



Analysis of the Appropriateness of Standard Lunch Portion for Diabetes Mellitus Patients in Class 3 Wards at Ulin Regional General Hospital, Banjarmasin

Tity Mutiarsih¹, Khuzaini², Dwi Wahyu Artiningsih³

Universitas Islam Kalimantan Muhammad Arsyad Al Banjari Banjarmasin, Indonesia^{1,2,3}

Abstract

Diabetes Mellitus (DM) is a chronic disease with a high prevalence in Indonesia, including South Kalimantan, and its management relies heavily on proper dietary regulation, particularly the accuracy of carbohydrate portions such as rice. Ulin Regional General Hospital (RSUD Ulin) Banjarmasin, as a referral hospital, treats a large number of DM patients in Class 3 wards, where socioeconomic and educational factors often affect health conditions and access to optimal care. Inaccuracy in food portions within hospital food service can have a direct impact on patients' blood sugar control. Previous studies have shown discrepancies in the portions of staple foods served. This study aims to determine the standard portion of regular rice, analyze the accuracy of regular rice portions in lunch menus, and identify factors influencing it for Diabetes Mellitus patients in Class 3 wards at RSUD Ulin Banjarmasin in 2025. The research used a qualitative approach with a descriptive case study method. Data collection was carried out through direct weighing of the rice portions served, observation of the portioning process, and in-depth interviews with key informants (ward nutritionists, administrative staff, and food handlers). The results showed that the standard portions for regular rice in the DM diet for lunch are: 1300 kcal (100 g), 1500 kcal (150 g), 1700 kcal (200 g), 1900 kcal (200 g), 2100 kcal (250 g), and 2300 kcal (300 g). There was a high level of portion inaccuracy (72.4%). Analysis using the System Management Theory framework indicated that this inaccuracy is a systemic problem stemming from dysfunction and lack of synergy among subsystems in food service management. Factors influencing portion accuracy include incomplete dietary order information from nutritionists, administrative delays in producing labels due to insufficiently detailed input, reliance on non-standard portioning tools and limited measuring equipment (scales), and lack of specific training on DM diets and the importance of portion accuracy for food handlers. Feedback mechanisms and monitoring of portion accuracy were also found to be ineffective.

Keywords:

Portion Accuracy,
Regular Rice,
Diabetes Mellitus,
Class 3 Patients,
Food Service Management,
Ulin Regional General
Hospital Banjarmasin.

Corresponding Author:

Tity Mutiarsih
Email:
titymutiarsih27@gmail.com



This is an open access
article under the CC BY
license.

INTRODUCTION

Health is the fundamental foundation of human resource quality and national progress. Non-communicable diseases such as Diabetes Mellitus (DM) are a serious concern due to their increasing prevalence both globally and in Indonesia. It is estimated that 50% of DM patients in Indonesia remain undiagnosed, with a prevalence increase of 1.7% in 2023. Indonesia ranks sixth in the world in terms of the number of DM patients.

Ulin Regional General Hospital (RSUD Ulin) Banjarmasin, as a national referral hospital, carries the mission of providing high-quality healthcare services oriented toward patient needs and safety. In September 2024, there were 322 DM patients treated in Class 3 wards at RSUD Ulin, representing a prevalence of 2.6%. The high number of DM patients in Class 3 is associated with socioeconomic factors such as unequal access to education and information (Prof. Sidartawan), poverty and social injustice (Dr. Nafsiah Mboi), as well as the principle of the social gradient in health, which states that lower socioeconomic status correlates with poorer health conditions.

DM management includes both prevention and treatment, with strict dietary regulation based on the 3J guidelines (amount, type, and meal schedule). High-carbohydrate foods, such as rice, can trigger obesity and insulin resistance, making portion control critically important. Inaccurate food portions, whether excessive or insufficient, are common in hospitals and can affect the nutritional value received by patients. Previous research by Wadyomukti (2017) revealed discrepancies in the rice portions served.

Therefore, this study aims to analyze the standard portion of regular rice, the accuracy of regular rice portions in lunch menus, and the factors influencing portion accuracy for Class 3 DM patients at RSUD Ulin Banjarmasin in 2025. The study's findings are expected to serve as both a theoretical reference and a practical evaluation tool to improve food service management.

METHOD

This study employs a qualitative approach using a descriptive case study method. The objective is to portray the actual condition regarding the accuracy of the standard portion of regular rice in the lunch menu for Class 3 DM patients at Ulin Regional General Hospital (RSUD Ulin) Banjarmasin. The qualitative approach enables an in-depth understanding of the reasons behind behaviors and the complexity of the issues involved. A descriptive approach is used to illustrate the actual condition of portion accuracy.

Types of Data

1. Primary Data: Collected directly from the source, including:
 - a. Measurement of rice portions using a weighing scale.
 - b. Direct observation of the food serving process.
 - c. Interviews with food handlers, administrative staff, inpatient ward dietitians, and patients.
2. Secondary Data: Pre-existing data, including:
 - a. Portion standards from the Nutrition Installation of RSUD Ulin Banjarmasin.
 - b. Data on the number of DM patients.
 - c. Patient diet labels.

Research Time and Location

Time : April – May 2025.

Location : Food Service Area at the Nutrition Installation of RSUD Ulin Banjarmasin.

Research Procedure

The research procedure follows the stages outlined by Denzin (Suharsaputra, 2012:201):

1. Reflection Stage: Identifying the research problem ("How accurate is the portion of regular rice in the lunch menu for Diabetes Mellitus patients in Class 3 wards at RSUD Ulin Banjarmasin?") and establishing the paradigm (the portion of regular rice should conform to the standard).
2. Planning Stage:
 - a. Selecting the location: Nutrition Installation at RSUD Ulin Banjarmasin.
 - b. Choosing the strategy: Case study with interviews conducted with informants.
 - c. Research method: Utilizing data triangulation (interviews, documentation, observation).
3. Research Preparation: Formulating the research problem, determining the research design (case study), selecting data collection methods (interviews, observation, documentation study, triangulation), developing research questions, and preparing the proposal.
4. Fieldwork Stage: Collecting data through pre-surveys/orientation, interviews, discussions, and triangulation.
 - a. Research Informants: 8 inpatient ward dietitians in Class 3 wards, 3 administrative staff at the nutrition service counter, 4 cooks/rice portioners, and 5 DM patients.
 - b. Documentation: Gathering data in the form of photographs, number of DM patients, rice portion weighing results, and portion standards.
 - c. Observation: Direct observation of rice portioning activities.
5. Research Reporting Stage: Preparing the research report.

Data Collection Methods

1. Weighing the regular rice served.
2. Checklist Form: Recording portion accuracy.
3. Interviews: Conducted with food handlers/portioning staff, administrative staff, inpatient ward dietitians, and patients.
4. Combining primary and secondary data (triangulation).
5. Documentation of activities.
6. Observation of food service management activities.

Data Analysis

Data were analyzed using method triangulation, followed by data reduction and conclusion drawing. Data reduction was based on the following assumptions:

1. Assumption of Accurate Standard Portion for Serving.
2. Assumption of Accurate Measuring Tools.
3. Assumption of Awareness among Food Handlers/Portioning Staff.
4. Assumption of Awareness among Administrative Staff.
5. Assumption of Awareness among Inpatient Ward Dietitians.
6. Assumption of Awareness among Inpatient Diabetes Mellitus Patients regarding the suitability of the food served with their medical condition.

RESULT AND DISCUSSION

General Overview of the Research Location

Ulin Regional General Hospital (RSUD Ulin) Banjarmasin is located at Jl. A. Yani Km. 2.5, Banjarmasin, South Kalimantan, with a land area of 63,920 m² and a building area of 55,000 m². It serves as a five-star, Class A, top-tier teaching and national referral hospital. RSUD Ulin carries out functions in healthcare services, education, and research. Its motto is: "Patient Safety is Our Priority." The vision is: "To Realize a National Referral Hospital that is of High Quality and Trusted in Service and Education." Its mission includes providing accredited services, conducting education/training/research, ensuring healthy business management, managing facilities and infrastructure, and delivering national referral services.

History of RSUD Ulin Banjarmasin

The hospital was founded in 1943, renovated in 1985 (with concrete building structures), and has continued to expand with additional facilities. In 1999, it was designated as a teaching hospital for general practitioners and specialists. Since 2007, RSUD Ulin has been fully designated as a Regional Public Service Agency (BLUD).

Development History of RSUD Ulin Banjarmasin

RSUD Ulin evolved from a self-financing unit into a full BLUD and a Class A general hospital, functioning in medical services, health education, research, and community service. Priority services include cancer, cardiovascular diseases, stroke, uro-nephrology, maternal and child health (MCH), diabetes mellitus, infectious diseases, pulmonary tuberculosis, and gastrohepatology.

Research Findings

This study used data triangulation from documentation, observation, and interviews with 20 informants (8 dietitians, 3 administrative staff, 4 food handlers, and 5 DM patients).

Table 1. Characteristics of Informants and Portion Accuracy for Regular Rice in Class 3 DM Patients at RSUD Ulin Banjarmasin

Variable	Description
Age	55% aged 44–60 years, 40% aged 25–43 years, 5% over 60 years. Majority considered experienced.
Education	Most hold Senior High School (30%) and Bachelor's degree (30%). Dietitians: Diploma/Bachelor in Nutrition; Admin: Senior High–Bachelor; Food Handlers: Junior–Senior High; Patients: Junior High–Bachelor.
Length of Service	79.8% have worked in the Nutrition Installation for more than 10 years, indicating substantial experience.
DM-Related Training	66.7% have never attended training related to Diabetes Mellitus, particularly food handlers (0% attended).
Standard Regular Rice Portion for DM Diet (Lunch)	1300 kcal = 100 g; 1500 kcal = 150 g; 1700 kcal = 200 g; 1900 kcal = 200 g; 2100 kcal = 250 g; 2300 kcal = 300 g. All dietitians, admin staff, and food handlers are aware of these standards.

Portion (Lunch)	Accuracy	Out of 47 regular rice portions served during 4 days of observation, only 13 portions (27.6%) matched the standard, while 34 portions (72.4%) were inaccurate, indicating a high error rate.
-----------------	----------	--

Table 2. Factors Affecting Portion Accuracy (Based on Interviews)

Stakeholder		Findings
Inpatient (Class 3 Ward)	Dietitians	<ul style="list-style-type: none"> • Diet Ordering: All dietitians place diet orders for DM patients in their respective wards, generally via WhatsApp group to admin staff. • Diet Type Notation: Some dietitians only write “NBDM” without specifying calorie category (e.g., NBDM 1500), while others write it in full. This inconsistency affects data input. • Rice Portion Ordering: Some dietitians order rice portions according to diet standards, but others do not specify the portion (grams), leaving interpretation to food handlers. • Communication: Some dietitians inform admins and food handlers about the importance of accurate portions, while others rely solely on the diet label (etiket).
Food Administration Staff	Service	<ul style="list-style-type: none"> • Diet Label Preparation: All admin staff are responsible for preparing patient diet labels. • Diet Type on Labels: Some admins write the DM diet type in full (e.g., NBDM 1500), while others only write “NBDM” due to limited label space or incomplete input from dietitians. • Data Limitations: Admin staff will not add calorie categories without explicit input from dietitians.
Food Handlers/Portioners		<ul style="list-style-type: none"> • Equipment Availability: Plastic bowls and scales are available, but plastic bowls are often inaccurate, and digital scales are considered slow/inconvenient due to high volume (400–500 portions total). As a result, portioners often use bowls without weighing. • Portioning Training: None have received specific training on portioning regular rice for DM patients; only general hygiene and sanitation training. • Workload Challenges: Many portioners find weighing each DM rice portion impractical due to the large number of patients and limited time.
Diabetes Mellitus Patients (Perceptions & Suggestions)		<ul style="list-style-type: none"> • Meal Timeliness: All patients report meals arrive on time. • Dietitian Interaction: All patients have met and communicated with dietitians. • Nutrition Counseling: All have received counseling about allowed and restricted foods. • Food Suitability: All patients feel the food matches their medical condition. • Rice Portion Accuracy: All patients believe their rice portion is “appropriate” or “sufficient” but do not weigh it—judging only by visual estimation. • Eating Habits: None finish their entire rice portion (consume only 1/3 to 1/2), citing fullness or reduced appetite. • Suggestions: Patients suggest adding more seasoning to food and improving dining utensils (spoon, tissue, replacing uncomfortable “plato” trays).

Discussion

This study confirms the importance of an appropriate diet—particularly accurate carbohydrate portions such as rice—in the management of Diabetes Mellitus (DM). The high prevalence of DM among Class 3 inpatients at Ulin Regional General Hospital (RSUD Ulin) underscores the role of socioeconomic factors in access to nutritional services.

Although the standard portion sizes for DM patients at RSUD Ulin are established and known by all relevant staff, the very high rate of inaccurate rice portioning (72.4%) indicates dysfunction in its implementation. This finding is consistent with previous research reporting inaccuracies in hospital portioning practices.

Analysis using Systems Management Theory reveals that the inaccuracy of rice portions is a systemic problem stemming from a lack of synergy and synchronization among subsystems:

1. **Inconsistent Input:** Dietitians sometimes provide incomplete diet order information (without specifying the calorie category), resulting in insufficiently detailed initial input. Verbal communication about portion details is also suboptimal.
2. **Hindered and Unsynchronized Processes:** The administrative subsystem struggles to produce complete diet labels when the input from dietitians lacks detail. Limited label space adds to the challenge. The food-handling subsystem, which relies heavily on labels, faces further obstacles due to vague information, compounded by equipment constraints (digital scales being slow/inconvenient) and the habitual use of non-standard measures (plastic bowls).
3. **Resources Requiring Enhancement:** The absence of DM-specific portioning training for food handlers indicates a weakness in essential knowledge and skills for milligram-level accuracy. General awareness of portion standards is insufficient without targeted practical competence.
4. **Weak Feedback Mechanisms:** The absence of a routine output measurement system (to monitor portion accuracy) and the lack of proactive feedback to all subsystems hinder continuous improvement. Dietitians often assume accuracy based on the absence of complaints—a passive and inadequate form of feedback. The patients' perception of "sufficient" portions does not reflect clinical accuracy.

The phenomenon of patients leaving food uneaten (consuming only 1/3 to 1/2 of the rice portion), despite perceiving it as "adequate," is a critical indicator. It suggests that even if a portion is perceived as appropriate, other factors such as appetite and food taste strongly influence actual intake. If the initial portion is already inaccurate (either excessive or insufficient) and patients fail to finish it, actual carbohydrate intake may deviate significantly from the target—negatively impacting blood glucose control and treatment effectiveness. Patients' suggestions to enhance food flavor and improve dining utensils support this conclusion.

Overall, the inaccuracy of rice portions for DM patients at RSUD Ulin Banjarmasin reflects a systemic failure to ensure clear information flow, efficient processes with adequate tools, specifically trained human resources, and data-driven improvement mechanisms. Achieving optimal nutritional service requires strong synergy and synchronization between dietitians, administrative staff, and food handlers, supported by sufficient equipment and relevant training.

CONCLUSION

The standard portion sizes of regular rice for Class 3 DM patients at RSUD Ulin are well known by all relevant parties, including dietitians, administrative staff, and food handlers, with specific calorie and gram measurements ranging from 100 g for 1300 kcal to 300 g for 2300 kcal. However, the level of inaccuracy in portioning is notably high, with 72.4% of portions failing to meet the standard and only 27.6%

being accurate. Several factors contribute to this issue, including inconsistent input from dietitians, where diet orders often lack detailed calorie specifications; disrupted and unsynchronized processes, in which administrative staff face difficulties producing complete diet labels due to incomplete input, and food handlers rely on non-standard measures due to limited equipment and time constraints; insufficient resources, particularly the lack of DM-specific training for food handlers; and weak feedback and monitoring mechanisms, as there is no routine system to assess and improve portion accuracy. This problem is systemic in nature, requiring improvements at every stage of the process and stronger synergy among all personnel involved.

Recommendations

1. Adherence to DM Diet Standards
 - a. Dietitians must provide complete and specific information (calorie group and gram portion) in every diet order.
 - b. Display DM diet portion standards in the food portioning area for easy reference.
2. Optimization of Administrative and Labeling Processes
 - a. Improve diet label format to include detailed information.
 - b. Establish standard procedures for admins to clarify incomplete orders with dietitians.
3. Improvement of Portioning Quality Through Specific Training
 - a. Provide regular DM-specific training for food handlers on accurate carbohydrate portioning.
4. Provision of Standard Measuring Tools
 - a. Supply sufficient, accessible, and well-functioning digital scales.
 - b. Eliminate the use of non-standard measuring tools for DM rice portions.
 - c. Regularly calibrate scales.
5. Enhanced Supervision and Standardized Procedures
 - a. Strengthen monitoring by supervisors over portioning staff.
6. Strengthening of Feedback Mechanisms (Systemic Approach)
 - a. Implement routine portion accuracy monitoring through random sampling and weighing.
 - b. Share monitoring results regularly with all relevant subsystems.
 - c. Establish routine communication forums among subsystems to address challenges and develop solutions collaboratively.

REFERENCES

- Afifah, Ummu, Hubungan Ketepatan Porsi Makanan dengan Soisa Makanan Lunakdi Rumah Sakit Islam PKU Muhammadiyah Tegal, Kecamatan Adiwerna, Kabupaten Tegal, Universitas Muhammadiyah Semarang, 2018 Alodokter.com/diabetes.28.05.2025,12;24)
- Andita Putri Astari, Jurnal Ketepatan Pemorsian hidangan di RSUD Dr.Tjitrowardojo. Purworejo,2019
- Annisa dan Dewi, Fungsi dan Klasifikasi Protein, 2021.
- Aritonang Irianon, Penyelenggaraan Makanan: Manajemen Sistem Pelayanan Gizi Swakelola dan Jasa boga di Instalasi Gizi Rumah Sakit, Leutika, Yogyakarta, 2012.
- Arsyih Sundusil, dkk, Kesesuaian Besar Porsi Nasi yang Disajikan dengan Standar Porsi Pada Menu Makanan Biasa, Jurusan Gizi, Poltekkes Kemenkes Mataram, Indonesia, 2019.
- Astrini.W.Retno, Hubungan Karakteristik Tenaga Pemorsi dan Alat Pemorsian Dengan Ketepatan Pemorsian Makanan Pokok Berdasarkan Standar Porsi di Rumah Sakit Muhammadiyah Bantul, Prodi DIV Gizi Jurusan Gizi Politeknik Kesehatan Kementerian Kesehatan Tahun 2017

- Asyriani,S.Pratiwi, Hubungan karakteristik Tenaga Pemorsi dengan Ketepatan Porsi dan Energi pada Standar Diet Dabetes Melitus di RSUD Embung Fatimah, Jurnal Kesehatan Amanah, 2024
- Changa Jimmy, 19 Apr, 2017 Apa itu PORSI?, artikbbi.com
- Chasanah, Uswatun, Hubungan Pendidikan, Lama Bekerja dan Pengetahuan Tentang Pemorsian Petugas Penjamah Makanan dengan ketepatan Porsi Makana di RSUD Dr.Amina Gondohutomo Provinsi Jawa Tengah, 2018
- Dr.H.C.Hery, SE,dkk , Manajemen Kinerja, 2021
- dr.Jati Satrio, Diabetes Melitus: Penyebab, gejala, Diagnosis, Pengobatan dan pencegahan, 2020
- Firyal Yasmin, Faktor-Faktor yang Berhubungan dengan Jeteptan Besar Porsi Nasi TI, dki RSUD Pasar Rebo, Jakarta, poltekkes Kemenkes Jakarta II, 2019
- Hawara Gian , Tressia Febrianti, Dewi Fitriani, Analisis Status Sosial Ekonomi Dengan Kepatuhan Pengobatan Pada Pasien Diabetes Melitus di Kota Depok, Edu Dharma Journal, Stikes Widya Dharma Husada, Tangerang, vol 8 No.1 , 2024
- Helena.D.Nita Maria, Jurnal “Ketapatan Standar Porsi Nasi pada Penderita Diabetes Melitus di RSUD Prof Dr.W.Z Johannes Kupang, 2019
- <https://rsulin.kalselprov.go.id/home.php>,kamis 30-05-24, 18 ;27
- <https://hellosehat.com/diabetes/tes-gula-darah-puasa/>, Gula Darah Puasa, Ini Nilai Normal dan Prosedur Tesnya, Ditinjau oleh dr. Jimmy Tandradynata, Sp.PD jumat 9-5-2025 : 22:20
- https://repositori.uma.ac.id/bitstream/123456789/1279/5/128600207_FILE5.pdf, sabtu 10-05-2025, 03.40
- <https://www.banksinarmas.com/id/artikel/perbedaan-kelas-bpjs>, Ini Perbedaan BPJS Kesehatan Kelas 1, 2, dan 3 sabtu 10-05-2025, 03;46
- <https://www.makemeask.com/2024/11/nasi-pengertian-manfaat-dan-kandungan.html>, Nasi: Pengertian, Manfaat dan Kandungan jumat, 9-5-25 16;59 wita
- Humarsudulin, 2023, Rumah Sakit Daerah Umum Ulin Banajrmasin,
- IDAI, Pedoman Pengelolaan dan Pencegahan Diabetes Melitus Tipe 1 pad Anak dan Remaja di Indonesia, 2021
- Iswanelly Mourbas,Pengembangan Alat Pemorsian Nasi Sesuai Standar Diet Pasien Rawat Inap di Rumah Sakit, Poltekkes Kemenkes Padang,2020
- J.Guwandi,, Etika dan Hukum Kesehatan, PT RajaGafindo Persada, 2019
- Kemenkes R.I, Lampiran Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/Menkes/2009/2024 Tentang Pedoman Nasional Pelayanan Klinis Tatalaksana Diabetes Melitur Pada Anak, jdih,kemkes.go.id
- Kemenkes Republik Indonesia, Dokumen Penyelenggaraan Makanan, Jakarta 2013.
- Laila Julianto, Jurnal Ilmiah Wijaya Volume 12 Nomor 2, September 2020. Hal 92-97; website: www.jurnalwijaya.com; p-ISSN: 2301-4113; e-ISSN: 2723-344892, Hubungan Tingkat Kepatuhan Diet Makan Dengan Tingkat Kadar Gula Darah Pasien Diabetes Melitus, STIKes Wijaya Husada Bogor, Email : wijayahusada@gmail.com
- Lakshmi Widiana Puspita, SKM, MPH, Laporan Penelitian : Efektifitas Alat Ukur Porsi Terhadap Standar Porsi Makanan Pokok Pada Diet Penderita Diabetes Melitus di Rumah Sakit Pontianak, Poltekkes Pontianak, 2017.
- Malislicha, Hubungan Asupan Natrium dengan Tekanan Darah pada Lansia di wilayah Kerja Puskesmas, 2017.
- Mourbas Iswaneli,dkk Pengembangan Alat Pemorsian Nasi Sesuai Standar Diet Pasien Rawat Inap di Rumah Sakit, Jurnal Sehat Mandiri, vol 12 Tahun 2919

- Nabilah Abiyyah, Studi Literatur Ketepatan Besar Porsi Dengan Standar Porsi Makanan Pada Pasien di Rumah Sakit, Poltekkes Kemenkes, Riau, 2024
- Nanda Iriawan Ramadhan, Fondasi Teori Manajemen, 2020
- Novi. V, Teori Manajemen, Pengertian, Jenis dan Implementasinya., 2022
- NurhasanahAisyah, Definisi Makan Menurut Ahli, Reda Samudara.id, September 18,
- P0edjadi, Anna, Dasar-Dasar Biokimia, UI Press, 2006
- PERKENI, Pedoman Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 Dewasa, 2021.
- Retno, Astrini Wadyomukti dan Tjarono, Sari dan Abdullah, Jurnal Hubungan Karakteristik Tenaga Pemorsi dan Alat Pemorsian dengan ketepatan Pemorsian Makanan Pokok Berdasarkan Standar Porsi di Rumah Sakit PKU Muhammadiyah Bantul, 2017
- Sarno Wuragil, Perkembangan Teori Manajemen, 2024
- Shanti,D,et,al, analisis Kandungan Serat Pangan pada Seduhan Tepung Kulit Pisang Kepok (Musa Paradisiaca), 2017.
- Sihombing,S.D,Prihantini,T, & Raizza,A, Studi Kasus Pengaruh Pemberian Buah Naga Merah terhadap Kadar Glukosa Darah pada Pasien Diabetes Melitus Tipe 2, 2018.
- Sridanti Kartika, Perbedaan Antara Makan Siang Dan Makan Malam2,4/11/2024, Kartika Sridianti,com
- Studocu.id/id/document/ Energi-Definisi Zat Gizi yang dikenal dengan Nutrisi/universitas-singaperbangsa Karawang, 28.05-2025;14;02
- Uswatun Chasanah, Yuliana Noor Setiawati, Hubungan Pendidikan, Lama Bekerja dan Pengetahuan tentang Pemorsian Petugas Penjamah Makanan dengan Ketepatan Porsi Makan di RSJD Dr.Amino Gondohutomo Provinsi Jawa Tengah, Universitas Muhammadiyah, Semarang, 2018.
- Wahyudiati, Hubungan Kadar Diet Sukrosa dengan Peningkatan Kadar Gula Darah Sebagai Faktor Risiko Diabetes Melitus pada Tikus Wistar(Rattus Norvegicus), Universitas Wijaya Kusuma, Surabaya, 2017.
- World Health Organization (WHO), Publikasi Mengenai Kesehatan dan Pembangunan /IPM 2023