



# Effect of Training on Knowledge and Attitude of Nurses Toward Pain Management: A Quasi-Experimental Study

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## Abstract

**Background:** Pain is an interesting sign of life. It is a wonderful phenomenon that often serves to save man's life. Pain management is one of the most important aspects of patient care and nurses play a crucial role in this regard. Therefore, it is very important that caregivers have sufficient knowledge of pain management.

**Objectives:** The aim of this study was to survey the effect of training on knowledge and attitude toward pain management among nurses working in hospitals affiliated to Jiroft University of Medical Sciences in south of Iran.

**Methods:** This was a quasi-experimental study.

**Results:** A significant difference was found between knowledge and attitude scores obtained before and after training on pain management ( $P = 0.000$ ). Scores showed a significant increase after training in terms of knowledge and attitude toward pain management among nurses.

**Conclusions:** Results showed that training had a significant effect on nurses' knowledge and attitude toward pain management; therefore, it is necessary for them to receive continuous training on how to manage pain.

**Keywords:** Education, Knowledge, Attitude, Nurses, Pain Management

## 1. Background

Pain is an interesting sign of life and a wonderful phenomenon that contributes to saving humans' lives. It presents a warning of the harmfulness of external factors and causes patients to seek help and support from other people (1).

The International Pain Association defines pain as a hidden sensation and an emotional experience relative to acute or potential tissue damage. This definition emphasizes pain as a biopsychological experience and an indication of tissue damage (2). Pain is also associated with many psychological symptoms such as depression, mood and anxiety disorders, and it affects patients' overall quality of life (3).

Pain is the most common reason individuals visit a health care professional. Globally, inadequately managed pain is the source of major human and economic costs for patients, their families and the society (4). Effective pain relief not only provides physical comfort for patients, but also it improves their quality of life and facilitates more rapid return to everyday life, reduces the duration of hospital stay and ultimately cuts the cost of healthcare (5, 6).

Pain affects the lives of approximately 100 million Americans, and pain treatments and the associated healthcare services cost well over several hundred billion dollars annually (7). The American Pain Society declared pain as the fifth most essential vital sign, because if pain were the means to assess the other vital signs, then pain relief treatment would be faster (8).

Department of Health and Human Services (HHS) has endorsed efforts to improve understanding of pain management through research, prevention, and improved treatment strategies (9).

Every patient has the right to be free of pain. Accordingly, major challenges in nursing are maintaining comfort and managing pain, and pain control has always been the responsibility of nurses. Among the many tasks in nursing, few are more important than pain relief (10).

A caregiver's knowledge about the physiological effects of pain is very important (11). Nurses in wards such as internal, surgery, oncology, outpatient and home care units are all faced with patients suffering from pain, it is therefore necessary that nurses have the sufficient knowledge and skills to assess pain and its effect on patients, ad-

minister different methods of pain relief and assess their effectiveness (12). A person's attitude is an indication of that person's beliefs and opinions, and attitude is reflected in actions, behaviors and emotions (11). There are various factors that affect a nurse's behavior and performance in relation to different caring issues such as attention to patients' pain and society's beliefs, values, customs and culture in general, and these reflect a nurse's attitude (13). Therefore, with understanding nurses' attitude to pain, it should be possible to determine factors that affect change in attitude.

Studies have also shown that most nurses underestimate the intensity of a patient's pain and they lack adequate knowledge of pain relief. Also, as analgesics can be addictive, nurses sometimes refuse to administer analgesics to patients (14, 15). Moreover, recent studies have shown that if nurses have sufficient knowledge about pain management, they will achieve more effective results in controlling and alleviating pain in their patients (16).

## 2. Objectives

Therefore, regarding the importance of pain control and patient's rights, we decided to design and perform this study to investigate the effect of training on knowledge and attitude toward pain management among practicing nurses.

## 3. Methods

### 3.1. Design and Sampling

The study was conducted during February to March 2016 in hospitals affiliated to Jiroft University of Medical Sciences in south of Iran. Ethical approval was obtained from the Ethics Committee of Jiroft University of Medical Sciences. A quasi-experimental design was adopted, and the subjects were selected through the census sampling method.

### 3.2. Intervention

The study population constituted nurses working in hospitals affiliated to Jiroft University of Medical Sciences. Initially, all nurses were asked to go to a website for continuous education and enroll on a free, one-day workshop from 20 to 23 of February 2016, and the workshop was held on February 28. Of 162 practicing nurses, 86 registered in the workshop. This workshop was about pain management and covered various subjects such as the concept of pain, pain physiology, methods of pain assessment and alleviation and drugs and their side effects. These subjects were presented by faculty members of Jiroft University of

Medical Sciences. At the beginning of the workshop, all the nurses were given a questionnaire to evaluate their knowledge and attitude toward pain assessment. All the questionnaires received a specific code. The participants were asked to complete the questionnaires for a second time following the workshop. The participants signed a written informed consent to participate in the study.

### 3.3. Instruments

The instruments used in this study were the nurses' attitude survey (NAS), the pain management principles assessment test (PMPAT) and a demographic checklist.

### 3.4. Nurses' Attitude Survey

The NAS, created by McMillan et al. (17), is a 25-item instrument rated using a four-point Likert-type scale to assess attitudes toward pain management, for example: (1) Distraction and diversion can decrease patients' pain level, (2) lack of pain expression does not mean lack of pain, and (3) continuous assessment of pain and medication effectiveness is necessary for good pain management. Responses ranged from strongly disagree to strongly agree, with raw scores varying from 1 to 4 for each item. The higher the score, the more positive the attitudes held by the respondents.

Internal consistency of this scale was established using Cronbach's alpha ( $r = 0.70$ ). Validity was demonstrated after it was pre- and post-tested among nursing students (with a significant difference of  $t = 6.88$ ,  $P < 0.01$ ) (17).

### 3.5. Pain Management Principles Assessment Test

The PMPAT is a 31-item multiple-choice test with four response choices per question. The questionnaire has been designed to test pain management knowledge. Scores for the survey range from 0 to 31, or 0% to 100%, with higher scores meaning more questions were answered correctly. The questionnaire evaluates knowledge about the concept of pain, pain assessment, physiology of pain and pharmacology of pain. Each correct answer is given one score (18). The tool was designed based on a blueprint from previous research studies attesting to its content validity. Its validity was also found to be significantly high based on the pre- to post-test scores ( $t = 6.76$ ,  $P < 0.01$ ). Reliability was also found to be significantly high ( $r = 0.84$ ,  $P = 0.00$ ) (17).

### 3.6. Demographic Checklist

Each participant was asked to complete a demographic checklist. The form included items on age, gender, marital status, educational level, job, duration of employment and previous training on pain management.

In order to translate the English version of NAS and PMPAT into Farsi, the standard forward-backward method was applied. Translation of the items and the response categories was independently performed by six professional translators and then temporary versions were provided. Later, they were back translated into English and after a careful cultural adaptation, the final versions were provided. The validity of the questionnaires was assessed through a content validity discussion. Statisticians, physicians and nurses reviewed the contents of the questionnaires. To reassess the reliability of the translated questionnaires, alpha coefficients of internal consistency were used. The alpha coefficients for the questionnaires were 0.86.

### 3.7. Sample Size

The samples were selected through the census sampling method.

### 3.8. Data Analysis

Data analysis was performed by SPSS version 19. Descriptive statistics such as mean and standard deviation were used to describe demographic characteristics and knowledge and attitude to pain scores. Paired *t*-test was used to compare the effect of training before and after participation in the workshop. Also, inferential statistics such as Pearson's correlation coefficient were used to evaluate the relationship between the level of knowledge and attitude, and their relationship with demographic characteristics was evaluated by *t*-test and ANOVA. *P* value less than 0.05 was considered significant.

## 4. Results

This was a quasi-experimental study of 86 participants. Thirteen nurses were excluded from the study due to incomplete questionnaires, and 73 nurses were considered in data analysis. The mean age of the participants was  $33.36 \pm 7.44$  years (range: 22 to 48 years; [Table 1](#)). The *t*-test was used to determine the relationship between gender and knowledge and attitude scores, the results of which showed no significance relationship. Also, ANOVA test did not reflect a significant association between marital status, job experience, service department, and other demographic variables and scores of knowledge and attitude of nurses towards pain management.

[Table 2](#) shows the frequency and percentage of knowledge scores before and after training. [Table 3](#) shows the frequency and percentage of nurses' correct responses to pain knowledge questions before and after training.

**Table 1.** Demographic Information of the Participants (N = 73)

Demographic Information	Frequency (%)
<b>Gender</b>	
Female	57 (78)
Male	16 (22)
<b>Marital status</b>	
Married	49 (67)
Unmarried	24 (33)
<b>Educational degree</b>	
Bachelor	61 (84)
Master	12 (16)
<b>Job position</b>	
Nurse	49 (67)
Head-nurse	12 (16)
Supervisor	12 (16)
<b>Employment length</b>	
Under 3 years	19 (26)
4-11 years	42 (57)
12-19 years	12 (16)
<b>Previous training</b>	
Yes	11 (15)
No	62 (85)

**Table 2.** Frequency and Percentage of Pain Knowledge Scores Before and After Training (N = 73)

Knowledge Score	Frequency (%)
<b>Before training</b>	
More than 70%	2 (3)
50% -70%	15 (20)
Less than 50%	56 (77)
<b>After training</b>	
More than 70%	49 (67)
50% -70%	19 (26)
Less than 50%	5 (7)

Paired *t*-test revealed a significant difference in scores of knowledge and attitude to pain management before and after training ( $P = 0.000$ ). The scores of knowledge and attitude of nurses to pain management showed a considerable increase after training ([Table 4](#) shows comparison of mean scores of knowledge and attitude of nurses towards pain management before and after training).

**Table 3.** Frequency and Percentage of Nurses' Correct Responses to Pain Knowledge Questions Before and After Training (N = 73)

Pain Knowledge Questions	Before Training, No. (%)	After Training, No. (%)
<b>Knowledge Content</b>		
Patient most reliable judge of pain	71 (97)	73 (100)
Definition of tolerance	69 (94)	73 (100)
An example of distraction	28 (38)	73 (100)
Patient in control over pain management	24 (79)	72 (98)
Nurse should call physician when pain increases on maximum dose	20 (27)	70 (96)
Use of combination analgesics	18 (24)	68 (93)
Cancer patients who suffer from pain	17 (23)	66 (70)
Cancer patients with pain	11 (15)	57 (78)
Physicians and nurses under medicate	10 (14)	53 (72)
Nurse should not base pain administration on objective assessment	7 (10)	53 (72)
Goal of pain management	7 (10)	49 (67)
Occurrence of addiction less than 1%	27 (37)	67 (92)
<b>Physiology of Pain</b>		
Mechanism action of opioid	22 (30)	66 (90)
Opiate receptors	18 (24)	64 (88)
Level of analgesics	16 (22)	58 (80)
Symptoms of chronic pain	12 (16)	56 (77)
Symptoms of acute pain	8 (11)	55 (76)
Gate control theory	6 (8)	56(77)
C fibers of nerves	18 (24)	58(80)
Symptoms of chronic pain	16 (22)	55(76)
<b>Pharmacology of Pain</b>		
Pain due to decrease in analgesic	8 (11)	53(72)
Disadvantage of meperidine	6 (8)	51(70)
Best method to achieve steady state of analgesic	6 (8)	53(72)
Drug with longest duration of action	4 (5)	56(77)
Preferred route of administration	17 (8)	67(92)
<b>Cutaneous Stimulation</b>		
Example of cutaneous stimulation	17 (8)	53 (72)
Cutaneous stimulation as a method of pain relief of any intensity	9 (12)	50 (68)
Cutaneous stimulation for any type of pain	9 (12)	48 (66)

**Table 4.** Comparison of Mean Scores of Nurses' Knowledge and Attitude Towards Pain Management Before and After Training (N = 73)

Variable	Before Training <sup>a</sup>	After Training <sup>a</sup>	P Values of Paired t-Test
Knowledge	11.095 ± 4.48	22.00 ± 4.52	0.000
Attitude	65.0548 ± 6.56	69.75 ± 6.10	0.000

<sup>a</sup> Values are expressed as mean ± SD.

## 5. Discussion

Results showed that almost 76.7% of the nurses had little information on pain management before attending the workshop, which is in line with the findings of previous studies. In a study performed in Turkey entitled "investigating the knowledge and attitude of nurses in oncology and non-oncology wards", results showed that nurses had insufficient knowledge of pain management, therefore implementing a pain management training program

was suggested for the nurses (19).

Rafati et al. (20) in a retrospective study investigated pain assessment and pain management. The results showed that a high percentage of nurses failed to assess patients' pain and that they had inadequate knowledge of pain management. LaLande in University of South (21) reported that oncology-certified nurses scored significantly higher on the PMPAT than did non-certified oncology nurses.

Many studies have shown that despite the availability of effective analgesics, pain management is insufficient and many patients are still suffering from slight to severe pain (22). Research has also demonstrated that most nurses underestimate the intensity of the pain experienced by their patients and fail to understand its severity. Also, nurses' knowledge of methods of pain relief has often been reported as inadequate and nurses have often refused to administer analgesics because such drugs can be addictive (14, 15).

Results have also shown that pain management workshops have been very effective in increasing knowledge and promoting nurses' attitude to pain management; knowledge scores increased from 2.7% to 67.2% after training. The results of a quasi-experimental study by Al Qadire and Al Khalailah (23) in Jordan entitled "investigating the effect of training of knowledge and attitude of nurses" showed a significant difference in knowledge and attitude scores before and after training. In other studies performed in 2016 and 2014, it was found that pain management training was very effective in increasing nurses' knowledge (18, 24).

In our study, attitudes to pain management were significantly different before and after participation in the workshop, and post-training, the nurses had a more positive attitude toward pain management. As nurses' knowledge increases, nurses' attitude to pain management is also subject to change. Harry (2006) proposed that a negative attitude toward assessment tools presents an obstacle to pain control. Also, Zhang et al. (25) in a study carried out in China showed that a pain education program could have a positive effect on nurses' pain knowledge, attitudes and pain assessment practices. Moreover, another previous study reveal that if nurses are sufficiently aware of pain management, they will be more effective in pain control and alleviation of patients' suffering (16).

Aziato and Adejumo (26) in a study entitled "determination of nurses' knowledge and obstacles in pain management in Ghana" revealed that nurses lacked adequate knowledge and positive attitude in relation to pain management and suggested absence of training courses and lack of supervision in pain assessment and management as the main reasons for this problem.

Mamishi et al. (13) in a study entitled "investigating the knowledge and attitude of nurses in pain alleviation in cancer patients" found that nurses had moderate level of knowledge regarding pain management. Review of numerous evidence-based research projects shows that nurses continue to score poorly on knowledge and attitude assessments and surveys (27-30). The small sample size was the most important limitation of this study.

## 5.1. Conclusions

Nurses' level of knowledge and attitude was insufficient in this study, and training was effective in promoting knowledge and attitude of nurses towards pain management. Since pain management is a patient's right, the provision of educational workshops and training courses on pain, pain assessment, pain alleviation methods and pain pharmacology and physiology is essential for all practicing nurses. Moreover, it may be necessary to revise the educational curriculum for nursing students, and a course on pain, pain assessment, pain alleviation methods and pain pharmacology and physiology should be added to the curriculum.

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## Footnotes

**Authors' Contribution:** Fatemeh Mashayekhi developed the original idea and the protocol, abstracted and analyzed data, wrote the manuscript, and is guarantor. Ali Kamali contributed to the development of the protocol, abstracted data, and prepared the manuscript.

**Conflict of Interests:** The authors have no conflict of interests to declare.

**Ethical Considerations:** Ethical approval was obtained from the Ethics Committee of Jiroft University of Medical Sciences.

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**Patient Consent:** Participants signed a written informed consent to participate in the study.

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