


## External Factors Relating To Morning Schedule Food Leftovers In Current Patients Stay At Donggala Kabelota Hospital

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| Article Info   | ABSTRACT   |
|--|--|
| <b>Keywords:</b><br>Data analysis<br>Receptivity<br>Accuracy of Meal Times<br>Leftovers<br>Food Waiter Attitude  | The amount of leftover food obtained by inpatients at the Kabelota Regional Hospital on the breakfast schedule is > 20%. The impact of patient food waste causes losses both in terms of nutritional adequacy per person and costs in terms of purchasing food ingredients. The aim of this study was to analyze external factors related to morning schedule food waste in inpatients at the Kabelota Regional Hospital. This research method uses <i>cross-sectional analytical observation</i> , with a sample size of 50 patients. With primary and secondary data collection techniques. The results of the chi square test analysis showed that there was no significant relationship between the acceptability of food menus and food waste ( $p>0.05$ ). There is no relationship between portion standards for each type of food and food waste ( $p>0.05$ ). There is no significant relationship between the timeliness of eating staple food menus, animal side dishes, vegetable side dishes, vegetables and food waste ( $p>0.05$ ). There was no significant difference between the attitude of the food waiter and the remaining food on the breakfast menu ( $p>0.05$ ). Conclusion: There is no significant relationship between external factors and the occurrence of food waste in inpatients at the Kabelota Donggala Regional Hospital during the breakfast schedule. Suggestion: For further research, it would be better to analyze the internal factors that cause food waste. |
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### INTRODUCTION

The medical services provided by hospitals consist of various fields, one of which is nutritional services. The Nutrition Services Program aims to improve the quality of hospital services by providing nutritional therapy to support patient recovery (Nafi'a, 2021). Nutrition service activities in hospitals are based on the Regulation of the Minister of Health of the Republic of Indonesia (Permenkes RI) Number 41 of 2014 concerning Guidelines for Balanced Nutrition, which includes outpatient nutrition services, diet management, research and development, as well as inpatient nutrition services.

The main function of the Hospital Nutrition Service (PGRS) is the provision of food. The aim of food management is to ensure the availability of high quality food in accordance with patient nutritional needs, cost, safety and patient acceptance, so as to achieve optimal nutritional status. The success of food management in hospitals is closely related to the

presence of food waste. This indicates that the food supply is less than optimal and the patient's nutritional needs are not met (Bakri *et al.*, 2018).

The amount and amount of food waste in hospitals is determined from the Regulation of the Minister of Health of the Republic of Indonesia Number 129 concerning Minimum Service Standards for Hospitals where if the food waste is  $\geq 20\%$  and the food waste is small if the food waste is  $< 20\%$  (Sulistiawati *et al.*, 2021). There are two factors that cause food waste in hospitals, namely external and internal factors (Izzah *et al.*, 2022).

Internal factors that cause food waste are gender, age, occupation and education (Putricia *et al.*, 2023). Previous research shows that women produce the most food waste at 59.1% compared to men at 40.9% (Schiavone *et al.*, 2019). Apart from that, age also has an influence on food waste, where in elderly patients the function of the sense of taste has begun to decline so that the patient has no appetite and causes food waste (Suriyantini *et al.*, 2020). According to Hartati *et al.* (2022) stated that the patient's age group, gender and taste are also factors that influence a person's choice of food to consume. Another internal factor is the level of education (Yudianti *et al.*, 2024). A person's higher education means the higher their food intake patterns will be. This is because the level of education a person has, the higher the person's exposure to health information and applying it (Ningsih *et al.*, 2023).

External factors that cause food waste are food acceptability (taste, aroma, texture and color), food serving schedule, attitude of serving staff, and food portion standards (Izzah *et al.*, 2022). Based on previous research regarding food acceptability of food waste at Permata Bunda Hospital Malang in 2019, it was found that food waste was 39.44%. This is because the taste of the food is not good, the appearance of the food is not attractive, the aroma of the food is not appetizing, and the texture is too soft. Then, inappropriate food portions, less than optimal attitudes of staff and inappropriate eating schedules are also factors causing food waste so that patients tend to consume food from outside the hospital (Rimporok *et al.*, 2019).

Based on these problems, researchers are interested in conducting research on the factors that influence food waste in inpatients at the Kabelota Regional Hospital because research related to this has never been carried out before. This study aims to determine the factors that influence food waste on the breakfast schedule of inpatients at the Kabelota Regional Hospital .

## METHOD

The type of research used is analytical observation research. The design of this research is *cross-sectional* , namely research by identifying the independent variable and the dependent variable at the same time. The population of this study are patients undergoing inpatient treatment with a regular food menu in the Inpatient Room at the Kabelota Regional Hospital which will be carried out in June-July 2024.

The sampling method uses the *Lemeshow formula* . This research was carried out at Kabelota Donggala Hospital. This research uses primary data with research instruments in the form of patient identity data (name, age, gender and occupation) as well as patient food

waste data and secondary data with research instruments in the form of initial study report data regarding morning schedule food waste, meal schedule data in hospitals, and the usual menu and diet available at the Kabelota Donggala hospital in 2024. The food waste variable is determined by the percentage of food that is not finished. Data analysis uses univariate analysis and bivariate analysis. Variables that have an e-value <5 are considered significant. Data analysis using the SPSS version 25 application.

## RESULTS AND DISCUSSION

### Univariate Analysis Results

Distribution of Respondent Characteristics

**Table 1** Distribution of Respondent Characteristics based on Gender, Age, Occupation, Education Level at the Kabelota Donggala Regional Hospital.

| Characteristics                       | Frequency ( <i>f</i> ) | Percentage (%) |
|---------------------------------------|------------------------|----------------|
| Gender                                |                        |                |
| Man                                   | 7                      | 14             |
| Woman                                 | 43                     | 86             |
| Age                                   |                        |                |
| 18-27 Years                           | 20                     | 40             |
| 28-37 Years                           | 11                     | 22             |
| 38-47 Years                           | 9                      | 18             |
| 48-57 Years                           | 7                      | 14             |
| 58-67 Years                           | 3                      | 6              |
| Work                                  |                        |                |
| Student/Students                      | 5                      | 10             |
| Civil servants/TNI/Polri              | 8                      | 16             |
| Private employees                     | 3                      | 6              |
| Self-employed                         | 3                      | 6              |
| Others (Housewives and Entrepreneurs) | 31                     | 62             |
| Level of education                    |                        |                |
| elementary school                     | 5                      | 10             |
| SMP/MTs                               | 13                     | 26             |
| SMA/MA/SMK                            | 19                     | 38             |
| S1                                    | 13                     | 26             |

<sup>a</sup> Overall sample total. Source: Primary Data (2024)

Based on Table 1, it can be concluded that the largest gender distribution is 43 people (86%), 20 people aged 18-27 years (40%), 31 people (40%) who work as housewives and entrepreneurs. And the education level was SMA/MA/SMK as many as 19 people (38%). Distribution of external factors based on food acceptability, portion standards, breakfast schedule/timeliness, attitude of food waiters and food waste.

**Table 2** Description of external factors based on food acceptability, portion standards, schedule/accuracy of breakfast time, attitude of food waiters, food waste that influence food waste at the Kabelota Donggala Regional Hospital

| Variable           | Frequency ( <i>f</i> ) | Percentage (%) |
|--------------------|------------------------|----------------|
| Food Acceptability |                        |                |

| Variable   | Frequency ( <i>f</i> ) | Percentage (%) |
|--|------------------------|----------------|
| Good   | 7                      | 14             |
| Not enough                                       | 43                     | 86             |
| Food Portion Standards                           |                        |                |
| Good   | 2                      | 4              |
| Not enough                                       | 48                     | 96             |
| Schedule/Accuracy of Meal Times Morning Schedule |                        |                |
| On time  | 49                     | 98             |
| Not on time                                      | 1                      | 2              |
| Food Waiter Attitude                             |                        |                |
| Friendly   | 37                     | 74             |
| Not friendly                                     | 13                     | 26             |
| Leftovers  |                        |                |
| Staple food                                      |                        |                |
| Good   | 1                      | 2              |
| Not enough                                       | 49                     | 98             |
| Animal Side Dishes                               |                        |                |
| Good   | 1                      | 2              |
| Not enough                                       | 49                     | 98             |
| Vegetable Side Dishes                            |                        |                |
| Good   | 3                      | 6              |
| Not enough                                       | 47                     | 94             |
| Vegetables                                       |                        |                |
| Good   | 2                      | 4              |
| Not enough                                       | 48                     | 96             |

<sup>a</sup> Overall sample total. Source: Primary Data (2024)

Based on table 2, it can be seen that the patient's acceptance of insufficient food is 43 respondents (86%), the patient's acceptance of standard portions of insufficient food is 48 respondents (96%), the patient's acceptance of the schedule/accuracy of the morning meal schedule, which is on time as many as 49 respondents (98%), patient acceptance of the friendly attitude of food waiters as many as 37 respondents (74%). And patient acceptance of staple foods is less than 49 respondents (98%), patient acceptance of animal side dishes is less 49 respondents (49%), patient acceptance of vegetable side dishes was 47 respondents (94%) and 48 respondents (96%) were 48 respondents (96%).

### Bivariate Analysis Results

The relationship between external factors of receptivity and the occurrence of food waste on the breakfast schedule at the Kabelota Donggala Regional Hospital.

**Table 3** Relationship between Acceptability and Food Waste

| <sup>b</sup> Acceptance | Leftovers      |                |                |    | Total |    | <sup>eP</sup> Value |
|-------------------------|----------------|----------------|----------------|----|-------|----|---------------------|
|                         | Good           |                | Not good       |    | F     | %  |                     |
|                         | <sup>c</sup> f | <sup>d</sup> % | <sup>a</sup> f | %  |       |    |                     |
| Staple food             |                |                |                |    |       |    |                     |
| Good                    | 1              | 2              | 6              | 12 | 7     | 14 | 0.140               |
| Not enough              | 0              | 0              | 43             | 86 | 43    | 86 |                     |
| Animal Side Dishes      |                |                |                |    |       |    | 1,000               |

| <sup>b</sup> Acceptance | Leftovers      |                |                |    | Total |    | <sup>eP</sup> Value |
|-------------------------|----------------|----------------|----------------|----|-------|----|---------------------|
|                         | Good           |                | Not good       |    | F     | %  |                     |
|                         | <sup>c</sup> f | <sup>d</sup> % | <sup>a</sup> f | %  |       |    |                     |
| Good                    | 0              | 0              | 7              | 14 | 7     | 14 |                     |
| Not enough              | 1              | 2              | 42             | 84 | 43    | 86 |                     |
| Vegetable Side Dishes   |                |                |                |    |       |    |                     |
| Good                    | 1              | 2              | 6              | 12 | 7     | 14 | 0.370               |
| Not enough              | 2              | 4              | 41             | 82 | 43    | 86 |                     |
| Vegetables              |                |                |                |    |       |    |                     |
| Good                    | 1              | 2              | 6              | 12 | 7     | 14 | 0.263               |
| Not enough              | 1              | 2              | 42             | 84 | 43    | 86 |                     |

<sup>a</sup> Total number of respondents. <sup>b</sup> Receptivity, <sup>c</sup> Frequency, <sup>e</sup> Chi-squer test is significant if  $p < 0.05$ , source: Primary Data (2024)

Based on table 3, the results showed that the relationship between food acceptability and food waste for staple foods with poor acceptability was 43 respondents (86%), animal side dishes with poor acceptability were 42 respondents (84%), vegetable side dishes had poor acceptability. there were 41 respondents (82%), and for vegetables with less acceptability there were 42 respondents. With the results of the bivariate *Chi-Square analysis*, the  $p$  value  $> 0.05$  shows that there is no significant relationship between acceptability and leftover food on the morning schedule at the Kabelota Donggala Regional Hospital.

#### The Relationship between External Factors of Portion Standards and the Occurrence of Food Leftovers on the Breakfast Schedule at the Kabelota Donggala Regional Hospital.

**Table 4** Relationship between external factors of portion standards and the occurrence of food waste at the Kabelota Donggala Regional Hospital.

| Portion Standards     | Leftovers |   |          |    | Total |    | P Value |
|-----------------------|-----------|---|----------|----|-------|----|---------|
|                       | Good      |   | Not good |    | F     | %  |         |
|                       | f         | % | f        | %  |       |    |         |
| Staple food           |           |   |          |    |       |    |         |
| Good                  | 0         | 0 | 2        | 4  | 2     | 4  | 1,000   |
| Not enough            | 1         | 2 | 47       | 94 | 48    | 96 |         |
| Animal Side Dishes    |           |   |          |    |       |    |         |
| Good                  | 0         | 0 | 2        | 4  | 2     | 4  | 1,000   |
| Not enough            | 1         | 2 | 47       | 94 | 48    | 96 |         |
| Vegetable Side Dishes |           |   |          |    |       |    |         |
| Good                  | 0         | 0 | 2        | 4  | 2     | 4  | 1,000   |
| Not enough            | 1         | 2 | 47       | 94 | 48    | 96 |         |
| Vegetables            |           |   |          |    |       |    |         |
| Good                  | 0         | 0 | 2        | 4  | 2     | 4  | 1,000   |
| Not enough            | 2         | 4 | 46       | 92 | 48    | 96 |         |

<sup>a</sup> Total sample size, <sup>b</sup> Standard portion, <sup>c</sup> f= Frequency, <sup>d</sup> %, *Chi-Square test* is significant if  $p < 0.05$  Source: Primary Data (2024)

Based on table 4, the results showed that 47 respondents (94%) had less than standard portions of staple food leftovers, 47 respondents (94%) had less standard portions

of animal side dishes, 47 respondents (94%) had less standard portions of vegetable side dishes and 47 respondents (94%) of vegetable side dishes. 46 respondents (92%) had less standard portions, with the results of bivariate *Chi-Square analysis*  $p > 0.05$  showing that there was no significant relationship between standard portions and leftovers on the morning schedule for inpatients at the Kabelota Donggala Regional Hospital.

**The relationship between external factors: schedule/accuracy of meal times and the occurrence of food waste. Breakfast schedule at the Kabelota Donggala Regional Hospital**

**Table 5** Relationship between external factors: schedule/accuracy of meal times with food waste at the Kabelota Donggala Regional Hospital

| Schedule/Timeliness <sup>b</sup> | Leftovers      |                |          |    | Total |    | P Value |
|----------------------------------|----------------|----------------|----------|----|-------|----|---------|
|                                  | Good           |                | Not good |    | f     | %  |         |
|                                  | f <sup>c</sup> | % <sup>d</sup> | f        | %  |       |    |         |
| Appropriate                      | 1              | 2              | 48       | 96 | 49    | 98 | 1,000   |
| Not exactly                      | 0              | 0              | 1        | 2  | 1     | 2  |         |

<sup>a</sup>Total number of samples, <sup>b</sup>Schedule/Timeliness <sup>c</sup>, f= Frequency. <sup>d</sup>%=percentage, <sup>e</sup>Test *Chi-Square* is significant if  $p < 0.05$ , Source: Primary Data (2024)

Based on table 4.5, the results show that there is a relationship between food waste and the schedule/accuracy of meal times, there are 48 respondents (96%) who stated that the distribution of food was on time but with less food leftovers, and who stated that the distribution of food was not on time there was 1 respondent (2%) with food waste is lacking, while 1 respondent (2%) stated that food distribution was on time with good food waste <20%. The results of the bivariate *Chi-Squer p-Value analysis*  $> 0.05$  show that there is no significant relationship between schedule/punctuality and food waste on the morning schedule of inpatients at the Kabelota Donggala Regional Hospital.

**The Relationship between External Factors, Attitudes of Food Waiters and Food Leftovers, Breakfast Schedule at the Kabelota Donggala Regional Hospital.**

**Table 6** The Relationship between External Factors of Food Waiters' Attitudes and Food Leftovers at the Kabelota Donggala Regional Hospital

| Waiter's Attitude <sup>b</sup> | Leftovers      |                |          |    | Total |    | P Value            |
|--------------------------------|----------------|----------------|----------|----|-------|----|--------------------|
|                                | Good           |                | Not good |    | f     | %  |                    |
|                                | f <sup>c</sup> | % <sup>d</sup> | f        | %  |       |    |                    |
| Friendly                       | 1              | 2              | 36       | 72 | 37    | 74 | 1,000 <sup>e</sup> |
| Not friendly                   | 0              | 0              | 13       | 26 | 13    | 26 |                    |

<sup>a</sup> Overall total sample, <sup>b</sup> Attitude of waiters, <sup>c</sup> f = Frequency, <sup>d</sup> % = Percentage, <sup>e</sup> *Chi-square* test is significant if  $p < 0.05$ . Source: Primary Data (2024)

Based on table 4.6, the results showed that food waste with the waiter's attitude in distributing food stated that the waiter was friendly, 36 respondents (72%) with less leftovers, and those who stated that the waiter was not friendly were 13 respondents (26%) and 1 respondent (2%) stated that the waiter was not friendly when distributing food, with the results of bivariate *Chi-Square analysis*  $p > 0.05$  showing that there was no significant relationship between the waiter's attitude and the presence of leftover food on the morning schedule for inpatients at the Kabelota Donggala Regional Hospital.



## Relationship between Acceptability and Food Leftovers on the Breakfast Menu at the Kabelota Donggala Regional Hospital

The results of the chi square test analysis in this study showed that there was no significant relationship between the acceptability of the food menu and food waste. The patient's acceptance of the staple food menu served can influence the frequency of food waste in the hospital. The lower the patient's ability to accept the menu, the greater the frequency of food waste. This can be caused by the match between the hospital meal menu and the patient's eating habits at home. From direct interviews, patients were of the opinion that the menu served did not suit their tastes because it was not salty enough, did not taste a bit spicy and the habit of eating at home was not to eat breakfast with staple foods (rice and porridge). The taste discrepancies felt by patients include the texture of rice being too soft or mushy, so patients often bring food from outside the hospital and there are also some patients who are not used to eating breakfast (Safitri, 2019).

These results are in accordance with the theory which explains that the acceptability of food is determined by stimulation and the senses of sight, smell and taste. Choosing a menu that suits your wishes will make a person more interested in finishing the food and not trying not to leave any leftovers, so that the specified food intake will be more easily fulfilled by selecting a menu according to the patient's wishes. This is in accordance with the theory which explains that the emergence of food waste is influenced by factors of pleasure and displeasure, habits, purchasing power and food availability, beliefs, self-actualization, religious and psychological factors and what is considered the least important, nutritional and health considerations (Sunarya and Puspita , 2018).

The results of the chi square test analysis in this study showed that there was no significant relationship between the acceptability of animal side dishes, vegetable side dishes and vegetables and food waste. This can be caused by patients who feel that the hospital menu is not tasty/bland and do not feel the use of salt. Patients who do not finish their food have food waste >20%. One reason is because the patient feels a lack of appetite. The patient's condition, such as lack of appetite, is one of the main causes of a patient's nutritional intake decreasing which can cause the patient to potentially experience a lack of energy (Dian et al., 2023; Oktaviani et al., 2023). The patient's poor appetite makes the taste bland so that the patient does not finish his food (Oktaviani et al., 2023; Safitri et al., 2020). Apart from that, according to previous research, portioning results that appear larger than standard are one of the causes of increased food waste in patients (Guntur et al., 2022).

Meanwhile, discrepancies in eating habits were found in several patients who were not used to having breakfast in the morning and were not used to consuming a vegetable menu regularly, so patients tended to only finish part of the food served and left a lot of food waste. If the patient's eating habits match the food served, then the patient tends to be able to finish the food served by the hospital, whereas if it does not suit the patient's eating habits, then it takes time to adjust.

## **The Relationship between Portion Standards and Food Leftovers on the Breakfast Menu at the Kabelota Donggala Regional Hospital**

Based on research results regarding food portion standards and food waste, it shows that there is no relationship between portion standards for each type of food and food waste. In the results of the data analysis, the average food waste was >20% (not good) as much as 50% for each type of food and the results of the analysis related to respondents' assessment showed that the majority of respondents gave good responses to the perception of portion standards for each type of food. This research includes portions of staple foods, namely rice and porridge, portions of animal side dishes, portions of vegetable side dishes, portions of vegetables. For all aspects studied in this research, it is known that the p value obtained was  $p > 0.05$ , which shows that there is no relationship between standard portions of rice, animal side dishes, vegetable side dishes and vegetables and food waste. The research results obtained are in line with the results of previous research which showed that there was no significant relationship between the portion size of staple foods. This is supported by statements from several respondents who said that the portions of basic foods were too large, they were full and they were lazy to eat. Respondents who said they were full apparently also consumed food other than that provided by the hospital (Izzah et al., 2022).

From the results of observations, the portion size of the dishes in the hospital was in accordance with what was determined by the hospital. However, the portion size does not anticipate the patient's ability to finish the food served, so much of the food served is wasted. This research is in line with (Hartati et al., 2022). that there is a significant relationship between inappropriate portion sizes and patient food waste. Likewise, menus and portion sizes can influence the appearance and characteristics of respondents regarding food so that if portions are too large or too small it can affect acceptability.

According to (Sugiarti, 2018) patients should finish all the food served, this is because the food served by the nutritional installation takes into account the quantity and quality of nutrition so that healing can proceed optimally. One of the successes of a nutrition service in an inpatient room is evaluated by observing the remaining food that is not consumed after the food is served.

## **Relationship between schedule/timeliness of meals and food waste on the breakfast menu at the Kabelota Donggala Regional Hospital**

The results of the chi square test analysis in this study showed that there was no significant relationship between the schedule/accuracy of meal times for staple food menus, animal side dishes, vegetable side dishes, vegetables and food waste. Based on the results of observations and interviews during data collection, respondents said that food was distributed/shared according to the breakfast schedule at the Kabelota Regional Hospital, namely at 06.00 - 07.00 WITA and there were also several patients who said it was not on time. Food distribution and food serving time influence each other. The dishes that will be given to respondents must be on time because it will have an impact on consumers' desire to eat (Atma, 2018).



Based on (Rina, 2017) the distribution of food to individuals/clients who are hospitalized is more complex than to healthy individuals. The food provided must be adjusted to the patient's condition and the comorbidities experienced by the patient, while carrying out food distribution activities is related to the timeliness of providing food to patients. This food must be distributed and served to patients at the right time because it affects various things such as consumer appetite. Timeliness of food distribution is an activity that uses a meal schedule based on existing regulations. Distribution must be at meal times. Another factor that can influence is the possibility that the processed food served does not suit the patient's taste, which causes the patient not to finish the food given so that if the food is given on time but the patient experiences nausea and vomiting, this causes food waste.

This is in accordance with research (Triyanto, 2022) which shows that there is no relationship between the timeliness of distribution and food waste at RAA Soewondo Hospital, Pati Regency. Food left on the patient's plate is caused by several internal, external and environmental factors such as meal schedules or times, food from outside the hospital, dishes and the friendliness of the waiter.

### **The Relationship between the Attitude of Food Waiters and Food Leftovers on the Breakfast Menu at the Kabelota Donggala Regional Hospital**

The results of statistical tests show that there is no significant relationship between the attitude of food waiters and the remaining food on the breakfast menu at the Kabelota Donggala Regional Hospital. The p-value is  $>0.05$ . Previous research by Suriyantini et al. (2020) stated that there was no relationship between the waiter's attitude and the incidence of patient food waste. Apart from that, research by Schiavone et al. (2019) also stated that there was no relationship between the waiter's attitude and the patient's food waste.

The food consumption habits of patients at the Kabelota Donggala Regional Hospital are not used to eating breakfast, which results in a lot of food waste so that the data taken does not match the attitude of the food waiters. The attitude of the food waiters at the Kabelota Donggala Hospital has implemented 5S (smile, greet, salute, be polite and courteous) so that patients feel satisfied with the service. However, due to the food consumption habits of patients who are not used to eating breakfast, the data obtained is not appropriate.

## **CONCLUSION**

Based on the results of research and discussion regarding the relationship between acceptability, portion standards, meal schedules/accuracy and waiters' attitudes, it can be concluded that there is no significant relationship. on leftover staple foods, animal side dishes, vegetable side dishes, vegetables .

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