Knowledge, attitudes and barriers to pain management by nurses in Iran: A systematic review

Ebrahim Khalighi1, Askar Soufinia2, Lale Solaimanizadeh3, Milad Borji4, Asma Tarjoman5, Behrouz Soltany6, Hosein Hydaryian7

ABSTRACT

Introduction: Pain is a phenomenon that may be experienced by every human being. Pain is one of the symptoms of the disease that has negative effects on patients and causes challenges in medical personnel. The aim of the present systematic review was to determine the knowledge, attitude, and pain management status in Iranian nurses.

Methodology: This is a systematic review carried out according to systematic review articles checklist (PRISMA). The search was conducted by two researchers separately. In case of inconsistency, the search was examined by a third researcher. In this study, articles that met the inclusion criteria and published between 2000 to June 2019, were included. The search process was carried out in Iranian and international databases. Data were reported in using a descriptive method using Excel 2007 software.

Result: According to result 180 articles were extracted in the initial search, of which 50 were excluded from the study, and finally 19 articles entered the data extraction phase. The extracted articles were classified into 4 dimensions of knowledge, attitude, and practice in pain management, nurses' understanding of pain management, nurses' problems in pain relief, and the extent of pain management implementation and assessment, which are described as follows.

Conclusion: Nurses' knowledge, attitude, and management regarding pain management is not in an excellent condition and many studies in Iran should include educational interventions for nurses to help improve their knowledge, attitude, and pain management.

Key words: Pain, Knowledge, Attitude, Practice, Nurse, Systematic Review

INTRODUCTION

Nursing is a profession that plays an effective role in patient care,1,2 and it is important to provide compassionate nursing care.3 Nurses cooperate well together and this can improve the health of patients.3 One of the prerequisites for such goal is to have the specialized knowledge and knowledge required in nursing. Pain control is among the factors that require specialized knowledge.4,5 Pain control is one of the tasks of nurses.6 Nurses' pain control can help improve the health of patients and it is essential to improve their knowledge and attitude.7,8 In fact, all patients are entitled to pain relief, and one of the challenges for nurses is to ensure patient comfort and relieve pain.9

Pain is one of the symptoms of the disease that has
negative effects on patients and causes challenges in medical personnel. Pain is a phenomenon that may be experienced by every human being. So that's the study Den Beuken-Van Den Beuken-Van The prevalence of pain after treatment in cancer patients was 39.3%. The pain had adverse effects on patients including poor mental health status, poor quality of life, and sleep disorders. Considering these negative effects, it is necessary to identify the factors affecting the pain management and relief.

Despite the great attention paid to the pain management program in nursing education and care programs, there are still challenges in this regard. So far, various tools have been designed to measure pain in patients or nurses and various studies have measured the knowledge and attitude of nurses and nursing students in this regard. However, the results of previous studies have provided different information. So that study showed that nursing students did not have knowledge and attitudes in pain management and assessment. Ekim, et al showed in a study that the highest score ranged between 15-65% and needed further training in this area. Al Qadire et al. also showed that nurses had a lower level of knowledge than other studies. The most common factors associated with inappropriate pain management may include nurses’ inadequate knowledge level, wrong assessment, shortage of nursing personnel, and fear of side effects of painkillers.

AIM

Considering the role of nurses in pain control and management, as well as the role of pain in patients' quality of life, it is necessary to have access to sufficient information on knowledge, attitude, and barriers to pain management in nurses. This information can provide the power for deciding necessary interventions to improve nurses’ knowledge, attitude, and barriers to pain management. Therefore, the aim of the present systematic review was to determine the knowledge, attitude, and pain management status in Iranian nurses.

METHODOLOGY

Study protocol

This is a systematic review carried out according to systematic review articles checklist (PRISMA). The search was conducted by two dominant researchers separately in the field of search. In case of inconsistency, the search was examined by a third researcher.

Search strategy

In this study, articles that met the inclusion criteria and published between 2000 to June 2019, were included. The search process was carried out in Iranian databases such as SID, Regional Information Center for Science and Technology (RICST), Mag-Iran, IranDoc, Barakat Knowledge Network System, Iranian National Library and international databases such as PubMed/Medline, Cochrane Library, Scopus, Science Direct, Web of Sciences, Embase, EBSCO, and Google Scholar. The search was performed using MESH-related English words and their Persian equivalents: "Pain", "Nurse", "Knowledge ", "Attitude ", "Understanding ", "Barriers ", "Perspective ", "Painkiller ", "Pain Severity ", "Pain control barriers ", "Pain assessment ", "Non-drug pain control ", "Iran" and the above keywords were combined using "AND" and "OR" search strategies. An example of a search strategy in Pubmed is as follows:

(Pain[Title/Abstract]) OR Knowledge[Title/Abstract]) OR Attitude[Title/Abstract]) OR Understanding[Title/Abstract]) OR Barriers[Title/Abstract]) OR Perspective[Title/Abstract]) OR Painkiller[Title/Abstract]) OR Pain Severity[Title/Abstract]) OR Pain Control barriers[Title/Abstract]) OR Pain Assessment[Title/Abstract]) OR Non-drug Pain Control[Title/Abstract]) AND Iran[Title/Abstract]) AND Nurse[Title/Abstract])

Inclusion criteria:

Assessment of knowledge, attitude, pain management methods and factors related to the research topic in nurses, availability of full-text articles.

Exclusion criteria:

Interventional studies, case-control studies, review, qualitative and intervention studies, re-publish studies

Data extraction:

A checklist including author's name, year of publication, location, sample size, method, questionnaire used, and findings was designed and used.

Statistical analysis:

Data were reported in using a descriptive method using Excel 2007 software.

RESULTS

According to Figure 1, Number 80 articles were extracted in the initial search, of which 50 were excluded from the study, and finally 19 articles entered the data extraction phase (Figure 1). The extracted articles were classified into 4 dimensions of knowledge, attitude, and practice in pain management.
Table 1: Studies data as well as the Knowledge, attitude, and practice in pain Management Entered into a systematic review

| Author (years) | City | N | Aim | Study population | questionnaire | Result |
|---------------|------|---|-----|------------------|--------------|--------|
| Mamishi et al. (2006) | Tehran | 113 | Knowledge, attitude, and practice in pain Management | Pain in cancer patients | pain assessment and pain control questionnaire and a questionnaire on the nurses’ attitude toward using different pain relief methods in cancer patients | Nurses has a moderate knowledge of and positive attitude towards pain relief in 76% and 86.6% of cases, respectively. Findings revealed that the mean knowledge score of nurses with bachelor's degree, in-service nurses, and nurses working in chemotherapy, radiotherapy, and operating rooms was higher than other nurses. However, there was no significant relationship between knowledge score and marital status, participation in retraining courses, age, work experience, and presence of cancer patient in family or close relatives. |
| Heydari et al. (2008) | Sabzevar | 35 | evaluated patients’ cardiac pain using a knowledge and attitude survey regarding pain relief | patients’ cardiac pain | knowledge and attitude survey regarding pain relief | The most commonly used drug was pethidine (36.8%). Also, there was no pain relief re-assessment in 41.1% of cases. Mean ± SD of nurses’ knowledge score was 11.25 ± 3.9 out of 20. Moreover, a total of 100% of nurses were fully aware of the importance of their role in pain assessment and its effect on pain relief, and 32 (91.4%) of them stated that non-drug methods were effective in pain relief. |
| Zakerimoghadam et al. (2011) | Tehran | 100 | knowledge of pain | nurses working in ICU | questionnaires on nursing knowledge of pain | Mean ± SD of nurses’ pain control and pain nature scores were 11.75 ± 3.41 and 9.12 ± 5.46, respectively. Moreover, nurses had high, moderate, and low knowledge of pain nature in 38%, 53%, and 9% of cases, respectively. Findings on postoperative pain control showed that nurses had high, moderate, and low levels of knowledge in 23%, 58%, and 19% of cases, respectively. There was no relationship between demographic characteristics (except for nurses’ work place and knowledge level. Also, patients were more satisfaction with nurses who had higher level of knowledge of postpartum pain control, while there was no relationship between patients’ satisfaction with nurses’ knowledge of the pain nature was |
| Noghabi et al. (2012) | Bandar Abbas | 40 | nurses and practical nurses working in the neonatal and NICU wards | using a tool including practice checklist, knowledge and attitude questions | The mean knowledge score of nurses was 10.27 with a possible score range of 4-16. With regard to relation to attitude, mean attitude score of nursing personnel was 54.22 out of 60 with scores ranging from 46 to 59. Nurses had knowledge scores above 50 about neonatal pain and a positive attitude in 36 nurse (90%). Majority of the correct answers were related to the pain effects and complications and the pain physiology dimensions, while the lowest correct answer was related to pain measurement instruments. There was no statistically significant relationship between nurses’ knowledge scores with work experience, marital status, workplace (neonatal and NICU). However, the knowledge score was higher in those with higher levels of education. |
| Shahnazi et al. (2012) | Isfahan | 90 | pain knowledge and attitude about cancer patients | questionnaire on knowledge and constructs of the health belief model (HBM) | With regard to knowledge questions, the mean ± SD of patients was 61.2 ± 16.5 with scores ranging from 30-100 and concerning the attitude dimension, Mean ± SD of patients was 63 ± 11 with scores ranging from 35-95. It was also shown that Mean ± SD of the perceived benefits, perceived barriers, perceived threat, self-efficacy, and cues to action dimensions was 67.8 ± 13.3(min=40, max=100), 46.07 ± 15.7(min=5–max=75), 43.7 ± 17.8 (min=0-max=85), 87.2 ± 16.4 (min=30-max=100), and 78.5 ± 16.8(min=25-max=100). |
Results showed that nurses have knowledge levels below 50%, 50% -70%, and more than 70% in 73 (71.6%), 23 (22.5%), and 6 (5.9%) of cases, respectively. Moreover, nurses had negative (<50%), moderate (50-70%), and positive (>70%) attitude scores in 23 (22.5%), 68 (66.7%), and 11 (10.8%) of nurse, respectively. With regard to the pain management field, nurses’ knowledge score ranged from 2 to 31 with a mean ± SD of 14.64 ± 7.32 and their attitudes score of pain management ranged from 44 to 79 with a mean ± SD of 66.71 ± 6.87.

Nurses’ Pain Management Attitude Survey (NAS) and Pain Management Principles Assessment Test (PMPAT) 10

Aflatoonian et al. (2017)9
Jiroft 102
Nurses Pain Management Attitude Survey (NAS) and Pain Management Principles Assessment Test (PMPAT)

Hossainzadegan et al. (2017)10
Urmia 114
Surgical nurses’ used questionnaires and checklists to assess surgical nurses’ knowledge, attitude, and practice in pain management

Sadeghy et al. (2016)11
Tabriz 49
Attitude pain management
cancer patients

Table 2: Studies data as well as the Nurses’ perception of pain control Entered into a systematic review

| Author(years) | City | N | Aim | Study population | questionnaire | Result |
|---------------|------|---|-----|------------------|---------------|--------|
| Moghadas et al. (2013)12 | Rasht | 113 | Nurses’ perception of pain control | nurses working in CCU | barriers to the use of methods to reduce needle-related pain | Nurses’ perception of communication was equal 3.3(0.97), activity was 3.05 (0.92), trust was equal to 3.9 (0.86), and environment was equal to 3.9 (0.93). The overall quality of pain control was 8.4 (1.68) and 3.56 (0.84) respectively. Among the domains studied, the communication domain had the highest score. |
| Karampourian et al. (2016)13 | Hamadan | - | Nurses’ perception of pain control | - | pain perception questionnaire | Findings showed that nurses had poor, moderate, and strong perception in 0 (0%), 11 (73.3%), and 4 (26.7%) of nurse, respectively. Although most patients (83.3%) reported severe pain, most nurses (53.3%) assessed their patients pain at the moderate level |
| Rad et al. (2015)14 | Rasht | 20 | Nurses’ perception of pain control | departments of surgery | Ildal, E et al’s Questionnaire | Only 20 (9.8%) of nurses chose the Strongly agree option on the question, which measured patients’ pain from 0-10 times a day. And only 66 (32.4%) of nurses completed the Strongly agree option on accepting patient statements about pain. |
Table 3: Studies data as well as the Nurses' Problems in Pain Relief Entered into a systematic review

| Author(years)                     | City     | N   | Aim                                      | Study population                                      | Result                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|----------|-----|------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Allahyari, et al. (2006)⁴⁰      | Tehran   | 30  | Nurses' Problems in Pain Relief          | pediatric wards                                        | Nurses' problems were evaluated in four dimensions: management personnel, educational, environmental-equipment, and motivational dimensions. With regard to the management personnel dimension, the most important problems included shortage of nurses' time (96.7%) and inappropriate nurse-patient ratio (93%). Regarding the educational dimension, the most frequent problems were reported to be inaccessibility of pain assessment tools in the pediatric ward (73.4%) and lack of pain education courses (70%). The most frequent problems in the environmental-equipment dimension included inadequate game and entertainment (73.3%) and inadequate pain relief equipment (63.4%). Also, nurses' inadequate satisfaction with work shifts (86.7%) and inadequate satisfaction with working hours (68.7%) in the motivational dimension were the most important problems for nurses in pain reduction. |
| Hossein et al. (2016)⁴¹         | Sabzevar | 43  | -                                        | -                                                     | Mean ± SD of the overall score of pain barriers for medical personnel was 112.33 ± 18.65                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Parvizi et al. (2008)⁴¹         | -        | 30  | nurses working in pediatric, pediatric emergency, and NICU wards | non-drug pain management methods in children using a self-report questionnaire as well as a questionnaire suggesting solutions to solve problems according to nurse's opinion | The distraction method was the most non-drug pain control method. Very few nurses (3.3%) had information about non-drug pain control methods. From the Nurses' perspective, pain relief problems included lack of equipment (93.2%), environmental problems (90%), child and parent culture problems (80%), lack of education during education (60%), lack of retraining courses (53.3%), insufficient motivation (40%), shortage of personnel (33.3%), and heavy work load (33.3%). |
| Mohebbi and et al (2014)³⁵      | Tabriz   | 50  | nurses working in the internal and surgical wards of pediatric hospitals | Questionnaire on pain control barriers and problems, and a questionnaire on the priority of problem-solving strategies | Mean ± SD of the overall score of their views on barriers to the most important barriers to proper non-drug pain management in children was 50.82 ± 6.25, and the most important problems from their perspective included long work hours, lack of time, and heavy workload, shortage of personnel, inadequate clinical experience of child care, managers' indifference, inadequate education, lack of child cooperation, inadequate ward facilities, being unaware of recent relevant research results, lack of dedicated room for invasive procedures, nurses' lack of empowerment for pain assessment and, etc. From the nurses' perspective, practical solutions also included increasing the number of nursing personnel, training the child's parents to learn and apply these methods, training personnel how to improve their child's communication skills, managers who encourage competent nurses, provision of executive facilities, methods and training of personnel on how to improve their communication skills with parents of children for participation, etc. |
| Gholami et al. (2019)³⁵         | Mashhad  | 81  | nurses working in pediatric and pediatric emergency departments | A questionnaire on nurses' problems regarding mental preparation of mother and child for pain relief | Nurses' problems in the personnel-management dimension were as follows: disproportionate nurse–patient ratio, and excessive workload, shortage of nurses' time, managers' indifference. In the educational dimension, problems were reported to be lack of skills in internships and lack of retraining courses, respectively. With regard to the environmental- equipment dimension, nursing problems included insufficient game and entertainment equipment and lack of proper environment for performing the procedures. Also, lack of support from managers and low satisfaction with work shifts were identified as nurses' problems in the motivational dimension. |
### Table 4: Studies data as well as the Implementation of pain management and assessment Entered into a systematic review

| Author(years)                  | City          | N   | Aim                                                   | Study population                                      | questionnaire                                                                 | Result                                                                                           |
|-------------------------------|---------------|-----|-------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Noghabi et al. (2012)          | Bandar Abbas  | 40  | Implementation of pain management and assessment       | -                                                      | using a tool including practice checklist, knowledge and attitude questions        | Mean scores obtained was 4.22. Also showed a very poor practice on nurse's pain assessment and measurement. None of the nurses used a pain measurement tool. |
| Bahrami et al. (2016)          |               | 50  | nurses working in open heart surgery ward              | -                                                      |                                                                                | On the adequacy of pain management, nurses stated fully adequate, adequate, and fully inadequate pain management in 5 (4.2%), 111 (94.1%), and 1 (1.6%) cases, respectively. Also, nurses regarded nurses, physicians, and both nurses and physicians responsible for monitoring patient pain in 22 (18.6%), 2 (1.7%), and 94 (79.7%) of nurses, respectively |
| Aflatoonian et al. (2017)      | Jiroft        | 102 | Nurses Pain Management Attitude Survey (NAS) and Pain Management Principles Assessment Test (PMPAT) | -                                                      |                                                                                | Showed in a study that nurses' pain management knowledge score ranges from 2 to 31 with a Mean ± SD of 14.64 ± 7.32 and their attitudes score of pain management ranges from 44 and 79 with a Mean ± SD 66.71 ± 6.87 |
| Rahimi et al. (2017)           |               | 138 | pain management and assessment tools                   | nurses working in NICUs                                |                                                                                | The mean pain management and assessment score was 59.16 ± 18.98. The frequency of items selected by nurses in this tool were as follows: 1. Nurses provided care to reduce the pain of newborns in 72.8% of cases. 2. Nurses let parents of infants relieve pain in 68.5% of cases. 3. Nurses used non-drug methods of swaddling in 66.7% of cases. 4. Neonatal pain was assessed by 62.9% of nurses at each time providing medical care. 5. Nurses used non-drug methods using sucrose solution in 61.6% of cases. 6. Nurses taught parents about symptoms of facial pain in 58.7% of cases. 7. Neonatal pain was assessed by 52.2% of nurses every 4 hours. A valid pain assessment instrument was used by 36.8% of nurses. The scores of nurses who participated in the workshops were also higher than other nurses. |
| Tatjoman et al. (2019)         | Ilam          | 45  | pain management and assessment tools                   | nurses working in the NICU                              |                                                                                | The frequency of items selected by nurses in this tool were as follows: 1- Only a small number of nurses (12.1%) Always performed care to reduce neonatal pain. 2- Sometimes option was chosen only by 31% of nurses to allow infants' parents to relieve pain. 3- Sometimes option was chosen by 60.3% of nurses to evaluate infants' pain frequency each time providing healthcare services. Neonatal pain was assessed by 31% of nurses every 4 hours 5- A valid pain assessment instrument was used only by 5.2% of nurses. |
nurses’ understanding of pain management, nurses’ problems in pain relief, and the extent of pain management implementation and assessment, which are described as follows.

The findings of Table 1 show the status of Knowledge, attitude, and practice in pain management in Iranian nurses. According to the findings of this table, there were 8 studies in this field in which knowledge and attitude about pain management were not in excellent condition.

The findings of Table 2 show the results of studies of nurses’ perceptions of pain in Iran. According to the findings, 3 studies were conducted in the Nurses of Rasht and Hamadan, which explained the perception of pain control in the findings of the table.

The findings in Table 3 showed the results of systematic reviews of Problems in Pain Relief. There were 5 articles in this field that showed that nurses’ problems were in the studied areas.

The findings in Table 4 showed the results of systematic reviews of Problems in Implementation of pain management and assessment there were 5 articles in this field that showed that nurses’ problems were in the studied areas.

DISCUSSION

Pain affects the health of patients and calls for special attention.47,48 The aim of the present systematic review was to determine the knowledge, attitude, and pain management of nurses in Iran. The extracted articles were classified into 4 dimensions of knowledge, attitude, and practice in pain management, nurses’ perception of pain control, nurses’ problems in pain relief, and frequency of pain management implementation and assessment.

The findings on the knowledge and attitude domain showed varying knowledge and attitude levels ranging from poor to high levels of knowledge and attitude; while the most common knowledge and attitude scores were at the moderate range. Previous studies on the knowledge and attitude of nurses in Jordan,49 Saudi Arabia,25 and India50 showed that most of them had poor knowledge and attitude, which was inconsistent with the results of the present study. Lui et al. showed in a study in Hong Kong that nurses had a good attitude toward pain management but their practice and attitude were different.51 Alnajar et al. revealed in a study that 51.5% of nurses had a positive attitude toward pain management in cancer patients,8 which is consistent with the present study.

The findings also showed that another dimension included nurses’ problems regarding pain management. The most important areas of nurses’ problems included management, educational, environmental-equipment, and motivational dimensions. Shoqirat showed in a qualitative study that nurses’ problems in pain management were classified in two dimensions: patient-related problems (including patient violence, significant number of companions, etc.), and emergency-related problems (including physicians' mastery of pain management and shortage of nursing personnel). Nurses also emphasized the role of environmental factors on pain management.52 In the study of in the United States, Czarnecki et al. referred to inadequate physician prescriptions and low priority of pain management as barriers to pain management in nurses.53 Pretorius also stated in a study that pain management barriers included unwillingness to prescribe pain relievers, lack of time, heavy workload, and nurses’ lack of knowledge of narcotic use,54 which is consistent with the present study.
CONCLUSION

Nurses' knowledge, attitude, and management regarding pain management is not in an excellent condition and many studies in Iran should include educational interventions for nurses to help improve their knowledge, attitude, and pain management.

Acknowledgment: Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran (Grant Number: 3008508).

Conflict of Interests: No conflict of interest was reported.

Authors contribution: All authors took part in literature search, analysis and manuscript preparation.

REFERENCES

1. Shohani M, Rasouli M, Sahebi A. The level of professional autonomy in Iranian nurses. JCDR. 2018;12(5):LC1-LC4. DOI: 10.7860/JCDR/2018/31249.11465
2. Dalvandi A, Vaisi-Raygani A, Nourozi K, Ebadi A, Rahgozari M. The importance and extent of providing compassionate nursing care from the viewpoint of patients hospitalized in educational hospitals in Kermanshah-Iran 2017. Open Access Maced J Med Sci. 2019 Mar 28;7(6):1047-52. [PubMed] DOI: 10.3889/oamjms.2019.204
3. Zamanzadeh V, Irajpour A, Valizadeh L, Shohani M. The meaning of collaboration, from the perspective of Iranian nurses: A qualitative study. ScientificWorldJournal. 2014;2014:785942. [PubMed] DOI: 10.1155/2014/785942
4. Peterson A, Berggården M, Schaller AS, Larsson B. Nurses' advocacy of clinical pain management in hospitals: a qualitative study. Pain Manag Nurs. 2019;20(2):133-9. [PubMed] DOI: 10.1016/j.pmn.2018.09.003
5. Hroch J, VanDenKerkhof EG, Sawhney M, Sears N, Gedcke-Kerr L. Knowledge and attitudes about pain management among Canadian nursing students. Pain Manag Nurs. 2019;20(4):382-9. [PubMed] DOI: 10.1016/j.pmn.2018.12.005
6. Colquhoun L, Shepherd V, Neil M. Pain management in new amputees: a nursing perspective. Br J Nurs. 2019;28(10):638-46. [PubMed] DOI: 10.12968/bjn.2019.28.10.638
7. Holtzman AL, Williams JP, Hutchinson DF, Morris CG, Yeung AR. Improving patient-reported pain during radiotherapy through nurse involvement and patient education. Am J Clin Oncol. 2018;41(10):1028-30. [PubMed] DOI: 10.1097/COC.0000000000000415
8. Alnajar MK, Darawad MW, Alshahwan SS, Samarkandi OA. Knowledge and attitudes toward Cancer pain management among nurses at oncology units. J Canc Educ. 2019;34(1):186-93. [PubMed] DOI: 10.1007/s13187-017-1285-5
9. Alfordonian MR, Rafati F. The survey of nurses, knowledge and attitude towards pain management in Jiroft University of medical sciences. JAP. 2014;8(2):14-21. [Free Full Text]
10. Fernandes MdeF, Komessu JH. Nurses' challenges in view of the pain and suffering of families of terminal patients. Rev Esc Enferm USP. 2013;47(1):250-7. [PubMed] DOI: 10.1590/S0080-62342013000100032
11. Mohammadi M, Raiegani AAV, Jalali R, Ghabadi A, Sarai N. The prevalence of low back pain among Iranian hospital nurses: a systematic review and meta-analysis. Nursing Midwifery Studies. 2019;8(1):1-6. [PubMed] DOI: 10.4103/nms.nms_46_18
12. Ganasegeran K, Abdulrahman SA, Al-Dubai SAR, Tham SW, Perumal M. Spirituality needs in chronic pain patients: a cross-sectional study in a general hospital in Malaysia. J Relig Health. 2018;1-16. [PubMed] DOI: 10.1007/s10943-018-0730-z
13. Vasigh A, Jaafarpour M, Khajavikhan J, Khani A. The effect of gabapentin plus celecoxib on pain and associated complications after laminectomy. J Clin Diagn Res. 2016;10(3):UC04-8. [PubMed] DOI: 10.7860/JCDR/2016/17923.7346
14. Soltanzadeh M, Ebad A, Pipelzadeh M, Tabatabaeei S, Dehghani FM, Vasigh A, et al. Gabapentin may relieve post-coronary artery bypass graft pain: a double blind randomized clinical trial. Iran Cardiovasc Res J. 2011;5(3):79-82. [Free Full Text]
15. Van Den Beuken-Van MH, Hochstenbach LM, Joosten EA, Tjan-Heijnen VC, Janssen DJ. Update on prevalence of pain in patients with cancer: systematic review and meta-analysis. J Pain Symptom Manage. 2016;51(6):1070-90. [PubMed] DOI: 10.1016/j.jpainsymman.2015.12.340
16. Mansfield KE, Sim J, Jordan JL, Jordan KP. A systematic review and meta-analysis of the prevalence of chronic widespread pain in the general population. Pain. 2016;157(1):55-64. [PubMed] DOI: 10.1097/j.pain.0000000000003314
17. Demyttenaere K, Bruffaerts R, Lee S, Posada-Villa J, Kovess V, Angermeyer MC, et al. Mental disorders among persons with chronic back or neck pain: results from the World Mental Health Surveys. Pain. 2007;129(3):332-42. [PubMed] DOI: 10.1016/j.pain.2007.01.022
18. Strand EB, Mengshoel AM, Sandvik L,
knowledge, attitudes and barriers pain management

Helland IB, Abraham S, Nes LS. Pain is associated with reduced quality of life and functional status in patients with myalgic encephalomyelitis/chronic fatigue syndrome. Scand J Pain. 2019;19(1):61-72. [PubMed] DOI: 10.1515/spain-2018-0095

19. Martinez-Martín P, Rizos AM, Wetmore JB, Antonini A, Odin P, Pal S, et al. Relationship of nocturnal sleep dysfunction and pain subtypes in parkinson's disease. Mov Disord Clin Pract. 2019;6(1):57-64. [PubMed] DOI: 10.1002/mdc3.12694

20. Papathanassoglou ED, Hadjibalassi M, Miliadous P, Lambrinou E, Papastavrou E, Paikousis L, et al. Effects of an integrative nursing intervention on pain in critically ill patients: a pilot clinical trial. Am J Crit Care. 2018;27(3):172-85. [PubMed] DOI: 10.4037/ajcc2018970

21. Drake G, de C Williams AC. Nursing education interventions for managing acute pain in hospital settings: a systematic review of clinical outcomes and teaching methods. Pain Manag Nurs. 2017;18(1):3-15. [PubMed] DOI: 10.1016/j.pmnn.2016.11.001

22. Bastami M, Azadi A, Mayel M. The use of ice pack for pain associated with arterial punctures. J Clin Diagn Res. 2015Aug;9(8):JC07-9. [PubMed] DOI: 10.7860/JCDR/2015/12657.6336

23. Duke G, Haas BK, Yarbrough S, Northam S. Pain management knowledge and attitudes of baccalaureate nursing students and faculty. Pain Manag Nurs. 2013;14(1):11-9. [PubMed] DOI: 10.1016/j.pmnn.2010.03.006

24. Shohani M, Tavan H. The validity and reliability of the constructs of pain management-measuring tool for incurable patients. Iran Red Crescent Med J. 2018;20(9):e62353. DOI: 10.5812/icrcmj.62353.

25. 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. [PubMed] DOI: 10.1016/j.pmnn.2018.09.001

26. Dale CM, Prendergast V, Gélinas C, Rose L. Validation of The Critical-care Pain Observation Tool (CPOT) for the detection of oral-pharyngeal pain in critically ill adults. Crit Care Med. 2018;46:334-8. [PubMed] DOI: 10.1016/j.ccrj.2018.09.024

27. Ekim A, Ocakci AF. Knowledge and attitudes regarding pain management of pediatric nurses in Turkey. Pain Manag Nurs. 2013;14(4):e262-e7. [PubMed] DOI: 10.1016/j.pmnn.2012.02.004

28. Al Qadire M, Al Khalaileh M. Jordanian nurses knowledge and attitude regarding pain management. Pain Manag Nurs. 2014;15(1):220-8. DOI: 10.1016/j.pmnn.2012.08.006

29. Mercadante S. Why are our patients still suffering pain? Nature Clin Oncol. 2007;4(3):138-9.

30. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Ann Intern Med. 2009;151(4):264-9. [PubMed] DOI: 10.7326/0003-4819-151-4-20090818-00135

31. Mamishi N, Behroozishad F, Mohagheghi M, Eftekhar Z, Shahabi Z. The study of nurses’ knowledge and attitudes regarding cancer pain management. Hayat. 2006;12(2):23-32. [Free Full Text]

32. Heydari A, Najjar L, Estagi Z, Altmann DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Ann Intern Med. 2009;151(4):264-9. [PubMed] DOI: 10.7326/0003-4819-151-4-20090818-00135

33. Zakerimoghadam M, Shariat E, Asadi M, Mirtaheri Z, Azadi A, et al. Nurse attitude-related barriers to effective control of cancer pain among Iranian nurses. Asian Pac J Cancer Prev. 2016;17(4):2141-4. [PubMed] DOI: 10.7314/APJCP2016.17.4.2141

34. Noghabi A, Soudagar S, Nazari O. Comparison of nurses' and patients’ perception on quality of pain control in patients under coronary artery bypass graft. J Health Care. 2013;15(4):19-29. [Free Full Text]

35. Hosseinzadegan F, Jasemi M, Shahbaz AM, Fizollah-zadeh H, Jabarzadeh F, Azadi A, et al. Nurse attitude-related barriers to effective control of cancer pain among Iranian nurses. Asian Pac J Cancer Prev. 2016;17(4):2141-4. [PubMed] DOI: 10.7314/APJCP2016.17.4.2141

36. Sadeghy A, Mohamadian R, Rahmani A, Fizollah-zadeh H, Jabarzadeh F, Azadi A, et al. Nurse attitude-related barriers to effective control of cancer pain among Iranian nurses. Asian Pac J Cancer Prev. 2016;17(4):2141-4. [PubMed] DOI: 10.7314/APJCP2016.17.4.2141

37. Moghadam N, Baghai M, Kazemnejad E, Momeni M, SedghiSabet M. Comparison of the nurse’s and patient’s perception on quality of pain control in patients under coronary artery bypass graft. J Health Care. 2013;15(4):19-29. [Free Full Text]

38. Karampourian A, Imani B, Mousavi-Bahar SH, Mahzad R. Comparison of nurses, patient and surgeon perception of pain and its relationship with analgesics at post open prostatectomy. J Res Urol. 2016;1(1):1-7. [Free Full Text]

39. Rad TK, Sayad S, Baghai M, Hossini SM, Salahshorian A, Zare M. A study of patients and nurses’ perception of the quality of pain management in the patients undergoing surgery in the departments of surgery of rasht hospitals in 2013. Glob J Health Sci. 2015;7(7):55. [PubMed] DOI: 10.5539/gjhs.v7n7p55

40. Allahyari I, Alhany F. Evaluation of the nurses' problems in using methods to reduce injection pain in children. Iranian J Pediatrics. 2006;16(2):183-8.

41. Hosseini SH, Azizi M. Analysis of “family institution” advocacy policies in islamic republic of iran. Woman and Family Studies. 2016;4(1):7-34. [Free Full Text]

42. Parvizi F, Alhani F, Aghebati N. The nurses' problems in applying non-pharmacological pain management for children. IJNPI. 2016;4(1):7-34. [Free Full Text]

43. Gholami S, Tayebi V, Hamedi A, Ghorbanzadeh M. Problems of nurses in using the methods of psychological preparation of the child and the mother before the painful procedures. J Urmia
44. Bahrami M, Saadati M, Saadati A, Barati M. A study of patients and nurses’ perception of pain management after cardiac surgery. JHC. 2016;18(3):179-90. [Free Full Text]

45. Rahimi O, Godarzi Z, Khalessi N, Soleimani F, Mohamadi N, Shamshiri A. The implementation of pain management and assessment in neonatal intensive care units of teaching hospitals affiliated to Tehran University of Medical Sciences. JBUMS. 2017;19(6):28-34. [Free Full Text]

46. Tarjoman A, Vasigh A, Safari S, Borji M. Pain management in neonatal intensive care units: A cross sectional study of neonatal nurses in Ilam City. J Neonatal Nurs. 2019;25(3):136-8. DOI: 10.1016/j.jnn.2018.08.006

47. Enteshari-Moghaddam A, Isazadehfar K, Habibzadeh A, Hemmati M. Efficacy of methotrexate on pain severity reduction and improvement of quality of life in patients with moderate to severe knee osteoarthritis. Anesth Pain Med. 2019;9(3):e89990. [PubMed] DOI: 10.5812/apam.89990

48. Rostami K, Sharif F, Zarshenas L, Ebadi A, Farbood A. Health needs in patients suffering from chronic back pain: a qualitative study. Anesth Pain Med. 2019;9(2):e85244. [PubMed] DOI: 10.5812/apam.85244

49. Khalil H, Mashaqbeh M. Areas of knowledge deficit and misconceptions regarding pain among jordanian nurses. Pain Manag Nurse. 2019;20(6):649-55. [PubMed] DOI: 10.1016/j.pmn.2019.02.010

50. Dongara AR, Shah SN, Nimbalkar SM, Phatak AG, Nimbalkar AS. Knowledge of and attitudes regarding postoperative pain among the pediatric cardiac nursing staff: An Indian experience. Pain Manag Nurse. 2015;16(3):314-20. [PubMed] DOI: 10.1016/j.pmn.2014.08.009

51. Lui LY, So WK, Fong DY. Knowledge and attitudes regarding pain management among nurses in Hong Kong medical units. J Clin Nurs. 2008;17(15):2014-21. [PubMed] DOI: 10.1111/j.1365-2702.2007.02183.x

52. Shoqirat N, Mahasneh D, Singh C, AL-Sagarat AY, Habashneh S. Barriers to nursing pain management in the emergency department: A qualitative study. Int J Nurs Pract. 2019;25(5):e12760. [PubMed] DOI: 10.1111/ijn.12760

53. Czarnecki ML, Guastello A, Turner HN, Wrona SK, Hainsworth KR. Barriers to pediatric pain management: a brief report of results from a multisite study. Pain Manag Nurse. 2019;20(4):305-8. [PubMed] DOI: 10.1016/j.pmn.2019.01.008

54. Pretorius A, Searle J, Marshall B. Barriers and enablers to emergency department nurses’ management of patients’ pain. Pain Manag Nurse. 2015;16(3):372-9. [PubMed] DOI: 10.1016/j.pmn.2014.08.015