

Research Article



## The Factors Related to Food Waste Disposal Behavior of Students in the Dormitory in STIKes Santa Elisabeth Medan

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### ABSTRACT

**Background:** Food waste refers to food that should be consumed but is discarded for specific reasons. Factors contributing to food waste include neglecting the menu, preparing it more than twice a day, the appearance of the meal, and inaccurate perceptions of the food's taste. Reducing food waste can be achieved by valuing food as an essential aspect of human life and managing food consumption effectively. Based on a survey conducted in dormitories, the problem identified is the significant number of leftovers daily, ranging from 4-6 buckets consisting of vegetables, tempeh, and tofu, mainly because the food does not appeal to the students' tastes. The purpose of this study is to identify the factors related to the food waste disposal behavior of students at the STIKes Santa Elisabeth Medan dormitory in 2023.

**Methods:** : A cross-sectional approach combined with correlational research was employed in this investigation. The sample consisted of 84 students living in the dormitory. Instruments used in this study included a Food Waste Questionnaire and Food Scales Questionnaire. Data were analyzed using Chi-square to determine the relationship of each independent variable are Food Appearance and Food Taste Factors with the dependent variable is the behavior of throwing food waste..

**Results:** Results indicated a significant relationship between unattractive food appearance and high food waste, with 90.4% showing high waste and 9.6% showing low waste, confirmed by a Chi-square value of 455a and a p-value of 0.05.

**Conclusions:** The conclusion of this study is that there is a significant relationship between the unattractive appearance of food and the behavior of discarding food waste by dormitory students

**Keywords :** *Disposal Behavior, Dormitory, Factors, Food Waste, Students*

## INTRODUCTION

Waste is one of the global problems we face worldwide.(1) Increasing food waste impacts future food supply chains and global environmental protection issues.(2) Food waste causes problems in several aspects of human life.(3)

High food waste is a serious problem for the environment. It stems from a lack of appreciation for the value of the food served, low awareness of the need to consume food when needed, and low awareness of the environmental impact of food waste. Factors such as unplanned food purchases, unsustainable food practices, and inappropriate marketing contribute to the issue. Currently, the impact of food waste on the environment includes bad odors, disease vectors, and the release of greenhouse gases, which lead to climate change, health risks, increased conflict, and loss of livelihoods.(4)

In Indonesia, the most common types of food waste include vegetables (up to 7.3 kg), fruits (5 kg), processed soybean products (such as tempeh, tofu, and oncom) (up to 2.8 kg), rice (up to 2.7 kg), tubers and corn (up to 2.5 kg), milk and dairy products (up to 1.7 kg), meat (up to 1.6 kg), fish and seafood (up to 1.5 kg), nuts (0.4 kg), eggs (up to 1 kilogram), and other miscellaneous items (up to 1.8 kg). According to a survey conducted by the Barilla Center for Food and Nutrition, Indonesia loses up to 300 kg of food per year per inhabitant, totaling 13 tons.(5)

Several factors contribute to food waste, including consumer behavior, which encompasses preferences for taste, appearance, purchasing power, food availability, self-actualization beliefs,

religious and psychological factors, and nutritional considerations. Food throwing behavior is influenced by factors such as improper menu planning, a large number of menu options, frequent meal scheduling, consistent meal offerings, and varying perceptions of food flavors.(6)

Reducing global food waste generated by consumers and traders per person is essential for improving supply chains and production efficiency. This reduction could contribute to maintaining food security and enhancing resource efficiency in the economy.(7). "Reduce Waste" initiatives provide information on food waste generation, which can be an environmental, economic, and social problem. These initiatives also include educational programs and campaigns aimed at facilitating waste management, encouraging menu preparation that is appreciated by everyone, and promoting the preparation of menu dishes that cater to diverse tastes.

Based on the researchers' initial investigation, the researchers observed that the amount of food remaining per day in the dormitory of STIKes Santa Elisabeth Medan ranged from 4 to 6 containers of rice, vegetables and tempeh, tofu and at times In the food from outside program (Gofood), there is no food waste but only plastic waste because the food in the dormitory is less appealing to students' tastes. And at each Gofood program, there are more than 50 people buying meatballs right in front of the gate.

The researcher intends to conduct a study titled "Factors Related to Food Waste Disposal Behavior of Students at STIKES Santa Elisabeth Medan Dormitory in 2023"

based on this background. According to the researcher, this study presents a novel approach by examining food waste disposal behavior among respondents, particularly students within the STIKes Santa Elisabeth Medan environment. The findings are expected to differ from previous studies conducted in different locations. The specific purpose of this study was to identify factors related to food waste disposal behavior and analyze food appearance factors with food waste disposal behavior in students in dormitories. The reason the researchers wanted to conduct research at this location is because no studies have been done on food waste disposal behavior at STIKes dormitories. So, they were interested in taking over the place.

## METHOD

The study was conducted at the Santa Elisabeth Medan STIKes Dormitory, situated at Bunga Terompet Road No.118, Sempakata Village, Medan Selayang District. The research took place from April to May 2023. The researcher applied for research permission from STIKES Santa Elisabeth Medan. After receiving permission to conduct the study, the researcher collected initial research data.

The researcher employed a correlational research design utilizing a cross-sectional approach. The aim of the study was to investigate the factors related to food appearance and food waste disposal behavior among students residing in the STIKes Santa Elisabeth Medan dormitory in 2023. The study population comprised all students living in the STIKES Santa Elisabeth Medan dormitory, totaling 560 individuals.

Purposive sampling was utilized as the sampling method, which involves selecting a

sample from the population based on the study's purpose or problem, aiming to represent the characteristics of the student population. The minimum sample size was determined using Vincent's sampling method, taking into account observed demographic trends.(8) The sampling Vincent's formula used to determine the minimum sample amount in this study is:

$$\text{Formula : } n = \frac{N \times Z^2 \times P(1-P)}{N \times G^2 + Z^2 \times P(1-P)} \text{ Description:}$$

n =

Number of samples N = Number of populations  
Z = Normal standard value (1.96)  
P = Estimated population if known, considered 50% (0.5)  
G = Degree of deviation (0.1)  
Therefore, the sample size will be 84 people. The inclusion criteria in this study include students who live in dormitories for at least 6 months, students who often throw food waste, and students who are willing to be respondents. Exclusion criteria in this study include students who have not reached 6 months of living in dormitories, students who are not in dormitories and students who do not dispose of food waste.

The independent variables in this study were factors such as food appearance. The dependent variable in this study is food waste behavior. The research tool that will be used is a questionnaire that includes research variables.

The questionnaire to measure the appearance of food is the Food Appearance Questionnaire, how to use it is by looking at the color of the food served in the dormitory, the form of food served, the portion of food served, the presentation of food served. The way to calculate it is to use the scale range as follows with a validity of 0.459 and stated with a valid description because it is more

than 0.444 and its reliability is 0.890. The questionnaire to measure the flavour of food is The Food Flavour Questionnaire, how to use it is by looking Food aroma, food seasoning, food consistency, food tenderness and food temperature or temperature with a validity value of 0.551 and a reality value of 0.890 and how to calculate this food flavor questionnaire using a range of scales with categories not felt and felt. The Questionnaire to measure the waste of food is The Food Waste Questionnaire, how to use it is by looking By measuring the morning, afternoon and evening food menu with the formula:  $\% \text{ food waste} = \frac{\text{Residual weight}}{\text{Starting weight}} \times 100\%$ , If  $> 25\%$  = high food waste and if  $< 25\%$  = low food waste. Of the 61 respondents of unattractive food appearance with high food waste, 56 respondents (91.8%) and with a validity value of 0.444 and a reality value of this questionnaire was 0.890. The reliability test of an instrument is reliable because *Cronbach's alpha* coefficient is greater or equal (0.890). The method used in testing the level of validity is valid because the corrected item value is greater than the table *r* value which is 0.444.(9)

Data were analyzed using Chi Square to determine the relationship of each independent variable with the dependent variable, result (a) is 0,000 ( $p < 0,05$ ) and Value Chi Square 455<sup>a</sup>.

This study has also received an "Ethical Clearance" from the Health Research Ethics Committee of STIKes Santa Elisabeth Medan, with the letter number No.094/KEPK-SE/PE-DT/IV/2023. The research ethics practiced by researchers in research is that the researcher first introduces himself and then gives an explanation to potential research respondents

about the aims of the research and research implementation procedures.

## RESULTS

### 1. Demographic data of respondents in patients in Lidwina and Joseph rooms of Santa Elisabeth Hospital Medan in 2023

**Table 1. Frequency Distribution Based on (Age, Gender, Religion, Ethnicity and Education) at Santa Elisabeth Hospital Medan Year 2023**

Characteristics	(f)	%
<b>Age</b>		
20-29 year	7	12.0
30-39 year	7	12.0
40-49 year	21	35.0
50-60 year	25	41.0
<b>Religion</b>		
Protestant	40	67.0
Christianity	20	33.0
Catholic		
<b>Gender</b>		
Male	34	57.0
Female	26	43.0
<b>Tribe</b>		
Batak toba	34	59.0
Batak karo	16	28.0
Batak simalungun	2	3.0
Nias	2	3.0
Nias	3	5.0
Java	1	2.0
Chinese		
<b>Education</b>		
SD	10	17.0
SMP	11	18.0
HIGH SCHOOL	32	53.0
Diploma	3	5.0
Bachelor	4	7.0
<b>Total</b>	<b>60</b>	<b>100.0</b>

Based on table 1 age range data obtained in the age range 50-60 years



totaling 25 respondents (41%), and in the age range 20-29 years and 30-39 years a total of 7 respondents each (12%). Respondent religion data is Protestant Christianity totaling 40 respondents (67%), and Catholicism totaling 20 respondents (33%). Gender data of male respondents totaled 34 respondents (57%), and female respondents totaled 26 respondents (43%). Respondent data on the Batak toba tribe amounted to 34 respondents (59%), and the Chinese tribe amounted to 1 respondent (2%). Respondent education data are at the high school level totaling 32 respondents (53%), and at the Diploma level totaling 3 respondents (5%).

**2. Caring behavior of nurses in Lidwina and Yosef rooms of Santa Elisabeth Hospital Medan in 2023**

**Table 2 . Frequency Distribution of Caring Behavior of Nurses in Lidwina and Joseph Rooms of Santa Elisabeth Hospital Medan Year 2023**

Caring behavior	(f)	%
Very good	50	83.0
Good	9	15.0
Good enough	1	2.0
Not good	-	-
<b>Total</b>	<b>60</b>	<b>100.0</b>

Based on table 2 above, it is found that caring behavior in respondents is very good, 50 respondents (83%), and quite good, 1 respondent (2%).

**3. The level of spirituality in patients in Lidwina and Joseph Room of Santa Elisabeth Hospital Medan in 2023**

**Table 3 Frequency Distribution of Patients' Spirituality Level in Lidwina**

**and Joseph Rooms of Santa Elisabeth Hospital Medan Year 2023**

Spirituality level	(f)	%
High	58	97.0
Medium	2	3.0
Low	-	-
<b>Total</b>	<b>60</b>	<b>100.0</b>

Based on table 3, it was found that the level of spirituality was high for 58 respondents (97%) and moderate for 2 respondents (3%).

**4. The relationship between nurses' caring behavior and the level of spirituality of patients in the Lidwina and Yosef rooms of Santa Elisabeth Hospital Medan 2023.**

**Table 4 Tabulation Results Between the Relationship between Caring Behavior of Nurses and the Level of Spirituality of Patients in the Lidwina and Joseph Rooms of Santa Elisabeth Hospital Medan Year 2023**

	Spirituality	Σ		μ	p-value
		High	Medium		
Caring Behavior	Very good	49	1	9	0,547
	Good	8	1		
	Simpl y	1	0		
<b>Total</b>	<b>58</b>	<b>2</b>	<b>60</b>		

Based on table 4 using the Spearman Rank test, the p-value is 0.000 ( $p < 0.05$ ) with a correlation coefficient of 0.547, which means that if the caring behavior variable increases, the spirituality level variable also increases.

**DISCUSSION**

There are several factors related to littering behavior that occurs in the STIKes Santa Elisabeth Medan students dormitory, namely Food Appearance with indicators including food color, food shape, food portion, food presentation and food taste factor with indicators of food aroma, food



seasoning, food consistency, food tenderness, food temperature or temperature. Based on the results of research conducted on 84 respondents regarding factors related to food waste disposal behavior of asrama STIKEs Santa Elisabeth Medan students in April 2023, the following results were obtained.

The results of a study conducted by researchers student at STIKes Santa Elisabeth Medan dormitory in 2023 about the appearance of food showed that respondents who had the largest percentage of food appearance were in the appearance of food with (61.9%) that was not attractive. Researchers argue that when conducting research in dormitories regarding the appearance of food such as (food color, food form, food portion and food presentation) is not attractive, it can be seen from the answers given when filling out the questionnaire, especially on the question of the form of unattractive food with a percentage (65.5%). The color of unattractive food can be due to the shape or texture such as vegetables served with faded colors and hard side dishes, thus reducing students' appetite and food portions to be few, as well as the color of the vegetables served is not flashy and also menu variations that are always repeated. The researchers' assumptions are supported by research,(10) which states that, unattractive food colors can cause more leftovers.

Researchers argue when conducting research on the taste of food consisting of (food aroma, food seasoning, food consistency, food tenderness, food temperatur) from the results of the answers given when filling out the questionnaire with the largest percentage is in food seasoning (75.0%). The quantity of food wasted is also increased by the fact that during

presentation, foods like rice, vegetable side dishes, and animal side dishes are not warm enough to eat when they are served. Additionally, the vegetable taste menu lacks appeal due to improperly used spices, the fish is tough or has a fishy texture, and the aroma of the fishy animal side dishes and vegetables is strong enough to make people feel hungrier than they should. According to research by, (13) Food that is not covered may lose its heat and make people less inclined to eat. This viewpoint is consistent with that research. Additionally, due of its overly soft quality, overripe fruit can result in leftovers, according to researchers.

Researchers argue that the high factor of waste behavior reaches a percentage (90.5%). This is because there are two factors that trigger an increase in food waste behavior, namely internal factors and external factors, where internal factors can be in the form of appetite, eating habits, boredom and the presence of food from outside and external factors can be the taste of the food. The type of vegetable food is the most leftover food during the day, namely vegetables that are soupy such as kale, spinach and eggplant mixed with long beans.

The above opinion is supported by research by (11) which states that most people bring food from outside or from home so that the food given is not spent, factors that influence food waste in addition to external factors, namely the taste of food, there are also internal factors, namely appetite, eating habits, boredom and the presence of food from outside.

This is also in accordance with research (12) that the food menu ingredients served are the same for every meal, so there is food waste. Apart from boredom, still full, nausea and no appetite can lead to food waste.

According to the above results, there is a relationship between the taste of food and the behavior of throwing food waste because food waste is influenced by outside factors and looks more appealing when it is presented in an attractive way. For example, 47 respondents with prensentase (90.4%) and 5 respondents with prensentase (9.6%) had high food waste and low food waste, respectively, with a value of  $p\text{-value} = 0.000$ .(14) asserts that there is a connection between patients' opinions of food flavor and food waste, which makes the research acceptable and corroborative. Food's look and taste are the two primary components that make up its flavor. 39.6 times as many items are separated by their unappealing appearance. From the results above, it was found that the results of unattractive food taste with high food waste 56 respondents with prensentase (91.8%) and low food waste 5 respondents with prensentase (8.2%) with  $p\text{-value} = 0.067$  so that there was no relationship between the taste of food and the behavior of disposing of food waste.(15)

Research is appropriate and supported by (15) which states that there is no relationship between the taste of food and the behavior of throwing food waste with food waste because the taste of food related to the appearance of food served can stimulate nerves through the sense of sight so that it can increase appetite, food waste can be influenced by internal factors consisting of psychic, physical and eating habits, external factors namely The taste food and appearance of food, and environmental factors consisting of the schedule/time of serving food, food from outside the home, cutlery used and the collar of the officer/presenter.(16)

Indiscriminate dumping of rubbish causes disease in the people living around it,

because bacteria enter the human body and damage the body's organs, including the kidneys and cause chronic kidney disease.(17-18)

## CONCLUSION

The conclusion in this study is that the appearance and taste of food in students in the dormitory is because it is not attractive, based on the results of the Chi-Square statistical test, it can be concluded that there is a relationship between the appearance of food and the behavior of throwing food waste in students in the STIKes Santa Elisabeth Medan dormitory and there is no relationship between the taste of food and the behavior of throwing student food waste.

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