describe the characteristics of a particular group or situation which in line with the objective of the study to identify the level of awareness and food waste management practices among the community of Bandar Puncak Alam residents. Primary data was collected through a structured survey questionnaire and was distributed across Bandar Puncak Alam. The questionnaire focused on various aspects such as food waste management practices, awareness levels, attitudes, and behaviors among Bandar Puncak Alam residents. Non-probability sampling was employed in this study due to the inherent challenges associated with delineating a well-defined sampling framework and targeted to analyze around more than 100 data using the Social Science Statistical Package (SPSS) which meet the requirement of

minimum sample size. A convenience sampling technique was employed to select participants from the Bandar Puncak Alam area, based on their availability and willingness to take part in the survey. The collected data from 152 Bandar Puncak Alam residents was analyzed using statistical package for social sciences version 21 (SPSS) to run descriptive statistics analysis to summarize the responses.

#### 4.0 Findings

In order to gauge the level of awareness and the management of food waste among the residents of Bandar Puncak Alam, a descriptive analysis was conducted using SPSS. In order to identify the respondent's agreement and disagreement with the items used to measure the variables, the mean statistics of each item were performed and compared between other items and variables. In this study, the Likert scale of one to five is used where the minimum value is one and the greatest value is five. Hence, if the mean is above three it indicates respondents' agreement on the item being questioned. The findings obtained from this analysis are presented in Table 1, which provides a visual representation of the results.

Table 1: Descriptive Statistics

Section	Statement	Min	Max	Mean	SD
Knowledge and awareness about food waste	I think that phenomenon of food waste is widespread	1	5	4.49	0.763
	Food waste impacts the environment	2	5	4.61	0.610
	Extra food waste impacts health conditions	1	5	4.56	0.725
	I know the difference in meaning between the label "use by" and "best before"	1	5	4.51	0.789
	I know few ways of managing food waste at home	1	5	3.87	0.874
Food wastage behavior/attitudes	I will make sure a lot of foods always available at home	1	5	3.17	1.047
	I get excited easily to order food based on my cravings	1	5	3.43	1.221
	I will only throw food when it is already expired	1	5	4.24	0.874
	Food wastes are a lot than usual whenever there's special occasion held at my home	1	5	4.22	0.941
Management of food wastage	I separated the food wastes from other garbage at home	1	5	3.49	1.133
	I will recycle the kitchen wastes category like cooking oil appropriately	1	5	3.61	1.110
	I will carry out the decomposition of organic food wastes	1	5	2.76	1.114
	I will send the domestic food wastes to the landfill/garbage dump	1	5	2.93	1.177
	I will burn the excessive food wastes	1	5	2.15	1.227
Level of concern about food waste related issues	I am very worried if there's excessive waste of food at my home	2	5	4.41	0.792
	I process the food wastes or organic wastes to produce fertilizer to avoid breeding of flies or mice	1	5	2.71	1.280
	The impact of excessive food wastes is dangerous because it threatens natural environment	1	5	4.38	0.796
	The habit of buying too many foods can affect the state of economy to family	1	5	4.47	0.754
	Excessive food wastes will increase social gap between group of people that have extra foods with those without foods	1	5	4.27	0.853

#### 5.0 Discussion

##### 5.1 Knowledge and Awareness about Food Waste

The results reveal that residents of Puncak Alam exhibit a commendable level of knowledge and awareness about food waste, with four out of five assessed items achieving a mean value exceeding 4.00. Particularly noteworthy is the high mean value for item 2, highlighting residents' acute awareness of the environmental impact of food waste. While these findings underscore a strong commitment to environmental sustainability, a noticeable gap exists in their understanding of methods for managing food waste, as reflected by the mean value of 3.81 for this category—the only one below 4.00. This gap suggests a need for targeted education and resources to enhance residents' proficiency in specific strategies for effective food waste management. Addressing this gap through additional resources and education could further contribute to sustainable practices within the community and bridge the identified disparity in understanding.

##### 5.2 Food Wastage Behaviour

The findings on residents' food wastage behavior in Puncak Alam reveal that they predominantly dispose of food waste when it reaches its expiration date (mean score of 4.24), reflecting their prioritization of freshness and safety. During special occasions, there's a notable increase in food waste production (average score of 4.22), aligning with similar observations in Phooi et al.'s (2022) study where Malaysians identified weddings and bereavement events as major sources of food waste. Notably, two aspects scored below 4.00: residents maintaining a surplus of food at home (score of 3.17) suggests a lack of consideration for potential waste, and the tendency to impulsively order food based on cravings (score of 3.43) indicates a lack of mindfulness towards the potential impact on food wastage.

These insights illuminate specific areas where targeted interventions or educational initiatives could foster more sustainable and mindful food consumption practices among Puncak Alam residents.

### *5.3 Management of Food Waste*

While assessing four variables, the management of food wastage emerged with the lowest mean score, indicating a need for improvement. Notably, positive practices were observed in specific aspects within this category. For instance, individuals exhibited consciousness in segregating food waste from general waste at home (mean score of 3.49), and they demonstrated commendable efforts in recycling kitchen waste like cooking oil (mean score of 3.61). These results suggest that, despite the overall need for improvement in food waste management, some individuals are already practicing positive behaviors. However, certain aspects, such as the decomposition of organic food waste, sending domestic food waste to the landfill, and burning excessive food waste, received lower scores (2.76, 2.93, and 2.15, respectively). This indicates room for improvement in these specific areas. While respondents demonstrated a commendable level of awareness and familiarity with various food waste management methods, there appears to be a lack of comprehension regarding specific techniques. Targeted education and awareness campaigns focusing on these areas could enhance their understanding and contribute to more effective food waste reduction strategies.

### *5.4 Level of Concern About Food Waste Related Issues*

The study's final variable assesses participants' concern about food waste and related issues, with respondents rating their agreement with specific statements. Analysis reveals a significant level of worry among participants regarding food waste. Notably, statements such as "I am very worried if there's excessive waste of food at my home" (average score of 4.41) and "The impact of excessive food waste is dangerous because it threatens the natural environment" (average score of 4.38) indicate a strong personal and environmental concern. Additionally, participants express awareness of economic consequences, with the statement "The habit of buying too many foods can affect the state of the economy for families" receiving a relatively higher average score of 4.47. Recognition of potential social inequality arising from food waste is evident in the statement "Excessive food waste will increase the social gap between groups of people that have extra food with those without food," which received an average score of 4.27. However, the data highlights a lower level of concern (score of 2.71) regarding the process of converting food waste into fertilizer to prevent pests, suggesting a potential lack of awareness. This underscores the need for increased education and awareness campaigns to emphasize the importance of proper food waste disposal and recycling to minimize environmental and health risks.

## **6.0 Conclusion & Recommendations**

In conclusion, the study demonstrates the commendable knowledge and environmental awareness of Bandar Puncak Alam residents regarding food waste. While residents exhibit a strong commitment to sustainability, there is a notable gap in understanding effective methods for managing food waste. To address this gap, it is crucial to develop practical strategies through targeted educational programs. These programs should not only enhance residents' comprehension of food waste management but also provide actionable and effective approaches for reducing, reusing, and recycling food waste. Additionally, the study emphasizes the need for mindfulness in food purchasing and consumption, particularly during special occasions. Future research could explore and develop campaigns focusing on responsible consumption practices during events. While residents conscientiously segregate and recycle certain types of food waste, continuous encouragement is necessary for practices like decomposition and burning, possibly through the introduction of incentives for adopting sustainable food waste management. The study also underscores participants' high level of concern for food waste, suggesting a strong personal commitment to minimizing waste, but reveals a lower concern regarding the conversion of food waste into fertilizer. To address this, awareness campaigns are recommended, emphasizing the ecological benefits and contributions to a circular economy associated with converting food waste into fertilizer. For further study, future research should delve into the effectiveness of targeted educational programs in closing the identified knowledge gap among Bandar Puncak Alam residents regarding food waste management. This could involve assessing the impact of such programs on residents' understanding and implementation of practical strategies for reducing, reusing, and recycling food waste.

### *6.1 Limitation of the Study*

The limitation of the study is the study's scope is confined to the Bandar Puncak Alam community, and findings may not be entirely representative of broader regional or cultural variations. Moreover, the research predominantly relies on self-report measures, introducing the potential for recall bias as participants may not accurately recall or report their food waste management practices. Lastly, the study may not comprehensively capture the influence of external factors, such as economic conditions or policy changes, on residents' food waste behaviors and awareness. Addressing these limitations would enhance the robustness and generalizability of the study's findings.

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## Paper Contribution to Related Field of Study

This paper makes a significant contribution to increase the awareness on food waste management among households in Malaysia through understanding the knowledge, attitudes, and behaviors of residents in Bandar Puncak Alam on food waste.

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