



IMPLEMENTATION OF THE NOSOCOMIAL INFECTION PREVENTION AND CONTROL (IPC) PROGRAM ON SERVICE QUALITY AND PATIENT SAFETY IN HOSPITALS

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ABSTRACT

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Background: Nosocomial infections represent a significant problem that contributes to increased morbidity, mortality, and the financial burden of healthcare. The implementation of Infection Prevention and Control (IPC) programs serves as a primary strategy for enhancing patient safety and the quality of hospital services.

Objective: This study aims to analyze the influence of IPC program implementation on service quality and patient safety through a systematic literature review.

Methods: This study employed a PRISMA-based Systematic Literature Review, utilizing searches conducted through Google Scholar and PubMed. Of the 164 articles identified, 8 articles met the inclusion criteria and were analyzed using a thematic approach.

Results: IPC program implementation encompasses hand hygiene compliance, instrument sterilization, use of personal protective equipment (PPE), Healthcare-Associated Infection (HAI) prevention bundles, waste management, and active surveillance. All studies demonstrated a reduction in nosocomial infections ranging from 20% to 52%. The primary supporting factors for IPC program success include periodic training, availability of facilities, and hospital management support. IPC programs also contribute to improved service quality and the development of a safety culture.

Conclusion: IPC programs have been proven effective in reducing the incidence of nosocomial infections and enhancing patient safety. Consistency in implementation, sustainable supervision, and management support are the determining factors for program success.

INTRODUCTION

Patient safety is a key indicator in healthcare, serving as a benchmark for hospitals to provide high-quality and optimal care, thereby reducing adverse events affecting patients. To achieve patient safety goals, the primary focus is directed toward

patients requiring intensive care and emergency treatment. Patients with less urgent conditions are provided with care appropriate to their clinical needs to ensure the continuity and quality of healthcare services during their hospital stay (Ismainar, 2015).

The quality of healthcare is a

fundamental aspect of efforts to maintain public health and improve patient safety during the delivery of healthcare services. The demand for quality healthcare is growing across all segments of society, particularly in hospitals as healthcare institutions that provide comprehensive medical services.

Hospitals are healthcare institutions that provide comprehensive individual healthcare services, including inpatient care, outpatient care, and emergency services. As healthcare facilities, hospitals play a strategic role in improving public health and are therefore required to provide high-quality care in accordance with established standards. However, patients, healthcare workers, visitors, and others within the hospital environment remain at risk of infection due to inadequate hygiene practices or exposure while in the healthcare facility (Rosa, 2019).

The primary issue regarding hospital-acquired infections relates to the ability of healthcare facilities to prevent and control such infections. An increase in infection rates can lead to longer patient hospital stays, which ultimately contributes to a significant rise in healthcare costs (Madjid & Wibowo, 2019).

Healthcare-associated infections (HAIs), also known as nosocomial infections, are among the factors contributing to increased morbidity and mortality rates in hospitals. Nosocomial infections have become a global health issue affecting various countries, including Indonesia. The issue of

healthcare-associated infections has garnered international attention and been discussed in various forums, such as the Global Health Security Agenda, as their impact extends beyond health to impose an economic burden on nations.

According to the Ministry of Health of the Republic of Indonesia (2017), nosocomial infections are infections that occur in patients during their stay in a hospital or other healthcare facility. Healthcare-associated infections (HAIs) are infections that were neither present nor in the incubation period when the patient entered the healthcare facility but developed during the course of care or after the patient received healthcare services. In addition to patients, HAIs can also occur among healthcare workers and hospital staff as a result of exposure during the provision of care in healthcare facilities.

Data from various sources indicate that the incidence of nosocomial infections remains high in many countries around the world, particularly in low-income and developing countries. A prevalence survey conducted by the WHO in 55 hospitals across 14 countries representing four WHO regions—Europe, the Middle East, Southeast Asia, and the Western Pacific—revealed that an average of 8.7% of inpatients experienced nosocomial infections. Each year, more than 1.4 million people worldwide experience complications resulting from infections acquired during hospital care. The highest prevalence of nosocomial infections was reported in the Middle East and

Southeast Asia regions, at 11.8% and 10.0%, respectively, while the European and Western Pacific regions recorded prevalences of 7.7% and 9.0%.

As a developing country, Indonesia also faces the problem of nosocomial infections, which persist across various healthcare facilities. Data indicate that the incidence of nosocomial infections in public hospitals was recorded at 1,527 cases among 160,417 at-risk patients, while in private hospitals, 991 cases were identified among 130,047 at-risk patients (Stract, 2023).

A study conducted by Sulisno et al. (2022) explains that efforts to prevent nosocomial infections can be achieved by optimizing organizational structures and strengthening the role of management in fostering a culture of patient safety. Each hospital needs to design and tailor infection surveillance and control programs based on its specific needs and characteristics, given that infection conditions and patterns can vary between hospitals (Hapsari et al., 2018). In this regard, the support and involvement of hospital management play a crucial role in facilitating the implementation of infection control programs.

Infection prevention and control constitutes a series of efforts aimed at preventing and minimizing the risk of infection among patients, healthcare workers, visitors, and the community within healthcare facilities. However, attention to this issue has not yet become a priority for some hospital

management teams. This situation often leads to the implementation of infection control programs being more focused on meeting accreditation requirements, whereas such programs should be one of the primary standards adopted by hospitals and other healthcare facilities to ensure patient safety and improve the quality of healthcare services (Aldi Nadin P, 2018).

Essentially, nosocomial infections are preventable if healthcare facilities consistently implement infection prevention and control programs (Trinanda W, 2019). Therefore, infection prevention and control programs must be implemented across all healthcare facilities in Indonesia as part of efforts to reduce the risk of infection transmission.

In Indonesia, policies regarding infection prevention and control are regulated by Ministry of Health Regulation No. 27 of 2017, which covers various important aspects, including hand hygiene practices, the use of personal protective equipment (PPE), medical waste management, and the sterilization of medical devices. Nevertheless, the implementation of these policies still faces various challenges, particularly in small-scale healthcare facilities or those located in areas with limited infrastructure and human resources. The Ministry of Health emphasizes that regular training and optimal supervision are essential components to ensure the effective implementation of infection prevention and control programs. In addition to technical aspects, management support also

plays a crucial role in determining the success of program implementation, especially in healthcare facilities with limited resources.

In theory, the success of infection prevention and control programs is influenced by three main factors: full support from healthcare facility management, the availability of adequate facilities and infrastructure, and the level of awareness and compliance among healthcare workers in following applicable protocols (WHO, 2022). However, in practice, various challenges are still frequently encountered, such as budget constraints, suboptimal training, and inconsistencies in program implementation in the field.

Infection prevention and control is a series of measures aimed at protecting everyone from the risk of infection transmission, whether originating from the community or occurring during the provision of care in healthcare facilities. Therefore, further analysis of the various factors related to the implementation of these programs is needed through similar studies to strengthen the development of infection prevention and control strategies in healthcare facilities.

METHODS

The approach used in this study is a Systematic Literature Review (SLR), which was conducted systematically through two main stages: the literature review process and the identification of articles using the Preferred Reporting Items for Systematic

Reviews and Meta-Analyses (PRISMA) guidelines. PRISMA is an evidence-based guideline presented in the form of a flowchart to assist researchers in conducting systematic and structured literature reviews (Pati & Lorusso, 2018).

In the application of the SLR method, a critical evaluation of the literature is a crucial aspect, as it can improve the quality of the resulting study. Therefore, this study employs a selection process based on predefined inclusion and exclusion criteria. The use of a PRISMA-based approach offers several benefits, including: (1) assisting in formulating research questions in a detailed, systematic, and explicit manner; (2) facilitating the determination of inclusion and exclusion criteria; and (3) helping to identify appropriate scientific databases within the specified timeframe (Shaffril et al., 2018).

The databases used in this study include Google Scholar and PubMed to facilitate the search for scientific publications relevant to the research topic. The keywords used in the article search process include “Nosocomial,” “Infection Control,” and “Implementation,” without imposing a publication timeframe limit, with the last search conducted on October 8, 2025.

During the screening stage, the researcher conducted a systematic literature review to identify relevant articles based on the research objectives. This stage aimed to obtain summaries and conclusions from the documents for further analysis. Subsequently,

during the eligibility stage, the researcher added or removed articles based on the relevance and quality of the documents used. Priority was given to articles from publications that had undergone a peer-review process.

The criteria used in article selection include: journal articles published between 2020 and 2025, as well as documents containing empirical data aligned with the research focus. Additionally, the process of searching for articles from various sources, such as Google Scholar and PubMed, was supported by the use of the Publish or Perish application to facilitate the identification of relevant publications, as well as the VOSviewer application to assist with bibliometric visualization, thereby enabling the identification of publications and findings with a significant impact on the research topic (Andini, 2019).

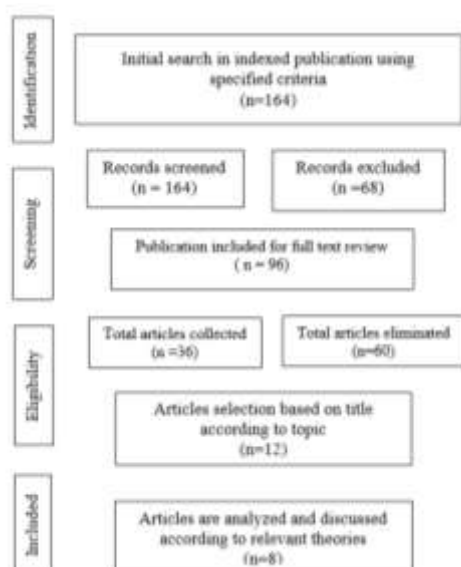


Figure 1. *PRISMA Diagram for Systematic Review.*

Based on an analysis using the PRISMA diagram, the identification process during the initial literature search yielded a total of 164 articles ($n = 164$). This number indicates that the systematic search conducted in the specified databases was able to identify articles relevant to the research topic. These results suggest that the search strategy employed was sufficiently targeted and yielded a number of articles with potential for further analysis.

During the screening stage, 36 articles ($n = 36$) were selected for further evaluation regarding their relevance to the research focus. At this stage, 60 articles ($n = 60$) were eliminated because they were deemed not to meet the criteria or were considered unsuitable for further review.

The eligibility stage constituted a crucial part of the article selection process, during which 8 articles ($n = 8$) were subsequently evaluated through a full-text review to assess their compliance with the previously established inclusion criteria. The evaluation results demonstrated that the selected articles possessed good quality and relevance to the research objectives; thus, all articles that passed this stage were deemed suitable for use in the subsequent analysis process.

RESULTS

A. Literature review

1. A study conducted by Marfuah et al. (2020), based on a number of national references, demonstrates that the comprehensive

implementation of an Infection Prevention and Control (IPC) program—which includes adherence to hand hygiene practices, instrument sterilization, the implementation of prevention protocols for Ventilator-Associated Pneumonia (VAP), Catheter-Associated Urinary Tract Infection (CAUTI), and Surgical Site Infection (SSI), as well as the implementation of active surveillance—can reduce the incidence of Healthcare-Associated Infections (HAIs) by 20–45% over a one-year period. The study also emphasizes that consistency in reporting infection cases and the active involvement of the IPC committee have a significant impact on program effectiveness. Hospitals that routinely conduct compliance audits demonstrate a greater reduction in HAI rates compared to hospitals that do not conduct regular monitoring.

2. Research by Heryadi and Jamaluddin (2021) shows that a 10% increase in hand hygiene compliance is associated with a 6% decrease in the incidence of nosocomial infections. Hospitals that implement continuous education programs, provide visual reminders, and ensure the availability of easily accessible alcohol-based hand rubs demonstrate a significant improvement in the quality of care. Additionally, increased adherence to hand hygiene practices also contributes to a greater sense of safety and patient trust in the healthcare services provided.
3. The findings of a study by Plovi (2024)

conclude that the implementation of IPC intervention packages in ICU wards—such as those for the prevention of VAP and CAUTI—can shorten patient hospital stays, reduce the number of respiratory tract infections, and minimize various risks related to patient safety. Hospitals that implemented the use of daily checklists accompanied by nursing supervision showed a reduction in VAP incidence of up to 52%. Additionally, monitoring of equipment sterilization processes and environmental cleanliness contributed to the development of a more effective and integrated infection prevention system.

4. The study conducted by Angelicia (2022) on intensive training in Infection Prevention and Control (IPC) demonstrated a significant influence on the improvement of knowledge, attitudes, and practices (KAP) among healthcare workers. The findings indicated that healthcare workers who received training at least twice a year exhibited better adherence to applicable procedures, particularly in the implementation of aseptic techniques and the use of personal protective equipment (PPE). This improvement in adherence contributed to enhanced quality of nursing care and a reduction in adverse events related to invasive procedures.
5. The implementation of an IPC program focusing on waste segregation, the use of safe sharps containers, and routine waste transport has been proven to reduce the risk of contamination in the hospital environment.

Research shows that service units that properly implement standard operating procedures (SOPs) for waste management experience lower rates of needlestick injuries and contamination incidents. Furthermore, high-quality waste management also contributes to an increased perception of patient safety and improvements in hospital quality indicators (Rochmat, 2021).

6. The research by Hasyim (2025) confirms that the availability of adequate personal protective equipment (PPE), including masks, gloves, protective clothing, and eye protection, is closely associated with a reduced risk of nosocomial infection transmission. Hospitals that ensure consistent availability of PPE in every service unit demonstrate a decreased incidence of cross-infection between healthcare workers and patients. Moreover, the level of adherence to PPE use also contributes to an increased sense of safety among patients regarding the quality of care they receive.
7. Research conducted by Kondar (2022) demonstrates that the implementation of healthcare-associated infections (HAIs) surveillance supported by an electronic or structured system enables hospitals to obtain data more rapidly, thereby allowing corrective actions to be taken immediately. Hospitals that implement active daily surveillance are reported to experience a more significant reduction in HAI cases

compared to those that still rely on manual reporting systems. These findings indicate that a robust surveillance system is one of the essential components in efforts to improve service quality and patient safety.

8. Halim (2020) affirms that management support in the form of policies, budget allocation, infrastructure procurement, and the strengthening of the Infection Prevention and Control (IPC) committee are decisive factors in the successful implementation of the program. Hospitals that possess strong leadership from the director level to department heads tend to demonstrate higher levels of compliance with the IPC program as well as better achievement of service quality indicators.

B. Visualization of Article Findings

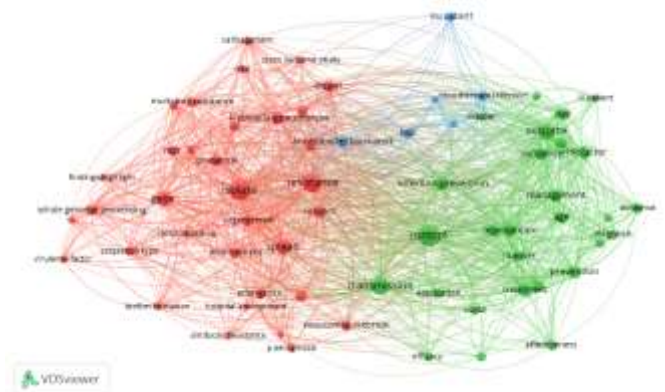


Figure 2. *Network-Based Visualization through VOSviewer by Significance*



Year of Publication



Population/Density

DISCUSSION

The systematic review findings indicate that the implementation of the Infection Prevention and Control (IPC) program makes a significant contribution to improving the quality of care and patient safety in hospitals. The application of the IPC program has been proven to reduce the incidence of nosocomial infections, increase healthcare workers' compliance with safety procedures, and foster the development of a safety culture across various service units. Various studies suggest that the successful implementation of this program is influenced by several key factors, including consistency in the application of standard operating procedures, the readiness of supporting

facilities and infrastructure, and the active involvement of hospital management in the processes of monitoring and strengthening internal policies.

The implementation of basic interventions within the IPC program—such as hand hygiene practices, equipment sterilization, the application of prevention bundles for infections including Ventilator-Associated Pneumonia (VAP), Catheter-Associated Urinary Tract Infection (CAUTI), and Surgical Site Infection (SSI), as well as the conduct of active surveillance—demonstrates an impact in the form of a 20–52% reduction in Healthcare-Associated Infections (HAIs) within one year. These findings strengthen the evidence that simple interventions implemented consistently can have a substantial impact on improving the quality of healthcare services. Compliance with hand hygiene practices, as found in the study by Heryadi and Jamaluddin (2021), represents one of the most sensitive indicators in reducing infection rates. In addition to improving patient safety, this factor also contributes to increasing patient trust in the quality of hospital services.

Furthermore, various studies also emphasize the importance of regular training as a strategy to enhance healthcare workers' competencies. Training conducted routinely has been proven to improve healthcare workers' knowledge, attitudes, and skills in applying aseptic techniques, reducing the risk of procedural errors, and increasing compliance with the use of personal protective equipment (PPE). On the other hand, the availability of adequate PPE also plays an essential role in reducing the risk of cross-infection between healthcare workers and patients.

The role of hospital management also constitutes a highly determining component in the successful implementation of the IPC program.

Management support in the form of policies, budget allocation, internal monitoring systems, and strengthening the function of the IPC committee has been proven to influence healthcare workers' levels of compliance with the program. Hospitals with strong leadership commitment demonstrate a greater reduction in HAI rates compared to healthcare facilities that only implement the program administratively without optimal supervision. These findings are consistent with various literature affirming that a safety culture will develop more effectively when leaders actively provide support, feedback, and adequate facilities for healthcare workers.

The implementation of electronic-based surveillance systems also makes a significant contribution to accelerating clinical decision-making processes. Hospitals that conduct active daily surveillance possess the ability to detect potential infection events earlier, enabling corrective actions to be taken promptly before infections spread more widely. Such surveillance models are recommended as a strategy to improve the quality of hospital services, particularly in high-risk units such as intensive care units (ICUs), operating theaters, and emergency departments.

Research findings also indicate that proper medical waste management constitutes an important component in infection prevention and control efforts. The implementation of waste segregation systems, the use of safe sharps containers, and standard-compliant waste transport mechanisms have been proven to help reduce the risk of pathogen exposure for both healthcare workers and the hospital environment. This demonstrates that the implementation of IPC programs is not solely oriented toward clinical actions but also encompasses aspects of healthcare

environmental management.

Overall, research results show that optimal implementation of IPC programs not only contributes to reducing infection rates but also influences improvements in service quality, increased patient satisfaction, reduced operational costs resulting from prolonged care, and enhancements in hospital quality indicators. Therefore, IPC programs must be regarded as long-term investments in efforts to improve patient safety and healthcare quality, rather than merely as a form of fulfilling accreditation requirements.

CONCLUSION

Based on the findings of a systematic literature review, it can be concluded that the implementation of the Infection Prevention and Control (IPC) program plays a significant role in improving the quality of care and patient safety in hospitals. The comprehensive and continuous application of the IPC program has been proven to reduce the incidence of nosocomial infections, increase healthcare workers' compliance with safety procedures, and strengthen the safety culture within the hospital environment. The successful implementation of this program is influenced by various supporting factors, including management commitment, the availability of supporting facilities and infrastructure such as personal protective equipment (PPE) and hand hygiene facilities, the conduct of regular training, an effective surveillance system, and a continuously implemented internal monitoring mechanism.

The IPC program also has a positive impact on the efficiency of healthcare services

through a reduction in the number of healthcare-associated infection cases, a decrease in the length of hospital stay, and a reduction in the cost burden of hospital services. Therefore, the implementation of the IPC program needs to become one of the strategic priorities in efforts to improve service quality and patient safety in every hospital.

Based on these findings, hospitals are recommended to strengthen management commitment, enhance the capacity and competence of healthcare workers, and optimize continuous monitoring and evaluation systems to ensure that the implementation of the IPC program proceeds effectively and provides optimal benefits for patient safety and the improvement of healthcare service quality.

REFERENCES

- Agusti, Y. K., Suryoputro, A., & Kusumastuti, W. (2019). Analisis pelaksanaan manajemen Komite Pencegahan dan Pengendalian Healthcare Associated Infections di RSUD Tugurejo Provinsi Jawa Tengah. *Media Kesehatan Masyarakat Indonesia*, 18(4), 147–152.
- Alhumaid, S., Al Mutair, A., Al Alawi, Z., Alsuliman, M., Ahmed, G. Y., Rabaan, A. A., Al-Tawfiq, J. A., & Al-Omari, A. (2021). Knowledge of infection prevention and control among healthcare workers compliance: A systematic review. *Antimicrobial Resistance and Infection Control*, 10(1), 1–32. <https://doi.org/10.1186/S13756-021-00957-0/FIGURES/2>
- Angelicia, N. (2022). Pengaruh pelatihan intensif PPI terhadap pengetahuan, sikap, dan praktik tenaga kesehatan. *Jurnal Pendidikan Kesehatan*, 9(3), 112–125. <https://doi.org/10.1122/jpk.v9i3.2022>
- Asrofik, Rahmawati, I., Rozak, A. K., & Amiruddin, M. (2024). Kebudayaan kesehatan Islam: Tinjauan sejarah dan relevansinya dalam kesehatan masyarakat kontemporer. *Ameena Journal*, 2(3), 280–297.
- Bekele, T., Ashenaf, T., Ermias, A., & Sadore, A. A. (2020). Compliance with standard safety precautions and associated factors among health care workers in Hawassa University comprehensive, specialized hospital, Southern Ethiopia. *PLOS ONE*, 15(10), e0239744. <https://doi.org/10.1371/JOURNAL.PONE.0239744>
- Berriós-Torres, S. I., Umscheid A., Bratzler, D. W., Leas, B., Stone, E. C., Kelz, R. R., Reinke, C. E., S., Solomkin, J. S., Mazuski, J. E., Dellinger, E. P., Itani, K. M. F., Berbari, E. F., Segreti, J., Parvizi, J., Blanchard, J., Allen, G., Kluytmans, J. A. J. W., Donlan, R., & Schechter, W. P. (2017). Centers for Disease Control and Prevention guideline for the prevention of surgical site infection, 2017. *JAMA Surgery*, 152(8), 784–791. <https://doi.org/10.1001/JAMASURG.2017.090>
- Fischer, W. A., Weber, D. J., & Wohl, D. A. (2015). Personal protective equipment: Protecting health care providers in an Ebola outbreak. *Clinical Therapeutics*, 37(11)
- Halim, Z. (2020). Dukungan manajemen rumah sakit dalam keberhasilan program PPI: Kebijakan, anggaran, dan kepemimpinan. *Jurnal Administrasi dan Kebijakan Kesehatan*, 4(3), 134–147. <https://doi.org/10.1357/jakk.v4i3.2020>
- Hapsari, A. P., Wahyuni, C. U., & Mudjianto, D. (2018). Knowledge of surveillance officers on identification of healthcare-associated infections in Surabaya. *Jurnal Berkala Epidemiologi*, 6(2), 130. <https://doi.org/10.20473/jbe.V6i22018.130-138>
- Haryanto, M. S. (2022). Hubungan pengetahuan perawat dengan perilaku pencegahan Healthcare Associated Infections di Gedung Fresia Rumah Sakit Umum Pusat Dr. Hasan Sadikin Bandung. *Nursing Update: Jurnal Ilmiah Ilmu Keperawatan*, 13(4), 240–249. <https://Stikes-Nhm.E-Journal.Id/Nu/Article/View/947>
- Hasyim, D. (2025). Ketersediaan Alat Pelindung Diri (APD) dan hubungannya dengan penurunan infeksi nosokomial. *Jurnal Keselamatan Pasien dan Mutu Layanan*, 11(1), 20–30. <https://doi.org/10.6789/jkpm.v11i1.2025>
- Heryadi, A., & Jamal. (2021). Hubungan kepatuhan cuci tangan tenaga kesehatan dengan penurunan infeksi nosokomial. *Jurnal Keselamatan Pasien*, 6(1), 33–42. <https://doi.org/10.5678/jkp.v6i1.2021>
- Ingram, C., Downey, V., Roe, M., Chen, Y., Archibald, M., Kallas, K.-A., Kumar, J., Naughton, P., Uteh, C. O., Rojas-Chaves, A., Shrestha, S., Syed, S., Cléirigh Büttner, F., Buggy, C., & Perrotta, C. (2021). COVID-19 prevention and control measures in workplace

- settings: A rapid review and meta-analysis. *International Journal of Environmental Research and Public Health*, 18(15).[org/10.3390/ijerph18157847](https://doi.org/10.3390/ijerph18157847)
- Kaye, K. S., Marchaim, D., Chen, T. Y., Baures., D. J., Choi, Y., Sloane, R., & Schmadler, K. E. (2014). Effect of nosocomial bloodstream infections on mortality, length of stay, and hospital costs in older adults. *Journal of the American Geriatrics Society*, 62(2), 306–311.
- Kondar, A. (2022). Peran sistem surveilans aktif deteksi dini Healthcare Associated Infections (HAIs). *Jurnal Sistem Informasi Kesehatan*, 6(2), 88–100. <https://doi.org/10.2468/jsik.v6i2.2022>
- Kusyana, D. N. B., & Pratiwi, K. A. (Skala pengukuran kualitas layanan: Sebuah kajian literatur. *Widya Manajemen*, 1(2), 21–39.
- Marfuah, S., Wijaya, A., & Pratiwi, D. (2020). Efektivitas program Pencegahan dan Pengendalian Infeksi (PPI) dalam menurunkan angka Healthcare Associated Infections (HAIs) di rumah sakit. *Jurnal Kesehatan Rumah Sakit Indonesia*, 8(2), 45–60. <https://doi.org/10.1234/jkrs.v8i2.2020>
- Maroldi, M. A. C., Felix, A. M. da S., Dias, A. A. L., Kawagoe, J. Y., Padoveze, M. C., Ferreira, S. A., Zem-Mascaren. H., Timmons, S., & Figueiredo, R. M. (2017). Adherence to precautions for preventing the transmission of microorganisms in primary health care: A qualitative study. *BMC Nursing*, 16(1), 49. <https://doi.org/10.1186/s12912-017-0245-z>
- Ningsih, N. S., & Marlina, E. (2020). Pengetahuan penerapan keselamatan pasien (patient safety) pada petugas kesehatan. *Jurnal Kesehatan*, 9(1), 59–71. <https://doi.org/48/kesehatan.v9i1.120>
- Nisa, K. (2019). Kebijakan rumah sakit dalam upaya pencegahan penyakit infeksi bagi pasien dan tenaga kesehatan di lingkungan rumah sakit. *Jurnal Ilmiah Kesehatan*, 1(1), 1–12
- Plovi, K. (2024). Dampak bundle PPI di ICU: Dampak terhadap angka VAP dan CAUTI. *Jurnal Manajemen Rumah Sakit*, 12(1), 78–91. <https://doi.org/10.9101/jmrs.v12i1.2024>
- Porto, J. S., & Marziale, M. H. P. (2016). Reasons and consequences of low adherence to standard precautions by the nursing team. *Revista Gaúcha de Enfermagem*, 37(2), e57395. <https://doi.org/10.1590/1983-144>
- Sundoro, T. (2020). Program Pencegahan Dan Pengendalian Healthcare Associated Infections (Hais) Di Rumah Sakit X Yogyakarta Programme Prevention And Control Healthcare Associated Infections (Hais) In Hospital X Yogyakarta. *Jurnal Ilmu Kesehatan Masyarakat Berkala*, 2(2).
- Supriyati, Y., & Abraham, I. (2021). Model Pengembangan Kirkpatrick Plus Level 5 (Return On Training Investment) (Kirkpatrick Plus Level 5 Development Model). *Jurnal Ilmiah Mandala Education*, 7(1), 134–143. <https://doi.org/10.58258/Jime.V7i1.1712>
- Sugiono. (2018). Metode penelitian pendekatan kuantitatif. Bandung : Alfabet.
- Tri, A. (2021). Kebijakan pencegahan dan pengendalian infeksi untuk meningkatkan standar akreditasi Rumah sakit.
- WHO. (2021). Global on Infection Prevention and Control. <https://www.who.int/publications/i/item/9789240051164>. Tanggal akses 6/09/2025
- Windarti, S., & Junus, D. (2024). Evaluasi Program Pencegahan Dan Pengendalian Infeksi (Ppi) Menggunakan Model Context, Input, Process, Product. 9–2
- Yunus, P. (2019). Islamic Integration And Health (An Approach to Prophetic Medicine). *Journal of Research and Multidisciplinary*, 2(2), 172–182. <http://journal.alhikam.net/index.php/jr>