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THE IMPACT OF PDCA CYCLE IMPLEMENTATION ON NURSING MANAGEMENT IN HOSPITALS: A SYSTEMATIC LITERATURE REVIEW

Niky Isa Hapsari[1*], Djazuli Chalidyanto[2]

[1,2] Health Policy and Administration, Faculty of Public Health, Airlangga University, Surabaya, Indonesia

***Correspondence:* Niky Isa Hapsari**
Email: neykyniky@gmail.com

ABSTRACT
Effective nursing management is a crucial factor in improving the quality of healthcare services in hospitals. One approach that can be applied in nursing management is the PDCA (Plan-Do-Check-Act) cycle, which aims to enhance efficiency and effectiveness in the care process. This article aims to analyze the impact of PDCA cycle implementation on nursing management in hospitals. The method used in this study is a systematic literature review with a PICOS approach, utilizing databases from PubMed and ScienceDirect. Out of the 26 articles obtained based on the keywords “PDCA Cycle” and “nursing management”, 8 articles met the inclusion criteria: (1) implementation of the PDCA method in nursing management; (2) a quantitative study with an intervention; (3) articles published no earlier than 2020; and (4) international publications. The results indicate that the implementation of the PDCA cycle on nursing management has a positive impact on both patients and nurses. For patients, outcomes include reduced complications and infection rates, shorter hospital stays, fewer side effects, and improved satisfaction. For nurses, benefits include enhanced compliance with procedures, better infection control practices, reduced workload and errors, and increased professional competency and safety. Therefore, the PDCA cycle can be considered an effective approach to improving the quality of nursing management.

Keywords: *Nursing Management; PDCA Cycle; Patient Outcome; Nurse Performance*

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INTRODUCTION

Human resource management in the healthcare sector, particularly in nursing, plays a vital role in delivering quality services to patients. Nurses are the frontline professionals who interact directly with patients, provide care, and support the healing process. Nursing management has a significant influence on the delivery of healthcare services (Seniwati et al., 2022). This is in line with a study conducted by Li Yijing (2024), the results of the meta-analysis showed that optimizing nursing services increased top-box responses in the overall patient experience dimension, including the overall hospital rating and the willingness of patients to recommend the hospital.

Therefore, the demand for high-quality healthcare services, especially in nursing, continues to increase. Patients now expect not only effective medical treatment but also compassionate

and patient-centered care (Tehranineshat et al., 2019). Standardized nursing management is essential to ensure both the safety of nurses and the overall quality of healthcare services. In addition to patient satisfaction, job satisfaction must also be considered so that nurses can work in a safer and more effective environment, which in turn improves both patient safety and nurse well-being (Seniwati et al., 2022).

To ensure that nursing services operate optimally, a structured approach focused on continuous improvement is required. In an effort to enhance the effectiveness and efficiency of nursing management, the PDCA (Plan-Do-Check-Act) cycle approach has been widely applied. The PDCA cycle, also known as the Deming Cycle, is extensively used in nursing management to standardize practices and improve the quality of care (Yao et al., 2022).

Despite the increasing application of the PDCA cycle in nursing management, there is still limited consolidated evidence regarding its actual impact on both patient outcomes and nurse performance. Many healthcare institutions adopt quality improvement initiatives without fully understanding their effectiveness in the context of nursing services. This systematic literature review aims to identify the impact of PDCA cycle implementation on nursing management, highlighting the benefits for both patients and nurses.

METHODS

Study Design

This study used a systematic literature review method. The collected and selected articles were then analyzed and summarized, focusing on research topics relevant and valuable for further reading.

Research Subject

The systematic literature review using inclusion and exclusion criteria guided by the PICOS approach (Population, Intervention, Comparison, Outcome, and Study Type). The journal search was limited to publications from the years 2020 to 2024. The inclusion criteria for this systematic literature review were: (1) implementation of the PDCA method in nursing management; (2) a quantitative study with an intervention; (3) articles published no earlier than 2020; and (4) international publications. The exclusion criteria were: (1) incomplete articles; and (2) articles that did not provide clear results or explanations related to the topic. After screening, 8 relevant articles were found that met the criteria and supported the analysis for this study.

Instruments

Relevant literature was searched through online-accessible databases, specifically PubMed and ScienceDirect. The search strategy involved the use of several keywords, with “PDCA” and “nursing management” as the main search terms. All databases were accessed on 17 December 2024.

Data Analysis

The systematic literature review was conducted based on the PRISMA guidelines (Preferred Reporting Items for Systematic Review and Meta-Analyses), using inclusion and exclusion criteria guided by the PICOS approach (Population, Intervention, Comparison, Outcome, and Study Type).

Table 1. PICOS Criteria

Parameter	Inclusion Criteria	Exclusion Criteria
Population	Nurses	-
Intervention	PDCA Cycle	-
Outcome	Nursing Management	-
Study type	Quantitative Studies	Qualitative studies, Systematic literature review, literature review, and meta-analysis

RESULTS

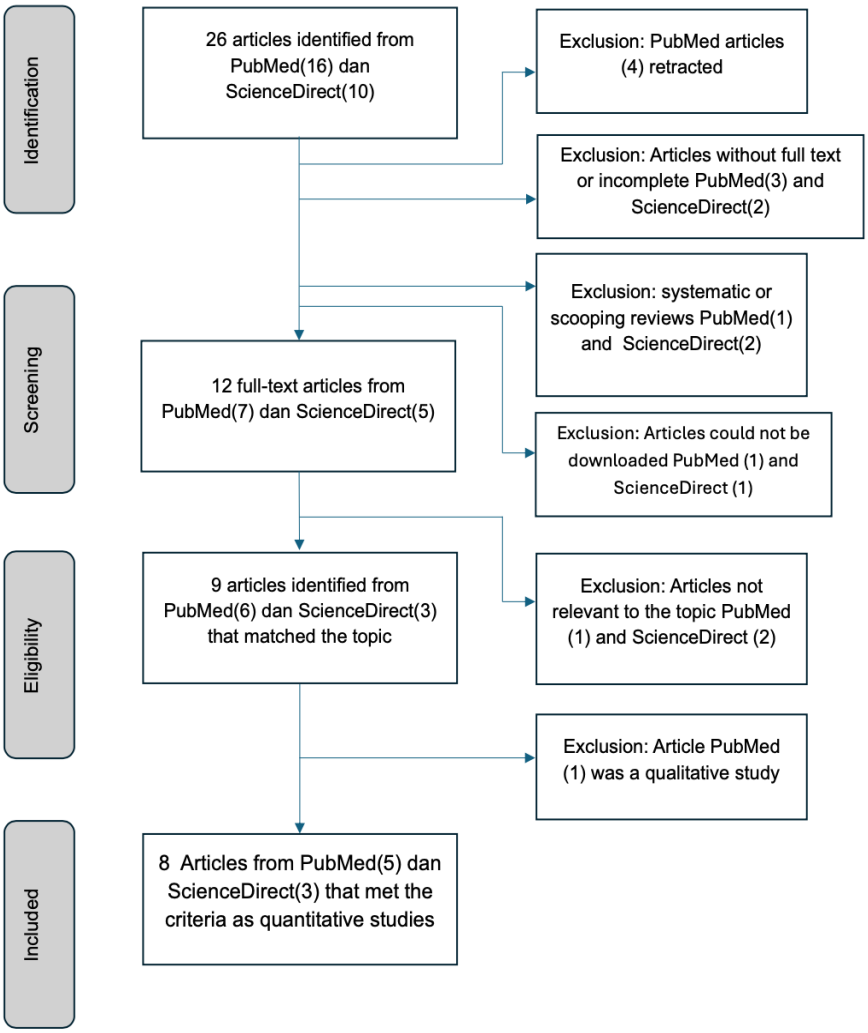

Figure 1. Prisma Flowchart

PDCA stands for Plan, Do, Check, and Act, which is a process improvement cycle that is continuous in nature, resembling an endless loop. This PDCA cycle concept was first introduced by an American management expert, Dr. William Edwards Deming, and is therefore often referred to as the Deming Cycle. (Plan) is the phase in which objectives or targets are established for process improvement or problem-solving efforts. It also involves selecting appropriate methods to achieve those goals. During this phase, a Process Improvement Team is formed, training is provided for team members, and schedules and deadlines are defined to execute the planned activities. (Do) is the implementation phase, where all plans developed during the Plan stage are put into action. This includes executing processes, production activities, and collecting data that will be used in the Check and Act stages. (Check) is the phase for evaluation, review, and analysis of the results obtained from the Do stage. This involves comparing actual outcomes with the predetermined targets and measuring the extent to which the planned schedule has been followed. (Act) stage involves taking appropriate actions based on the evaluation results from the Check stage. There are two types of actions taken at this stage: (1) Corrective Action: Steps taken to address obstacles or issues that hinder the achievement of targets. And (2) Standardization Action: Establishing best practices or methods that have proven effective, applied when the outcomes meet or exceed the set targets. After the Act stage, the cycle returns to the Plan stage for further improvement and development, thereby creating a cycle of continuous process improvement (Rejeki, 2021).

Table 2. Articles of PDCA Cycle Implementation in Nursing

No	Researcher, Year, Country	Title	Study Design, Intervention, Method & Instruments	Results
1	Jin Wang et al., (2023) Shanghai, China https://doi.org/10.1016/j.jrras.2023.100600	Reduction of postoperative cerebral edema and depression by evidence-based nursing with PDCA cycle in patients with brain tumor after surgery	Control n=55 (routine nursing) Intervention n=55 (PDCA cycle nursing) 1. Postoperative complications (headache, vomiting, blurred vision, cerebral oedema) 2. Quality of life (SDS and ADL scores) 3. Patient satisfaction questionnaire	1. PDCA group had significantly lower complications (p<0.05) 2. Lower SDS and ADL scores in PDCA group (p<0.05) 3. Higher patient satisfaction in PDCA group (p<0.05)
2	Kang He et al., (2024) Guangdong, China https://doi.org/10.1186/s12912-024-01765-8	Clinical application and nursing experience of the plan-do-check-act cycle in daytime varicocelectomy	Control n=65 (routine surgery) Intervention n=65 (one-day surgery with PDCA) 1. Length of stay 2. Treatment cost 3. Patient satisfaction	1. Shorter hospital stay in PDCA group (p<0.05) 2. Lower treatment cost in PDCA group (p<0.05) 3. Higher patient satisfaction (p<0.05)
3	Lina Jiang et al., (2021) Shandong, China https://doi.org/10.1016/j.rinp.2021.104377	PDCA cycle theory based avoidance of nursing staff intravenous drug bacterial infection using degree quantitative evaluation model	Control: Jan–Dec 2017 Intervention: Jan–Dec 2018 1. Error data based on doctor's advice (unreasonable medical advice, percentage unreasonable medical advice, dan percentage correction of medical advice) from hospital information system 2. Nurse working time (sticker, dispensing, examine, preparation) 3. Incidence of nursing errors (mismatch of transfusion patch, drug preparation error, drug placement in wrong order, dan false infusion of finished drugs)	1. Lower unreasonable medical advice and higher correction rate in PDCA group 2. Reduced nurse working time (p<0.05) (sticker, dispensing, examine, preparation) 3. Reduced nursing errors (p<0.05)
4	Chunxia Liu et al., (2022) Shijiazhuang, China https://doi.org/10.1186/s12871-022-01570-3	Application of the PDCA cycle for standardized nursing management in sepsis bundles	Control n=113 (routine sepsis management, data: Jan–Dec 2018) Intervention n=113 (PDCA-enhanced, data: Jan–Dec 2019) 1. Completion rate 1h, 3h, 6h 2. Nursing compliance	1. Higher completion rates (1h, 3h, 6h) in PDCA group (p<0.05) 2. Increased compliance with sepsis bundle (p<0.05) The collection of blood cultures, administration of broad-

			3. ICU length of stay	spectrum antibiotics, and measurement of $ScvO_2$ increased significantly in the group where the PDCA cycle was implemented 3. Shorter ICU stay (p<0.05)
5	Hong Chen et al., (2022) Lianyungang, China https://doi.org/10.3389/fsurg.2022.837014	Analysis of the Application Effect of PDCA Cycle Management Combined with Risk Factor Management Nursing for Reducing Infection Rate in Operating Room	Control n=150 (routine infection management, data: Nov 2020–Feb 2021) Intervention n=150 (PDCA + risk management, data: Mar–Jun 2021) 1. Bacteria detection (24h post-op) 2. Surgical site infection incidence based on criteria of hospital infection 3. Infection control level (disinfection of object surface, hands of medical staff, and air from agar plate) 4. Irregular incidents (non-standard instruments, incomplete hand hygiene, unauthorized personnel activity, and improper disposal of surgical waste) 5. Nursing quality assessment (environmental management, nurse safety, equipment management, disinfection, and isolation) using the hospital quality evaluation table	1. Lower gram-negative and gram-positive bacterial detection (p<0.05) 2. Lower surgical site infection incidence (p<0.05) 3. Improved disinfection rate (p<0.05) 4. Fewer irregular events (p<0.05) 5. Higher nursing quality scores (p<0.05)
6	Yan Xu et al., (2023) Jingmen, China http://dx.doi.org/10.1097/MD.0000000000035885	Application effect of PDCA circulation on nursing quality management and risk control in digestive endoscopy room	Control n=90 (routine nursing, Jan–Apr 2022) Intervention n=156 (PDCA risk-control, May–Dec 2022) 1. Infection status using medical records and air quality 2. Patient physiological state (RR, HR, BP) 3. Patient satisfaction (Patient satisfaction with nurses, nursing errors, complaints about nurses) 4. Disinfection indicators (endoscope cavity disinfection level and	1. Reduced infection rate and improved air quality (p<0.05) 2. Lower RR, HR, BP (p<0.05) 3. Fewer errors and complaints; higher satisfaction (p<0.05) 4. Improved disinfection indicators (p<0.05) 5. Higher patient management scores (p<0.05)

			endoscope exterior disinfection level) 5. Patient management score (post management, nursing safety, disinfection and isolation, first- aid drugs, instruments and devices, theoretical exams, and operational exams)	
7	Xue Bai et al., (2023) Hubei, China https://doi.org/10.1016/j.jradnu.2022.11.005	Application of the PDCA Cycle for Nursing Safety Management in Radiology Department	Control n=160 (routine nursing) Intervention n=160 (PDCA process management, Dec 2019–Feb 2022) 1. Nursing quality (3 dimensions: nursing safety, specialist quality, and nursing norms) 2. Waiting time & side effects 3. Patient satisfaction questionnaire (nursing communication, professional technology, nursing service attitude, nursing environment, and knowledge education)	1. Improved nursing quality scores (p<0.05) 2. Shorter waiting time and fewer side effects (p<0.05) 3. Higher patient satisfaction (p<0.05)
8	Xiaoyan Yao et al., (2022) Zhejiang, China https://doi.org/10.1155/2022/3503095	Study on the Effect of PDCA Circulation Method on Nursing Quality Management in the Day Operating Room	Control n=150 (routine nursing) Intervention n=150 (PDCA nursing, Jan 2019–Dec 2020) 1. Nursing quality management (Management of equipment, Preparation of equipment, Cooperation skills of itinerant nurses, disinfection and isolation, quality and safety of nursing) 2. HAMA & HAMD scores 3. Adverse events 4. Infection (respiratory tract infection, urinary tract infection, wound infection) & pathogen detection (gram-positive and gram-negative bacterial) 5. Patient satisfaction (very satisfied, satisfied, unsatisfied)	1. Improved nursing quality scores (p<0.05) 2. Lower HAMA and HAMD scores after received nursing care with PDCA (p<0.05) 3. Fewer adverse events (p<0.05) 4. Reduced infection and pathogen detection (p<0.05) 5. Higher patient satisfaction (very satisfied and satisfied) (p<0.05)

Based on the results above, here is the classification of which studies provided benefits for patients and which provided benefits for nurses:

POSTIVE IMPACTS FOR PATIENTS

Jin Wang et al. (2023) – Reduced postoperative complications, improved quality of life, and higher patient satisfaction. (Plan) Identify nursing problems that are commonly encountered clinically in order to classify the issue and determine the subject, intervention, control, and prognosis. For example, a study on the effect of mannitol in patients with cerebral edema after brain tumor surgery. (Do) Explore evidence relevant to the classified nursing problem, then summarize and apply that evidence into clinical practice. In this case, it involves examining the effects of mannitol on brain tumor patients with cerebral edema. (Check) Involve specialized personnel to monitor and record subtle changes in the patient's condition and compare the outcomes with relevant literature to continuously improve nursing care methods and operational procedures. (Act) In the implementation phase, care decisions should be based on existing evidence and the patient's preferences, while conducting regular evaluations to avoid overtreatment.

Kang He et al. (2024) – Shorter hospital stays, lower treatment costs, and higher patient satisfaction. (Plan) A multidisciplinary team, including medical and nursing leaders, anesthesiologists, OR staff, and outpatient schedulers, collaborates to design a more efficient daytime varicocelectomy procedure using a minimally invasive approach. Evaluation indicators include length of stay, treatment cost, pain level (VAS score), and patient satisfaction (≥4 points). (Do) The team implements the procedure for eligible patients, starting from outpatient screening to surgery scheduling. Pre-op includes medical exams, patient education, and preparation. Surgery is followed by close monitoring, post-op care, and discharge within 24 hours. Follow-up includes wound checks, semen analysis, and scrotal ultrasound. Continuous surgical staff training and coordination with the quality and medical records departments are conducted to streamline the clinical pathway. (Check) Ongoing evaluation ensures process adherence and identifies delays or complications. Data is collected on hospitalization status and post-op outcomes. Nurse leaders conduct random audits on nursing practice and documentation, while the deputy team leader checks for unnecessary exams and medical record quality. (Act) Regular team meetings gather feedback to optimize the daytime surgery process and plan the next PDCA cycle. To boost accountability and motivation, quality control measures and a reward-punishment system are implemented based on patient eligibility and clinical appropriateness

Chunxia Liu et al. (2022) – Higher compliance with sepsis bundles, faster completion times, and shorter ICU stays. (Plan) A retrospective review of 113 sepsis cases in 2018 revealed several issues in implementing sepsis bundle therapy, including delays in antibiotic administration, low rates of blood culture collection, delayed or absent $ScvO_2$ and CVP monitoring, and inappropriate fluid or drug dosing. Root causes included staff workload, poor guideline understanding, low awareness, and delays in record handling, illustrated in a fishbone diagram. (Do) Improvement strategies included staff training, supervision by team leaders, and a reward-punishment system to enhance compliance. Monthly statistics were monitored, and IT systems were introduced to support adherence. (Check) Completion rates of sepsis therapy at 1, 3, and 6 hours were tracked to assess the effectiveness of interventions. (Act) Sepsis treatment processes were continuously adjusted and evaluated to ensure interventions align with guidelines. Compliance was measured through staff willingness and timely therapy execution.

Hong Chen et al. (2022) – Reduced surgical site infections, better infection control, and improved patient safety through fewer irregular incidents. (Plan) Operating room management was evaluated to identify core issues. Based on the Hospital Infection Management Standard, an infection control plan was developed covering environmental management, nursing safety, equipment handling, disinfection, and isolation. A quality

assessment survey form for the operating room was also created. (Do) Regular training ensured staff understood hand hygiene, disinfection, isolation, surgical attire, and medical waste management. Clear instructions were posted, and compliance was monitored. The operating room flow was organized, separating sterile and infected zones. Chlorine disinfectants were used, and strict procedures were implemented for handling sterile items and waste. (Check) Supervision of infection control steps (e.g., instruments, sterile materials, disinfectants) was conducted using supervision records. The hospital's infection office participated in inspections, identified issues, and proposed solutions. Nurses' knowledge was assessed through theory tests, operational skills, and random interviews. (Act) Infection risks and management gaps were summarized. Plans were revised based on departmental needs, and unresolved issues were included in the next PDCA cycle for continuous improvement.

Yan Xu et al. (2023) – Lower infection rates, improved physiological parameters, and fewer complaints. (Plan) A quality control team was formed to assess risks in endoscopy care, identifying issues such as poor adherence to medical instructions, low standards, and inadequate bed management. Based on these findings, targeted management goals and rational intervention plans were developed, along with systematic training to enhance nurses' awareness and managerial skills. (Do) The hospital conducted regular training and assessments on nursing theory, operational skills, and legal education. Environmental controls were strengthened to prevent cross-infection, and equipment was arranged to optimize examination procedures. Staff assignments were adjusted based on workload to improve accountability and risk management effectiveness. (Check) The quality control team performed regular and random inspections of nursing care quality. (Act) Identified problems were analyzed and reported to relevant departments. Effective management methods were explored and monitored, feeding into the next PDCA cycle for continuous improvement

Xue Bai et al. (2023) – Shorter waiting time, fewer side effects, and increased patient satisfaction. (Plan) A nursing quality control team, led by the head nurse of the main department and unit head nurses, was formed. Based on hospital evaluation guidelines and nursing regulations, quality control standards and evaluation rules were established, focusing on nursing management, environmental control, and patient safety. (Do) Training was conducted to improve nurses' theoretical knowledge, skills, and overall competence. The quality control team planned and assessed required knowledge and skills, reporting uncontrollable factors to upper management. Head nurses performed routine evaluations and provided continuous improvement feedback. All nursing staff were involved in improvement efforts through training and consultation. (Check) Monthly quality improvement logs were prepared, and routine inspections covered disinfection, medication use, infusion procedures, and interventional standards. Head nurses conducted random checks and encouraged self- and peer-review among staff. (Act) Based on quality management analysis, practical solutions were developed to optimize nursing processes in radiology and prevent risks. Root causes were identified, and standards and systems were improved. Unresolved issues were carried into the next PDCA cycle, providing a foundation for ongoing improvements.

Xiaoyan Yao et al. (2022) – Fewer adverse events, lower anxiety/ depression scores (HAMA/HAMD), reduced infections, and greater satisfaction. (Plan) A quality control team was formed to analyze issues in the operating room, such as unclear surgical site marking, medication errors, equipment mismanagement, and retained foreign objects. The root causes were investigated in relation to operating room standards and implementation. Goals and targeted solutions were developed based on actual conditions. (Do) Based on nursing management goals, pre-op nurses visited patients to explain pre- and post-operative precautions. Patient data and surgery type were verified prior to entry. In the OR, nurses assisted with correct positioning, maintained aseptic awareness, monitored vital signs, prepared for emergencies, and managed instruments and supplies. Post-op, items were counted and labeled, patient warming was prioritized, and skin disinfection time was

minimized. Routine training was provided to enhance nurses' knowledge and equipment management skills. (Check): Nurses were encouraged to conduct self- and peer-assessments. Head nurses performed random quality checks on surgical care, and the hospital quality office evaluated various management tasks. Additional training was provided for nurses not meeting standards. (Act) Issues in nursing quality management were analyzed, practical solutions developed, and surgical nursing processes optimized to prevent care risks. Unresolved problems became goals for the next cycle, ensuring continuous nursing improvement

POSTIVE IMPACTS FOR NURSES

a. Lina Jiang et al. (2021) – Decreased unreasonable medical advice, reduced working time, and fewer nursing errors.
b. Chunxia Liu et al. (2022) – Improved nursing compliance with protocols.
c. Hong Chen et al. (2022) – Enhanced infection control practices, improved nursing quality scores.
d. Yan Xu et al. (2023) – Higher scores in patient management, better disinfection practices, fewer nursing errors.
e. Xue Bai et al. (2023) – Improved nursing safety and professional quality.
f. Xiaoyan Yao et al. (2022) – Enhanced quality management in nursing procedures.

DISCUSSION

The implementation of the PDCA (Plan-Do-Check-Act) cycle across various studies has demonstrated significant positive impacts on both patient outcomes and nursing performance. Notably, interventions grounded in structured quality improvement processes resulted in measurable clinical benefits for patients, including reduced complication rates, shorter hospital stays, and enhanced satisfaction levels. For instance, the study by Jin Wang et al. (2023) showed that applying evidence-based nursing protocols significantly reduced postoperative complications and improved the quality of life among patients with cerebral oedema. Similarly, the work by Kang He et al. (2024) demonstrated how multidisciplinary coordination and standardized perioperative care in varicocelectomy led to shorter hospital stays, lower treatment costs, and higher patient satisfaction.

Further evidence of improved patient outcomes is found in Chunxia Liu et al. (2022), where a structured sepsis bundle strategy led to increased compliance and faster completion times, ultimately reducing ICU stays. Likewise, studies by Hong Chen et al. (2022) and Yan Xu et al. (2023) emphasized the effectiveness of infection prevention and risk management protocols in enhancing patient safety and reducing infection rates. Xue Bai et al. (2023) and Xiaoyan Yao et al. (2022) contributed additional findings that support PDCA-driven nursing interventions in improving radiological care and perioperative outcomes, including reductions in adverse events and psychological distress.

In addition to patient-centered outcomes, the PDCA cycle also brought significant improvements to the nursing workforce. Studies reported a decrease in nursing errors, improved compliance with clinical guidelines, and elevated professional performance. For example, Lina Jiang et al. (2021) highlighted reductions in unreasonable medical advice and shortened work durations, reflecting enhanced workflow efficiency. Improvements in nursing compliance and infection control practices were also consistently reported in articles from Chunxia Liu et al. (2022) and Hong Chen et al. (2022). Moreover, Yan Xu et al. (2023), Xue Bai et al. (2023), and Xiaoyan Yao et al. (2022) all noted enhanced nursing quality scores, improved safety practices, and increased professional competency.

Collectively, these findings affirm that the PDCA cycle serves not only as a tool for enhancing

patient care but also as a framework for empowering nurses through education, process optimization, and collaborative accountability. The dual impact observed benefiting both patients and healthcare professionals highlights the PDCA cycle's role as a vital component in sustainable quality improvement within nursing practice. Future implementations should focus on institutionalizing this approach through continuous monitoring, feedback integration, and adaptive strategies tailored to departmental needs.

CONCLUSION

The studies reviewed demonstrate that applying the PDCA (Plan-Do-Check-Act) cycle in nursing practice yields substantial benefits for both patients and nurses. For patients, outcomes included reduced complications, shorter hospital stays, fewer infections, decreased side effects, and higher satisfaction achieved through evidence-based planning, targeted interventions, and continuous quality monitoring. For nurses, the PDCA cycle led to improved compliance with protocols, enhanced infection control practices, reduced workload and errors, and increased professional competency and safety. Overall, these studies highlight the effectiveness of PDCA as a systematic approach to improving healthcare quality.

SUGGESTIONS

The successful implementation of the PDCA cycle in nursing suggests strong potential for its adoption in other healthcare areas such as pharmacy, medical records, laboratory services, and hospital administration where continuous quality improvement, error reduction, and service efficiency are equally critical.

DECLARATION OF INTEREST

The authors declare no financial or personal interests that could bias the work.

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AUTHOR CONTRIBUTION

Author 1 : Material sourcing, manuscript drafting, and article submission.
Author 2 : Supervision, review and recommendations.

REFERENCES

Bai, X. (2023). Application of the PDCA Cycle for Nursing Safety Management in Radiology Department. *Journal of Radiology Nursing,* 42, 241-244, https://doi.org/10.1016/j.jradnu.2022.11.005.

Chen, H., Wang, P., & Ji, Q. (2022). Analysis of the Application Effect of PDCA Cycle Management Combined With Risk Factor Management Nursing for Reducing Infection Rate in Operating Room. *Frontiers in Surgery*, 9, Article 837014, https://doi.org/10.3389/fsurg.2022.837014.

He, K., Li, J., Yang, C., Wu, J., Wu, B., & Xia, H. (2024). Clinical Application and Nursing Experience of The Plan-Do-Check-Act Cycle in Daytime Varicocelectomy. *BMC Nursing*, 23:118, https://doi.org/10.1186/s12912-024-01765-8.

Jiang, L., Sun, X., Ji, C., Kabene, S. M., & Keir, M. Y. (2021). PDCA Cycle Theory Based Avoidance of Nursing Staff Intravenous Drug Bacterial Infection Using Degree Quantitative Evaluation Model. *Results in Physics*, https://doi.org/10.1016/j.rinp.2021.104377.

Li, Y., Liu, S., Cai, Y., Cun, W., Zhang, X. & Jiang, Y. (2025). Effectiveness of nursing interventions on patient experiences with health care: A systematic review and meta-analysis. *International Nursing Review*, 72, 1–12, https://doi.org/10.1111/inr.13075.

Liu, C., Liu, Y., Tian, Y., Zhang, K., Hao, G., Shen, L., & Du, Q. (2022). Application of The PDCA Cycle for Standardized Nursing Management in Sepsis Bundles. *BMC Anesthesiology*, 22:39, https://doi.org/10.1186/s12871-022-01570-3.

Manik, C. D., Sarwani, Karolina, Triyadi, Wardani, E. S., & Sunarsi, D. (2020). The Effect of PDCA Cycle on Service Quality, Innovation Capability, and Work Performance of Indonesian Private Universities. *PalArch's Journal of Archaeology of Egypt/ Egyptology*, 8462-8483.

Rejeki, M. (2021). Development of an Effective and Results-Oriented Hospital Performance Management and Management System. *LPPM PTMA*, 1046-1057.

Sarathi, F. A. (2024). Implementasi Siklus Deming dalam Optimalisasi Kualitas Operasional Pelayanan Kesehatan: Sebuah Analisis Literatur Komprehensif. *Jurnal Pendidikan Tambusai,* Volume 8 Nomor 2 Tahun 2024, 33514-33521.

Shrotriya, A. (2019). *A Comprehensive Guide to the PDCA Cycle.* Texas: Amazon Kindle Direct Publish.

Seniwati, Ita, Anugrahwati, R., Silitonga, J. M., Huatgaol, R., & Gunawan, D. (2022). *Buku Ajar Manajemen Keperawatan.* Bandung: Feniks Muda Sejahtera.

Supriyanto, S., & Ernawaty. (2022). *Pemasaran Jasa Kesehatan.* Depok: PT Rafagrafindo Persada.

Tehranineshat, B., Rakhshan, M., Torabizadeh, C., & Fararouei, M. (2019). Compassionate Care in Healthcare Systems: A Systematic Review. *J Natl Med Assoc*, 111(5):546-554, https://doi.org/10.1016/j.jnma.2019.04.002.

Wang, J., Cheng, Y., Xu, K., & Zhao, F. (2023). Reduction of Postoperative Cerebral Edema and Depression by Evidence-Based Nursing with PDCA Cycle In Patients with Brain Tumor After Surgery. *Journal of Radiation Research and Applied Sciences,* 16 (2023) 100600, https://doi.org/10.1016/j.jrras.2023.100600.

Wardhana, A., Sari, A. P., Limgiani, Gunaisah, E., & Suroso. (2020). *Manajemen Kinerja (Konsep, Teori, dan Penerapannya).* Bandung: Media Sains Indonesia.

Xu, Y., Shi, C., & Liu, Y. (2023). Application Effect of PDCA Circulation on Nursing Quality Management and Risk Control in Digestive Endoscopy Room. *Medicine,* 102:48, http://dx.doi.org/10.1097/MD.0000000000035885.

Yao, J., & Xian, X. (2023). Effect of PDCA on Nursing Management. *Journal of Clinical and Nursing Research, 7*(6), http://ojs.bbwpublisher.com/index.php/JCNR.

Yao, X., Zhu, H., Wang, Y., Xiang, Y., & Chen, Y. (2022). Study on the Effect of PDCA Circulation Method on Nursing Quality Management in the Day Operating Room. *Contrast Media & Molecular Imaging*, https://doi.org/10.1155/2022/3503095.

Zhong, X., Wu, X., Xie, X., Zhou, Q., & Xu, R. (2023). A Descriptive Study on clinical Department Managers' Cognition of The Plan-Do-Check-Act Cycle and Factors Influencing Their Cognition. *BMC Medical Education*, 23:294, https://doi.org/10.1186/s12909-023-04293-2.

BIOGRAPHIES OF AUTHORS

Niky Isa Hapsari, drg. I am a dentist who graduated from Brawijaya University in Malang. Currently, I am pursuing a Master's degree at the Faculty of Public Health, Airlangga University in Surabaya, majoring in Health Policy and Administration, with a concentration in Hospital Administration.
: neykyniky@gmail.com

Dr. Djazuly Chalidyanto, S.KM., M.ARS. Affiliation in Airlangga University Surabaya. I am a lecturer at the Health Policy and Administration Department, Faculty of Public Health, Airlangga University, Surabaya.
: https://orcid.org/0000-0002-1498-0957
: 57202650292
: djazulych@fkm.unair.ac.id