



THE ASSOCIATION OF EATING HABITS AND CONSUMPTION OF FOOD FROM OUTSIDE THE HOSPITAL WITH FOOD WASTE OF CLASS III INPATIENTS AT HOSPITAL X IN KARAWANG REGION

Diana Fiqma * , Millyantri Elvandari, Eka Andriani

Department of Nutrition, Faculty of Health Sciences, Universitas Singaperbangsa Karawang

Jl. HS.Ronggo Waluyo, Karawang, 41361, Indonesia

Email: 2110631220023@student.unsika.ac.id

Abstrak

The Minimum Hospital Service Standards state that the remaining food that is not eaten by patients is $\leq 20\%$, which is an indicator of the success of nutrition services in every hospital in Indonesia. This study aims to analyze the relationship between eating habits and consumption of food from outside the hospital with the remaining food of inpatients at Karawang Regional Hospital. This research design uses observational type and with cross sectional research. Samples were selected using purposive sampling method with a total of 109 respondents. Data collection was carried out by measuring the rest of the patient's meal and using a questionnaire. The results of this study showed that most patients were ≥ 45 years old, 58.7% female, and dominated by the last education of SPM patients 43.1%. Based on the category of frequency of eating habits that are high or frequent 57.8%, as many as 72.5% of patients consume food from outside the hospital, and 63.3% of patients have a lot of food waste or $>20\%$. There was a significant relationship between eating habits and food waste ($p=0.019$). There is a significant relationship between consumption of food from outside the hospital and food waste ($p=0.008$).

Keywords: Food Waste, Eating Habits, Hospital

Introduction

Nutrition services in hospitals are a form of service that is tailored to the patient's condition, including nutritional status, clinical conditions, and the metabolic needs of each individual (Dewi & Djokosujono, 2022). Based on Kepmenkes No 129/Menkes/SK/II/2008, the minimum standards of nutrition services include timeliness of food distribution ($>90\%$), food waste ($\leq 20\%$), and accuracy of diet (100%). The organization of food in hospitals includes input, process, and production stages, all of which are geared towards providing high-quality food that meets the needs of patients. The provision of optimal quality food aims to reduce the amount of food waste in hospitals (Loditha et al., 2023).

Various research results in Indonesia show that the level of patient food waste in hospitals is still relatively high, which exceeds 25% (Sumardilah, 2022). This large amount of food waste has an impact on not achieving the nutritional adequacy of patients and causes economic waste, because the high amount of food waste reflects the amount of wasted budget, especially in the total cost of food ingredients (Septidiantari et al., 2023).

The amount of food waste can vary at each serving time. One of the internal factors that influence the occurrence of food waste is the eating habits of the patient. Eating habits include food preferences, desired portions, daily diet, diversity and culture, habits, health conditions, and individual preferences. Research shows that the mismatch between the menu provided by the hospital and the eating habits of patients often leads to low levels of food consumption. This results in an increase in food waste, which in turn can reduce the efficiency of health services and increase the burden of hospital operational costs

(Dewi & Djokosujono, 2022). In addition, the lack of food intake due to the incompatibility of the menu with the patient's eating habits can affect the patient's recovery process and health condition (Widyanti & Rahmi, 2024).

One of the environmental factors that contribute to food waste is the patient's habit of consuming food from outside the hospital. According to Rumokoy, et al. (2016), patients who consume food from outside have a 2.4 times greater risk of food waste. Research conducted at the Prof. Dr. R. Soeharso Orthopedic Hospital Surakarta showed that 65.7% of respondents were classified as frequently consuming food from outside the hospital. In this group of patients, the percentage of food waste reached 60.8%, which far exceeds the maximum limit of food waste based on the hospital's minimum nutritional service standards, which is $\leq 20\%$ (Nafieis, 2016).

Data generated from the Field Work Practice that the author conducted at the Karawang Regional Hospital in 2024, the remaining food of patients in class III, namely carbohydrates 41%, animal side dishes 7%, vegetable side dishes 41%, and vegetables 28%, so that this exceeds the indicators of the minimum nutritional service standards listed in kepmenkes number 129/Menkes/SK/II/2008. Based on this background, which shows that the remaining food of patients in hospital X Karawang area is still relatively high, the researcher is interested in raising research with the title The Relationship between Eating Habits and Food Consumption from Outside the Hospital with the Remaining Food of Class III Inpatients in hospital X Karawang area.

Methods

This study used an observational design with a cross-sectional approach, which means that data collection was carried out at one time simultaneously to see the relationship between the variables studied. The research location was conducted at hospital X in Karawang. The research was conducted from May to June 2025. The sample determination used the Lemeshow formula, and the sample size was set to 109 respondents. The sampling technique was carried out by purposive sampling method, namely the selection of subjects based on certain predetermined criteria. Inclusion criteria in this study include patients aged 18-59 years, fully conscious, able to communicate, get regular or soft food, not on a special diet, have been treated for at least one day, and do not have indigestion. Meanwhile, the exclusion criteria included patients who went home, were fasting, or had their food consumed by family. The tools and instruments used in data collection included respondent identity forms, food habit questionnaires (FFQ), food weighing forms, and food consumption questionnaires from outside the hospital. Measurement of food waste was done using Comstock's weighing and visual methods, which recorded the percentage of food not consumed by the patient. Consumption of food from outside the hospital was assessed using a questionnaire that asked the frequency, type of food, and reasons for consuming food from outside the hospital. The data obtained were analyzed using Kendall's Tau statistical test to determine the relationship between variables. This study has also undergone ethical testing

Result

Tabel 1. Respondent Characteristics

Characteristics	n	(%)
Age		
< 45 years	40	36,7
≥ 45 years	69	63,3
Gender		
Male	45	41,3
Female	64	58,7
Education level		
Elementary school	37	33,9
Junior high school	47	43,1
High school	25	22,9
Total	109	100,0

Tabel 2. Univariate analysis

Kategori	n	(%)
Eating Habits		
Often	63	57,8
Seldom	46	42,2
Never	0	0
Consumption of Food from Outside the Hospital		
No	30	27,5
Yes	79	72,5
Food Waste		
Little	40	36,7
Much	69	63,3
Total	109	100,0

Tabel 3. Association between Eating Habits and Foo

Eating Habits	Food Waste				Total	p-value		
	Little		Much					
	n	%	n	%				
No	29	26,6	34	31,2	63	57,8		
Yes	11	10,1	35	32,1	46	42,2		
	0	0	0	0	0	0		
Total	40	36,7	69	63,3	109	100,0		

Tabel 4. Association between Consumption of Food from Outside the Hospital and Food Waste

Consumption of Food from Outside the Hospital	Food Waste				Total	p-value		
	Little		Much					
	n	%	n	%				
No	17	15,6	13	11,9	30	27,5		
Yes	23	21,1	56	51,4	79	72,5		
Total	40	36,7	69	63,3	109	100,0		

Discussion

Respondent Characteristics

A total of 69 patients (63.3%) in this study were aged ≥ 45 years. This is in line with research conducted by Pratama (2019), in his research most patients were aged ≥ 45 years. A person's sensory sensitivity to smell and taste decreases with age. Taste buds begin to decline when a person enters the In early to middle adulthood (18-45 years old), energy requirements are relatively higher because physical activity and metabolism are still quite active. However, entering late adulthood (45-59 years old), there is a slowdown in metabolism and a decrease in physical activity, which can reduce daily energy requirements. If hospital meals are provided in standardized portions without regard to differences in energy requirements based on age, then late adult patients are likely to leave more food behind.

A total of 64 patients (58.7%) in this study were female. These results are in line with research conducted by Septidiantri et al. (2023), where in his research it was found that the remaining food in the high category was mostly based on female gender 56.66%. Female patients consume less food than men and the recommended nutritional adequacy rate for men is greater than that of women so that men are able to finish their food. Gender can be a contributing factor to food waste due to differences in energy needs between women and men, where women's basal calories are about 5-10% lower than men's basal calorie needs (Marfuah et al., 2022).

A total of 47 patients (43.1%) in this study had a junior high school education. A person's level of education is closely related to knowledge about nutrition. Individuals with higher education tend to have a better understanding of the importance of nutritional content, a balanced diet, and the benefits of food served by the hospital. With this knowledge, an individual is more likely to consume the food provided, even though the taste may be less appetizing. In contrast, individuals with lower levels of education may not have sufficient awareness of the nutritional value of food, and are more likely to leave out food that they do not like in taste or appearance.

Overview of Respondents' Eating Habits

Based on the results in Table 2, it is known that the eating habits of the research subjects were dominated by the category of high or frequent frequency of eating habits, with a percentage of 57.8% or 63 respondents. This shows that the majority of respondents tend to have a regular diet and are accustomed to consuming food with a high frequency in everyday life. According to Lisara (2020), cooking activities or how to process food ingredients is an important component in organizing food, because the taste of the food produced is highly dependent on the cooking techniques and processes applied. Therefore, although respondents have eating habits similar to the food served in hospitals, other factors such as processing and cooking techniques remain crucial in determining whether or not the food will be well received by patients.

Overview of Food Consumption from Outside the Hospital

Based on the results of the research conducted, it was found that 79 patients or 72,5% of the total respondents consumed food from outside the hospital. This figure shows that most patients do not fully rely on food provided by the hospital while undergoing treatment. This finding is in line with the results of previous research by Pamungkas & Subandriani (2017), It was found that respondents who brought food from outside the hospital tended to have more food waste, with 14 respondents (77,8%). In contrast, respondents who did not bring food from outside the hospital tended to finish their food, with 12 respondents (60%) showing little food waste. This shows that the consumption of outside food is closely related to the increase in the amount of food waste, because patients who are already full or satisfied with outside food, no longer consume optimal hospital food.

Overview of Food Waste

The observations from the study displayed in Table 2 show that the majority of respondents' food intake is still classified as insufficient, as indicated by the percentage of food waste in the large category, which is more than 20%, as much as 63.3% or equivalent to 69 respondents. On average, the most food waste occurs at breakfast time, and the types of food that are most left over are vegetables and vegetable side dishes.

This condition illustrates that most patients do not finish the food provided by the hospital, which indirectly indicates a low level of food acceptance. One of the factors that influence this is the treatment that the patient is undergoing. As explained by Ronitawati et al. (2021), certain medications can affect a patient's appetite, either through drug side effects or metabolic disorders that arise from the disease, resulting in a decrease in appetite and an increase in the amount of food waste. As a result, the intake of food into the body is reduced, which then contributes to a decrease in the patient's nutritional quality.

Relationship between Eating Habits and Food Waste

The results of the bivariate test in this study showed that there was a significant relationship between patients' eating habits and food waste left over during hospitalization ($p=0.019$). This study shows that the eating patterns or habits that patients have before being admitted affect the level of consumption of hospital food that ends up as food waste. This means that the greater the difference between the patient's eating habits at home and the food provided at the hospital, the greater the likelihood that the patient will not finish the food provided. The results of this study are in line with Fakhrudin's research (2024) that there is a significant relationship between eating habits and patient waste. If the consumer's eating habits are in accordance with the food served, then consumers tend to be able to finish the food served, otherwise if it does not match the consumer's eating habits, it takes time to adjust.

According to Fatkuroman et al. (2017) When a patient is hospitalized, they are required to follow a special diet or diet that has been determined based on the medical condition suffered. This makes patients have to get out of their daily eating habits and adapt to foods that they may not have consumed before. This sudden change can lead to discomfort or lack of satisfaction with hospital food, which in turn results in high food waste.

Lestari & Asthiningsih (2020) explain that eating habits are a personal expression of each individual in choosing the type of food consumed. These habits are formed from experience, cultural background, social environment, and individual preferences that continue to be repeated to form specific eating behavior patterns. These established daily eating patterns will greatly influence how patients receive food in the hospital. Tanuwijaya et al. (2018) said that the difference between eating patterns at home and while in the hospital can affect the patient's acceptance of the food provided. If the food served is not in accordance with the preferences and habits that have been previously formed, then it is likely that the food will not be consumed, thus increasing the amount of food waste and reducing the effectiveness of the nutritional interventions that have been designed.

Association between Consumption of Food from Outside the Hospital and Food Waste

The results of the bivariate test in this study showed a significant relationship between food consumption from outside the hospital and food waste left over during hospitalization ($p=0.008$). This finding is in line with the research of Ronitawati et al. (2018), which also found a relationship between outside food consumption and patient food waste ($p=0.006$).

Consumption of food from outside the hospital is one of the factors that can affect the rest of the patient's diet during treatment (Amalia, 2020). Patients who get or bring food from outside, especially those that suit their personal tastes or eating habits at home, tend to reduce the consumption of food provided by the hospital. This results in an increase in food waste, because patients prefer to consume

food from outside that is considered tastier or more in line with their preferences than hospital food which is often considered bland or not in accordance with their daily eating habits (Sari et al., 2019). In addition, psychological and emotional factors also play a role. Outside food is often brought by families as a form of attention and emotional support to patients. The presence of food brought from home or purchased from outside the hospital can provide comfort and a sense of familiarity, which indirectly makes patients reluctant to consume hospital food. Moreover, if the outside food is given before the hospital meal time, the patient already feels full and is no longer interested in finishing the food served by the hospital, because naturally humans will feel hungry after 3-4 hours of eating, so after that time they have to get food, either in the form of light or heavy meals (Muntaqoh et al., 2025). The waiting period between meals can affect the patient's diet which results in the patient seeking food from outside the hospital. This is in accordance with previous research at RSUD A Yani Metro City which shows that the waiting period for meal times results in patients eating outside food (Sumardilah, 2022).

Conclusion

Based on the research conducted, it was found that there was a significant relationship between eating habits and consumption of food from outside the hospital with the remaining food of class III inpatients at X hospital in Karawang area.

References

- [1] Amalia, S. E. (2020). Pengaruh Faktor Eksternal terhadap Sisa Makanan Pasien Di Ruang Cempaka RSUD Ibnu Sina Kabupaten Gresik. *Journal of Health Science and Prevention*, 4(1), 50–57. <https://doi.org/10.29080/jhsp.v4i1.331>
- [2] Anggradia, V. (2018). Hubungan Antara Konsumsi Makanan dari Luar Rumah Sakit Dengan Sisa Makanan Pasien di Rumah Sakit Panti Waluya Sawahan Malang. *Universitas Brawijaya*.
- [3] Dewi, M. K., & Djokosujono, K. (2022). Analisis Sisa Makanan Dan Biaya Sisa Makanan Lunak Makan Malam Pasien Kelas Iii Di Rsupn Dr. Cipto Mangunkusumo. *Jurnal Gizi dan Pangan Soedirman*, 6(1), 34–50. <https://doi.org/10.20884/1.jgipas.2022.6.1.5501>
- [4] Fakhrudin, A. H. P. (2024). Hubungan kebiasaan makan dan penampilan makanan dengan sisa makanan pasien rawat inap kelas iii rumah sakit citra husada jember. *Politeknik Negeri Jember*.
- [5] Fatkuroman, Lestari, Y. N., & Torina, D. T. (2017). Hubungan Perubahan Standar Porsi Makan dengan Sisa Makanan Pasien Rumah Sakit Holistik Tahun 2016. *Journal of the Indonesian Lestari*, E. I., & Asthiningish, N. W. W. (2020). Hubungan Pola Makan dengan Kebiasaan Konsumsi Makanan Cepat Saji (Fast Food) pada Siswa-Siswi Kelas XI di SMA Negeri Samarinda. *Borneo Student Research*, 1(3), 1766–1771. <https://journals.umkt.ac.id/index.php/bsr/article/download/961/539>
- [7] Loditha, C. P., Cahyono, J., & Utami, K. D. (2023). Hubungan Ketepatan Waktu Distribusi Dan Mutu Makanan Terhadap Sisa Makanan Pada Jadwal Makan Siang Penderita Gastritis Rawat Inap Di Rumah Sakit Umum Daerah Inche Abdoel Moeis. *Jurnal Multidisiplin Indonesia*, 2(8), 2203–2212. <https://doi.org/10.58344/jmi.v2i8.437>
- [8] Marfuah, D., Setya Wardana, A., & Tyas Nur Anggraeni, H. (2022). Hubungan Tingkat Kepuasan Pelayanan Makanan Terhadap Sisa Makanan Di Afif Catering Surakarta. *Profesi (Profesional Islam) : Media Publikasi Penelitian*, 19(No.2), 119–126. <https://doi.org/10.26576/profesi.v19ino.2.102>
- [9] Muntaqoh, C. D., S, D. N., & Prayitno, S. A. (2025). Faktor Jumlah Sisa Makanan Bubur Halus Pada Pasien Ruang Bougenville 4 di Rsud dr . Soegiri Lamongan. *Ghidza Media Jurnal*, 6(April), 16–28.

[10] Nafieis, D. A. A. (2016). Hubungan Cita Rasa Makanan dan Konsumsi Makanan dari Luar Rumah Sakit Dengan Sisa Makan Biasa pada Pasien di Rumah Sakit Orthopedi Prof.Dr.R.Soeharso Surakarta. Universitas Muhammadiyah Surakarta.

[11] Pamungkas, T. U., & Subandriani, D. N. (2017). Faktor-Faktor Yang Berhubungan Dengan Sisa Makanan Pada Pasien Kanker Payudara Di Rumah Sakit Dadi Keluarga Purwokerto. *Jurnal Riset Gizi*, 5(2), 79–87. <https://doi.org/10.31983/jrg.v5i2.4353>

[12] Permenkes RI No. 1096/Menkes/Per/ VI/2011 tentang Higiene Sanitasi Jasaboga, 53 1689 (2011). <https://peraturanpedia.id/peraturan-menteri-kesehatan-nomor-1096-menkes-per-vi-2011/>

[13] Pratama, I. A. L. (2019). Hubungan Kepuasan Pelayanan Makanan dengan Jenis Diet pada Pasien di RSU Haji Surabaya. *Media Gizi Kesmas*, 8(1), 12. <https://doi.org/10.20473/mgk.v8i1.2019.12-18>

[14] Ronitawati, P., Fujima, M., Sitoayu, L., Sa'pang, M., & Dewanti, L. P. (2021). Hubungan Tingkat Kepuasan Dan Kualitas Pelayanan Makanan Terhadap Biaya Sisa Makanan Dan Zat Gizi Yang Hilang Pada Pasien Di Rumah Sakit Umum Daerah Koja Jakarta. *Gizi Indonesia*, 44(1), 77–86. <https://doi.org/10.36457/gizindo.v44i1.527>

[15] Septidiantari, L. P. Y., Padmiari, I. A. E., & Ariati, N. N. (2023). Faktor-Faktor Yang Mempengaruhi Terjadinya Sisa Makanan Pada Pasien Rawat Inap Di Rsud Bangli. *Journal of Nutrition Science*, 11(1), 15–21.

[16] Sumardilah, D. S. (2022). Analisis Sisa Makanan Pasien Rawat Inap Rumah Sakit. *Jurnal Kesehatan*, 13(1), 101–109. <http://ejurnal.poltekkes-tjk.ac.id/index.php/JK>

[17] Tanuwijaya, L. K., Sembiring, L. G., Dini, C. Y., Arfiani, E. P., & Wani, Y. A. (2018). Sisa Makanan Pasien Rawat Inap: Analisis Kualitatif. *Indonesian Journal of Human Nutrition*, 5(1), 51–61. <https://doi.org/10.21776/ub.ijhn.2018.005.01.6>

[18] Widyanti, W., & Rahmi, Y. (2024). *Jurnal Kesehatan Perintis (Perintis's. Health Journal*, 11(2), 128–135.