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The Relationship Between Timeliness of Food Distribution and Food Temperature with Lunch Leftovers from Regular Food Diet Patients at Regional General Hospitals

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ABSTRACT

Background: *Leftover food is food left by respondents on their eating plates. Leftovers can be categorized as good if the patient can finish food > 80%, so the patient does not leave food > 20%. The timeliness of food distribution and temperature can affect food waste in the hospital.*

Research Methods: *This research aimed to determine the relationship between the timeliness of food distribution and food temperature with the respondents' leftover lunch. The research design was an analytical quantitative observational with a cross-sectional approach, carried out in May 2023 at the Inner Mangunang Tanggamus General Hospital. The research sample was all class III inpatients with a regular diet of 30 respondents. Bivariate analysis in this study used the Chi-Square test.*

Research Result: *The results showed a relationship between the timeliness of food distribution and food waste (p=0.007) and between food temperature and food waste (p=0.016).*

Conclusion: *Based on the research results, it can be concluded that there is a relationship between the timeliness of food distribution and food temperature with the remaining lunch of the respondents.*

BACKGROUND

Food waste is food left by respondents on their eating plates. High levels of food waste in patients can reduce their nutritional intake, impacting their recovery and nutritional status (Uyami et al., 2014). Leftover food can be categorized as good if the patient can finish >80% of the food, meaning the patient does not leave >20% (Ministry of Health 2013).

Hospital food waste can be assessed using several methods, such as PDAT (Pictorial et al.), Comstock, and food weighing. The PDAT (Pictorial et al.) method uses pictures or questionnaires to describe food waste in patients (Ministry of Health, 2013). The Comstock method is carried out by observing food waste. Meanwhile, the food weighing method assesses food waste by directly weighing the remaining food that has been consumed (Ministry of Health, 2013).

The timeliness of food distribution and temperature can influence food waste in hospitals. The accuracy of the food distribution schedule can affect the patient's leftover lunch. Food should be distributed to patients 3-4 hours after getting the previous food because humans will feel hungry 3-4 hours after eating (Widosari & Widiyaningsih, 2017). The timeliness of food distribution also influences patient satisfaction with nutrition services in hospitals (Nurqisthy, 2016). Because food distribution differs from the schedule, patients will leave much food the hospital provides (Mardianingsih et al., 2020). The timeliness of food distribution is said to be good/appropriate if the score is >90% (Ministry of Health, 2013).

Besides the timeliness of food distribution, temperature can also influence food waste. Food temperature is a level that indicates the hot or cold state of food. Food temperature can be an influence on food waste because when food is served at a high temperature and consumed warm, it will stimulate the cerebrum, specifically the parietal lobe, which interprets sensory information such as food temperature, which will then increase appetite (Ministry of Health, 2016), so that effect on food waste (Widyastuti & Pramono, 2014., in Kusuma & Metta, 2020). A suitable food temperature when serving food to patients is > 60°C (Ministry of Health, 2013).

Based on a preliminary study at the Batin Mangunang Tanggamus Regional General Hospital on Wednesday, 09 February 2023, 6 respondents with a regular diet and no infectious diseases found that four (66.66%) left > 20% of their food. Then, for the timeliness of distribution, the percentage score obtained was 66.6%, which means that the distribution of food to respondents was not correct because the score was <90% (Ministry of Health, 2013), while five respondents (83.33%) received food served at a lower temperature. Appropriate (<60°C) (Ministry of Health, 2013).

Based on previous research conducted by Sumarni (2022) at Batin Mangunang Tanggamus Regional Hospital, the results were that patients contributed the most food waste at lunchtime. Therefore, the author is interested in analyzing the relationship between the timeliness of food distribution and food temperature with the remaining lunch of patients on a regular diet and without infection/special diet at Batin Mangunang Tanggamus Regional Hospital.

RESEARCH METHODS

This type of research is quantitative analytical observational with a cross-sectional approach. The research was carried out after obtaining approval from the Ethics Commission of the Faculty of Medicine, Malahayati University, with Number 335/EC/KEP-UNMAL/IV/2023. It was carried out from 09 to 12 May 2023 at the Batin Mangunang Tanggamus Regional General Hospital. The population in the study was all class III inpatients within one week, with a total sample of 30 respondents with a normal diet.

The timeliness of food distribution is measured by comparing the timeliness of food distribution using a score. Score one food distributed more than 20 minutes from the distribution schedule. Score 2 foods are distributed 11-20 minutes from the distribution schedule. Score 3 foods are distributed 1-10 minutes from the distribution schedule. Then, the score is divided by three and multiplied by 100%. The food distribution schedule is said to be on time if compliance with the schedule determined by the nutrition installation reaches a score of 90% (Ministry of Health, 2013). Food temperature is measured using a Mark Nankai thermometer. The temperature of the food is that if the food served has a temperature of >60°C, it means the food temperature is appropriate, but if the food served has a temperature of <60°C, it means the food temperature is not suitable (Ministry of Health, 2013). The patient's food waste is assessed using the Comstock and food weighing method (Ministry of Health, 2013).

Univariate analysis was carried out to determine the data results for each variable in percentage form. Meanwhile, the bivariate analysis uses the Chi-Square test. The instrument used in this research is the respondent's identity form, which includes name, address, gender, room name, room class, medical diagnosis, and usual diet. Informed Consent, Digital food scales with an accuracy of 1g CE mark, Nankai mark food thermometer, Stopwatch, food waste assessment form (Comstock and food weighing form), food distribution timeliness assessment form, food temperature assessment form, Excel application software, and SPSS software version 24.

This study has inclusion and exclusion criteria. Inclusion criteria include a sample of inpatients with a regular diet or without infection and a special diet at the Batin Mangunang Tanggamus Regional Hospital. The sample agreed to a letter of consent to be used as a respondent by researchers in research on the relationship between timeliness of food distribution and food temperature with lunch leftovers in diet patients. Average food and without infection/special diet at Batin Mangunang Tanggamus Regional Hospital; the sample is conscious and can communicate well; the sample does not have any particular disease or infection or is on a special diet and is a class III patient. Meanwhile, exclusion criteria include patients experiencing a change in type of food, patients withdrawing from being respondents when the research has not been completed, and patients dying.

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Researchers took primary data and secondary data. Primary data includes food waste data obtained by assessing using the Comstock and food weighing method after the main meal is given and consumed by the respondent, namely at the patient's lunchtime, data on the exact time of food distribution, food temperature data measured using a food temperature thermometer in degrees Celsius (° C) by measuring when the food is finished production (just cooked), the food is portioned and when the food arrives at the respondent's room. Meanwhile, secondary data includes identity, data on food administration at Batin Mangunang Tanggamus Regional Hospital, which includes food and portion standards, and data on respondents' lunch leftovers from previous researchers (Sumarni, 2022).

RESULTS

Univariate Analysis

Table 1. Shows The Frequency Distribution Results Of Respondents

Variable	Frequency (n=30)	Percentage (%)
Age		
<35	19	63.33
>35	11	36.66
Gender		
Man	15	50
Woman	15	50
Timeliness of Food Distribution		
Appropriate	14	46.66
Not exactly	16	53.33
Food Temperature		
In accordance	13	43.33
Not Appropriate	17	56.66
Respondents' Lunch Leftovers (Comstock)		
<20%	18	60
>20%	12	40
Respondents' Lunch Leftovers (Food Weighing)		
Low	18	60
high	12	40

Table 1 shows the frequency distribution results of respondents With more respondents aged <35, namely 19 respondents (63.33%). There were 15 male respondents (50%) and 15 female respondents (50%). Meanwhile, the results of the incorrect time for distributing food to patients were higher than the correct time, namely 16 respondents (53.33%). The results of the food temperature given to respondents in the inappropriate category were higher than those served at the appropriate temperature, namely 17 respondents (56.66%). The frequency distribution of respondents with low food waste (<20%) was more significant, namely 18 respondents (60%) than respondents with high food waste (>20%) which was 12 respondents (40%).

Bivariate Analysis

Table 2. Chi-Square Test Results

Dependent Variable	Independent Variable	*p-value*	Amount
Respondent's Lunch Leftovers	Timeliness of Food Distribution	0.007	30
Respondent's Lunch Leftovers	Food Temperature	0.016	30

Table 2 shows the results: there is a relationship between the timeliness of food distribution and the remaining lunch of respondents on a regular food diet at Batin Mangunang Tanggamus Regional Hospital (p=0.007) and between food temperature and the remaining lunch of respondents on a regular food diet at Batin Mangunang Tanggamus Regional Hospital (p=0.007), p=0.016).

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DISCUSSION

Frequency Distribution of Respondent Characteristics (Age and Gender)

Based on the results of research conducted at the Batin Mangunang Tanggamus District Hospital in Table 1 shows that there were more respondents aged <35 years, namely 19 respondents (63.33%), while respondents aged >35 years were 11 respondents (36.66). The percentage of food waste in respondents aged <35 is higher than in respondents aged >35; this could be because the research sample obtained contained more respondents aged <35. This can happen because age is not a factor causing food waste; food waste can be influenced by dominant internal factors, namely the respondent's eating habits (Tanuwijiya., et al., 2018).

Based on the gender characteristics of the respondents, the number of male and female respondents was the same, namely 15 male respondents (50%) and 15 female respondents (50%). This shows that the number of male and female patients is the same. However, this contradicts WHO data from 1987-1991 in Sarma H's research, which stated that the highest number of hospital patients were female (Sarma H, 2003., in Christopher B, 2012).

Frequency Distribution Timeliness of Food Distribution

The timeliness of food distribution is when food is delivered to respondents according to the schedule determined by the hospital nutrition installation (Widosari & Widiyaningsih, 2017). Based on the results of research carried out at the Batin Mangunang Tanggamus District Hospital, it can be seen in Table 1 that 16 respondents (53.33%) received food not on time due to the distribution time (>10 minutes), so the total score obtained was <90%. This shows that food should be distributed to patients on time.

Frequency Distribution of Food Temperature

Food temperature is a level that indicates the hot or cold state of food. A Food thermometer can measure food temperature (Ministry of Health, 2018). A suitable food temperature when serving food to patients is >60°C (Ministry of Health, 2013). Based on the results of research carried out at the Batin Mangunang Tanggamus District Hospital in Table 1, checking the temperature of food using a Mark Nankai thermometer showed that the percentage of appropriate food temperature when served was less, namely 43.33% compared to the percentage of food temperature that was not suitable when served, namely 56.66%.

Frequency Distribution of Respondents' Lunch Leftovers

The patient needs to finish leftover food and is still left behind or left on the plate that has been given as needed (Ministry of Health, 2018). Based on the distribution in Table 1, it can be seen that the amount and percentage of food waste is divided into two categories, namely low food waste (<20%) and high food waste (>20%) (Ministry of Health, 2018). The low food waste category can be seen from the number and percentage of acceptability distribution. The number of respondents was 18 respondents (60%), while the number of respondents with high food waste was 14 respondents (40%).

Food waste at Batin Mangunang Hospital, based on the results of calculations and research using food waste assessment, namely Comstock and food weighing, is 20.83%. This indicates that the respondent's lunch waste is classified as high based on the respondent's food waste, namely >20%.

The Relationship between Timeliness of Food Distribution and Respondents' Lunch Leftovers

Table 2 shows a relationship between the timeliness of food distribution and the remaining lunch, as evidenced by the statistical test result of the Chi-Square test, p=0.007. This indicates that the timeliness of food distribution affects respondents' food waste, which is in line with research by Widiosari and Widyaningsih (2017).

The time for food distribution should be 3-4 hours after the respondent has eaten the previous time because, at that time, the respondent will feel hungry. That if the food is served correctly, the respondent will feel satisfied (Widiosari & Widyaninhsih, 2017). Research conducted by Mardianingsih., et al. (2020) states that there is a relationship between the accuracy of meal times and satisfaction with hospital services with a value of p=0.017; distribution of food that is not on time (>10 minutes) can cause patients to leave the food served by the hospital nutrition installation.

The Relationship between Food Temperature and Respondents' Lunch Leftovers

Table 2 shows a relationship between food temperature and respondents' lunch waste, p=0.016. This means that the temperature of the food can affect the rest of the respondent's lunch. This research is in line with research by Paramita and Kusuma (2020), which states that there is a relationship between food temperature and food waste. According to him, the relationship between food temperature and food waste can also occur because each respondent's taste in food temperature is different. This research is also in line with research conducted by Nuraini et al. (2016), which states that there is a relationship between food temperature and food waste; the higher the food temperature, the lower the food waste.

Inappropriate food temperatures during the serving process can occur due to inappropriate distribution times (>10 minutes), in addition to the length of time it takes for servers to distribute respondent food plates, which is caused by the number of servers only having one to distribute food to all respondents at each meal time by serving food. To respondents without using a trolley, apart from that, the distance between one inpatient room and another inpatient room is quite far (5-10 m), which can make the temperature of the food served to respondents inappropriate. Inappropriate food temperatures can affect the respondent's leftover lunch. A respondent's leftover lunch is said to be high if the respondent leaves >20% of their food (Ministry of Health, 2013).

CONCLUSIONS

There were 19 more respondents aged <35 (63.33%) than respondents aged >35. Male respondents were the same as female respondents, namely 15 respondents (50%) each, while the results of the inappropriate timing of food distribution to patients were 16 (53.33%). The results of the food temperature served to respondents in the inappropriate category were higher than the appropriate food temperature, namely 17 respondents (56.66%). The frequency distribution of respondents with low food waste (<20%) was more significant, namely 18 respondents (60%), while respondents with high food waste (>20%) were 12 respondents (40%). There is a relationship between the timeliness of food distribution and food waste, as well as between food temperature and food waste.

SUGGESTION

It is necessary to provide education and information regarding the importance of timely food distribution so that the temperature of the food served to respondents is appropriate (>60°C).
Researchers who wish to continue this research should conduct further research on food waste in the morning, afternoon, and evening, with a complete cycle and using the Comstock and food weighing methods.

REFERENCES

Agustia L., & Suzzana P. (2018). Hubungan Antara Rasa Makanan dan Suhu Makanan dengan Sisa Makanan Lauk Hewani pada Pasien Rawat Inap Rumkital Dr.Ramelan Surabaya. Jurnal Amerta Nutrition. 2 (3) : 245-253

Andis T. (2022). Hubungan Antara Ketepatan Waktu Penyajian Makanan dan Rasa Makanan dengan Sisa Makanan Pasien Umum RSUD RAA Soewondo Kabupaten Pati. Jurnal Widya Praja. 2 (1) : 27-32

Gusti Putu. (2015). Hubungan Indeks Massa Tubuh dan Umur DENGAN Daya Tahan Umum Mahasiswa Putra Semester II Kelas A Fakultas Pendidikan Olahraga dan Kesehatan IKIP PGRI Bali Tahun 2014. Jurnal Pendidikan Kesehatan Rekreasi. 1 (1) : 42-47

Handayani & Srimiati. (2021). Hubungan Faktor Makanan dan Lingkungan dengan Sisa Makanan Lunak Pasien Dewasa Kelas 2 dan 3 Ruang Rawat Inap Rumah Sakit Grha Permata Ibu Kota Depok. Jurnal Gizi Pangan. 1 (1) : 22-29

KBBI. (2016). Arti Kata Usia, available from : http://kbbi.web.id/umur, accesed 10 Februari 2023

Kementrian Kesehatan RI (Kemenkes). (2013). Pedoman Pelayanan Gizi Rumah Sakit (PGRS). Direktorat Jendral Bina Gizi dan Kesehatan : Jakarta

Kementrian Kesehatan RI (Kemenkes). (2016). Anatomi Fisiologi Manusia. Kementrian Kesehatan RI : Jakarta

Kementrian Kesehatan RI (Kemenkes). (2017). Dietetika Penyakit Infeksi. Kementrian Kesehatan RI : Jakarta

Kementrian Kesehatan RI (Kemenkes). (2018). Manajemen Sistem Penyelenggaraan makanan Institusi. Kementrian Kesehatan RI : Jakarta

Kusuma, S H., & Paramita, M. (2020). Peran Suhu Makanan pada Sisa Makanan Pokok, Lauk Nabati dan Sayur pada Diet TKTP. Jurnal Gizi. 9 (1) : 142-149

Lironika, A., & Suryadi MY. (2019). Jadwal Distribusi dan Citarasa Makanan Berhubungan dengan Sisa Makanan Pasien di Ruang Perawatan Obygn dan Bedah RSD. dr.Soebandi Jember. Jurnal Amerta Nnutrition. 3 (3) : 194-200

Mardianingsih, N., Utami, f., & Palupi, I. (2020). Capaian Standar Pelayanan Minimal Gizi di Rumah Sakit Umum Daerah (RSUD) Manokwari Papua Barat. Jurnal Gizi Klinik Indonesia. 6 (4) : 152-167

Nisa F., & Yasir F. (2017). Hubungan Citarasa Makanan, Jenis Kelamin, dan Hari Rawat dengan Sisa Makanan Pasien Rumah Sakit. Jurnal Pangan Poltekkes Banjarmasin. 1-6

Nisak, N., Ronitawati, P., & Palupi, K. (2019) Metode PDAT dan Comstock Lebih Efesien Sedangkan Food Weighing Ddalam Menilai Sisa Makanan Pasien. Jurnal Gizi-Dietetik. 11 (1) : 18-19

Nourman Ayu. (2014). Resiliensi Pada Pasien Stroke Ringan Ditinjau Dari Jenis Kelamin. Jurnal Ilmiah Psikologi. 4 (2) : 241-262

Nuraini., et al. (2016). Suhu Makanan dan Sisa Makanan Pasien Dewasa Diet Lunak di Rawat Inap Penyakit Dalam Rumah Sakit Umum Daerah Semarang. Jurnal Gizi. 6 (1) : 41-48

Nurqisthy, A., Adriani, M., & Muniroh, L. (2016). Hubungan Kepuasan Pelayanan Makanan dengan Tingkat Kecukupan Protein Pasien di Rumah Sakit Universitas Airlangga Surabaya. Jurnal Media Gizi Indonesia. 11 (1) : 32-39

Paramita, M., & Kusuma, H. (2020). Peran Suhu Makanan pada Sisa Makanan Pokok, Lauk Hewani, Lauk Nabati, dan Sayur pada Pasien Diet TKTP di Rumah Sakit Roemani Muhammadiyah Kota Semarang. Jurnal Gizi. 9 (1) : 142-149

Peraturan Daerah Kabupaten Tanggamus. No 02 .(2019). Pemberian Nama Rumah Sakit Umum Daerah Kota Agung Kabupaten Tanggamus.

Peraturan Kementrian Kesehatan RI (Permenkes). (2018). Kewajiban Rumah Sakit dan Kewajiban Pasien : Jakarta

Ratufalen, E., Zainuddin, A., & Junaid. (2018). Hubungan Pola Makan, Ekonomi Keluarga dan Riwayat Infeksi dengan Kejadian Gizi Kurang pada Balita di Wilayah Kerja Puskesmas Benua-Benua Tahun 2018. Jurnal Ilmu Mahasiswa Kesehatan Masyarakat. 3 (2) : 3

Ronitawati., et al .(2017). Faktor-Faktor Yang Berhubungan Dengan Sisa Makanan di RSUD Kota Jakarta Utara 2017. HSG Journal. 3 (1) : 57-76

Saskia, R., Primadona, S., & Mahmudino, T. (2018). Hubungan Tingkat Kematangan dan Suhu dengan Sisa Makanan Lauk Nabati pada Pasien Anak di Ruang Inap Rumkital dr. Ramelan Surabaya. Jurnal Media Gizi Indonesia. 13 (2) : 100-107

Tanuwijaya., et al. (2018). Sisa Makanan Pasien Rawat Inap. Indonesian Journal Of Human Nutrition. 5 (1) : 51-61

Uyami., Hendriyani, H., & Wiwik, W. (2014). Perbedaan Sisa, Sisa dan Asupan Makan pada Pasien dengan Menu Pilihan dan Menu Standar di RSUD Sunan Kalijaga Demak. Jurnal Riset Gizi. 2 (1) : 1-6

Widi, A., Dewi C., Sofiyatin, R., & Suranadi, Ll.. (2020). Pengaruh Suhu Makanan DENGAN Sisa Makanan di Rumah Sakit. Jurnal Gizi Prima. 5 (2) : 119-124

Widosari & Widyaningsih. (2017). Hubungan Antara Ketepatan Jam Makan dan Frekuensi Konsumsi Makanan dari Luar Rumah Sakit dengan Kepuasan Pasienyang Mendapatkan Makanan Biasa di RSUD dr.Soeradji Tirtonegoro. Seminar Nasional Gizi. Program Studi Ilmu Gizi UMS

Wirasmadi ., et al. (2015). Analisis Sisa Makanan Pasien Rawat Inap di RSUP Sanglah Denpasar Provinsi Bali. Journal Public Health and Preventive Medicine Archive. 3 (1) : 88-95

Yuliantini, E., Ermawati., & Kamsih. (2015). Penampilan dan Rasa Makanan Sebagai Faktor Sisa Makanan Pasien Anak di Rumah Sakit dr. Sobirin Musi Rawas. Jurnal Media Kesehatan. 8 (2) : 184-189