Effect of a Nursing In-Service Education Program on Nurses' Knowledge and Attitudes towards Pain Management in a Governmental Hospital in the United Arab Emirates: Experimental Random Assignment Study

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Keywords

Pain management program · In-service education · Attitude · Knowledge · United Arab Emirates

Abstract

Background: Pain is the most common symptom, which is often experienced in acute illnesses and is one of the symptoms that patients feel apprehensive about. Undertaking pain management aims to prevent negative physiological and psychological outcomes. Inadequate knowledge about pain and its characteristics is a common barrier to effective pain management. Evidence shows that if nurses have adequate knowledge and a positive attitude towards pain, it may lead to more effective pain management. **Objectives:** The main goal of this study is to assess the effect of nursing in-service education program on nurses' knowledge and attitudes concerning pain management in one of the governmental hospitals in Dubai, United Arab Emirates. **Methodology:** This study has a quantitative-experimental, random assignment design with a pre-test/post-test approach used in one of the governmental hospitals in Dubai, United Arab Emirates. The study was carried out between February and April 2019. The sample of this study consisted of 200 partici-

pants selected randomly from the units in the hospital by simple randomization through the software SPSS version 20. The experimental group received the pain management program (PMP) over 5 h. The participants were exposed to a pre-test and after receiving the PMP, they were administered the post-test, while in the control group the pre-test and the post-test were carried out without intervention. **Result:** The paired *t* test was used to find the mean difference between pre- and post-intervention. The findings of the experimental group revealed that the mean score on the Knowledge and Attitudes Survey Regarding Pain (KASRP) increased after the intervention from 61.36 (SD 11.60) to 69.94 (SD 7.74) with a mean difference of 8.58 (*t*(99) = -5.97, *p* < 0.05), while in the control group the mean score on the KASRP slightly decreased following the test (mean ± SD, 60.99 ± 11.53%) compared to the pre-test (mean ± SD, 61.00 ± 11.60%) with a mean difference of 0.01 (*t*(99) = 1.41, *p* > 0.05). **Conclusion and Recommendation:** In-service education PMP proved to be effective. Pain knowledge and attitudes were improved after the educational session. Nurses in the experimental group scored higher in the post-test but still did not reach the passing score of 75%. Moreover, the knowledge scores increased significantly after implementing the PMP. As concluded from the current study, well-structured in-service ed-

education sessions are able to improve knowledge and show an impact on attitude changes. Since the PMP proved to be effective, it is recommended to be implemented in daily nursing practice.

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Introduction

Pain is the most common symptom, which is often experienced in acute illnesses and is one of the symptoms that patients feel apprehensive about [1]. Undertaking pain management aims to prevent negative physiological and psychological outcomes [2]. Since pain assessment is considered the responsibility of nurses, nurses are required to utilize the appropriate assessment measures and intervene accordingly [3]. Untreated pain may cause multisystem complications and the progression of chronic unrelenting pain leading to impaired body functioning and disturbed quality of life and well-being [4]. Many patients experience significant pain during hospitalization. For example, more than 30% of ICU patients suffer from pain at rest, and more than 50% complain about pain during routine care, such as endotracheal suctioning, wound care and changing [5].

A previous study was conducted by the same authors to assess the situation in the United Arab Emirates in two governmental hospitals. The result revealed that the staff nurses in both hospitals have poor knowledge and a non-standard attitude. The mean score on the Knowledge and Attitudes Survey Regarding Pain (KASRP) was 45%, significantly below the passing score of 80% [6].

A handful of international studies have examined nurse knowledge of pain management showing that nurses from Turkey (35%) [7], Italy (55%) [8], Iran (66.6%) [9], Saudi Arabia (42%) [10], Canada (41%) [11], and the

United States (72%) [12] have inadequate knowledge and attitudes regarding pain as measured by the Nurses Knowledge and Attitudes Survey Regarding Pain (NKARSP) (Table 1).

Relief of pain is an important nursing goal epitomized in the profession's philosophy [13]. Nurses are in charge of regular assessment of pain, medication administration and monitoring of the patients' responses [14].

Inadequate knowledge about pain and its characteristics is a common barrier to effective pain management [15]. Ineffective pain management skills by nurses and nurses' disinclination to embrace all dimensions regarding pain is problematic [16]. For instance, nurses were observed to have insufficient knowledge about opioid analgesic drugs [17]. They may develop different perspectives towards pain; thereby, they may subjectively judge the patients' pain level based on personal opinions or rituals [17].

Although pain control for hospitalized patients is considered a central concern for all health care providers, crucial barriers are presented by nurses' lack of knowledge, insufficient assessment skills, negative attitudes and reluctance to act as the patients' advocate [18] and misconceptions [14]. Inadequate pain management reflects deficient knowledge on the nurses' part. Adequate pain management knowledge aids nurses to support their practices of pain assessment, medication administration and monitoring [19]. The beliefs and attitudes of nurses may influence patient care [20]. Evidence shows that if nurses have adequate knowledge and a positive attitude towards pain, it may lead to more effective pain management [21]. Nurses who believe in the significance of patient pain relief implement more pain management activities [22], and nurses with a positive attitude have the aim and motivation to provide care for a patient with pain [20]. Previous studies have shown that in-service pain ed-

Table 1. Summary of international scores of the Pain Knowledge and Attitudes Survey

Authors	Country	Year	Sample size	Mean score
Brunier et al. [11]	Canada	1995	514	41%
Bernardi et al. [8]	Italy	2007	287	55%
Yildirim et al. [7]	Turkey	2008	608	35%
Shahriary et al. [9]	Iran	2015	58	66.6%
Eid et al. [10]	Saudi Arabia	2014	593	42%
Brant et al. [12]	United States	2017	217 RNs	72%
Al-Atiyyat et al. [6]	United Arab Emirates	2019	115	45%

RNs, registered nurses.

education programs improved nurses' knowledge and attitudes toward pain management [23]. Nevertheless, levels of education and the culture of nursing practice may vary within and between countries.

There are no studies in the United Arab Emirates discussing the effect of nursing in-service education pain management program (PMP) on the nurses' knowledge and attitudes. Thus, this is the first study to highlight this issue. The main goal of this study is to assess the effect of the nursing in-service education program on the nurses' knowledge and attitudes concerning pain management in one of the governmental hospitals in Dubai, United Arab Emirates.

Methodology

Setting, Design, Sample

This study is a quantitative, experimental, simple random sampling design with a pre-test/post-test approach used in one of the governmental hospitals in Dubai, United Arab Emirates. The study was carried out between February and April 2019. The sample size was calculated based on group comparisons using a two-sample *t* test. Based on an effect size of 0.25, 95% power, and significance of $p < 0.05$, a total sample of 132 was determined. The participants who were selected for this study were nurses with more than 1 year of experience in dealing with or directly caring for patients, and who can fully understand and speak the English language.

Study Procedure

An in-service education program with theoretical sessions was conducted by the in-service education members in the classroom of the hospital. The principal investigator had developed a 5-h PMP. The pain education included: (1) introduction to pain man-

agement, covering pain definitions, pathophysiology, and the current trends in pain management; (2) pain assessment; and (3) pharmacological and nonpharmacological pain interventions. The participants were divided into two groups: an experimental and a control group. Sample distribution was done by using simple random sampling through SPSS. The experimental group received the PMP, which lasted 5 h, over two sessions to ensure the hospital unit workflow as did the control group. The participants of the experimental group were exposed to a pre-test and after having received the PMP, they were administered the post-test, while the control group received the pre-test and post-test without intervention (Fig. 1). The PMP was submitted to the accreditation committee for review of the content and for grant of the CPD (continuing professional development) hours. Several educational strategies were followed, such as educational materials, videos and case-based discussion. Teaching materials included standardized pain assessment materials and books. Approval has been obtained under the accreditation No. 0095\19.

Data collection was carried out using a structured, self-administered instrument (KASRP) consisting of 39 questions, 22 of which being true/false questions, 15 multiple-choice questions, and 2 scenarios. The tool was identified as discriminating between levels of expertise. It was developed by Betty Ferrell in 1987. She has been contacted by email to get permission to use and translate the tool. The tool is available on the website: <http://prc.coh.org> [25]. The validity and reliability of the tool were checked by the author.

Data Analysis

Data were checked for completeness and accuracy prior to data coding and entry. Data analysis has been conducted by using SPSS 20 software. The data have been tested at a 5% level of significance and $p < 0.05$ was considered significant. Descriptive statistics were used to find the frequency, percentage, and mean and standard deviation. In addition, a two-sample *t* test was carried out to compare the knowledge score between the two groups (pre-score and post-score), and the sample size was calculated based on comparing the post-score between the experimental and the control groups.

Fig. 1. Study design and procedure.

Table 2. Participants' demographical data

Gender	
Male	20 (10%)
Female	180 (90%)
Nationality	
Arab	15 (7.5%)
Filipino	85 (42.5%)
Indian	92 (46%)
Other	8 (4%)
Level of education	
Diploma	14 (7%)
BSN	170 (85%)
Master	16 (8%)
Marital status	
Single	64 (32%)
Married	134 (67%)
Other	2 (1%)
Previous pain course	
Yes	50 (33%)
No	150 (67%)
Continuous variables (mean $\pm$ SD)	
Age, years	35.43 $\pm$ 8.134
Experience, years	11.88 $\pm$ 6.289

Ethical Consideration

The ethical consideration was taken up to standard. The study was reviewed by the scientific research committee. Institutional Review Board approval (Ref. No. DSREC-06/2018_07) had been obtained prior to data collection. In order to start data collection, the questionnaire and consent form were given to the participants who met the inclusion criteria. An information sheet was attached to the questionnaire explaining the purpose of the study. The nurses assured that confidentiality and privacy of the answers are granted. No names, phone numbers and identification are required.

Results

Demographical Data

The sample consisted of 200 participants; 10% of the sample were male and 90% female. Among the participants, 67% were married, 32% single, and 1% others. In terms of the nationality, 46% of the respondents were Indians, 42.5% Filipino, 7.5% Arabs, and 4% others.

The study reveals that the majority of the participants have a bachelor's degree (85%), 8% have a master's degree, and 7% are diploma holders. Regarding education related to pain management, 62.5% had received training, while 37.5% had never attended any sessions related to pain management. The mean age ($\pm$ SD) of the participants was 35.43 $\pm$ 8.134 years, while the mean experience was 11.88 $\pm$ 6.289 years (Table 2).

Statistical Analysis

Regarding between-group comparisons, no significant difference existed between the pre-test scores for the experimental and the control groups ($p = 0.30$). However, a significant difference existed in the post-test scores ($p < 0.01$), with the experimental group scoring significantly higher than the control group. Both the experimental and control groups were analyzed separately. When the experimental group was analyzed, all respondents increased their knowledge on the KASRP at the post-test. On average, participants answered 61.36% of the survey items correctly before the intervention and 69.94% after the intervention. The findings revealed that the mean score on the KASRP increased after intervention from 61.36 $\pm$ 11.60 (mean $\pm$ SD) to 69.94 $\pm$ 7.74, with a mean difference of 8.58 ($t(99) = -5.97$, $p < 0.05$).

In terms of the control group, all respondents maintained the same knowledge and even less on the KASRP at the post-test. The findings revealed that the mean score on the KASRP slightly decreased at the post-test (mean $\pm$ SD, 60.99 $\pm$ 11.53%) compared to the pre-test (61.00 $\pm$ 11.60%) with a mean difference of 0.01 ($F(99) = 1.41$, $p > 0.05$; Table 3).

Discussion

The findings of the current study showed a significant improvement in the mean scores of nurses regarding pain management following participation in the PMP. It provides important information about the effect of an education program on nurses' knowledge and attitudes regarding pain management. Allard et al. [26] and Bennett et al. [27] found that one session of educational exposure was not inferior to multiple episodes of education.

It is worth noting that the baseline knowledge in the United Arab Emirates (61.36%) was better compared to Canada (41%) [11], Italy (55%) [8], and Turkey (35%) [7]. On the other hand, the situation was better in the United States (72 %) [12] and in Iran (66.6%) [9]. Comparing the situation in the gulf area, the baseline knowledge was better compared to a study conducted in Saudi Arabia (42%) [10].

A handful of studies conducted earlier confirmed the findings of the current study and that inadequate knowledge and a nonstandard attitude toward pain could be enhanced by an in-service education PMP [19, 28].

Post-test scores reported here are more similar to those detected in a nationwide survey, which concludes that nurses who received the PMP significantly increased both in mean score and pain assessment practice [29]. When

Table 3. Proportion of correct answers and mean pre-test and post-test KASRP scores by using the paired *t* test

	Experimental group		Control group	
	pre-test	post-test	pre-test	post-test
Mean $\pm$ SD	61.36 $\pm$ 11.60	69.94 $\pm$ 7.74	61.00 $\pm$ 11.60	60.99 $\pm$ 11.53
N	100	100	100	100
Standard error of the mean	1.16	0.77	1.16	1.15
Mean difference		-8.58		-0.01
<i>t</i>		5.97		1.41
df		99		99
Significance (<i>p</i> value)		<0.05		>0.05

compared to the results reported by Ferrell et al. [30] using the same instrument (NKAS), this study found average pre-test scores (61.36 vs. 58.4%) and the improvement of post-test score was significant ($p < 0.05$) in both groups. The same conclusion was noticed in a study conducted by Machira et al. [31] that nurses' knowledge and attitudes towards pain, besides their ability to assess pain, were shifted from negative to positive competency after receiving pain education. A quasi-experimental study with control groups confirmed that after the educational intervention, the registered nurses' knowledge and attitudes regarding cancer pain management could be effectively changed [32]. Similarly, evidence was found that nurses' knowledge and attitudes regarding pain management have improved after introducing a PMP [33].

When comparing the scores in the control group, there was no significant difference. Hence, the result of the pre-test was $61.00 \pm 11.60\%$ (mean $\pm$ SD) compared to $60.99 \pm 11.53\%$ for the post-test ($p > 0.05$). Sharif et al. [34] observed that there is no significant improvement in staff knowledge 2 weeks after intervention. Tse and Ho [35] found, upon completion of the PMP, that the scores for pharmacological knowledge remained low, while Machira et al. [31] report a significant difference in the NKAS pre-test and post-test score among the participants in the experimental group. No significant difference was noticed between post-test and follow-up among the participants in the control group.

An improper PMP in the staff nurses' educational curriculum or even their hospital setting can attribute to inadequate knowledge and a nonstandard attitude. Knowledge translation of educational interventions targeting registered nurses can often, but not always, improve patients' quality of life [36]. Therefore, knowledge, skills and attitudes regarding pain control after a PMP should be used and utilized to perform actions with a full under-

standing of pain assessment and management to improve the quality of life among hospitalized patients. Knowledge must not only be acquired but also remembered, retained and utilized.

The limitations of the current study are acknowledged. Lack of staff and unit workload prevented them from participating in the current study. In addition, the sample was restrained to one governmental hospital in the United Arab Emirates, which may not be generalized to other health care sectors. Another limitation that was considered was the possibility of guessing when answering the true/false and multiple-choice questions, which could have affected the participants' score. Face-to-face interviews can be used to avoid such a risk.

Conclusion and Recommendation

In-service education PMP proved to be effective. Pain knowledge and attitudes were improved after the educational session. Nurses in the experimental group were scored higher in the post-test but still did not reach the passing score of 75%. However, the knowledge scores increased significantly after implementing the PMP. As concluded from the current study, well-structured in-service education sessions are able to improve knowledge and show an impact on attitude changes. The authors will suggest including the PMP as an essential session of a general orientation program for newly hired staff. In addition, continuous staff evaluation and pain management competency should be taken into consideration. An ongoing need exists for more effective evidence-based education programs in pain management. Interactive teaching strategies, such as on-the-job training, improvisational learning, and case studies, should be tested for their influence on pain knowledge and attitudes and patient outcomes.

Since the PMP proved to be effective, it is recommended to be implemented in the daily nursing practice. The authors of the current study conducted a previous study to address the knowledge and attitude in their hospital. Since the results have shown poor knowledge and attitude, an educational session was conducted by the in-service education department to improve the challenges. The third project of the authors will be to assess the impact of the pain education program on the patients' quality of life.

Acknowledgment

The authors would like to thank the participants who dedicated their time to enroll in our study.

Statement of Ethics

Ethical approval was obtained from the Dubai Scientific Research Ethics Committee in Dubai Health Authority (DHA) prior to data collection.

Disclosure Statement

The authors declare that they do not have conflicts of interest. All authors read and approved the submitted version. All authors confirm that the manuscript is their own original work.

Funding Sources

This study was not funded by any organization.

Author Contributions

N.A.S.: The principle investigator, corresponding author and data analyst.

R.J.: Lecturer, data collector and data entry.

N.A.: Co-author and proofreading.

F.C.: Manuscript revision, completing and follow-up of the ethical approval with the Scientific Research Dubai Committee.

A.J.: Lecturer, data collector and data entry.

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