Multidisciplinary Output Research For Actual and International Issue (MORFAI Journal) ISSN (e): 2808-6635
Volume 6 No. 6 (2026)

# THE EFFECT OF SUPERVISION BY INFECTION PREVENTION AND CONTROL LINK NURSES (IPCLN) ON COMPLIANCE WITH THE USE OF PERSONAL PROTECTIVE EQUIPMENT (PPE): A LITERATURE REVIEW

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**Received:**05/09/2026 | **Revised** : 12/09/2026 | **Accepted:** 30/09/2026 | **Published:** 09/11/2026

**Abstract**

**Background:** Healthcare-associated infections (HAIs) remain a major problem in healthcare services due to their increased morbidity, mortality, length of hospital stay, and service costs. One infection prevention and control effort is ensuring healthcare workers use Personal Protective Equipment (PPE) properly. Healthcare worker compliance with PPE use remains low and is influenced by various factors. One such factor is supervision by the Infection Prevention and Control Link Nurse (IPCLN).
**Purpose:** To analyze the effect of IPCLN supervision on PPE compliance among healthcare workers through a literature review.
**Method:** The study searched scientific articles across Google Scholar, PubMed, and Semantic Scholar using keywords such as IPCLN, supervision, PPE compliance, and infection prevention and control. The study included articles published in 2020 and 2025 that met the inclusion criteria.
**Results:** The study indicates that IPCLN supervision positively affects PPE compliance. Supervision, including education, monitoring, evaluation, mentoring, and feedback, can increase healthcare workers' awareness and compliance in implementing standard precautions. Factors supporting successful supervision include work motivation, knowledge, management support, and PPE availability.
**Conclusion:** IPCLN supervision plays a crucial role in improving PPE compliance and supporting the implementation of infection prevention and control programs in hospitals.

**Keywords: IPCLN, supervision, compliance with the use of PPE, infection prevention and control**

## INTRODUCTION

Hospitals are relatively complex medical service units. Their complexity arises not only from the various diseases that require healthcare professionals' attention but also from the use of medical devices and the performance of invasive and non-invasive procedures, ranging from simple to modern and sophisticated techniques (Kartika et al., 2022). Hospitals are central institutions in the medical field, providing a wide range of goods and services. The rapid development of the medical field must be matched by skilled healthcare professionals, appropriate equipment and supplies, expert supervision, and the delivery of medical care in accordance with established standards and procedures. To determine whether healthcare services are of good quality, appropriate service quality indicators are needed. One such indicator is reduced risk of healthcare-associated infections (HAIs) (Hafni, 2020).

The impact of HAIs includes increased morbidity, prolonged hospital stays, and increased mortality, all of which are highly detrimental to patients and may even result in legal claims against hospitals. Therefore, all hospitals and other healthcare facilities must implement infection prevention and control measures (Rusdi et al., 2022). Healthcare-associated infections (HAIs) contribute to high rates of morbidity and mortality, particularly in low- and middle-income countries (Ghorbanmovahhed et al., 2023). Nosocomial infections are diseases triggered by pathogenic bacteria that invade the body and are a major cause of high morbidity and mortality rates in hospitals. These infections continue to increase annually and remain a major global health problem (Annisa et al., 2022). Healthcare-associated infections (HAIs) also concern both healthcare providers and patients (Afriani et al., 2021). Healthcare-associated infections (HAIs) are a major challenge in the healthcare sector, including in Indonesia (Mimiyati et al., 2024). In developed countries, HAI prevalence ranges from 3.5% to 12%. Meanwhile, in developing

countries, including Indonesia, the prevalence of HAIs is approximately 9.1%, with rates ranging from 6.1% to 16%. Blood and bodily fluids are media through which diseases can be transmitted from patients to healthcare workers. Human immunodeficiency virus (HIV), hepatitis B virus, and hepatitis C virus are among the greatest threats to healthcare workers. In 2002, the World Health Organization (WHO) reported 16,000 cases of hepatitis C virus transmission, 66,000 cases of hepatitis B virus transmission, and 1,000 cases of HIV transmission among healthcare workers worldwide. Nosocomial infections occur worldwide, with the highest incidence reported in poor and developing countries. A WHO study found that approximately 8.7% of patients in 55 hospitals across 14 countries in Europe, the Middle East, Southeast Asia, and the Pacific experienced nosocomial infections, with a 10% prevalence reported in Southeast Asia. In Indonesia, Utji (2004) studied 11 hospitals in Jakarta and found that 9.8% of hospitalized patients acquired new infections during their hospital stay. Hospital reports in Indonesia have also documented nosocomial infections in several hospitals, including Hasan Sadikin Hospital in Bandung (9.9%), Pirngadi Hospital in Medan (13.92%), Kariadi Hospital in Semarang (7.3%), Dr. Soetomo Hospital in Surabaya (5.32%), and Cipto Mangunkusumo Hospital (RSCM) in Jakarta (5.4%) (Purwacaraka et al., 2023).

One effective strategy for controlling nosocomial infections is improving healthcare workers' skills in implementing universal precautions. Universal precautions include hand hygiene, the use of personal protective equipment (PPE), waste management, linen management, patient placement, environmental control, decontamination of patient-care equipment, employee health, safe injection practices, cough etiquette, and lumbar puncture practices. Universal precautions are expected to provide maximum protection against both diagnosed and undiagnosed infections (Wijaya & Putri, 2024). Healthcare workers can transmit diseases if they fail to follow preventive measures (universal precautions), including using PPE, when performing procedures on patients. Proper PPE use protects individual users and helps prevent infection spread within the hospital environment, making it a key component of infection prevention and control (Sugiarti et al., 2026). In addition, international policies and technical guidelines issued by global health organizations emphasize that PPE must be an integrated component of infection prevention and control (IPC) programs in healthcare facilities (Ningrum et al., 2026).

Infection Prevention and Control (IPC) can help healthcare facilities prevent and reduce the impact of emergencies by evaluating preventive measures and preparedness for mitigation and response, reducing infection transmission, and improving the safety of staff, patients, and visitors (Astari et al., 2022). IPCLNs (Infection Prevention and Control Link Nurses), as implementers of the Infection Prevention and Control (IPC) Program in hospitals, must report and monitor nurses' compliance with standard precautions (Rahmadiana & Mulyana, 2020). According to the Regulation of the Minister of Health of the Republic of Indonesia Number 27 of 2017 concerning Guidelines for Infection Prevention and Control in Healthcare Facilities, IPCNs (Infection Prevention and Control Nurses) may be assisted by several IPCLNs (Infection Prevention and Control Link Nurses) from each unit, particularly those at risk of infection. As daily implementing nurses and liaison personnel, IPCLNs record surveillance data for each patient in their respective inpatient units, provide motivation, and remind staff to implement IPC practices (Rusdi et al., 2022).

One solution is to supervise paramedical personnel in hospitals to encourage nurses to use personal protective equipment (PPE) effectively (Purwacaraka et al., 2023). To improve the quality of bleeding care, which is essential for optimizing nurses' compliance with nosocomial infection prevention, supervision should focus on improving the quality and standards of bleeding care (Irawati et al., 2022). Based on this background, the author is interested in synthesizing and reviewing the literature on the relationship between the effectiveness of supervision by Infection Prevention and Control Link Nurses (IPCLNs) and the implementation of personal protective equipment (PPE) use during flood procedures, with the expectation that nurses can be protected from hazards and nosocomial infections.

## METHOD

This stage was conducted systematically using available literature-search resources. The aim was to obtain as many scientific publications as possible on the topic under investigation. The search strategy involved identifying relevant research articles published in Indonesian and English using accessible, reputable databases, including Google Scholar, PubMed, and Semantic Scholar. The search included articles published from 2020 to 2025. The research questions and keywords were formulated using the PICO framework. Keywords included IPCLN supervision, supervision, PPE compliance, and infection prevention and control. The number of articles retrieved was limited because the topic under investigation was highly specific. We then screened the articles again using the inclusion criteria established with the PICO framework. A total of 15 articles met the criteria and are presented in Figure 1.

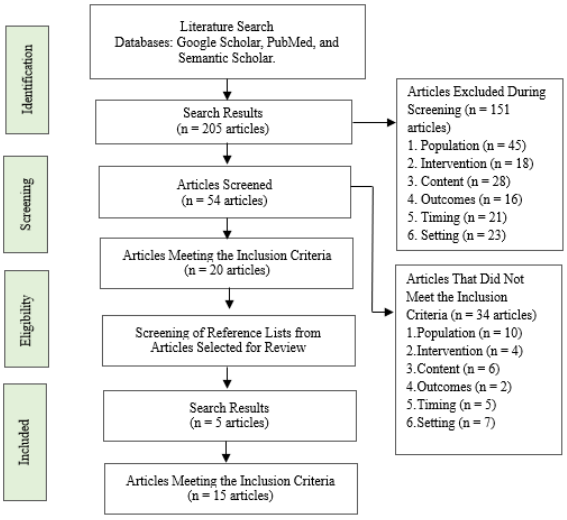



Figure 1. Identification of Studies Through Databases and Registers

## RESULTS AND DISCUSSION

### RESULTS

Most studies on the supervision of Infection Prevention and Control Nurses (IPCNs) and Infection Prevention and Control Link Nurses (IPCLNs) have employed a cross-sectional design with a quantitative correlational approach (Afriani et al., 2021; Annisa et al., 2022; Hafni et al., 2022; Mendrofa et al., 2024; Wijaya & Siti Auliya Putri, 2024). Some researchers have selected stronger designs to establish causal relationships, namely, a quasi-experimental pretest–posttest design (Ghorbanmovahhed et al., 2023) and a cluster randomized controlled trial (Donati et al., 2020). Other researchers have explored experiences and barriers to implementing supervision using a qualitative descriptive approach involving focus group discussions and in-depth interviews (Dewi et al., 2023; Houghton et al., 2020; Kartika et al., 2022). The research instruments varied, ranging from researcher-developed questionnaires and the Manchester Clinical Supervision Scale to the Standard Precautions Compliance Scale and observation sheets for personal protective equipment (PPE) use. Meanwhile, the data were generally analyzed using the chi-square test, Fisher's exact test, Spearman's rank correlation, and logistic regression. The synthesis table used in this literature review presents the research methods and findings of the included studies.

Ghorbanmovahhed et al. (2023) investigated "Effectiveness of Implementing an Infection Control Link Nurse Program to Improve Compliance with Standard Precautions and Hand Hygiene among Nurses." This study used a quasi-experimental design with a pretest–posttest approach and involved 154 clinical nurses across various wards at a tertiary referral teaching hospital in Iran. The intervention group (n = 77) had 16 designated infection control link nurses (ICLNs), while the control group (n = 77) received only the hospital's standard multimodal approach. Pretest and posttest assessments of compliance with standard precautions and hand hygiene were conducted using the Compliance with Standard Precautions Scale (CSPS) and the World Health Organization (WHO) hand hygiene observation form. Two independent-samples t-tests were used to analyze differences in compliance with standard precautions and hand hygiene between nurses in the intervention and control groups. Multiple linear regression analysis was used to assess the magnitude of the intervention's effect. The results showed that hand hygiene compliance increased significantly from 18.8% to 37.3%, whereas compliance with standard precautions, including the use of personal protective equipment (PPE), increased but was not significant.

Afriani et al. (2021) investigated “Motivasi dan Supervisi Berhubungan dengan Kinerja Infection Prevention Controling Link Nurse (IPCLN) dalam Menerapkan Pencegahan dan Pengendalian Infeksi.” This study employed a cross-sectional design involving a population of 64 IPCLN nurses, all of whom were selected using a total sampling technique. Data were collected from December 14, 2020, to January 14, 2021, at four hospitals in Banda Aceh City and one hospital in Aceh Besar Regency. The research instruments included the Unified Motive Scales (UMS), adopted from Schönbrodt and Gerstenberg (2012), and the Manchester Clinical Supervision Scale 26 (MCSS-26), adopted from Winstanley and White. Both instruments had been translated into Indonesian and tested for validity and reliability among 10 IPCLN nurses at Tgk Chik Ditiro Regional General Hospital (RSUD) in Sigli. The testing was conducted online using Google Forms, and both instruments were found to be valid and reliable. The data obtained were analyzed using descriptive statistics, namely frequency distributions, to determine the percentage of

each category of the research variables. Non-parametric statistical tests, namely the chi-square test, and logistic regression analysis using the stepwise method were subsequently performed. The results showed that motivation and supervision were significantly associated with infection prevention and control nurses' performance at hospitals in Banda Aceh City and Aceh Besar Regency ($p < 0.05$).

Houghton et al. (2020) investigated "Barriers and Facilitators to Healthcare Workers' Adherence to IPC Guidelines for Respiratory Infectious Diseases." This study included qualitative and mixed-methods studies with identifiable qualitative components, focusing on healthcare workers' experiences and perceptions of factors that influence their ability to adhere to infection prevention and control (IPC) guidelines for respiratory infectious diseases. The studies examined IPC guidelines for respiratory infectious diseases at the local, national, or international level across various healthcare settings. The findings identified several factors that influence healthcare workers' ability and willingness to follow IPC guidelines when managing respiratory infectious diseases. These factors included aspects of the guidelines themselves and how they were communicated, managerial support, workplace culture, training, physical working conditions, access to and confidence in personal protective equipment (PPE), and the desire to provide good patient care. This review also highlighted the importance of involving all healthcare facility staff, including support staff, in implementing IPC guidelines.

Annisa et al. (2022) investigated “Hubungan Supervisi dengan Pelaksanaan Pencegahan dan Pengendalian Infeksi pada Perawat Pelaksana di RSUD Arifin Achmad.” This study used a descriptive, cross-sectional design. The study population included staff nurses in the medical and surgical inpatient wards at Arifin Achmad Regional General Hospital. The sample comprised 63 respondents selected using purposive sampling. The researcher developed a questionnaire and tested its validity and reliability. The data were analyzed using the chi-square test. The results showed a significant relationship between supervision and staff nurses' implementation of infection prevention and control (IPC) ($p = 0.025$). Supervision was associated with staff nurses' IPC implementation. Nurses are expected to maintain and improve IPC practices in their wards and set a positive example for other healthcare workers, patients, and their families. In addition, the IPC team is expected to continue working optimally and provide facilities to support IPC implementation in the hospital.

Mendrofa et al. (2024) investigated "Pengaruh Supervisi Infection Prevention Control Nurse (IPCN) Terhadap Kepatuhan Dalam Pencegahan Healthcare Associated Infections (HAIs) Di Rumah Sakit Kota Jayapura." This study used purposive sampling. A total of 100 nurses from hospitals in the Jayapura City area participated. The results showed that most supervision practices were inadequate (53%), while most nurses were compliant (98%). IPCN supervision affected nurses' compliance with HAI prevention ($p < 0.05$). The coefficient of determination was 0.5, indicating that IPCN supervision explained 50% of the variation in nurses' compliance with HAI prevention. Improving IPCN supervisory performance in hospitals is essential. Training, rewards, and a supportive work environment can motivate IPCNs to implement infection control programs.

Dewi et al. (2023) investigated "Experiences of Infection Prevention and Control Nurses (IPCNs) in Performing Their Roles and Duties in the Indonesia Army Central Hospital: A Qualitative Descriptive Study." This study used a qualitative descriptive design and collected data through a focus group discussion (FGD) with six purposively selected participants in April 2021 at Gatot Soebroto Army Central Hospital (RSPAD Gatot Soebroto), Jakarta, Indonesia. Thematic analysis was used to analyze the data. The findings provided new insights into the roles and responsibilities of IPCNs, which require collaboration and coordination with various professional groups, as well as management support to overcome barriers that hinder the performance of their duties. The findings also highlighted the need to improve IPCN performance in accordance with competency-based career levels to achieve patient safety, quality of care, and job satisfaction.

Purwacaraka et al. (2023) investigated "Hubungan Supervisi Oleh Tim Pencegahan Dan Pengendalian Infeksi (PPI) Dengan Kepatuhan Penggunaan Alat Pelindung Diri (APD) Handscoon Dalam Tindakan Keperawatan Di Ruang Rawat Inap Penyakit Dalam Rumah Sakit Dr. Iskak Tulungagung." This study used an analytical, cross-sectional design. The sample consisted of 30 nurses selected using purposive sampling. Data were collected using an observation checklist to assess PPE compliance and supervision effectiveness, evaluated based on timeliness, accuracy, guidance and operational procedures, and acceptability. The study was conducted from February to April 2019. Data were collected through observation, processed, and analyzed using Fisher's exact test. The results showed that IPC team and IPCN supervision were 80% effective, while nurses' compliance was 83.3%. These findings indicated a statistically significant relationship between supervision and glove-use compliance ($p = 0.003$). Supervision substantially influenced nurses' glove use by encouraging effective PPE use. Furthermore, continuous supervision could help nurses develop the habit of complying with glove-use requirements. The IPC team and IPCNs


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are therefore advised to maintain and further improve supervision effectiveness to achieve better compliance with glove use.

Kartika et al. (2022) investigated "Supervisi Kepatuhan Penggunaan Alat Pelindung Diri oleh Perawat Di Rumah Sakit Pertamina Bintang Amin." This study used a qualitative approach with interviews. The informants were nurses and supervisors at Pertamina Bintang Amin Hospital in Bandar Lampung. Data were analyzed using content analysis, which began by systematically arranging the data and organizing information from in-depth interviews and photographs taken for documentation. The findings showed that most informants had good knowledge, including perceptions and attitudes. The hospital-provided personal protective equipment (PPE) was largely appropriate for their work requirements. Supervision played an essential role in monitoring nurses' PPE use. Most nurses demonstrated good compliance with PPE use and followed the standard operating procedures (SOPs) established at Pertamina Bintang Amin Hospital.

Taufik and A'in (2022) investigated "Gambaran Kinerja Infection Prevention Control Link Nurse (IPCLN) Dalam Pelaksanaan Pencegahan Dan Pengendalian Infeksi (PPI) HAIs Di Instalasi Rawat Inap RSUD Kudungga." This study used a descriptive, cross-sectional design. The study population consisted of all 71 nurses working in the inpatient wards of Kudungga Regional General Hospital, including the VIP and neurology wards, surgical ward, pediatric ward, intensive care unit (ICU), and perinatology ward. Using the Slovin formula, we obtained a sample of 60 nurses. The data were analyzed using frequency distributions. The results showed that IPCLNs' performance in implementing infection prevention and control (IPC) for HAIs in the inpatient department of Kudungga Regional General Hospital was categorized as good in 45% of cases. In comparison, 55% were categorized as poor. These findings indicated that IPCLNs' overall performance in implementing IPC for HAIs in the inpatient department of Kudungga Regional General Hospital was inadequate. Kudungga Regional General Hospital is expected to improve IPCLNs' work motivation. Therefore, hospital management should consider providing rewards and sanctions for IPCLNs, as well as offering salary compensation or additional remuneration for their extra responsibilities.

Wijaya and Putri (2022) investigated "Hubungan Supervisi IPCN dengan Kepatuhan Perawat dalam SOP Universal Precaution." This study used an observational, cross-sectional design. The study population included all nurses working in the inpatient wards and emergency department (ED) at Palembang Special Eye Hospital in 2023. The total population comprised 39 nurses, all of whom were selected using a total sampling technique. Data were collected using questionnaires. The data were analyzed using univariate and bivariate analyses, with the chi-square test. The results showed that 34 respondents (87.2%) reported a high level of IPCN supervision, while 31 respondents (79.5%) demonstrated a high level of compliance with the standard operating procedures (SOPs) for universal precautions. The chi-square test yielded a p-value of 0.049, which was less than $\alpha = 0.05$, indicating a significant relationship between supervision by Infection Prevention and Control Nurses (IPC Nurses or IPCNs) and nurses' compliance with universal precaution SOPs.

Astari et al. (2022) investigated "Hubungan Pengetahuan, Motivasi, dan Supervisi dengan Kinerja IPCLN." This study used a survey method and collected data at Cicendo Eye Hospital. The study used primary data from questionnaires designed to measure IPCLNs' knowledge, motivation, supervision, and performance. The respondents comprised the entire population: one Infection Prevention and Control Nurse (IPCN) and 34 Infection Prevention and Control Link Nurses (IPCLNs). The data were analyzed using Spearman's rank correlation. IPCLN performance assessment showed that 21 nurses (61.80%) were categorized as having good performance. Regarding knowledge, 27 nurses (79.40%) had good knowledge, while 20 nurses (58.80%) had moderate knowledge. Regarding supervision, 24 nurses (70.60%) were categorized as receiving good supervision. The bivariate analysis showed strong correlations between knowledge and performance ($r = 0.68$; $p = 0.00$), motivation and performance ($r = 0.80$; $p = 0.00$), and supervision and performance ($r = 0.60$; $p = 0.00$). Knowledge, motivation, and supervision were strongly associated with performance in implementing infection prevention and control programs.

Irawati et al. (2022) investigated "Hubungan Supervisi dan Motivasi terhadap Tindakan Pencegahan Infeksi melalui Penggunaan APD dan Hand Hygiene." This study employed a correlational analytical research design. Supervision and motivation were the independent variables, while infection prevention practices were the dependent variable. The study population consisted of all 32 nurses working in the COVID-19 isolation ward at Prof. Dr. Soekandar Hospital, Mojokerto. The sample was selected using total sampling, comprising 32 respondents. Data were collected using questionnaires and analyzed with the contingency coefficient and chi-square tests. The contingency coefficient test showed a ρ-value of 0.001 for the relationship between supervision and PPE use. For supervision and hand hygiene, the ρ-value was 0.000. Meanwhile, the chi-square test results for motivation and PPE use showed a ρ-value of 0.005, which was less than $\alpha = 0.05$, while the relationship between motivation and hand hygiene yielded a ρ-value of 0.004, which was also less than $\alpha = 0.05$. The bivariate analysis showed that H1 was

accepted, indicating a relationship between supervision and motivation and infection prevention practices through PPE use and hand hygiene. The multivariate analysis showed that supervision had a higher beta coefficient than motivation (0.304), indicating that supervision was the dominant variable. Appropriate, effective supervision can foster enthusiasm and improve healthcare workers' performance in correctly implementing infection prevention practices.

Hafni et al. (2022) investigated "Ketersediaan APD (Alat Pelindung Diri) Dan Pengawasan IPCLN (Infection Prevention and Control Link Nurse) Terhadap Pelaksanaan Kewaspadaan Standar." This study employed a quantitative research method with a descriptive correlational and observational design using a cross-sectional approach. The results showed that PPE availability and IPCLN supervision were significantly associated with the implementation of standard precautions. The PPE availability variable had an odds ratio (OR) of 24.363, while the IPCLN supervision variable had a regression coefficient corresponding to an OR of 27.904. PPE availability and IPCLN supervision were significantly associated with implementing standard precautions in private hospitals in Medan City.

Donati et al. (2020) investigated "Effectiveness of Implementing Link Nurses and Audits and Feedback to Improve Nurses' Compliance with Standard Precautions: A Cluster Randomized Controlled Trial." This cluster randomized controlled trial used a pretest–posttest design and included 121 clinical nurses across various wards at a university hospital. The intervention group (n = 61) had three designated infection control link nurses (ICLNs) who participated in systematic audits and feedback. The control group (n = 60) received only the hospital's standard multimodal approach. Pretest and posttest assessments of compliance with standard precautions (SPs) were conducted using the World Health Organization (WHO) hand hygiene observation form and the Italian version of the Compliance with Standard Precautions Scale. At the post-intervention assessment, nurses in the intervention group reported a significant increase in hand hygiene compliance. In contrast, no significant improvement was found in the control group. Nurses in both groups reported significant increases in their scores on the Italian version of the Compliance with Standard Precautions Scale; however, a greater and practically meaningful improvement was observed in the intervention group. Participants who experienced improvements in their scores were also compared between the groups, showing that the individual score improvements in the intervention group were significantly greater than those in the control group.

Sugiarti (2026) investigated “Hubungan Supervisi Infection Prevention and Control Nurse (IPCN) dengan Kepatuhan Penggunaan Alat Pelindung Diri (APD) di Ruang Rawat Inap RS Grha Permata Ibu Depok Tahun 2025.” This study employed a quantitative approach with a correlational analytical design and a cross-sectional method. The study population consisted of all 56 nurses working in the four inpatient wards of Grha Permata Ibu Hospital, Depok, and a total sampling technique was used. Data were collected using an IPCN supervision questionnaire and an observation sheet to assess PPE use compliance. The data were analyzed using univariate and bivariate analyses with the chi-square test. Most respondents rated IPCN supervision as moderate (58.9%), while 62.5% were classified as compliant with PPE use. Bivariate analysis revealed a significant relationship between IPCN supervision and PPE compliance (p = 0.001). Nurses who received a high level of IPCN supervision were 33.85 times more likely to comply with PPE use than nurses who received a moderate level of supervision. This study demonstrated that IPCN supervision plays a highly significant role in improving nurses' compliance with PPE use. Therefore, optimizing IPCNs' role through stronger supervision, continuous monitoring, and structured education is essential to improve healthcare worker and patient safety and reduce the risk of healthcare-associated infections (HAIs) in hospitals.

## DISCUSSION

Based on the results of the literature review, the implementation of infection prevention and control (IPC) programs in hospitals is strongly influenced by supervision, motivation, the availability of facilities, and the presence of Infection Prevention and Control Link Nurses (IPCLNs). The IPCLN program has been shown to improve healthcare workers' compliance with standard precautions, particularly hand hygiene and the use of personal protective equipment (PPE). Studies by Ghorbanmovahhed et al. (2023) and Houghton et al. (2020) indicate that implementing the IPCLN program can improve nurses' compliance through ongoing education, monitoring, and evaluation. It demonstrates that IPCLNs play a strategic role as liaisons between the IPC team and healthcare workers in clinical service units.

Supervision also helps improve nurses' compliance with infection prevention and control (IPC) implementation. Studies by Annisa et al. (2022), Purwacaraka et al. (2023), and Wijaya and Putri (2024) demonstrated a significant relationship between supervision and nurses' compliance with standard operating procedures (SOPs) for universal precautions and the use of personal protective equipment (PPE). Routine supervision


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can improve healthcare workers' discipline, awareness, and responsibility in implementing standard precautions. Effective supervision also helps healthcare workers identify errors in clinical practice so that immediate corrective actions can be taken. In addition to supervision, nurses' work motivation also influences compliance with standard precautions. Irawati et al. (2022) found that highly motivated nurses tend to comply more with PPE use and hand hygiene practices. Motivation can increase individuals' awareness of the importance of self-protection and patient safety in healthcare delivery. Therefore, organizational support and a positive work environment are essential for enhancing healthcare workers' motivation to implement IPC programs.

Other supporting factors include access to facilities and infrastructure. Hafni (2020) stated that limited facilities, lack of personal protective equipment (PPE), and insufficient budgetary support hinder the implementation of infection prevention and control (IPC) programs. Adequate PPE availability is essential for healthcare workers to implement standard precautions effectively. Without sufficient facility support, healthcare workers' compliance with IPC procedures will be difficult to achieve, even when supervision is conducted effectively. Rusdi et al. (2022) also showed that IPCLN performance is influenced by communication skills, education, monitoring, and hospital management support. Management support plays an important role in IPC program success because it supports policies, facilities, training, and ongoing evaluation. It aligns with Donati et al. (2020), who found that implementing audits and feedback, along with link nurses, effectively improves healthcare workers' compliance with infection prevention practices.

All studies consistently demonstrated that supervision by Infection Prevention and Control Nurses (IPC Nurses or IPCNs) and Infection Prevention and Control Link Nurses (IPCLNs) was significantly associated with nurses' compliance with personal protective equipment (PPE) use and hand hygiene practices ($p < 0.05$) (Annisa et al., 2022; Hafni et al., 2022; Purwacaraka et al., 2023; Wijaya & Siti Auliya Putri, 2024). Nurses who received a high level of supervision were 33.85 times more likely to comply with PPE use than those who received a moderate level of supervision (Sugiarti et al., 2026). Meanwhile, systematic audit and feedback interventions significantly improved hand hygiene compliance only in the group receiving support from link nurses (Donati et al., 2020; Ghorbanmovahhed et al., 2023). Work motivation also influenced IPCLN performance, with correlation coefficients for knowledge ($r = 0.68$), motivation ($r = 0.80$), and supervision ($r = 0.60$) (Astari et al., 2022). Qualitative studies exploring IPCNs' experiences in clinical settings identified barriers to effective supervision and IPC compliance, including limited support, workplace culture, PPE availability, and staff workload (Dewi et al., 2023; Houghton et al., 2020).

## CONCLUSION

Overall, the literature review indicates that IPCLN supervision of standard precautions, particularly the use of personal protective equipment (PPE), significantly influences healthcare workers' compliance with infection prevention and control practices. Successful IPC program implementation depends on several factors, including motivation, supervision, education, audits, PPE availability, and a patient safety culture. Therefore, hospitals need to strengthen IPCLNs' role through training, monitoring, and organizational support to ensure optimal implementation of standard precautions. To date, studies on IPC programs have generally been dominated by quantitative evaluations focusing primarily on formal compliance rates. At the same time, in-depth exploration of the subjective dimensions and lived experiences of IPCLNs in carrying out supervisory activities remains limited. Therefore, qualitative research is needed to explore IPCLNs' experiences in supervising PPE use and implementing standard precautions in hospitals. Improving PPE compliance is expected to reduce the risk of healthcare-associated infections (HAIs) and protect healthcare workers and patients in healthcare facilities.

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