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CLINICAL NURSE LEVELS AND ACCESS TO EBP RESOURCES: ANALYZING EVIDENCE-BASED PRACTICE AMONG INDONESIAN PERIOPERATIVE NURSE

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ABSTRACT
The clinical nurse career pathway nurses has been in place since 2017. Objective: this study aims to analyze the influence of nurse position level on the implementation of evidence-based practices in operating rooms in Indonesia. survey method used an online questionnaire involving 1075 respondents of operating room nurses actively working in hospitals. implementation of EBP in the operating room requires the role of nurse mentors with better qualifications in research and evidence-based practice. Nurses' education level is important in practice and nurses working in higher class hospitals, such as class A hospitals, also showed more positive attitudes towards evidence-based practice. The role of the nurse manager is important as there was found to be no significant difference between the nurse manager and the head of the room in the implementation of evidence-based practice. implementation of career paths for nurses, especially in operating rooms, is going in the right direction, the beliefs and practices of nurses at various levels have been reflected in the competencies expected from the Ministry of Health regulations.

Keywords: EBP; nurse career pathway; nursing; perioperative; operating room nurse

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INTRODUCTION

Evidence-Based Practice (EBP) has become the standard in global nursing care, encompassing data-driven practices aimed at enhancing the quality and safety of services. In Indonesia, the implementation of EBP faces challenges, particularly in the operating room, where complex clinical conditions require rapid adaptation to the latest evidence. Despite the availability of various guidelines and literature on EBP, obstacles persist in its implementation. Some nurses still struggle to access research journals, participate in studies, or receive support from experienced mentors, especially in the operating room, which demands a high level of precision and expertise in applying EBP. Understanding the factors that influence the level of EBP implementation among operating room nurses is crucial in this fast-paced era of ever-evolving health technologies. Inability to access or utilize EBP can lead to decreased service quality and increased risks for patients. Nurse characteristics, such as education, work experience, and access to EBP training, are important variables that affect how this practice is applied in hospital settings.

Several nursing studies on Evidence-Based Practice (EBP) implementation highlight multiple factors influencing EBP at the individual nurse level. Generally, nurses have shown a highly positive belief and attitude towards EBP, recognizing its value in enhancing nursing care quality and improving patient outcomes. Career pathways for operating room nurses starts at the basic specialty level with simple surgical procedures and advances to higher levels, specializing in complex surgeries and high-tech interventions. The higher clinical nursing level of an operating room nurse, the more competent they are not only in terms of skills but

also in the development of surgical science and its application in practice, including implementing EBP. The professional career system involves interconnected aspects, including performance, professional orientation, personality, and competency, which collectively contribute to professional performance. Career progression has a set timeframe for movement from one level to a higher level, evaluated based on performance assessments.

This is consistent with Swito's 2024 findings in Indonesia, indicating that surgical nurses hold very high attitudes and confidence toward EBP. Greater nurse confidence and self-efficacy regarding EBP are positively correlated with EBP implementation. Furthermore, collaboration with physicians is essential for successful EBP, as is strategic support from hospital leadership—from vision to budget and a conducive work environment—which are crucial for EBP implementation success (Atakro et al., 2020; Koota et al., 2020; swito, 2024; Swito et al., 2021; Yoo et al., 2019). Experience and clinical tenure also play a significant role, with studies indicating that the longer a nurse's clinical tenure, the greater their ability to engage with EBP in terms of belief, knowledge, and comfort with EBP. A 2018 study in Oman emphasized that nurses working in settings that already implement EBP face fewer barriers to its implementation (Al-Maskari & Patterson, 2018; Koota et al., 2020; Weaver et al., 2019; Yoo et al., 2019). Education level is one of the most frequently observed demographic correlations with EBP, with higher education levels, particularly master's and Ph.D. degrees, positively correlated with EBP readiness (Al-Maskari & Patterson, 2018; Melnyk et al., 2018; Weaver et al., 2019; Yoo et al., 2019). Nurse managers' support is a key factor, that can facilitate or barrier EBP implementation. Clinical nurses expect managers or administrators to have fundamental EBP knowledge, with some studies indicating a lack of support from nurse managers as a significant barrier (chen et al., 2019). Two additional studies report that staff nurses perceive a lack of support from nurse managers, which can impede EBP integration (Gifford et al., 2018; Pittman et al., 2019).

Indonesia has enacted regulations concerning the development of Clinical Nurse Levels (PK), which serve as a fundamental framework for clinical nurse development programs, providing opportunities to enhance competencies, develop critical analytical skills, and access research resources. The Clinical Nurse Levels (PK) as defined in the Indonesian Minister of Health Regulation No. 40 of 2017 on the Development of Professional Career Paths for Clinical Nurses employ a structured approach to nursing career development. This regulation establishes clear pathways for clinical nurses to advance through various levels based on their education, experience, and competencies, thereby enhancing their professional skills and responsibilities. The regulation emphasizes the importance of continuous professional development and the role of clinical nurses in delivering high-quality patient care. It encourages nurses to engage participate in research, and contribute to healthcare innovations, this regulation elevate the nursing profession's status and ensure that nurses are equipped with the necessary skills and knowledge to meet the evolving demands of Indonesia's healthcare system. It also highlights the significance of Continuous Professional Development (CPD), which is vital for nurses to stay current with the latest evidence-based practices (EBP) and enhance their clinical skills. By participating in CPD activities, nurses gain essential knowledge that aligns with EBP, such as workshops on critical appraisal of research, updated clinical guidelines training, and EBP-focused seminars, nurses not only stay current with the latest research but also improve their confidence in applying evidence-based practices in patient care. These activities equip nurses with the skills needed to critically evaluate and integrate the best available evidence into their clinical decision-making enabling them to provide high-quality patient care informed by the most recent scientific evidence. This study aims to investigate Clinical Nurse Levels of Operating room nurses in Indonesia influences

EBP practices and how it relates to other characteristics affecting operating room nurses' engagement and implementation of EBP in Indonesian hospitals.

METHOD

This study is a quantitative cross-sectional study with the study population consisting of operating room nurses in Indonesia. A non-probability sampling method with convenience sampling technique was used, whereby operating room nurses received a survey link. Nurses who are still actively working in the operating room with the role of scrub, circulating and head nurse of the operating room are the focus of this study sample, retired operating room nurses and anesthesiology nurses are excluded from this study.The questionnaire was developed based on existing validated tools and was adapted to fit the context of operating room nurses in Indonesia. The questionnaire underwent content validation by a panel of experts in nursing and surgical practice. A pilot test was conducted with a small group of operating room nurses to assess clarity and reliability, with modifications made based on feedback. Form questionnaire was distributed online using Google Forms, included informed consent, sociodemographic data, and an EBP (Evidence-Based Practice) survey with responses on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). Using SPSS to data analysis technique with the Correlation Test to assess the relationship between each Clinical Nurse Level (PK) and each survey question. Subsequently, Partial Regression Analysis is conducted to determine the influence of each PK level on individual survey questions while controlling for other variables. Additionally, a Paired-Samples T-Test is employed to examine respondent characteristics, comparing differences within these characteristics across responses.The study was conducted in 2024 with ethical approval from the ethics committee (1847/UN4.14.1/TP.01.02/2024).

RESULT

1.325 operating room nurses from various regions across Indonesia submitted questionnaires, 250 (18.9%) were excluded from data processing due to 4.7% of the questionnaires being incomplete or invalid, 5.7% of respondents "did not know" their Clinical Nurse Level, and 8.5% reporting that the Clinical Nurse Level career ladder system was not implemented at their hospital. This resulted in 1.075 valid respondent samples for data analysis. The majority of respondents were at Clinical Nurse Level III (43.3%) and Level II (31.2%). According to career ladder regulations, Pre-Level (1,7%) and Level I (14,5%) nurses are generally unqualified to work in operating rooms, which are categorized as specialized areas requiring specific competencies.

The analysis based on respondent characteristics revealed that the majority of respondents were male (54%), with the largest age group ranging from 31 to 40 years (42.9%). The predominant educational levels were Registered Nurse (RN) (45.1%). In terms of hospital characteristics, most nurses worked in Class C hospitals (41.4%), with 45.2% employed in regional government hospitals. Regionally, the highest number of respondents came from Java Island (40.7%), while the lowest representation was from eastern Indonesia (Maluku and Papua), at 2.1%, reflecting the population distribution across Indonesia. Over half of the respondents were aged between 26 and 35 years (51.5%), more than half of the nurses had between 0–10 years of experience in the operating room. Regarding hospital affiliation, the majority were employed in government hospitals (68.5%).

Tabel 1.
Characteristic respondent (n =1075)

Characteristic Respondent		f	%
Clinical Nurse Level	Pra-Level/Pra-PK	18	1,70%
	Level I	156	14,50%
	Level II	336	31,30%
	Level III	466	43,30%
	Level IV	88	8,20%
	Level V	11	1,00%
Age	<30 tahun	239	22,20%
	31 - 40 tahun	461	42,90%
	41 - 50 tahun	308	28,70%
	>50 tahun	67	6,20%
Education	Associate Degree	481	44,70%
	BSN	94	8,70%
	RN	485	45,10%
	Magister	15	1,40%
Gender	Male	580	54,00%
	Female	495	46,00%
Nurse Role	Head Nurse	229	21,30%
	Staff Nurse	846	78,70%
Calss of Hospital	Class A	180	16,70%
	Class B	388	36,10%
	Class C	445	41,40%
	Class D & Clinic	62	5,80%
Hospital Ownership	Central Government Hospital	214	19,90%
	Regional Government Hospital	486	45,20%
	Private Hospital	375	34,90%
Region	Sumatra	204	19,00%
	Java	437	40,70%
	Kalimanatan	136	12,70%
	Sulawesi	207	19,30%
	Bali & Nusa	68	6,30%
	Maluku & Papua	23	2,1%

Table 2.
Partial regression test of Clinical Nurse (PK) level for each question

Question	Mean ± Std	t	Sig. < 0,05
I am aware of nursing research related to my clinical area through discussions with colleagues.	4,03 ± 0,624	,465	,642
I have easy access to nursing research journals.	3,65 ± 0,808	,913	,361
Advanced practice nurses (such as clinical nurse specialists, nurse educators, etc.) serve as mentors for evidence-based practice.	4,18 ± 0,528	2,420	,016*
My nurse manager works to promote and implement evidence-based practice in the clinical setting.	3,8 ± 0,706	-,579	,563
Understand the process for implementing evidence-based practice in my organization.	3,85 ± 0,617	2,152	,032*
I am aware of evidence-based practice projects being implemented in my organization.	3,64 ± 0,719	-2,777	,006*
I participate in data collection for research studies (i.e., conducting research, not evidence-based practice projects).	3,66 ± 0,751	-,691	,490
I participate in data collection for quality improvement projects.	3,82 ± 0,688	-,017	,986
I participate in data collection for evidence-based practice (EBP) projects.	3,76 ± 0,697	1,405	,160

a. Dependent Variabel: Clinical Nurse Levels

A partial regression test was conducted on each question to assess the impact of Clinical Nurse Level (PK). The question had the highest mean score of 4.18 ± 0.528, indicating that most nurses perceive the role of advanced practice nurses as mentors in EBP positively. The low standard deviation reflects consistent responses among nurses. This question also showed a statistically significant relationship with Clinical Nurse Level (PK) ($t = 2.420$, $p = 0.016$), emphasizing the importance of mentorship in promoting EBP. The question had a mean score of 3.85 ± 0.617 and was also significantly influenced by Clinical Nurse Level (PK) ($t = 2.152$, $p = 0.032$). This suggests that Clinical Nurse Level plays a role in shaping nurses' understanding of EBP implementation processes, though the mean score indicates room for improvement in comprehension. Conversely, the question "I am aware of evidence-based practice projects being implemented in my organization"showed a negative relationship with Clinical Nurse Level (PK), with a mean score of 3.64 ± 0.719, a t value of -2.777, and a significance level of 0.006. This finding suggests that nurses at higher clinical levels may feel less exposed to or involved in EBP projects within their organizations, highlighting a potential gap in communication or engagement. The remaining questions did not show significant relationships with Clinical Nurse Level (PK) ($p > 0.05$). These results indicate that perceptions and involvement regarding other aspects of EBP, such as participation in data collection or access to nursing research journals, are relatively homogeneous across clinical nurse levels or are not strongly influenced by the Clinical Nurse Level (PK).

DISCUSSION

The presence of advanced-level nurses as mentors in the Evidence-Based Practice process is positively correlated with clinical nurse levels. The higher the clinical level of the nurse, the stronger the agreement that mentors play a vital role in promoting EBP implementation. Similar findings from studies in various countries indicate that establishing mentors and EBP teams is an essential first step in preparing for EBP implementation, demonstrating a positive correlation with EBP adoption processes (Gifford et al., 2018; Nguyen & Wilson, 2016). This need is further supported by studies that highlight the role of mentors as exemplary models in EBP implementation (Harper et al. 2017; Melnyk et al. 2018; Stavor, Zedreck-Gonzalez, and Hoffmann 2017). For example, a 2020 study by Atakro et al. in a teaching hospital in Ghana identified the necessity of experienced EBP mentors as a key supportive factor in successful implementation. Characteristics desired in EBP teams, mentors, and champions include high educational qualifications, correlating with advanced knowledge and education levels. This often includes nurses involved in research, clinical educators, clinical nurse specialists, or those with experience or training in EBP, who are expected to empower and engage nursing staff more effectively. Significant finding emerged with age: nurses under 30 years across all clinical levels showed higher confidence in EBP compared to those over 50, with diminishing confidence and no significant effect in the age group over 50, particularly at Clinical Nurse Level 5. The relevance of mentorship is underscored in the clinical nurse career progression, as defined by regulations. For instance, Clinical Nurse Level 2 includes preceptorship for novice nurses under their guidance, Levels 3-4 emphasize mentorship in specific areas, while Level 5 nurses are more oriented toward advocacy and support for mentors and preceptors. This structured career ladder also mandates competency achievements through Continuing Professional Development (CPD), including mandatory Evidence-Based Practice Preceptorship for nurses advancing from Level 2 to Level 3 .

According to the Advancing Research and Clinical Practice Through Close Collaboration (ARCC©) Model, establishing EBP mentorship is an essential step following the assessment of EBP culture readiness and the identification of strengths and barriers to EBP implementation. The mentoring strategy is intended to foster interactive EBP education

through skill development, workshops, and journal clubs (Melnyk & Fineout-Overholt, 2017). Mentorship programs positively influence knowledge, attitudes, skills, and confidence, with improvements evident after training. Effective EBP mentors play a crucial role in educating and supporting nurses in evidence-based care through a multifaceted approach, which includes mentorship at the point of care. Studies, such as those by Schuler, demonstrate that mentorship, when applied intensively for busy mentors and mentees is highly effective in enhancing nurses' EBP knowledge and practice (Schuler et al., 2020; Spiva et al., 2017).

Operating room nurses reported understanding the process for implementing Evidence-Based Practice (EBP) and were aware of EBP projects conducted in their hospitals. However, there was a significant difference observed in these aspects. A positive correlation was found between Clinical Nurse Level and understanding the process for implementing EBP, whereas knowledge of ongoing EBP projects in their hospitals showed a negative correlation. This indicates that the higher the Clinical Nurse Level, the better the understanding of the EBP implementation process in the hospital; however, fewer nurses felt exposed to or involved in ongoing EBP projects. Regarding the competency levels of Clinical Nurse Level in EBP involvement, nurses at Level 1 were mostly engaged in data collection as part of research teams. Nurses at Level 2 assisted in conducting descriptive nursing research and were competent in applying research findings in nursing care. At Level 3, nurses conducted both descriptive and analytical-inferential nursing research. Together with nurses at Level 4, they applied research findings in specialized areas of nursing care, including perioperative care. A negative correlation was found among nurses at Level 5, which may be influenced by their level of authority. Instead of participating as research team members or data collectors, Level 5 nurses primarily provided clinical consultations for nursing care in clients with complex issues in specialized areas and developed alternative nursing interventions based on scientific evidence. Therefore based on the findings of this study, Level 5 nurses demonstrated a better understanding of the process for implementing EBP in their hospitals. However, fewer nurses at this level felt exposed to or involved in ongoing EBP projects at a broader, hospital-wide scale.

In the split comparison demographic factors of Clinical Nurse Levels, gender did not show significant differences across any of the survey questions at each clinical nurse level in Indonesia. However, education level showed a positive correlation. Nurses with an Associate Degree, BSN, or RN had a stronger belief that advanced-level nurses acting as mentors would be beneficial. In contrast, nurses with a Master's or Specialist degree expressed a negative view on this aspect. Research from various countries also suggests that higher education levels are positively correlated with EBP, particularly among those with Master's and PhD degrees. However, the key educational factor influencing EBP implementation is the curriculum nurses receive during their formal education. A study in Finland (2017) found that nurses who graduated within the last 20 years exhibited higher confidence in EBP compared to those who graduated over 20 years ago, affecting both the quality of care and patient outcomes (Saunders & Vehviläinen-Julkunen, 2017). This finding aligns with several other studies, nurse education plays an important role in the implementation of EBP, where in addition to their higher education, their confidence, knowledge and ability to practice EBP will improve (Al-Maskari & Patterson, 2018; Eid AbuRuz et al., 2017; Gallagher-Ford et al., 2020; Weaver et al., 2019; Yoo et al., 2019).

Regarding the role of Head Nurses and Staff Nurses, there was no significant difference observed; however, Head Nurses scored higher overall. As leaders, Head Nurses are expected to play a crucial role in supporting EBP implementation among staff nurses. Numerous

studies have highlighted that managerial support is a critical factor in either facilitating or hindering EBP implementation. Clinical nurses expect that nurse managers or administrators possess basic EBP competencies. This is consistent with findings by Saunders & Vehviläinen-Julkunen (2017), which indicated that nurse managers and administrators generally have greater confidence in EBP compared to clinical nurses. Conversely, two other studies reported that staff nurses perceive a lack of support from their nursing managers (Gifford et al., 2018; Pittman et al., 2019). A study conducted in China found that nurse managers had a relatively positive attitude towards EBP but lacked sufficient knowledge and demonstrated poor implementation within the last 12 months (chen et al., 2019). In the USA, despite high competency levels related to EBP knowledge and activities among nurse managers, their proactive leadership in EBP scored relatively low (Shuman et al., 2019). At the hospital level, a correlation was observed where nurses working in higher-class hospitals exhibited positive attitudes across all survey questions, regardless of hospital ownership. Class A hospitals, being major referral centers with comprehensive facilities and highly specialized staff, are more likely to implement EBP effectively compared to lower-class hospitals.

Unexpected findings indicate a negative correlation between nurses with master's degrees and their awareness of ongoing EBP projects in hospitals. While education level is widely recognized as a facilitator in EBP implementation, certain factors may act as barriers and intersect with education level. For instance, age, which often correlates negatively with EBP awareness, is a relevant factor as nurses with master's degrees tend to be older. Additionally, the year of graduation plays a significant role, with earlier graduates potentially having less exposure to EBP-focused curricula. Workload, typically higher for nurses with advanced competencies, may also limit their ability to engage with or stay informed about EBP projects. Several studies emphasize the importance of embedding robust EBP-based learning in advanced nursing education programs. Integrating advanced EBP education into graduate curricula can help bridge gaps in awareness and involvement. Further research is warranted to explore strategies that enhance the engagement and active participation of master's-level nurses in EBP initiatives, ensuring their competencies translate into effective implementation and improved outcomes (Al-Maskari & Patterson, 2018; Atakro et al., 2020; Koota et al., 2020; Weaver et al., 2019).

CONCLUSION

The implementation of the Clinical Career Ladder for nurses in the operating room in Indonesia is progressing in the right direction, as evidenced by the attitudes and practices of senior-level nurses, which align with the competencies mandated by the Ministry of Health regulations. Higher Clinical Nurse Levels are positively correlated with the perception that mentoring by advanced-level nurses (such as clinical nurse specialists or nurse educators) plays a crucial role in supporting EBP implementation. This suggests that a well-structured career ladder system, with an emphasis on mentorship roles at higher levels, effectively contributes to enhancing EBP adoption. Nurses at higher Clinical Nurse Levels demonstrate a better understanding of the EBP implementation process in their hospitals. Educational levels among nurses at various Clinical Nurse Levels have a strong influence, showing a positive correlation with nurses working in larger hospitals, particularly those in Class A hospitals. There was no significant difference in EBP perceptions between Head Nurses and Staff Nurses, although Head Nurses scored slightly higher. This highlights the importance of managerial support in the implementation of EBP. Based on the findings, hospitals should enhance mentorship programs and provide EBP training aligned with clinical nurse levels to boost adoption. Advanced-level nurses (level III/IV) should mentor others, given their positive impact on EBP readiness. Initiatives like workshops, journal clubs, and professional

development are key. Integrating EBP into nursing curriculum and advanced programs master ensures level IV and V nurses are equipped to lead EBP efforts.

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