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Research article

Mediating Effect of Self-Efficacy in Pain Management between Knowledge and Attitude of Pain toward Pain Management Practice among Nurses in Indonesia

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Abstract

Nurses' knowledge and attitudes significantly influence pain management practices. Higher levels of self-efficacy in pain management are associated with improved pain. This study explored the relationships between nurses' knowledge and attitudes toward pain, self-efficacy in pain management, and actual pain management practices. This study employed a cross-sectional study which conducted at Sultan Agung Islamic Hospital, Indonesia, involving 249 nurses selected based on predefined criteria. Participants responded to an online survey encompassing demographic queries and standardized tools, namely the Knowledge and Attitude Survey Regarding Pain (KASRP-IDN), the Pain Management Self-Efficacy Questionnaire (PMSEQ-IDN), and the Nurse Behavior Questionnaire in Pain Management (NBQ-P). Mediation analysis was further conducted using the PROCESS add-on to discern the mediating effect of self-efficacy in pain management between knowledge and attitude of pain toward pain management practice among nurses. The study showed significant positive relationships among Knowledge and Attitude Survey Regarding Pain (KASRP), Pain Management Self-Efficacy (PMSE), and Pain Management Practice. However, the mediation analysis depicted that self-efficacy exerted a relatively modest mediating effect between KASRP and pain management practice (K2=0.17, CI= 0.05-0.27). The findings manifest the positive associations between knowledge-attitude regarding pain, self-efficacy in pain management, and pain management practices among nurses. In the future, in-service programs related to pain management should increase the nurses' knowledge and attitude and enhance their confidence, resulting in actual practice in pain management. However, the mediation effect of self-efficacy is modest, indicating the plausible existence of other contributory variables or factors warranting further exploration and elucidation.

INTRODUCTION

According to the definition by the International Association for the Study of Pain (IASP), pain is an unpleasant sensory and emotional experience.[1] Pain is considered chronic when it lasts for more than three months, and chronic pain is a

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significant health issue globally, impacting many people across the world.[2] Pain affects more than just the body; it also negatively influences life quality and work performance.[3] As a leading cause of disability worldwide, there is a pressing need for effective ways to prevent and treat it.[4] Good pain management services are essential for improving patient outcomes and quality of life.[5,6] Developing and applying effective strategies for managing pain is crucial[7], highlighting the significant impact of pain and the importance of addressing it thoroughly.

The Knowledge, Attitudes, and Practices (KAP) model is a theoretical framework that emphasizes the importance of knowledge and attitudes in influencing behavior.[8] It provides a framework for understanding the knowledge and attitudes of healthcare professionals, such as nurses, towards pain management.[9-11] Because nurses are the front line of pain management for patients, a solid foundation of knowledge has been shown to improve nurses' attitudes and knowledge regarding pain management, subsequently improving patient outcomes.[9,12] Although nurses with better knowledge and attitudes are linked to improved patient outcomes in pain management, nurses often show gaps in knowledge and negative attitudes towards pain management, which adversely affects care quality and can hinder the effectiveness of pain management practices.[13-15]

Self-efficacy refers to an individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments.[16] The concept of self-efficacy plays a pivotal role in managing pain among nurses. Nurses with higher self-efficacy in pain management not only show improved practices in effectively managing pain[17], but also demonstrate greater confidence and competence in pain assessment and management, employing a range of strategies from non-pharmacologic treatments like massage and music therapy[18,19] to administering pharmacological measures such as Paracetamol, Fentanyl, and Morphine.[20] They are more proactive in initiating and adjusting pain management interventions and communicate more effectively with patients regarding pain and its management options.[19,21] Nurses' high pain management self-efficacy may contribute to increased job satisfaction, continuous learning, and pain management improvement, reducing the likelihood of job burnout.[22-24] On the other hand, nurses with lower levels of self-efficacy may be less confident in their abilities and may be more likely to rely on suboptimal pain management strategies or avoid addressing pain altogether.[25]

The literature indicates that self-efficacy has been recognized as a mediator within the Knowledge-Attitude-Practice (KAP) model across other discipline such as in management.[26, 27] Specifically, Goodarzi, Ebrahimzadeh (2012) have highlighted the significant role of self-efficacy in linking knowledge and attitudes to the actual practice of patient care. Alzghoul and Chew Abdullah (2020) suggested that self-efficacy is a mediator between knowledge and attitude, which plays a crucial role in translating these elements into effective pain management practices. Despite this understanding, there remains a gap in the context of pain management among nurses in Indonesia. Although pain management is an integral part of the nursing curriculum in Indonesia, studies have shown that nurses' proficiency in pain management was moderate[30], and 51.3% of nurses were considered confident in pain management practice.[31] This issue is worsened by the excessive dependence of nurses on pain medication for post-operative patients.[32] They should possess comprehensive knowledge of various pain management strategies, encompassing both non-pharmacological techniques and medication-based interventions.

In light of these findings, this study aims to explore the specific role of self-efficacy

within the KAP model in pain management among Indonesian nurses. By focusing on this area, the study intends to bridge the identified gap and contribute to a more comprehensive understanding of how self-efficacy influences translating knowledge and attitudes into effective pain management practices in a real-world clinical setting. This study's findings can help improve pain management strategies and patient outcomes in the Indonesian healthcare system.

METHOD

Design, setting and participants

This study employed a cross-sectional design and convenience sampling. Data was collected various units at Sultan Agung Islamic hospital, Central Java, Indonesia. Recruitment criteria included nurses who worked at least one year in the hospital, and who possessed a smartphone and access to the internet. Based on G*power analysis,[33] a sample size of 204 was determined as ideal, considering an effect size of 0.4,[34] alpha of 0.05, and power of 0.80. During the COVID pandemic, the researcher opened the online survey to voluntary participants and received responses from a total of 249 individuals who expressed their interest in participating in the study.

Measures

Knowledge and attitude of pain

Knowledge and Attitude Survey Regarding Pain (KASRP), initially developed by Ferrel and McCaffery (35), was used to assess nurses' knowledge and attitudes regarding pain management. This scale was composed of 21 true/false questions about pain knowledge and attitudes, 14 multiple-choice questions, and 2 case studies, each with two multiple-choice questions. Each item correctly answered was given a score of 1, and each incorrectly answered item was given a score of 0. Pain experts confirmed the original KASRP's content validity and alignment with standards from organizations like the American Pain Society. This scale was translated into Bahasa Indonesia by the researchers and analyzed by Rasch analysis. The results showed good item reliability (0.99), construct validity, and infit-outfit MNSQ and ZSTD, which were within the threshold value.

Pain management self-efficacy

The Pain Management Self-Efficacy Questionnaire consists of 21 items for evaluating self-efficacy in comprehensive, evaluative, and supplemental domains of pain management, utilizing a 6-point Likert scale where higher scores reflect a greater sense of self-efficacy in pain management.[36] This scale was translated and validated into the Bahasa version and showed good model fits in the validity tests. The Cronbach alphas was 0.949, Composite Reliability ranged from 0.72 to 0.93 for the subscales, and test-retest reliability was 0.873.

Pain management practice

Nurse Behavior Questionnaire in Pain Management (NBQ-P) measures nurses' practical application and behaviors in managing pain. It consists of 36 items, 18 related to pain assessment-evaluation and 18 related to pain intervention. For each item, respondents answered with either "yes" or "no," where "yes" was assigned a score of 1 and "no" a score of 0, leading to a possible minimum of 0 and a maximum score of 36. Three experts validated this scale, and the coefficient reliability for pain assessment-evaluation and pain intervention was 0.78 and 0.72, respectively.[37]

Demographic Profile included gender, age, education, working unit/ward, civil status, and participation in pain management training.

Data Collection

Upon ethical approval (No. 38/KEPK-RSISA/III/2022), data was collected between April and June 2022. The study's aims and methods were clearly explained to the hospital's nursing directors and research assistants responsible for data gathering. The collection was carried out through an online survey shared by a research assistant via a WhatsApp group with both the assistant and participants. After the online informed consent was obtained from the participants, they completed the demographic profiles, KASRP, PMSEQ, and NBQ-P at their convenience outside of hospital duties. In our research, we meticulously applied ethical principles by confirming that participation was voluntary, with participants informed of their right to withdraw anytime. Anonymity was assured through the use of unique identifiers, protecting individuals' identities. Confidentiality was rigorously maintained by securely storing data and restricting access to authorized research team members only, ensuring that participants' information remained confidential and was used exclusively for the study's objectives.

Statistical Analysis

All analyses used the Statistical Package for the Social Sciences (SPSS) version 22.0.[38] Descriptive statistics, such as mean and standard deviation, were used to summarize the continuous data, while frequencies and percentages were used for categorical data. Pearson correlation was used to analyze the relationships between (1) knowledge-attitude and pain management practice, (2) knowledge-attitude and self-efficacy, and (3) self-efficacy and pain management practice. The PROCESS add-on in SPSS (Model 4) was employed to examine the mediation effect.[39] A p-value of less than 0.05 typically indicates a statistically significant result.

RESULTS

Participant characteristics

Demographic information is presented in Table 1. The average age of the participants was 31.19 years, and most were female (69.1%). The educational background was diverse, with 61.8% holding a Diploma III and 38.2% a bachelor's degree. Professional experience varied, with less than 6 years (29.3%), 6-10 years (35.7%), and over 10 years (34.9%) of experience. Notably, less than half (44.2%) had received specialized training in pain management. Table 2 presents the average scores and standard deviations of PMSEQ (M= 84.40, SD= 12.77), KASRP (M= 19.87, SD= 5.51), and NBQ-P (M= 24.24, SD= 4.66). The correlational analysis showed that the PMSEQ score was positively correlated with both KASRP (r= 0.72, p= 0.001) and Pain management practice (r= 0.68, p= 0.001). The KASRP score also strongly correlates positively with Pain management practice (r= 0.81, p= 0.001). Table 3 shows knowledge and attitude towards pain management (KASRP), self-efficacy (PMSEQ), and pain management practice, in relation to the demographic characteristics of nurses such as gender, education, working experience, and pain training. Gender, education level, and working experience showed no significant impact on nurses' knowledge and attitude towards pain management, self-efficacy, or pain management practices. However, nurses without pain training exhibited significantly higher knowledge and attitude scores towards pain management (19.04 ± 4.8) than those with training 20.53 ± 5.9). Similarly, nurses without pain training exhibited significantly higher pain management practice (23.59 ± 4.4) than those with training (24.75 ± 4.7), suggesting a potential reevaluation of pain training programs is necessary.

Table 1
General Characteristics of Study Participants (n = 249)

Indicators	f	%
Gender		
Male	77	30.9
Female	172	69.1
Education		
Diploma III	154	61.8
Bachelor	95	38.2
Working experience		
< 6 years	73	29.3
6 – 10 years	89	35.7
> 10 years	87	35
Pain training		
Yes	110	44.2
No	139	55.8

Testing for the mediation effect

Figure 1 shows the results of the mediation analysis. KASRP has a statistically significant positive influence on pain management self-efficacy (*b*=1.68, *t*=16.5, *p*=0.001) and pain management practice (*b*=0.57, *t*=12.9, *p=0.0001*). Additionally, PMSEQ significantly positively influences pain management practice when controlling for KASRP (*b*= 0.07, *t*= 3.60, *p*= 0.004). This suggests that both KASRP and PMSEQ independently contribute to pain management practice. After PMSEQ entered the model, KASRP maintained a statistically significant positive relationship with pain management practice, but the parameter decreased (*b*=0.57, *t*=12.9, *p* < 0.001) which indicated that pain management self-efficacy partially mediated the relationship between knowledge and attitude regarding pain and pain management practice. However, the mediating effect fell into the small-to-medium range (Kappa-squared= 0.17), and the 95% bias-corrected bootstrap confidence interval was from 0.05 to 0.27.

Table 2
Mean, standard deviation and intercorrelation for PMSEQ, KASRP and Pain management practice (n = 249).

Variable	M	SD	1	2	3
1. PMSEQ	84.40	12.77	-	0.72**	0.68**
2. KASRP	19.87	5.51		-	0.81**
3. Pain management practice	24.24	4.66			-

*Note. **p < 0.01*

Table 3
level of knowledge and attitude, self-efficacy and pain management practice based on nurses' demographic characteristics

Variables	KASRP Mean ± SD	F/t/ (p-value)	PMSEQ Mean ± SD	F/t/ (p-value)	Pain management practice Mean ± SD	F/t/ (p-value)
Gender						
Male	19.47 ± 5.4	-0.77	83.55 ± 12.4	-0.72 (0.47)	23.79 ± 4.6	-1.01
Female	20.05 ± 5.5	(0.44)	84.78 ± 12.9		24.44 ± 4.6	(0.32)
Education						
Diploma III	20.24 ± 5.5	1.36	84.81 ±13.2	0.66 (0.51)	24.42 ± 4.7	0.80 (0.42)
Bachelor	19.26 ± 5.5	(0.175)	83.74 ± 12.1		23.94 ± 4.6	
Working experience						
< 6 years	19.40 ± 5.4	0.532	82.68 ± 12.6	1.196	24.03 ± 4.5	0.633
6 – 10 years	19.83 ± 5.6	(0.588)	84.70 ± 12.7	(0.304)	23.97 ± 4.7	(0.532)
> 10 years	20.30 ± 5.5		85.82 ± 12.8		24.69 ± 4.6	
Pain training						
Yes	19.04 ± 4.8	-2.18	83.74 ± 12.9	-0.73 (0.47)	23.59 ± 4.4	0.04)
No	20.53 ± 5.9	(0.03)	84.93 ± 12.7		24.75 ± 4.7	

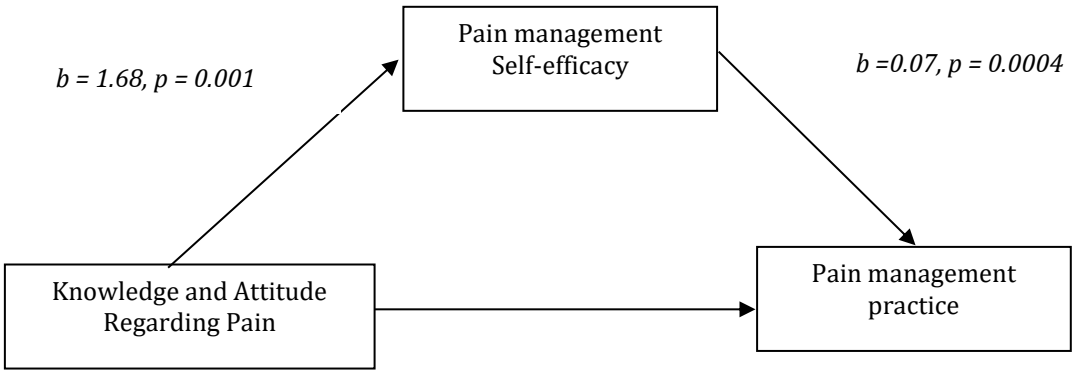

Figure 1
Diagram of the mediation model with regression coefficient, Indirect Effect and Bootstrapped CIs.

DISCUSSION

This research found the interrelationships between the nurses' knowledge and attitudes and their practice regarding pain management. Furthermore, the study supports that self-efficacy in pain management can play a mediating role in influencing the knowledge and attitudes toward pain translated into practical pain management.

Our study highlights the demographics and professional background of nurses in Indonesia, focusing on their experience in pain management. The average age of 31.19 years indicates a young workforce, predominantly female (69.1%), mirroring global trends in nursing demographics.[40, 41] Education levels among these nurses vary, with 61.8% holding a Diploma III and 38.2% a bachelor's degree, reflecting a diversity in educational attainment that enriches nursing care perspectives, including pain management. The Indonesian government's efforts to elevate nursing education are aimed at enhancing healthcare quality by increasing the proportion of higher-qualified nurses.[42]

Professional experience among nurses showed a balanced mix across different tenure lengths, suggesting an environment conducive to mentorship and knowledge sharing, especially in pain management.[43] However, a notable gap in specialized training in pain management was identified, with less than half (44.2%) of nurses having received such training. This lack underscores a significant area for improvement, as effective pain management is crucial in nursing care, and the absence of adequate training could hinder the delivery of optimal pain management practices in Indonesia.[44]

Relationship between knowledge, attitude and pain management practice

Nurses should have a solid foundation of knowledge about pain management and develop a positive attitude towards it to assess patients' condition and deliver individualized care.[10] The findings in this study align with previous studies that emphasized the importance of nurses' knowledge and attitudes toward pain management in providing effective care and improving patient outcomes.[10, 45, 46] Limited knowledge and negative attitudes toward pain management can be major obstacles to implementing effective pain management among nurses, suggesting the need for ongoing education and training.[46]

Consequently, there is a call for improved educational programs and interventions aimed at enhancing knowledge and attitudes regarding pain management across all levels of nursing practice. Studies highlight a noticeable deficiency in knowledge and attitudes toward pain management, especially among undergraduate nursing students and emphasize the necessity of incorporating educational interventions early within the nursing curriculum.[47-49] These interventions can lead to increased knowledge, changes in attitudes and behaviors, and better relationships with specialists, ultimately overcoming existing nursing barriers to pain management such as inadequate education about pain mechanisms and types of pain medications, the importance of proper pain assessment and documentation, an ongoing skepticism regarding the pursuit of drugs among users of opioids and/or apprehension of excessive sedation, along with a shortage of specialists.[45]

Our study on Indonesian nurses' knowledge and attitude towards pain management found no significant differences across educational levels, challenging previous research that suggested otherwise. This uniformity might stem from the standardized nursing curricula in Indonesia, which provides a consistent foundation in pain management for all nurses, regardless of their degree. Continuous professional development (CPD) opportunities, mandated for licensure, likely play a crucial role in bridging any knowledge and attitude gaps, offering a leveling effect over time.[50] Additionally, the practical experience gained through clinical work may further diminish educational disparities in pain management understanding and attitudes.[51] These findings, diverging from Kahsay and Pitkajarvi (2019) and aligning more with Samarkandi (2018), reflect the influence of local educational practices, healthcare systems, and the importance of considering cultural and systemic factors in research, suggesting that factors beyond initial educational attainment contribute significantly to nurses' competencies in pain management.

Mediation effect of self-efficacy pain management between Knowledge and Attitude of Pain toward Pain Management Practice

Although the pain knowledge and attitude related to pain management practice, our study also found that nurses with a good knowledge and positive attitude towards pain management are more likely to have higher levels of pain management self-efficacy which also leads to better pain management practice. The relationship between knowledge and attitude of pain towards pain management practice among nurses is partially mediated by the pain management self-efficacy. Possibly, a positive attitude reflects a belief in the importance and effectiveness of pain management practices, which in turn enhances nurses' confidence in their ability to successfully implement these practices.[10] Higher self-efficacy in managing pain was associated with more effective, problem-focused coping strategies, suggesting that nurses with higher self-efficacy could better support in managing pain.[52-55] A previous study also has shown that nurse with higher self-efficacy in managing chronic pain exhibited greater confidence in performing specific pain management tasks, enhancing their overall pain management practices[53] and better adjustment and coping strategies.[54] However, the modest mediating effect of self-efficacy between knowledge, attitudes, and pain management practices suggests the presence of other influential factors not explored in the study such as patient-related barriers,[29] complexities of clinical practice[56] and work-related psychosocial factors and mental health problems among nurses.[57]

Limitations

This study has several limitations. The study's setting at one hospital in Central Java, Indonesia, limits the generalizability of its findings to other geographical and cultural contexts. Additionally, the predominance of female nurses with a Diploma III in the sample may not accurately represent the diversity of the nursing workforce. Future research should encompass a variety of geographical and healthcare settings to enhance the generalizability of findings. Longitudinal studies are recommended to better understand the causal relationships between knowledge, attitudes, self-efficacy, and pain management practices. It is also advised to include a more diverse demographic in terms of gender and educational background in subsequent studies to ensure broader applicability of the results.

CONCLUSION

The study demonstrates that increased knowledge and positive attitudes toward pain management are related to their pain management practices directly and indirectly through increased self-efficacy among nurses. Therefore, this research highlights the importance of comprehensive education and training in pain management for nurses, emphasizing the need to focus not only on knowledge and attitudes but also on building self-efficacy in translating knowledge into effective pain management practices. Besides emphasizing knowledge and attitude, the pain management training program should enhance the nurses' confidence to practice optimal patient care.

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CONFLICTS OF INTEREST

Neither of the authors has any conflicts of interest that would bias the findings presented here.

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