



Application of an information system for inpatient nutrition management: An implementation study based on the Indonesian Minister of Health Regulation No. 26/2013

Penerapan sistem informasi untuk manajemen gizi pasien rawat inap: Studi implementasi berdasarkan Permenkes RI No. 26/2013

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Abstract

Nutritional management of hospitalized patients is critical for improving the quality of hospital services. The Indonesian Ministry of Health Regulation No. 26 of 2013 established standards for hospital nutrition management; however, its implementation has not been fully documented through digital systems. This study aimed to examine the application of information systems for inpatient nutrition management based on Regulation No. 26/2013. A descriptive qualitative approach was employed using content analysis of secondary data, including policy documents, nutrition unit reports, and outputs from hospital nutrition information systems in a Type B hospital from 2021 to 2023. The hospital was selected purposively based on the criterion of using a nutrition information system for a minimum of two years. The results showed that most components of the nutrition care strategy, such as initial assessment and diet provision, complied with regulatory standards, with over 80% of patients assessed within 24 h and 92,5% of diets appropriately provided. However, digital documentation of nutrition interventions and evaluations remained suboptimal (<40%), mainly because of manual recordkeeping, high workload, and limited training. In conclusion, although progress has been made in the implementation of nutrition management strategies, significant gaps remain in digital documentation. Strengthening information systems, improving human resource capacity through training, and routine monitoring are necessary to ensure compliance with the national standards.

Keywords: Inpatient care, Hospital nutrition information system, Nutrition intervention, Regulation no. 26/2013

Abstrak

Pengelolaan gizi pasien rawat inap merupakan elemen krusial dalam peningkatan mutu layanan rumah sakit. Permenkes RI No. 26 Tahun 2013 telah menetapkan standar pengelolaan gizi, namun implementasinya belum sepenuhnya terdokumentasi secara digital. Penelitian bertujuan untuk menelaah penerapan sistem informasi untuk manajemen gizi pasien rawat inap berdasarkan Permenkes RI No. 26/2013. Metode menggunakan pendekatan deskriptif kualitatif dengan analisis isi terhadap data sekunder berupa dokumen kebijakan, laporan unit gizi, dan keluaran sistem informasi gizi rumah sakit tipe B selama periode 2021–2023. Rumah sakit dipilih secara purposif berdasarkan kriteria penggunaan sistem informasi gizi minimal dua tahun. Hasil, sebagian besar komponen strategi gizi seperti asesmen awal dan pemberian diet telah sesuai regulasi, dengan tingkat kepatuhan asesmen dalam 24 jam mencapai >80% dan kesesuaian pemberian diet sebesar 92,5%. Namun, dokumentasi intervensi dan evaluasi gizi digital masih belum optimal (<40%), terutama karena pencatatan manual, beban kerja tinggi, dan kurangnya pelatihan. Kesimpulan, strategi pengelolaan gizi telah menunjukkan kemajuan, namun masih terdapat

kesenjangan signifikan pada aspek dokumentasi digital. Diperlukan penguatan sistem informasi, pelatihan SDM, dan monitoring rutin untuk memastikan implementasi yang sesuai standar nasional.

Kata Kunci: Dokumentasi intervensi, evaluasi gizi, sistem informasi gizi, Permenkes No. 26/2013, rawat inap

Introduction

Malnutrition in hospitals remains a global concern with significant implications for patient clinical outcomes. According to the World Health Organization (WHO), approximately 30–50% of hospitalized patients experience nutritional disorders, which directly contribute to prolonged hospital stays, increased risk of complications, and higher healthcare costs (Qwaider et al., 2025). This issue is not confined to developing countries; it is also prevalent in technologically advanced hospitals, where nutritional services are often not prioritized systematically (Wu et al., 2025).

With the advent of digital transformation in healthcare, information systems have been increasingly adopted to strengthen clinical nutrition management. Hospital-based nutrition information systems enable real-time documentation of nutritional assessments, dietary interventions, monitoring, and evaluations while also supporting data-driven clinical decision-making. Wu et al. (2025) demonstrated that digital platforms such as *FoodCoach* can reduce dietary documentation errors by up to 60% and enhance the accuracy of nutritional interventions.

In Indonesia, the strengthening of nutrition services is formalized through the Ministry of Health Regulation of the Republic of Indonesia No. 26 of 2013, which outlines clinical nutrition service standards, from initial nutritional assessment within the first 24 hours of admission, to diagnosis, intervention planning, and outcome evaluation. Ideally, all these processes should be integrated into the Hospital Management Information System (*Sistem Informasi Manajemen Rumah Sakit*, SIMRS) as part of efforts to improve service quality. However, implementation reports indicate that the utilization of nutrition information systems remains limited, particularly in documenting interventions and evaluations, which are often performed manually (Liyana, 2024; Sanjaya et al., 2024). Structural barriers, such as limited digital

training, high workload, and entrenched non-digital work cultures, continue to hinder progress in many type B hospitals.

Internationally, several countries have successfully integrated nutrition information systems into their hospital services. In South Korea and Germany, such systems not only improve documentation efficiency, but also serve as essential tools for Nutrition Support Teams (Cho et al. 2021; Kiss et al. 2021). In contrast, Indonesia continues to face implementation challenges owing to low system interoperability and the absence of a strong, data-driven culture (Sanjaya et al., 2024). These conditions suggest that the mere presence of regulations is insufficient to ensure effective implementation without synergy among technology, human resources, and hospital management policies.

Given these challenges, this study aimed to evaluate the implementation of inpatient nutrition management strategies based on information systems and assess their alignment with the Ministry of Health Regulation No. 26 of 2013. By focusing on documentation, initial nutritional assessment, and the accuracy of dietary provision, this study seeks to provide a comprehensive overview of current practices and contribute to the advancement of digitalized hospital nutrition services in Indonesia.

Methods

This study employed a qualitative descriptive approach, aiming not only to quantify data, but also to explore the underlying meanings behind implemented strategies and the extent to which national policy values are reflected in hospital practices. The primary focus of this research was to assess how inpatient nutrition management strategies are implemented through the support of information systems and whether these strategies align with Indonesian Ministry of Health Regulation No. 26 of 2013.

This study utilized secondary data collected from various official documents,

including the full text of Regulation No. 26/2013, annual nutrition unit reports from the selected hospital, and screenshots and outputs from the hospital's nutrition information system between 2021 and 2023. The hospital was selected purposively, specifically a Type B hospital that had been implementing a nutrition information system for more than two years and maintained traceable, systematically analyzable documentation of its nutrition services. The use of secondary data was driven not only by accessibility, but also by precedent in similar studies, where documentation data were effectively used for practice-based policy evaluation (Kaniecka et al., 2024; Sanjaya et al., 2024).

Data collection involved document review, including regulations, performance records, standard operating procedures (SOPs) from the hospital's nutrition unit, and internal presentation materials related to the development of the nutrition information system. In addition, a literature review was conducted of relevant scientific publications and evaluation reports from both domestic and international sources (Polit & Beck, 2021). This study employed a content analysis approach (Bowen, 2009) to identify the alignment between hospital nutrition management practices and the indicators outlined by the Ministry of Health regulation. This approach was chosen for its ability to examine the meaning embedded within documents rather than merely matching content literally (Qwaider et al., 2025; Wu et al., 2025).

To ensure the validity of the findings, data from internal hospital documents were cross-referenced with relevant academic sources, and source triangulation was used as the basis for validation. This method aligns with the document-based policy evaluation practices used in hospital nutrition studies in other countries, including those in Europe and Southeast Asia (Kaniecka et al., 2024; Liyana, 2024).

To support visualization of the inpatient nutrition management strategy implementation process via information systems, a strategic workflow diagram was developed, based on the principles outlined in Regulation No. 26/2013 and practical implementation in Type B hospitals in Indonesia:

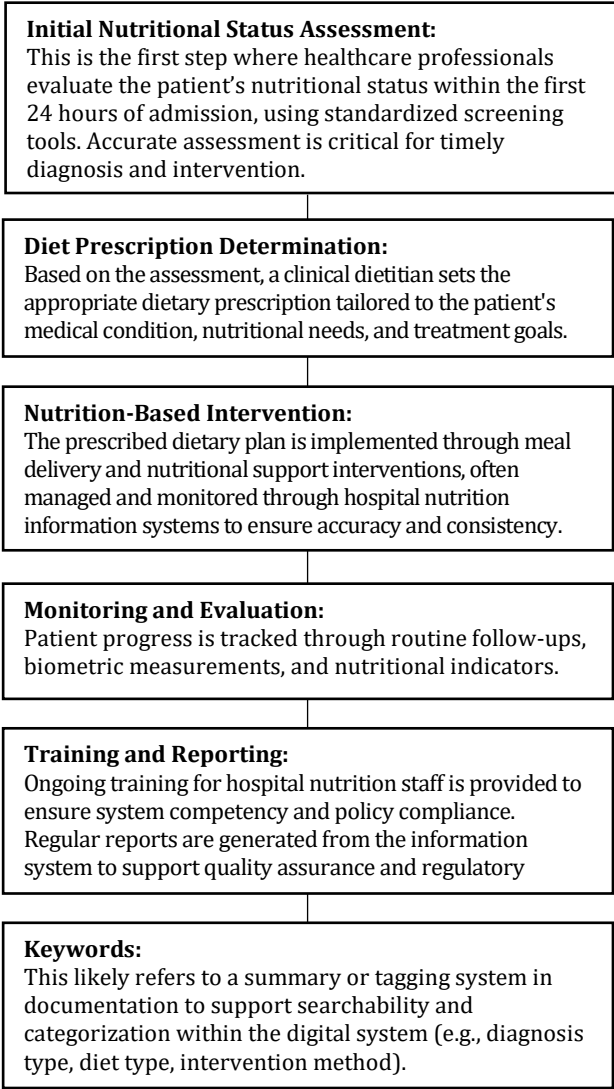


Figure 1. Implementation workflow of inpatient nutrition management strategy based on information systems in accordance with Indonesian Ministry of Health Regulation No. 26/2013

The diagram illustrates the key steps in nutrition management strategy, from the initial nutritional assessment to routine reporting and staff training. In practice, while most hospitals have implemented early stage processes, such as assessment and diet provision, intervention documentation, digital monitoring, and reporting remain ongoing challenges. This visualization served as the analytical framework for the content analysis of the reviewed documents.

This study applied content analysis as the primary methodological framework to assess

the alignment between hospital nutrition management practices and Ministry of Health Regulation No. 26/2013. The qualitative descriptive approach enabled researchers to not only examine documents literally, but also interpret the implied meanings, values, and strategies underlying the implementation of nutrition information systems. The goal was to determine the extent to which national policy was operationalized at the hospital level, particularly in the areas of assessment, diet prescription, intervention, and digital documentation.

The content analysis followed five stages.

1. Data reduction. Secondary data from regulatory documents, hospital reports, and system outputs (2021–2023) were selected and classified based on their relevance to Regulation No. 26/2013.
2. Thematic coding. Information within the documents was coded according to the following key themes in the nutrition management strategy: initial assessment, diet prescription, intervention, monitoring and evaluation, and documentation.
3. Categorization and interpretation. The coded data were categorized based on their degree of compliance with regulatory standards and analyzed interpretively to understand the context and implementation challenges.
4. Source triangulation. To enhance the validity of the findings, internal hospital documents were compared to external academic publications and similar system reports from other national contexts.
5. Thematic visualization. Analytical findings were supported by visual representations (workflow diagrams) to facilitate the understanding of processes and identify critical points within hospital nutrition information systems.

The study not only describes the level of hospital compliance with regulations but also explores the enabling and inhibiting factors influencing the success of digitalization in nutrition services. This approach is consistent with the document-based policy evaluation practices that are widely applied in regulation-driven healthcare studies.

Result and Discussion

The nutrition management strategy implemented at the Type B Hospital in this study

largely adheres to the Standardized Nutrition Care Process (SNCP) as mandated by the Indonesian Ministry of Health Regulation No. 26 of 2013. The hospital's Health Information Management System (SIMRS) supports the digital documentation of nutrition services, including initial assessments, diet prescriptions, and reporting to both the kitchen and nursing units. However, field implementation has revealed inconsistencies across process stages, particularly in the documentation of interventions and evaluations, which have emerged as key weaknesses.

Initial Nutrition Assessment: High Compliance, but Uneven Distribution

According to SIMRS data, nutrition assessments within the first 24 h were conducted with high compliance across most wards (>80%) (Table 1). The ICU was the only unit that did not meet this standard (69,1%), likely due to the high intensity of care and unfavorable patient-to-nutrition staff ratio (Qwaider et al., 2025). Although standard operating procedures (SOPs) are in place, limitations in personnel capacity remain a major barrier to the full implementation of regulatory mandates.

Table 1. Compliance with initial nutrition assessment by ward type (2021–2023)

Ward Type	Number of Patients	Assessment ≤ 24 Hours	Compliance Rate
Pediatric Inpatient	370	301	81,4%
Adult Inpatient	480	413	86,0%
Intensive Care (ICU)	110	76	69,1%
Maternity Ward	220	179	81,4%
Total	1,180	969	82,1%

Source: Processed from SIMRS data, Type B Hospital, Indonesia (2024)

Diet Accuracy: System Facilitates Interdepartmental Coordination

Diet accuracy reached 92,5%, indicating that SIMRS effectively supported coordination between nutritionists and kitchen staff. This finding aligns with that of Moick et al. (2020), who emphasized that digital workflow systems and consistent SOPs significantly reduce errors in nutrition service delivery. Table 2 confirms this performance, particularly in assessment and diet prescriptions.

Table 2. Compliance with the nutrition service components of Regulation No. 26/2013

Nutrition Service Component	Implementation Status	Remarks
Initial assessment ≤ 24 hours	Compliant (80–90%)	Hampered by nighttime or weekend admissions
Diet prescribed per diagnosis	Compliant (≥90%)	Good coordination between nutritionists and kitchen
Intervention and evaluation logs	Non-compliant	-

Source: SIMRS and SOP Nutrition Documents, Type B Hospital, Indonesia (2024)

Digital Nutrition Evaluation: Fragmented and Inconsistent

A major weakness was identified in the digital documentation of the nutritional interventions and evaluations. As shown in Table 3, only 35–40% of the cases had complete digital intervention records (Morrison, 2011). This issue warrants a broader analysis, encompassing both technical and non-technical causal factors (Schindler et al., 2010).

Table 3. Key documentation issues in nutrition interventions – type B hospital (2021–2023)

Component	Field Findings	Additional Notes
Initial diet documentation	Frequently recorded manually	Not fully digitized
Follow-up nutrition care	Undocumented in 35% of cases	Delayed input due to high workload
Diet evaluation	Inconsistent	Performed manually or via informal notes
Reporting to management	Fragmented	Discrepancy between digital and manual reports

Source: Content analysis of hospital records, Type B Hospital, Indonesia (2024)

Technical barriers continue to hinder the optimization of hospital nutrition information systems. Some units have limited access to real-time data entry. Moreover, the current SIMRS interface is considered non-user-friendly, too complex, and unintuitive for most healthcare workers. The absence of automated reminders for regular evaluation further contributes to data lapses.

Non-technical barriers were equally significant. A persistent manual documentation culture leads many staff members to initially record data on paper, thus delaying digital input. Motivation was also low, as documentation practices do not directly affect staff performance appraisals. Inadequate technical training and absence of continuous user support have exacerbated this situation (Kight et al., 2020; Sanjaya et al., 2024). As Wu et al. (2025) noted in the FoodCoach program, successful health service digitalization relies heavily on active user engagement. Even most advanced systems fail without consistent use.

Practical Recommendations: Bridging Policy and Practice

To address inconsistencies in nutrition evaluation, practical strategic solutions are needed. One approach is case-based training, designed to enhance staff awareness of both the technical and clinical importance of documentation. Nutrition evaluation should be embedded into clinical decision-making, not merely as an administrative task, to ensure that recorded outcomes directly inform patient care.

System-level improvements are necessary to support effective digital documentation. Quality indicators for nutrition documentation should be incorporated into hospital quality assurance metrics. On the technical side, SIMRS should be redesigned with a simplified interface, notifications, and auto-save features to enhance its usability. Periodic monitoring and management feedback are vital for reinforcing digital work culture and ensuring consistent documentation practices.

Standard vs. Field Practice: The Need for Governance Reform

Table 4 compares regulatory standards with field practices, revealing that while initial assessments and diet prescriptions are largely in compliance, documentation and evaluation of nutritional interventions fall short. This disparity underscores that system success depends not only on technology, but also on internal policies, continuous monitoring, and data-driven incentives.

Table 4. Comparison of Regulation No. 26/2013 vs. field practice

Nutrition service component	Regulatory standard	Field practice	Status
Initial nutrition assessment ≤ 24h	Mandatory for all new patients	Completed for 80%	Partially met
Diet accuracy based on diagnosis	Must be accurate and recorded	Compliant for 92,5%	Met
Documented intervention/monitoring	Must be digital and real-time	35–40% fully documented	Not met
Outcome evaluation of intervention	Data-driven and continuous	Not routine, lacks policy support	Not met

Source: Document and SIMRS content analysis, Type B Hospital, Indonesia (2024)

These findings confirm that the hospital's nutrition management strategy has made progress in key areas such as initial assessment and diet prescription. Compliance rates above 80% for assessments and 92,5% for diet accuracy illustrated the success of integrating digital systems into daily nutrition services. These results validate the effectiveness of the SNCP framework outlined in Regulation No. 26/2013, indicating that most nutrition staff fulfill their professional responsibilities in line with national standards.

However, the digital documentation of interventions and evaluations remains a critical gap. With only 35–40% of interventions fully recorded, the disconnect between regulation and practice is evident. This shortfall has serious implications, including the lack of continuous patient evaluation data and absence of an evidence base for clinical decisions. These gaps highlight that technology alone is insufficient for service transformation, and organizational culture and governance systems must also support digital documentation (O'Keeffe et al., 2019).

This study underscores that the main challenge in hospital nutrition management is not technological (hardware/software) but behavioral and organizational. Low user motivation, insufficient ongoing training, and absence of performance indicators for documentation are key contributors to inconsistent recordkeeping (Gandy, 2019).

Simultaneously, the hospital's success in assessments and diet prescriptions demonstrates the potential of SIMRS as a backbone for transforming nutrition services, provided it is actively utilized by all users. Lessons from countries such as South Korea, Germany, and Thailand, which integrate digital nutrition systems into clinical workflows, emphasize the importance of interdepartmental collaboration and role-based training as

prerequisites for success (Greenhalgh et al. 2017; Mahdizadeh et al. 2021).

International evidence suggests that platforms, such as FoodCoach, can reduce documentation errors by up to 38% and accelerate intervention processes by 25% (Wu et al. 2025). However, implementation in Indonesia must account for local challenges, such as digital literacy, system interoperability, and resistance to change (Kiss et al., 2020; Kiss et al., 2021).

In summary, this study found that information system-based nutrition management strategies are broadly aligned with national regulations, particularly regarding initial assessments and diet prescriptions. However, major weaknesses persist in the documentation of follow-up interventions and evaluations. These gaps suggest that the full strategic potential of digital systems to improve nutrition service quality has not yet been realized owing to various technical and non-technical barriers.

Ultimately, the study reinforces that digital transformation in nutrition services relies not only on technology availability, but also on synergy between systems, internal policies, and healthcare worker behavior. Nutrition documentation must become an integral part of professional culture. Thus, this research not only captures the achievements and challenges of digital implementation, but also provides a compelling argument that successful nutrition management in the digital era hinges on documentation culture, quality indicators, and sustained interdisciplinary training.

Conclusion

The inpatient nutrition management strategy at the hospital has partially adopted the principles outlined in Ministry of Health Regulation No. 26

of 2013, particularly in the implementation of initial nutritional assessments and diet accuracy. However, the application of nutritional interventions and evaluations based on information systems remains suboptimal, especially in terms of digital documentation and consistent use by nutrition personnel.

The availability of a nutrition information system has not been matched by adequate human resource readiness or a work culture that supports digitalization. This indicates a persistent gap between regulatory standards and technical implementation in the field. Therefore, efforts to strengthen implementation should focus on continuous training, system integration into clinical workflows, and monitoring mechanisms oriented toward institutional learning and improvement.

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References

- Barker, L. A., Gout, B. S., & Crowe, T. C. (2011). Hospital malnutrition: Prevalence, identification and impact on patients and the healthcare system. In *International Journal of Environmental Research and Public Health* (Vol. 8, Issue 2, pp. 514–527). MDPI. <https://doi.org/10.3390/ijerph8020514>
- Bowen, G. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9, 27–40. <https://doi.org/10.3316/QRJ0902027>
- Chen, J., Lieffers, J., Bauman, A., Hanning, R., & Allman-Farinelli, M. (2017). Designing Health Apps to Support Dietetic Professional Practice and Their Patients: Qualitative Results From an International Survey. *JMIR Mhealth Uhealth*, 5(3), e40. <https://doi.org/10.2196/mhealth.6945>
- Cho, J., Park, Y. S., Park, D. J., Kim, S., Lee, H., Kim, M., Lee, E., Lee, H. Y., & Lee, E. (2021). Bridging policy and service performance of hospital-based nutrition support by healthcare information technology. *Nutrients*, 13(2), 1–12. <https://doi.org/10.3390/nu13020595>
- Fellows, G. K., Koch, K., Galley, E., & Mansell, R. (2025). Northern Corridor Research Program: Phase 2 Final Report. *The School of Public Policy Publications*, 18(1). <https://doi.org/10.55016/ojs/sppp.v17i1.78202>
- Gandy, J. (2019). *Manual of Dietetic Practice*. John Wiley & Sons. https://books.google.co.id/books/about/Manual_of_Dietetic_Practice.html?id=iZebDwAAQBAJ
- Goel, M. S., Brown, T. L., Williams, A., Hasnain-Wynia, R., Thompson, J. A., & Baker, D. W. (2011). Disparities in Enrollment and Use of an Electronic Patient Portal. *Journal of General Internal Medicine*, 26(10), 1112–1116. <https://doi.org/10.1007/s11606-011-1728-3>
- Greenhalgh, T., Wherton, J., Papoutsis, C., Lynch, J., Hughes, G., A'Court, C., Hinder, S., Fahy, N., Procter, R., & Shaw, S. (2017). Beyond Adoption: A New Framework for Theorizing and Evaluating Nonadoption, Abandonment, and Challenges to the Scale-Up, Spread, and Sustainability of Health and Care Technologies. *J Med Internet Res*, 19(11), e367. <https://doi.org/10.2196/jmir.8775>
- Heidarizad, Z., Fazlzadeh, A., Ahmadian, W., & Nagdi, S. (2025). A meta-analysis on the impact of e-commerce on companies' export performance. *Journal of Strategic Management Studies*. <https://doi.org/10.22034/SMSJ.2025.453578.2014>
- Isabel T. D. Correia, M., & Waitzberg, D. L. (2003). The impact of malnutrition on morbidity, mortality, length of hospital stay and costs evaluated through a multivariate model analysis. *Clinical Nutrition*, 22(3), 235–239. [https://doi.org/10.1016/S0261-5614\(02\)00215-7](https://doi.org/10.1016/S0261-5614(02)00215-7)
- Kaniecka, E., Rybarcz, A., Wajkowska, Y.-S., &

- Timler, D. (2024). *Dobre praktyki i rozwiązania systemowe w obszarze funkcjonalnym komitetów i zespołów problemowych wybranych podmiotów leczniczych województwa łódzkiego*. <http://wydawnictwo.umed.pl/>
- Kight, C. E., Bouche, J. M., Curry, A., Frankenfield, D., Good, K., Guenter, P., Murphy, B., Papoutsakis, C., Richards, E. B., Vanek, V. W., Wilcock, D., & Wootton, A. (2020). Consensus Recommendations for Optimizing Electronic Health Records for Nutrition Care. *Nutrition in Clinical Practice*, 35(1), 12–23. <https://doi.org/10.1002/ncp.10433>
- Kiss, N., Hiesmayr, M., Sulz, I., Bauer, P., Heinze, G., Mouhieddine, M., Schuh, C., Tarantino, S., & Simon, J. (2021). Predicting hospital length of stay at admission using global and country-specific competing risk analysis of structural, patient, and nutrition-related data from nutritionday 2007–2015. *Nutrients*, 13(11). <https://doi.org/10.3390/nu13114111>
- Kotler, P., & Keller, K. L. (2016). *Marketing Management*. Pearson. https://books.google.co.id/books/about/Marketing_Management.html?id=UbfwtwEACAAJ
- Lee, Y. P., Tsai, H. Y., & Ruangkanjanases, A. (2020). The determinants for food safety push notifications on continuance intention in an e-appointment system for public health medical services: The perspectives of utaut and information system quality. *International Journal of Environmental Research and Public Health*, 17(21), 1–15. <https://doi.org/10.3390/ijerph17218287>
- Liyana, F. (2024). *Analisis Penerapan Sistem Informasi Manajemen Rumah Sakit (SIMRS) Generic Open Source di Rumah Sakit Jiwa Daerah Kolonel H. M. Syukur Tahun 2024*. <https://repository.unja.ac.id/75636/>
- Magalhaes de Paiva, E. M., & Correa, F. J. M. (2025). Health and quality of life in Argentina and Latin America in 2024. *Interamerican Journal of Health Sciences*, 5, 52. <https://doi.org/10.59471/ijhsc202552>
- Mahdizadeh, S. M., Sany, S. B., Sarpooshi, D. R., Jafari, A., & Mahdizadeh, M. (2021). Predictors of preventive behavior of nosocomial infections in nursing staff: a structural equation model based on the social cognitive theory. *BMC Health Services Research*, 21(1), 1187. <https://doi.org/10.1186/s12913-021-07205-6>
- Moick, S., Simon, J., & Hiesmayr, M. (2020). Nutrition care quality indicators in hospitals and nursing homes: A systematic literature review and critical appraisal of current evidence. *Clinical Nutrition*, 39(6), 1667–1680. <https://doi.org/10.1016/j.clnu.2019.10.007>
- Morrison, T. (2011). Not-for-profit volunteer clinics: rich source of nursing research data. *Journal of Clinical Nursing*, 20(13–14), 2074–2077. <https://doi.org/10.1111/j.1365-2702.2010.03676.x>
- O’Keeffe, M., Kelly, M., O’Herlihy, E., O’Toole, P. W., Kearney, P. M., Timmons, S., O’Shea, E., Stanton, C., Hickson, M., Rolland, Y., Sulmont Rossé, C., Issanchou, S., Maitre, I., Stelmach-Mardas, M., Nagel, G., Flechtner-Mors, M., Wolters, M., Hebestreit, A., De Groot, L., ... O’Connor, E. M. (2019). Potentially modifiable determinants of malnutrition in older adults: A systematic review. *Clinical Nutrition*, 38(6), 2477–2498. <https://doi.org/10.1016/j.clnu.2018.12.007>
- Polit, D. F., & Beck, C. T. (2021). *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. Wolters Kluwer. <https://books.google.co.id/books?id=HyNGxQEACAAJ>
- Putra, D. M., Hunna, C. M., & Fadhila, W. (2022). Analisis Pelaksanaan SIMRS Pada Unit Kerja Rekam Medis Dengan Metode Technology Acceptance Model (TAM). *Jurnal Rekam Medis Dan Informasi Kesehatan*, 5(1), 47–58. <https://doi.org/10.31983/jrmik.v5i1.8401>
- Qwaider, Y. Z., Amarin, J. Z., Spieker, A. J., Hayek, H., Chappell, J. D., Halasa, N. B., & Lovvorn, H. N. (2025). Incidence of biliary atresia in the United States before and during the COVID-19 pandemic. *Journal of Pediatric Gastroenterology and Nutrition*. <https://doi.org/10.1002/jpn3.70009>

- Safitri. (2019). *Hubungan Dukungan Keluarga dengan Kepatuhan Diet pada Pasien Diabetes Melitus Tipe 2 Rawat Jalan di RSUD Dr. Moewardi Surakarta*. <https://example.com/naskah-publikasi-baru>
- Sanjaya, G. Y., Prasetyawati, D., Pratama, R. A., Sutriana, V. N., Lazuardi, L., Setiawan, M. Y., Sutaryana, B. M., & Supriati, T. (2024). Development of Aplikasi Satu Data Kesehatan (ASDK) on key performance indicator of District Health Office of Kulon Progo using District Health Information Software 2 (DHIS2). *Journal of Community Empowerment for Health*, 7(3). <https://doi.org/10.22146/jcoemph.93829>
- Schindler, K., Pernicka, E., Laviano, A., Howard, P., Schütz, T., Bauer, P., Grecu, I., Jonkers, C., Kondrup, J., Ljungqvist, O., Mouhieddine, M., Pichard, C., Singer, P., Schneider, S., Schuh, C., & Hiesmayr, M. (2010). How nutritional risk is assessed and managed in European hospitals: A survey of 21,007 patients findings from the 2007–2008 cross-sectional nutritionDay survey. *Clinical Nutrition*, 29(5), 552–559. <https://doi.org/10.1016/j.clnu.2010.04.001>
- Subroto, D., Supriandi, Wirawan, R., & Rukmana, A. (2023). Implementasi Teknologi dalam Pembelajaran di Era Digital: Tantangan dan Peluang bagi Dunia Pendidikan di Indonesia. *Jurnal Pendidikan West Science*, 1, 473–480. <https://doi.org/10.58812/jpdws.v1i07.542>
- Wu, J., Mayer, S., Pilz, S., Antille, Y. S., Albert, J. L., Stoll, M., Garcia, K., Fuchs, K., Bally, L., Eichelberger, L., Schneider, T., Tiefenbeck, V., Merian, S., & Orban, F. (2025). FoodCoach: Fully Automated Diet Counseling. *IEEE Journal of Biomedical and Health Informatics*, 1–13. <https://doi.org/10.1109/JBHI.2025.3540899>