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Original Article

Assessing nurses' pain management competence using KASRP and organizational support in a public tertiary care hospital in Lahore

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Abstract

Effective pain management is a cornerstone of quality nursing care, yet knowledge gaps and systemic barriers often hinder optimal practice, particularly in low-resource settings. This study aimed to assess nurses' knowledge and attitudes regarding pain management, evaluate their self-reported pain practices, and explore the role of perceived organizational support in shaping pain management competence among nurses in a tertiary care hospital in Lahore, Pakistan. An exploratory survey was conducted with 120 registered nurses using the Knowledge and Attitudes Survey Regarding Pain (KASRP), a perceived organizational support scale, and a self-reported practice checklist. Descriptive statistics revealed that only 22.5% of the nurses reported good knowledge, whereas 45% reported moderate knowledge, and 32.5% reported poor knowledge. Perceived organizational support was moderate on average, and although self-reported practice scores were relatively high, they did not significantly correlate with knowledge levels. The Mann–Whitney U test revealed no significant differences in knowledge or practice scores by sex. Spearman correlation analysis revealed a significant positive association between organizational support and knowledge scores. Multiple linear regression identified organizational support as the only significant predictor of knowledge scores ($p = 0.003$). These findings highlight the critical role of organizational factors in fostering clinical competence and suggest the need for system-level interventions—such as regular training, managerial support, and access to protocols—to improve pain management outcomes in nursing practice.

Keywords

Pain management; Nurses; Attitude of health personnel; Clinical competence; Hospitals, public; Developing Countries; Organizational support

1. Introduction

Pain is one of the most frequent and distressing symptoms experienced by hospitalized patients, with studies reporting that up to 70–90% of patients suffer from moderate to severe pain during hospitalization [1,2]. Nurses, as the primary caregivers in clinical settings, are responsible for pain assessment, timely intervention, and continuous monitoring. However, despite their central role, research suggests that only 32% to 60% of nurses demonstrate adequate knowledge in pain management, and an even smaller proportion exhibit consistently positive attitudes toward pain relief strategies [3,4,5].

International studies have revealed that 40% of nurses fear opioid-related adverse effects such as respiratory depression or addiction, leading to reluctance in the administration of adequate doses, especially in elderly or postoperative patients [6,7]. Further-

more, over 40% of nurses reportedly underestimate patient-reported pain when objective signs (e.g., vital and facial expressions) are lacking [8,9]. In critical care and emergency settings, knowledge scores often drop even further due to workload pressure and clinical complexities, with some studies reporting only 50–76% competency in these environments [10].

In the Pakistani context, a recent cross-sectional study in Multan reported that while 67.3% of nurses had good knowledge about pain management, only 50.6% demonstrated favorable attitudes [11]. Similarly, inadequate training and a lack of formal education in pain assessment and management were among the most common barriers perceived by nurses caring for critically ill patients. [12]. Moreover, only 46.2% of nurses in a Lahore-based study reported using standardized pain assessment tools regularly in their practice [13]. These findings suggest a critical disconnect between the theoretical understanding and clinical application of pain management strategies, leading to persistent undertreatment of pain in public hospitals.

Educational interventions, especially those involving simulation or case-based training, have been shown to improve knowledge scores and significantly increase the likelihood of applying nonpharmacologic techniques or reassessing pain postintervention [14,15,16]. However, such structured programs remain limited in Pakistan's public health system, where high patient volumes, inconsistent protocols, and a lack of continuing education prevail.

While prior research has relied primarily on descriptive or knowledge, attitudes, and practices (KAP)-based approaches, this study integrates the Knowledge and Attitudes Survey Regarding Pain (KASRP) with an additional dimension of perceived organizational support to reflect the broader institutional context influencing nurses' competence. This framework enables a more comprehensive assessment of nurses' pain management competence and allows exploration of how system-level support may facilitate or hinder effective clinical practice. Therefore, this study aims to assess nurses' knowledge and attitudes toward pain management, examine their self-reported pain management behaviors, and evaluate how perceived organizational support contributes to their overall competence in a tertiary care hospital in Lahore, Pakistan.

2. Methods

2.1. Study design and duration

This was an exploratory study conducted over a period of two months, from December 2023 to February 2024.

2.2. Ethics approval

Ethical approval for this study was obtained from the Institutional Review & Research Advisory Board (IRRAB) and the Technical & Ethical Review Committee (TERC) of the National Health Research Complex and Sheikh Khalifa Bin Zayed Al-Nahyan Medical & Dental College, Lahore, Pakistan (No. TERC/SC/Internal/2023/513).

2.3. Sample size and sampling technique

A total of 120 registered nurses were recruited through convenience sampling from Mayo Hospital Lahore. The sample size was guided by Green's formula for regression analysis ($N \geq 50 + 8\ m$), where m represents the number of predictors in the regression model [17]. This formula is used to estimate an adequate sample size to ensure sufficient statistical power in multiple regression analyses. In this study, with up to seven predictors, the formula yields $N \geq 50 + (8 \times 7) = 106$ participants. Given that the analysis included

key predictors such as the KASRP score, perceived organizational support, self-reported practices, and relevant demographic variables, a sample of 120 participants was deemed adequate to meet the recommended threshold for robust multivariable analysis.

2.4. Study setting and population

This study was conducted at a public tertiary care hospital—Mayo Hospital Lahore—which is known for its high patient volume and wide range of clinical departments, including intensive care units (ICUs), emergency departments, medical and surgical wards, and outpatient units. The study population comprised registered nurses working in these departments who met the predefined inclusion and exclusion criteria.

2.5. Selection criteria

The participants eligible for inclusion were registered nurses working in a tertiary care hospital who were currently involved in clinical care within departments such as the ICU, emergency ward, inpatient ward, or outpatient unit and had completed at least six months of clinical experience following their internship. Nurses were excluded only if they were unavailable during the data collection period due to leave or reassignment. Participants who declined to take part, did not provide written informed consent, or submitted incomplete questionnaires were excluded from the study.

2.6. Measures and procedures

Data were collected via a structured, self-administered questionnaire developed from established instruments and tailored to the clinical context of nurses working in a public tertiary care hospital. The questionnaire was systematically divided into four thematic sections:

Section A covered demographic information, including age, sex, nursing qualifications (Diploma, Post-RN BSc, Generic BSc, or MSN and higher), years of clinical experience, current department or unit (e.g., ICU, emergency, ward, OPD), and whether the participant had received formal training in pain management.

Section B consisted of the complete 41-item KASRP, a validated tool developed by Ferrell and McCaffery [18]. This section assessed nurses' knowledge and attitudes toward pain management through 22 true/false items, 14 multiple-choice questions, and two clinical case scenarios with multiple subquestions, including pain scale ratings and dosage decisions. The KASRP has been widely used in various clinical settings and has demonstrated acceptable reliability and construct validity in international contexts [19].

Section C included five items assessing perceived organizational support for pain management. These items evaluate the availability of protocols, supervisor support, access to tools, training opportunities, and adequate time for pain assessment and reassessment. Each item was rated on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." The concept of perceived organizational support is rooted in organizational psychology and has been previously validated as a predictor of professional performance and motivation [20].

Section D captured self-reported pain management behavior via five items that asked how frequently nurses engaged in practices such as using standardized pain scales, reassessing pain after interventions, documenting pain scores, using nonpharmacologic methods, and escalating unresolved pain to physicians. These items were rated on a 5-point scale from "never" to "always" [21].

2.7. Study measures

Scoring was carried out independently for each section of the questionnaire. For the KASRP (Section B), each correct response was awarded one point, resulting in a total score ranging from 0–41. Higher scores indicate greater knowledge and more positive attitudes toward pain management. No reverse scoring was necessary. For analytical purposes, KASRP scores were treated as a continuous variable and categorized into poor (< 50% correct), moderate (50–79% correct), and good (80–100% correct) knowledge and attitude levels [22].

Perceived organizational support (Section C) was measured using five-item scores. . Each item was rated on a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), and the overall score was calculated as the median, with values between 1 and 5. Scores closer to 1 indicate low support, whereas scores closer to 5 indicate high support. All the items were positively framed, so reverse coding was not needed. Similarly, the self-reported practice score (Section D) was computed as the average of the five behavior items, where higher scores indicated more consistent application of pain management practices. These three scores—KASRP, organizational support, and self-reported practice—were analyzed both individually and collectively to explore how knowledge, workplace support, and behaviors relate to overall competence. This approach allowed for a broader understanding of the factors influencing effective pain management among nurses.

2.8. Data analysis

Data analysis was carried out using IBM SPSS Statistics (version 25.0). Descriptive analyses—comprising frequency distributions, means, standard deviations, medians, and interquartile ranges—were used to summarize demographic characteristics, KASRP results, levels of perceived organizational support, and reported pain management behaviors. To examine the associations between knowledge, support, and practice variables, Spearman's correlation coefficients were calculated. Differences in KASRP and practice scores between binary groups were assessed using Mann–Whitney U test, where appropriate. Additionally, multiple linear regression was employed to determine significant predictors of knowledge outcomes, incorporating demographic factors and organizational support as explanatory variables. A two-tailed significance threshold of $p < 0.05$ was applied for all the statistical procedures.

3. Results

Table 1 shows that the majority were female (90.0%), with a mean age of 39.5 ± 7.1 years. Most nurses held a diploma qualification (58.3%), followed by post-RN BSc (20.8%), generic BSc (13.3%), and MSN or higher degrees (7.5%). In terms of clinical experience, 39.2% of the nurses had 5–10 years of experience, 37.5% had less than 5 years, and smaller proportions had 11–20 years (18.3%) or more than 20 years (5.0%). Nurses worked across various departments: wards (43.3%), ICUs (20.8%), emergencies (20.0%), OPDs (10.8%), and other units (5.0%). Moreover, 35.8% reported having received prior training in pain management.

Table 1. Demographic characteristics of the participants (N = 120).

Variables		Frequency (%)
Age (in years), Mean ± SD		39.53 ± 7.09
Gender	Male	12 (10.00)
	Female	108 (90.00)

Variables		Frequency (%)
Nursing qualification	Diploma	70 (58.33)
	Post RN BSc	25 (83.33)
	Generic BSc	16 (13.33)
	MSN or higher	9 (7.50)
Years of experience	< 5 years	45 (37.50)
	5-10 years	47 (39.17)
	11-20 years	22 (18.33)
	> 20 years	6 (5.00)
Department/unit	ICU	25 (20.83)
	Emergency	24 (20.00)
	Ward	52 (43.33)
	OPD	13 (10.83)
	Other	6 (5.00)
Have you received training in pain management?	Yes	43 (35.83)
	No	77 (64.17)

The average KASRP score among nurses was 27.00 (IQR = 18.00). According to the standard cutoff scores, 32.5% of the nurses reported poor knowledge, 45.0% reported moderate knowledge, and only 22.5% reported good knowledge. Perceived organizational support had a median score of 3.20 (IQR = 1.60), with a Cronbach's alpha of 0.752, indicating acceptable internal consistency. The median self-reported pain management practice score was 3.60 (IQR = 1.15), with a Cronbach's alpha of 0.705, also reflecting acceptable reliability.

Table 2. Descriptive statistics of KASRP scores, perceived organizational support, and self-reported pain management practices (N = 120).

Variables		Frequency (%)	Median (IQR)	Cronbach Value
KASRP score		-	27.00 (18.00)	-
Perceived organizational support		-	3.20 (1.60)	0.752
Self-reported pain management practice		-	3.60 (1.15)	0.705
Level of pain management knowledge and attitudes	Poor	39 (32.50)	-	-
	Moderate	54 (45.00)	-	-
	Good	27 (22.50)	-	-

Table 3 shows that there was a statistically significant positive correlation between KASRP scores and perceived organizational support for pain management (p = 0.007), suggesting that greater organizational support is associated with greater knowledge and attitudes toward pain management. However, no significant correlation was found between KASRP scores and self-reported pain management practices (p = 0.633).

Table 3. Spearman correlation of KASRP scores with organizational support and pain management practice scores (N = 120).

Independent Variables	Spearman Correlation (ρ)	*p* Value
Perceived organizational support for pain management	0.246	0.007 **
Self-reported pain management practice	0.044	0.633

* Spearman correlation (2-tailed). ** $p < 0.01$ was considered statistically significant.

Table 4 shows the results of the Mann–Whitney U test comparing male and female nurses' KASRP and self-reported practice scores. While female nurses had slightly higher

median KASRP scores (median = 27.00, IQR = 17.00) than male nurses did (median = 25.00, IQR = 17.75), the difference was not statistically significant ($p = 0.324$). Similarly, no significant sex difference was observed in pain management practice scores ($p = 0.174$), although female nurses again presented higher median values (median = 3.60, IQR = 1.20) than males did (median = 3.00, SD = 0.95).

Table 4. Comparison of the KASRP and practice scores according to sex (N = 120).

Variables	Gender	N	Median (IQR)	U Statistic	*p* Value
KASRP score	Male	12	25.00 (17.75)	535.50	0.324
	Female	108	27.00 (17.00)		
Self-reported pain management practice	Male	12	3.00 (0.95)	493.50	0.174
	Female	108	3.60 (1.20)		

[*] Mann–Whitney U test was used to compare scores between male and female nurses. [**] A p value < 0.05 was considered statistically significant.

Table 5 shows the results of a multiple linear regression analysis examining predictors of nurses' KASRP knowledge scores. The overall model was statistically significant, $F(5, 114) = 3.150$, $p = 0.011$, and accounted for 12.1% of the variance in knowledge scores ($R^2 = 0.121$). Among the predictors, perceived organizational support for pain management was the only statistically significant factor (B = 2.891, $p = 0.003$), indicating that greater perceived support is associated with greater knowledge and attitudes toward pain management. However, age, sex, nursing qualification, and years of experience were not significant predictors in this model.

Table 5. Multiple linear regression predicting KASRP knowledge scores on the basis of demographic factors and organizational support (N = 120).

Variables	Unstandardized Coefficients (B)		Standardized Coefficients	*p* Value
	B	Std. Error		
Age	0.138	0.180	0.109	0.443
Gender	4.081	2.679	0.136	0.130
Nursing qualification	-1.553	0.839	-0.167	0.067
Years of experience	-1.866	1.453	-0.180	0.202
Perceived organizational support for pain management	2.891	0.957	0.267	0.003 **

[*] Multiple linear regression was conducted to identify predictors of KASRP knowledge scores. [**] $F = 3.150$; $R^2 = 0.121$, Sig = 0.011. [***] $p < 0.05$ was considered statistically significant.

4. Discussion

The current study examined nurses' knowledge and attitudes toward pain management, their self-reported practices, and the role of perceived organizational support. The findings revealed moderate overall KASRP scores, with nearly one-third of nurses falling into the "poor" category. A positive association was found between organizational support and knowledge scores, whereas practice scores did not significantly correlate with knowledge. Gender differences were not statistically significant, and organizational support emerged as a significant predictor of KASRP scores in the regression model.

These results align with those of national and international studies reporting similar deficits in nurses' knowledge regarding pain. A recent study conducted across multiple hospitals in China reported that nurses scored an average of 40.3 ± 7.95 on the KASRP, with significant variation on the basis of training and department assignment [23]. In Pakistan, most nurses lack confidence in assessing and managing pain because of inadequate training and the absence of standardized pain protocols [24]. Comparable outcomes were observed among nurses in Cyprus, Saudi Arabia, and Egypt, where

knowledge gaps were attributed to outdated curricula and a lack of structured continuing education [25,26,27].

Interestingly, in the current study, years of experience and academic qualifications were not statistically significant predictors of knowledge, which contrasts with findings from Jordan and Ireland, where higher academic credentials were associated with improved pain attitudes and practices [28]. This discrepancy may reflect context-specific limitations in Pakistan's clinical environment, where experiential learning is often unstructured and mentorship is lacking. The disconnect between formal education and actual practice has also been highlighted in Palestinian study, where clinical workload, time constraints, and hierarchical medical systems reduce opportunities for reflective practice and pain reassessment [29,30].

Perceived organizational support stood out as the only significant positive predictor of KASRP knowledge scores. This finding reinforces previous research from the U.S. and Europe suggesting that institutional investment—through training, supervision, and the availability of pain tools—directly enhances pain management competence [31,32,33]. In contrast, environments with weak leadership and ambiguous protocols often experience knowledge stagnation despite staff experience. A recent cross-sectional study in Ethiopia also showed that supportive environments, including regular feedback and interprofessional collaboration, led to better adherence to pain protocols [34].

Despite relatively high self-reported adherence to practices such as reassessment and documentation, there was no meaningful correlation between these behaviors and knowledge scores. This finding supports the notion that practice may be influenced by routine compliance or external factors (e.g., policies or peer behavior) rather than a deep understanding. Such discrepancies have been observed in Lebanon and Oman, where nurses reported following pain protocols but lacked clarity about pharmacologic options or assessment tools [35,36]. This suggests a need to reinforce the conceptual underpinnings of pain care alongside procedural compliance.

This study has several notable strengths, including the application of a validated tool (KASRP), the integration of perceived organizational support as an innovative variable, and the use of regression analysis to identify significant predictors. Nonetheless, it is important to acknowledge certain limitations. Since the research was conducted within a single tertiary care facility, the results may not be widely generalizable. Additionally, reliance on self-reported practices could have led to social desirability bias, and the exploratory design limits the ability to draw causal conclusions. Future research should explore longitudinal or multicenter approaches, incorporate observational methods to validate reported practices, and assess the impact of structured educational interventions—such as simulations or case-based learning—on sustained knowledge improvement.

5. Conclusions

This study reveals persistent gaps in nurses' knowledge and attitudes toward pain management in a tertiary care setting in Pakistan. While nurses report adhering to practice standards, knowledge remains suboptimal. Notably, organizational support emerged as a key driver of improved knowledge, suggesting that systemic and institutional investments may yield significant improvements in patient pain outcomes. Interventions targeting workplace support, structured education, and leadership engagement should be prioritized.

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NR; supervision, NB; project administration, ZP, and MA. All authors have read and agreed to the published version of the manuscript.

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Consent to participate: Not Applicable.

Data availability: The data supporting this study's findings are available from the corresponding author, Zunaira Parveen, upon reasonable request.

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References

[1] Wu CL, Hung YL, Wang YR, Huang HM, Chang CH, Wu CC, et al. Pain prevalence in hospitalized patients at a tertiary academic medical center: exploring severe persistent pain. PLoS One. 2020;15(12):e0243574. https://doi.org/10.1371/journal.pone.0243574

[2] Mahmud R, Rahman MM, Rassel MA, Monayem FB, Sayeed SKJB, Islam MS, et al. Post-COVID-19 syndrome among symptomatic COVID-19 patients: a prospective cohort study in a tertiary care center of Bangladesh. PLoS One. 2021;16(4):e0249644. https://doi.org/10.1371/journal.pone.0249644

[3] McCabe C, Feeney A, Basa M, Eustace-Cook J, McCann M. Nurses knowledge, attitudes and education needs towards acute pain management in hospital settings: a meta-analysis. J Clin Nurs. 2023;32(15–16):4325–36. https://doi.org/10.1111/jocn.16612

[4] Brant JM, Mohr C, Coombs NC, Finn S, Wilmarth E. Nurses' knowledge and attitudes about pain: personal and professional characteristics and patient reported pain satisfaction. Pain Manag Nurs. 2017;18(4):214–23. https://doi.org/10.1016/j.pmn.2017.04.003

[5] Qamar MA, Sakellari E, Istomina N. Knowledge and attitudes towards pain among nurses. Health Sci. 2024;13(2):143–8. https://doi.org/10.35988/sm-hs.2024.070

[6] Gretarsdottir E, Zoëga S, Tómasson G, Sveinsdóttir H, Gunnarsdóttir S. Determinants of knowledge and attitudes regarding pain among nurses in a university hospital: a cross-sectional study. Pain Manag Nurs. 2017;18(3):144–52. https://doi.org/10.1016/j.pmn.2017.02.200

[7] Micah S, Barolia R, Parpio Y, Kumar S, Sharif H. Factors associated with postoperative pain among patients after cardiac surgery in the tertiary care teaching hospital of Karachi, Pakistan. Pain Res Treat. 2019;2019:9657109. https://doi.org/10.1155/2019/9657109

[8] Onianwa PO, Alonge TO, Otegbayo JA, Ike EU, Chukura FO, Are OO, et al. Pain as 5th vital sign: impact of pain assessment training program on Nigerian nurses knowledge of pain management. Int J Nurs Midwifery. 2017;9(11):129–35. https://doi.org/10.5897/ijnm2017.0283

[9] Doward LC, Gnanasakthy A, Baker MG. Patient reported outcomes: looking beyond the label claim. Health Qual Life Outcomes. 2010;8:89. https://doi.org/10.1186/1477-7525-8-89

[10] Moceri JT, Drevdahl DJ. Nurses' knowledge and attitudes toward pain in the emergency department. J Emerg Nurs. 2014;40(1):6–12. https://doi.org/10.1016/j.jen.2012.04.014

[11] Ahmed S, Bano I, Shafqat R. Awareness and attitude regarding pain management among nurses working in major hospital departments. Biol Clin Sci Res J. 2024;5(1):844. https://doi.org/10.54112/bcsrj.v2024i1.844

[12] Rababa M, Al-Sabbah S, Hayajneh AA. Nurses' perceived barriers to and facilitators of pain assessment and management in critical care patients: a systematic review. J Pain Res. 2021;14:3475–91. https://doi.org/10.2147/JPR.S332423

[13] Din SU, Saddique H, Tasneem SS. Knowledge, attitude and practice of nurses regarding post-operative pain management at the hospital. Biol Clin Sci Res J. 2024;5(1):1428. https://doi.org/10.54112/bcsrj.v2024i1.1428

[14] Mitello L, Marucci AR, Salvatore S, Onesto AS, Baglio G, Latina R. Predictors of nurses' attitudes and knowledge towards pain management. Appl Nurs Res. 2021;62:151512. https://doi.org/10.1016/j.apnr.2021.151512

[15] Nguyen AT, Dang AK, Nguyen HTT, Nguyen TX, Nguyen TN, Nguyen TTH, et al. Assessing knowledge and attitudes regarding pain management among nurses working in a geriatric hospital in Vietnam. J Multidiscip Healthc. 2021;14:799–807. https://doi.org/10.2147/JMDH.S285044

[16] Alsaqri SH. Nursing student's knowledge and attitudes toward pain management at Hail University, Saudi Arabia. Int J Adv Appl Sci. 2018;5(3):75–81. https://doi.org/10.21833/ijaas.2018.03.011

[17] Green SB. How many subjects does it take to do a regression analysis? Multivariate Behav Res. 1991;26(3):499–510. https://doi.org/10.1207/s15327906mbr2603_7

[18] Manuel Batalha L, Cristina Ferreira A, Leonor Ribeiro A, Raposo C, Dias D, Santos J, et al. Tradução, adaptação cultural e validação da versão portuguesa do instrumento "knowledge and attitudes survey regarding pain" (kasrp). Onco News. 2019;38:30-9. https://doi.org/10.31877/on.2019.38.03
[19] Al Qadire M, Al Khalaileh M. Jordanian nurses' knowledge and attitude regarding pain management. Pain Manag Nurs. 2014;15(1):220–28. https://doi.org/10.1016/j.pmn.2012.08.006
[20] Eisenberger R, Huntington R, Hutchison S, Sowa D. Perceived organizational support. J Appl Psychol. 1986;71(3):500–07. https://doi.org/10.1037/0021-9010.71.3.500
[21] Ajzen I. The theory of planned behavior. Organ Behav Hum Decis Process. 1991;50(2):179–211. https://doi.org/10.1016/0749-5978(91)90020-T
[22] Saeed J, Abdullah L. Knowledge, attitudes, and practices of pelvic floor muscle exercises among pregnant women visiting public hospitals. J Basic Clin Med Sci. 2022;1:12-20. https://doi.org/10.58398/0002.000003
[23] Ou M, Xu X, Chen Y, Yan Y, Wang K, Zhou L. Factors related to nurses' knowledge and attitudes toward pain in hospitals in low-income areas. Pain Manag Nurs. 2021;22(3):386–93. https://doi.org/10.1016/j.pmn.2020.06.009
[24] Shahzad N, Rahman AU, Ali B, Zeb N, Ullah W, Ahmad T, et al. To assess knowledge and attitude regarding pain management among nursing students in Khyber Pakhtunkhwa. Soc Sci Rev Arch. 2024;2(2):1485–90. https://doi.org/10.70670/sra.v2i2.201
[25] Dağ GS, Caglayan Payas S, Dürüst Sakallı G, Yıldız K. Evaluating the relationship between empathy, pain knowledge and attitudes among nursing students. Nurse Educ Today. 2022;111:105314. https://doi.org/10.1016/j.nedt.2022.105314
[26] Samarkandi OA. Knowledge and attitudes of nurses toward pain management. Saudi J Anaesth. 2018;12(2):220–6. https://doi.org/10.4103/sja.SJA_587_17
[27] El-Aqoul A, Obaid A, Jarrah I, Al-Rawashdeh K, Al Hroub A. Effectiveness of education program on nursing knowledge and attitude toward pain management. Asia Pac J Oncol Nurs. 2020;7(4):382–8. https://doi.org/10.4103/apjon.apjon_17_20
[28] Al Omari D, Alhabahbeh A, Subih M, Aljabery A. Pain management in the older adult: the relationship between nurses' knowledge, attitudes and nurses' practice in Ireland and Jordan. Appl Nurs Res. 2021;57:151388. https://doi.org/10.1016/j.apnr.2020.151388
[29] Sweity EM, Salahat AM, Sada AA, Aswad A, Zabin LM, Zyoud SE. Knowledge, attitude, practice and perceived barriers of nurses working in intensive care unit on pain management of critically ill patients: a cross-sectional study. BMC Nurs. 2022;21:202. https://doi.org/10.1186/s12912-022-00990-3
[30] Odunayo OF, Olalekan PR. Knowledge as predictors of nurses' attitude towards effective pain management in selected secondary hospitals in Ibadan, Oyo State, Nigeria. Afr J Health Nurs Midwifery. 2020;3(2):53–66. https://doi.org/10.5281/zenodo.3883093
[31] Lewandrowski KU, Elfar JC, Li ZM, Burkhardt BW, Lorio MP, Winkler PA, et al. The changing environment in postgraduate education in orthopedic surgery and neurosurgery and its impact on technology-driven targeted interventional and surgical pain management: perspectives from Europe, Latin America, Asia, and the United States. J Pers Med. 2023;13(5):852. https://doi.org/10.3390/jpm13050852
[32] Liu J, Zhang M, Luo J, Xie J, Chen X, Wang H, et al. Practice, knowledge, and attitude of health care providers regarding cancer pain management: a national survey. Pain Res Manag. 2021;2021:1247202. https://doi.org/10.1155/2021/1247202
[33] Lentz TA, Gonzalez-Smith J, Huber K, Goertz C, Bleser WK, Saunders R. Overcoming barriers to the implementation of integrated musculoskeletal pain management programs: a multi-stakeholder qualitative study. J Pain. 2023;24(5):860–73. https://doi.org/10.1016/j.jpain.2022.12.015
[34] Okubai T, Fessehaye S, Gebray AY, Kahsay DT. Final-semester nursing students' knowledge and attitude regarding pain management in resource-limited settings. Int J Africa Nurs Sci. 2023;18:100542. https://doi.org/10.1016/j.ijans.2023.100542
[35] Alotaibi K, Higgins I, Chan S. Nurses' knowledge and attitude toward pediatric pain management: a cross-sectional study. Pain Manag Nurs. 2019;20(2):118–25. https://doi.org/10.1016/j.pmn.2018.09.001
[36] Zaabi AA, Al-Saadi M, Alaswami H, Al-Musalami A. Assessing nurses' knowledge and attitudes towards cancer pain management in Oman. Cancers. 2023;15(15):3925. https://doi.org/10.3390/cancers15153925