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Effectiveness of an Educational Program on Nurse's Knowledge and Practices Regarding Pain Management for Orthopedic Wards Patients in Baghdad Teaching Hospitals.

[1] Alaa M. Abdul-Hamid, [2] Hussein H. Atiyah

Abstract

Background: Quazi-experimental study was carried out at the orthopedic wards in AL-Wasity Teaching Hospital, and Ghazi AL-Hariri Martyr Hospital for Surgical Specialties. Objectives: the study aim to assess nurses knowledge and practices regarding pain management for orthopedic wards patients in Baghdad teaching hospitals, assess effectiveness of an educational program on nurses knowledge and practices regarding pain management for orthopedic wards patients in Baghdad teaching hospitals, and find out the relationships between nurses knowledge and practices, and their socio-demographic characteristics (age, gender, level of education, years of employments in nursing, years of experience in orthopedic wards, and participation in training session). Methodology: data collected through the application of a pre-test/ post-test approach for the study group and control group through using of structured questionnaire and checklist. Data collection was done at two times: baseline data (before any intervention was provided to the study group) and 21 days after giving the educational program (in the study group). The period of the study was from 16th December 2019 to 6thApril 2020. A non - probability purposive sample was randomly selected from nurses who were working in orthopedic wards. The sample divided into two groups (20) nurses considered as study group, and another (20) nurses considered as control group. The study group was exposed to an educational program, while the control group was not exposed to the program. Descriptive statistical analysis procedure by using SPSS version 23 (frequency, percentage and mean of score and standard deviation) and inferential analysis procedure (person correlation coefficient and t-test and p-value) were used to analysis the data. Results: the results of this study shows that there is a highly significant differences related to nurses' knowledge and practices regarding pain management for orthopedic wards patients; between pre and posttest in the study group, whereas there is a minor differences between pre and posttest in the control group. Conclusion: Nurses' knowledge and practices regarding pain management for orthopedic wards patients has been improved after application of the educational program in the study group, which confirmed the effectiveness of the delivered program toward improving knowledge and practices regarding pain management for orthopedic wards patients, the study concluded that there is a significant association between nurses knowledge and practices and their socio-demographic characteristics in term of level of education and years of experience in orthopedic wards. Recommendation: The researcher recommended the necessity of continuing applying this program to a broader sample.

Keywrods*:Pain Management, Orthopedic, Educational Program, Pharmacological Pain Management, Non-Pharmacological Pain Management*

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[1] Adult Nursing Department, College of Nursing/University of Baghdad
E-Mail: alaaazawee1993@gmail.com
[2] Adult Nursing Department, College of Nursing/University of Baghdad
E-Mail: husseinatia@conursing.uobaghdad.edu.iq

INTRODUCTION

The international association for the study of pain (IASP) defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage", pain is a multilevel phenomenon that comprises physiological and psychosocial characteristics. Orthopedic pain can be extreme due to the type of surgical procedure (Sikawa, 2018). Due to trauma, surgery, postoperative fixation, passive position and extremities exercises, patients are experiencing postoperative pain. Furthermore, more than 80% of patients experienced acute postoperative pain, and about 75% reported that the severity was moderate, severe pain is one of the most common complaints in orthopedic patients after surgery; though, the pain is generally undermanaged (Cui et al., 2018).

Joint or musculoskeletal pain is common among orthopedic patients. However, in the postoperative pain assessment for orthopedic patients, pain intensity was determined to be moderate to severe in those patients (Büyükyılmaz 2014). Nurses are the most important personnel in the assessment and management of pain because they spend more time with patients, they are involved in identification of those in pain, continuous assessment of pain, offer treatment options, documentation and monitoring (Shakya & Shakya, 2016).

After the pain assessment for effective pain management, both the pharmacological and non-pharmacological management must be used combine. Non-pharmacological measure (behavior therapy, relaxation technique, back massage, cold/hot application, etc.) is very important in orthopedic pain as well as pharmacological treatments (Büyükyılmaz, 2014). Balancing comfort and patient safety following acute musculoskeletal injury is possible when using a true multimodal approach including cognitive, physical, and pharmacological strategies (Hsu, et al., 2019).

The pharmacological management is the use of medications and non-pharmacological (comfort) intervension that comprise the alternative therapy and technological therapies and multimodal techniques (Sikawa, 2018). Barbosa et al., (2014) mentioned that systematic assessments and the use of specific scales to measure pain can led to adequate care and the reduction in the pain intensity.

Wulff (2012) stated that the aim of optimum pain management is viewed as the human right, as recommended in many studies the patients have the right to expect complete pain relief. The study also explained the factors that influencing orthopedic pain management such as patient perspectives, pre-operative counseling, nursing communication, and patients age.

Mota et al., (2019) declared that for mild pain relief, non-pharmacological interventions can be used only; in contrast, for moderate and severe pain conditions, it is suggested that non-pharmacological used in combination with pharmacological interventions. The study also mentioned that there is many intervention to relief pain such as, transcutaneous electrical nerve stimulation (TENS), acupoint stimulation, which obstructs the nociceptive signal and brings an analgesic effects, and active warming which is usually used in patients with acute conditions such as fractures.

Alsaraireh and Eshah (2019) in a study that collected data regarding pain management from patients who were on skin traction for more than 48 hours and were waiting for internal fixation surgery revealed that there is lack of studies interest to assess level and quality of pain management for orthopedic patient with fracture who receive skin traction as a temporary management before internal fixation surgery who experienced pain as a result of the primary injury besides the inflammatory responses.

Rafati (2016) recommended that successful pain management depends on health care professional's collaboration in assessment and management of pain. Therefore, decrease suffering and led to earlier mobilization, reduce hospital stay, increased patient's satisfaction and costs. Bilik, Savci and Damara (2018) mentioned that nurses play an important role in pain assessment and management in orthopedic patients. Nurses are the health professionals accountable for the management of patient's pain by diagnosing the pain, determining and implementing non-pharmacological interventions, planning analgesics treatment, teaching strategies for pain management and evaluating the effectiveness of these measures. Though, nurses observations and experiences play a role in the selection of analgesics, non-pharmacological measures and narcotic agents.

Khaled (2016) argue that nurses must be knowledgeable in all domain of pain management and the evidence based strategies underpinning these practices. Ineffective pain management leads to great suffering and may increase morbidity and mortality, effective pain management depends on skills, knowledge, and attitude of the health care professional HCP. Another study by Nuseir, Kassab and Almomani (2016) recommended that education and training of HCPs improves their skills which reflects positively on the patient outcomes.

IMPORTANCE OF THE STUDY

Musculoskeletal disorders encompass more than 150 diagnoses that affect the locomotors system that consist of muscles, bones, joints and associated tissues for example tendons and ligaments, as itemized in the International Classification of Diseases, they range from those that arise suddenly and are acute condition, such as fractures, sprains and strains; to chronic conditions associated with persistent pain and disability. The prevalence and impact of musculoskeletal conditions and other diseases that cause musculoskeletal disorders is expected to rise as the global population ages, they are typically characterized by pain, usually chronic pain (WHO, 2019).

Menlah et al., (2018) stated that there are reports of lack of patient assessment, poor documentation, and incorrect use of analgesics as challenges to pain management by nurses worldwide. Another study by Germossa, Sjetne & Hellesø (2018) argue that nurses are responsible for regular pain assessment, medication administration, and monitoring of the patients responses. These responsibilities require an understanding of the nature of pain in relation to a patients clinical state. inadequate pain management reflects nurses inadequate knowledge about pain, therefore, adequate pain knowledge helps nurses to underpin their practices of pain assessment, medication administration, and monitoring.

STATEMENT OF THE STUDY

Effectiveness of an Educational Program on Nurse's Knowledge and Practices Regarding Pain Management for Orthopedic Wards Patients in Baghdad Teaching Hospitals.

OBJECTIVES OF THE STUDY

1-Assess nurses knowledge and practices regarding pain management for orthopedic wards patients in Baghdad teaching hospitals.

2-The assess effectiveness of an educational program on nurses knowledge and practices regarding pain management for orthopedic wards patients in Baghdad teaching hospitals.

3-Find out the relationships between nurses knowledge and practices, and their socio-

HYPOTHESIS OF THE STUDY

It has been hypothesized that the study findings would reveal:

HO_1 There is significant differences in the level of knowledge and practices of nurses on pain management for orthopedic wards patients after the implementation of an educational program.

HO_2 There is significant association between pretest and post-test knowledge and practice of nurses on pain management for orthopedic wards patients with selected demographical variables.

MATERIALS AND METHODS

A quasi- experimental design was used in the current study with the application of a pre-test/ post-test approach for the study group and control group after implementation of educational program. Data collection was done at two times: baseline data (before any intervention was provided to the study group) and 21 days after giving the educational program (in the study group). The period of the study was 16th December 2019 to 6th April 2020.

SETTING OF THE STUDY

The study was conducted at orthopedic wards in AL-Wasity Teaching Hospital, and Ghazi AL-Hariri Martyr Hospital for Surgical Specialties.

THE SAMPLE OF THE STUDY

A non - probability purposive sample was randomly selected from (40) nurses who were working in orthopedic wards. The sample divided into two groups (20) nurses considered as study group, and another (20) nurses considered as control group. The study group was exposed to an educational program, but the control group was not.

INSTRUMENT OF THE STUDY

To evaluate the effectiveness of the educational program on nurse's knowledge and practices before and after implementation of the program, and used as a mean of data collection, a self-administered questionnaire was developed to assess the knowledge; and checklist to evaluate practices it was constructed through the review of related literatures and previous studies. The questionnaire consisted of three parts:

Orthopedic wards, participation in training session regarding orthopedic, and participation in training session regarding pain management.

Part II: Knowledge nurses regarding pain management for orthopedic wards patients:

The second part of the questionnaire consists of (35) items, (25 multiple choices questions and 10 true and false questions) which are:

A-Nurses knowledge regarding pain assessment.

B-Nurses knowledge regarding pharmacological pain management.

C-Nurses knowledge regarding non-pharmacological.

Part III: Nurses practices regarding pain management for orthopedic wards patients:

The third part of the questionnaire consists of (32) items divided into two main domains which are:

A. Observational checklist for nursing practices regarding pharmacological pain management, consist of (22) items.

B. Observational checklist for nursing practices regarding non- pharmacological pain management, consist of (10) items.

These items are rated according to Likert scale; always applying (3), sometimes applying (2), never applying (1), the level of scale which is scored as a total of three practices of event is observed for each respondent, three correct practices out of the three trails are valued as (3) always applied; (2) sometimes applied practices (applied in one or two observation), (1) never applied practices. The time practices checklist of each nurse for each observation took about 20-30 minutes.

VALIDITY OF THE INSTRUMENT

The content validity the study instrument was determined by the panel of (23) experts who had more than ten years' experience in their field. who are faculty members from college of nursing and surgeons. The experts were asked to review the questionnaire for content with clarity. Some changes were employed according to their suggestions and valuable comments.

RELIABILITY OF THE INSTRUMENT

STATISTICAL METHODS

Descriptive statistical analysis procedure by using SPSS version 23 (frequency, percentage and mean of score and standard deviation) and inferential analysis procedure (person correlation coefficient and t-test and p-value) were used to analysis the data

RESULTS OF THE STUDY

Table (1): Distribution of the study samples (study and control) according to the demographical Data.

Variables	Groups	Study group		Control group	
		Freq.	%	Freq.	%
Age Groups	20-25	7	35.0	8	40.0
	26-30	3	15.0	4	20.0
	31-35	3	15.0	2	10.0
	36-40	5	25.0	4	20.0
	41-45	2	10.0	2	10.0
	Total	**20**	**100.0**	**20**	**100.0**
Gender	Male	9	45.0	10	50.0
	Female	11	55.0	10	50.0
	Total	**20**	**100.0**	**20**	**100.0**
Marital Status	Married	10	50.0	11	55.0
	Single	9	45.0	8	40.0
	divorces	1	5.0	1	5.0
	Total	**20**	**100.0**	**20**	**100.0**
Educational Levels	Nursing high school	10	50.0	10	50.0
	Diploma in nursing	6	30.0	7	35.0
	Bachelor's in nursing	4	20.0	3	15.0
	Total	**20**	**100.0**	**20**	**100.0**

Freq. = frequency, % = percentages

Table (1) displays the frequency counts for selected variables. As mentioned above, the two groups (study versus control) were equal in size (20) participants for each of them. Most of the participants in the study group are in the (21–25) years-old age groups (n =7; 35.0%), and (n=8;40.0%), in the control group. Most of the participants in study group according to their gender is female (n= 11; 55.0 %), while the number in the control group is equal according to their gender (n= 10; 50.0 %) male and (n=10,50%). Most of the participants in both groups are married (n = 10; 50.0 %) In study group, and (n=11, 55.0%) in control group, while the single participants in the study group are (n=9,45.0%) and (n=8,40.0%) in the control group. As well the divorces participants in both groups (study and control), are equal (n=1,5.0%)

Most of the participants in the both groups are graduated from nursing high school (n=10; 50.0), followed by those graduated from institute of nursing (n = 6; 30.0 %) in the study group, and those who graduated from nursing college (n = 4; 20.0 %) in the study group. While, the same proportion in the control group, the most of them are followed by graduated from nursing institute (n = 7; 35.0 %), and those who graduated from nursing college (n = 3; 15.0 %). These findings would suggest that the non- randomization process that provide an acceptable level of equality between the groups.

Table (2): Distribution of the study samples (study and Control) according to their years of employments/experience and training courses.

Variable	Groups	Study group		Control group	
		Freq.	%	Freq.	%
Years of employments in nursing	1 -5	11	55.0	11	55.0
	6 to 10	3	15.0	2	10.0
	11 to 15	3	15.0	3	15.0
	16 to 20	2	10.0	3	15.0
	21 to 25	1	5.0	1	5.0
	Total	**20**	**100.0**	**20**	**100.0**
Years of experience in orthopedic wards	Less than 5	17	85.0	16	80.0
	6 to 10	2	10.0	3	15.0
	11 to 15	1	5.0	1	5.0
	Total	**20**	**100**	**20**	**100**
Participation in training courses regarding orthopedic	Yes	8	40.0	7	35.0
	No	12	60.0	13	65.0
	Total	**20**	**100.0**	**20**	**100.0**
Participation in training courses regarding pain management	Yes	5	25.0	4	20.0
	No	15	75.0	16	80.0
	Total	**20**	**100.0**	**20**	**100.0**

Freq. = frequency, % = percentages,

Table (2) shows that the general years of employment in nursing in the both groups ranged 1-5 years are (n = 11; 55.0 %) respectively, followed by those who have 6 - 10 years (n = 3; 15.0 %) in the study group, and who have 11-15 years (n = 3; 15.0 %) respectively. And who have 16-20 years (n=2,10.0%) in the study group, and who have (21-25) years (n=1,5.00%) respectively. However in the control group nearly the same proportion in the study group that ranging from 5-10 years (n=2,10.0%), followed by those who have 16-20 years (n= 3; 15.0%) . Also this table shows that the years of experience at orthopedic wards in the study group ranged from less than 5 years are (n = 17; 85.0 %), followed by those who have 6-10 years (n = 2; 10.0 %), and who have 11-15 years (n = 1; 5.0 %) respectively. While in the in the control group almost the same proportion in the study group that ranging from less than 5 years are (n = 16; 80.0 %), followed by those who have 6-10 years (n = 3; 15.0 %), and who have 11-15 years (n = 1; 5.0 %) respectively. Most of Participants have no training courses regarding orthopedic in the study group (n=12; 60.0%) and control group (n= 13; 65.0%). Most the participants in both groups (study and control) reported that they had no specific training courses regarding pain management in the study group(n=15,75.0%), and (n=16,80.0%) in the control group.

Table (3): Comparison significance of nurses' knowledge related to nurses' knowledge regarding overall domains.

Main Domains of Nurses' Knowledge	Study Group		t test	P value at 0.05	Control Group		t test	P value at 0.05
	Pre	Post			Pre	Post		
	Mean	Mean			Mean	Mean		
Nurses knowledge regarding pain assessment	1.18	1.80	20.14	0.00	1.22	1.26	1.61	0.06
Nurses knowledge regarding pharmacological management	1.18	1.77	14.42	0.00	1.23	1.22	0.19	0.42
Nurses knowledge regarding non pharmacological management	1.13	1.74	14.44	0.00	1.18	1.24	1.39	0.08
Overall Domains	**1.16**	**1.77**	**25.23**	**0.00 (HS)**	**1.21**	**1.24**	**1.56**	**0.09 (NS)**

***At p < 0.05; HS= Highly Significant; NS= Not Significant; Sig.= Significance.**

Table (3): shows that there is a highly significant difference between pre & post-test in the study group, while there is trivial difference between pre & post-test in the control group related to nurses' knowledge.

Table (4): Comparison significance of nurses' practices related to nurses' practices regarding overall domains.

Main Domains of Nurses' practices	Study Group		t test	P value at 0.05	Control Group		t test	P value at 0.05
	Pre	Post			Pre	Post		
	RS%	RS%			RS%	RS%		
Nurses practices regarding pharmacological pain management	43.86	87.19	18.92	0.00	45.22	44.16	0.25	0.39
Nurses practices regarding non-pharmacological pain management	36.83	87.50	17.38	0.00	38.66	39.50	0.16	0.43

Overall Domains	**40.34**	**87.34**	**13.35**	**0.00 (HS)**	**41.94**	**41.83**	**0.02**	**0.49 (NS)**

***At p < 0.05; HS= Highly Significant; NS= Not Significant; MS= Mean Score; SD= standard deviation; Sig.= Significance.**

As shown in table (4), there is no significant difference between both groups (study and control) at pre-test. Participants' practices in the study group have increased significantly at the post-test score; at p < 0.01. While there is no improvement in participants' practices concerning these items at post-test in the control group.

Table (5): Association between Nurses' Socio-Demographic Characteristics and their overall knowledge and practices.

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Age	-0.002	0.003	-0.069	-0.659	0.512
Gender	-4.021	2.282	-0.299	1.762	0.088
Marital status	-0.006	0.018	-0.014	-0.145	0.731
Educational level	2.769	1.429	0.225	6.965	**0.001**
Years of experience in nursing	0.666	0.014	0.207	1.518	0.133
Years of experience in orthopedic	2.634	0.339	0.788	7.126	**0.000**
Participation in training sessions regarding orthopedic	-2.990	2.847	-0.246	1.050	0.301
Participation in training sessions regarding pain assessment	-0.009	0.018	-0.020	-0.507	0.614

B= unstandardized coefficients; Std. Error= standard errors; Beta= standardized coefficients; t= t-statistics; Sig. = significance

Table (5) shows that; there is association between nurses' knowledge and practices, with their socio-demographical characteristics, in the educational level (at p value = 0.001), and years of experience at orthopedic wards (at p value = 0.000). Furthermore, there is no association between nurses' knowledge and practices, with their other socio-demographic characteristics (age, gender, marital status, years of experience in nursing; and training sessions).

DISCUSSION OF THE STUDY RESULTS

5.1. Part I: Discussion of the Socio-demographic characteristics, years of employment in nursing, years of experience in orthopedic wards, and training courses of the sample, in addition to its association with participants knowledge and practices

1.Age groups

Study findings revealed that most of the participants in the study group are in the range (20–25) years-old age; (n =7; 35.0%) in the study group, and (n=8;40.0%) in the control group. There is no significant association between nurse's knowledge and practices with their age (at p-value 0.512).

These findings supported through study done by Atiyah (2018) which confirmed that the majority of nurse's age in both the study and control groups was less than 40 years with percentage of (40.9%) in study group and (45.5%) in the control group, and the study showed that there was no significant association between nurse's knowledge and age.

2.Gender

The current study find out that most of the participants in the study group according to their gender is female (n= 11; 55.0 %), while the number in the control group is equal according to their gender (n= 10; 50.0 %) male and (n=10,50%) female. There are no significant relationship between nurse's knowledge and practices with their gender (at p-value 0.088).

The results supported in a study by Al-Ganmi (2013) which mentioned that the highest proportions (58.0%) of nurses participated in the study were female. Abas and Mohammed (2012) results disagree with these findings which had shown that the majority of the study samples were males (87.5%) and the remaining were females. Besides findings agree with the current study in that there is no significant relationship between participants knowledge and their socio-demographical characteristics variables.

3.Marital status

Most of the participants in both groups are married (n = 10; 50.0 %) in study group, and (n=11, 55.0%) in control group, while the single participants in the study group are (n=9,45.0%) and (n=8,40.0%) in the control group. As well the divorces participants in both groups (study and control), are equal (n=1,5.0%). There are no significant relationship between nurses' knowledge and practices with their marital status (at p-value 0.731).

Bakey (2012) agree with the findings which declared that in regard to the participants marital status, the majority of the sample were married and they accounted for (66.7%) of the whole sample, and disagree with the study in that the result has showed that there has been a significant relationship between marital status and nurse's practices. The results totally agree with the results obtained in Abid, Majeed and Mohammed (2018) stated that the majority of nurses 104(61.2%) of whole study sample were married, and there are no significant relationship concerning participants scores and their socio-demographic characteristics.

4.Educational level

Most of the participants in the both groups are graduated from nursing high school (n=10; 50.0), followed by those graduated from institute of nursing (n = 6; 30.0 %) in the study group, and those who graduated from nursing college (n = 4; 20.0 %) in the study group. While, the same proportion in the control group, the most of them are followed by graduated from nursing institute (n = 7; 35.0 %), and those who graduated from nursing college (n = 3; 15.0 %). There are high significant differences between nurses' knowledge with their level of education (at p-value 0.001).

A study by Atiyah, Khudhur and Hasan (2012) agree totally with the current study which declared that most participants (52.7%) were secondary nursing school graduate, even though the study indicated that there is strong positive relationship between level of education with participants practices as general.

This may stress the need to encourage nurses of high education level to work in orthopedic wards. Hence, it contributes to better patient outcomes (The researcher).

5.Years of employment in nursing

The general years of employment in nursing with respect in the both groups ranged 1-5 years are (n = 11; 55.0 %) respectively, followed by those who have 6 - 10 years (n = 3; 15.0 %) in the study group, and who have 11-15 years (n = 3; 15.0 %) respectively. And who have 16-20 years (n=2,10.0%) in the study group, and who have (21-25) years (n=1,5.00%) respectively. However in the control group nearly the same proportion in the study group that ranging from 5-10 years (n=2,10.0%), followed by those who have 16-20 years (n= 3; 15.0%). There are no statistical differences between nurses' knowledge and practices with their years of employments in nursing (at p-value 0.133).

The results supported by results obtained in Abbas (2014) which declared that (n=36; 51.4 %) of study participants are (1-5) years were employment in nursing. Furthermore, agree with Bader and Kadhim (2012) in that there is a no significant relationship between nurses practices and their years of employment in nursing.

6.Years of experience in orthopedic wards

The years of experience at orthopedic wards with respect in the study group ranged from less than 5 years are (n = 17; 85.0 %), followed by those who have 6-10 years (n = 2; 10.0 %), and who have 11-15 years (n = 1; 5.0 %)

respectively. While in the in the control group almost the same proportion in the study group that ranging from less than 5 years are (n = 16; 80.0 %), followed by those who have 6-10 years (n = 3; 15.0 %), and who have 11-15 years (n = 1; 5.0 %) respectively. There are highly significance in the association between nurses years of experience in orthopedic wards with their knowledge and practices (at p-value 0.000).

The results supported by the results obtained in Bader and Khadim (2012) which mentioned that (n=21; 53.8 %) of study participants have 1-5 years of experience in orthopedic wards, and disagree with the study in that there is a no significant relationship between nurses practices and their years of experience in orthopedic ward. Al-Tameemi and Khudur (2017) agree with the results which stated that there are significant relationship between nurse's knowledge and their specific years of experience (at p value = 0.000).

As a result of lacking of background knowledge and experience, nurses may insufficiently care for patients, with all respect to these range of few years of experience in orthopedic wards among nurses participating in the study gives indication that continually many nurses were moved from these wards, which have a negative consequences on the quality of care provided to the patients regarding pain management. This is why it is permanently recommended that nursing managers must reduce the staff nurses movements in-hospital and from orthopedic wards, as well as maintain those with more and great years of experience within the same wards (The researcher).

7.Participation in training courses regarding orthopedic

Most of Participants have no training courses regarding orthopedic in the study group (n=12; 60.0%) and control group (n= 13; 65.0%). Hence, the study did not find significant statistical differences between nurses' knowledge and practices with their participation in training courses regarding orthopedic (at p-value 0.301).

The results are supported by results obtained in Atiyah, Khudhur and Hasan (2012), as well in Jaddoua, Mohammed and Abbas (2013) which stated that the majority of nurses did not have training sessions in specified wards. Furthermore, the study disagree with the results in that there has been a significant relationship between participation in training sessions and nurses' knowledge.

The scarcity of availability of training courses concerning orthopedic for nurses who work in orthopedic wards directed toward increasing it whether inside or outside Iraq (The researcher).

8.Participation in training courses regarding pain management.

Most the participants in both groups (study and control) reported that they had no specific training courses regarding pain management in the study group(n=15,75.0%), and (n=16,80.0%) in the control group. Hence, the study did not find significant statistical differences between nurses' knowledge and practices with their participation in training courses regarding pain management (at p-value 0.614).

The results supported by findings found in Al-Attar and Majeed (2015) which indicated that in relation to training courses, (36.7%) of nurses in the study group not participated in specified training courses and (46.7%) of nurses in the control groups participated in (1-3) session. Moreover, there is no significant association between study and control groups with training courses.

Lack of training session regarding pain management may contributes to poor knowledge and practices of staff nurses.

5.2. Part II: Discussion of the educational program effectiveness on nurse's knowledge and practices.

1.Comparison significance of participants knowledge pre and post implementation of the program between study and control group regarding overall domains.

Most of participants in the study group have a weak level of knowledge in the pre-test, whereas the level of knowledge for most of the participants in the study group in the post-test stage has improved to a good level. In the control group, the majorities have a weak level of knowledge in the pre-test stage, A slight difference in the mean knowledge for participants in the control group at the post-test score which is due to the lack of educational program provided to them unlike the study group. There is no significant difference between both groups (study and control) at pre-test. Consequently, there are differences in the mean of the study group between the pre and post-test, at $p < 0.00$ which reveal that there are highly improvement in participants' knowledge at the post-test.

The results supported by Hussein and Al- Ani (2015) and Majeed and Al-Attar (2015) which indicated that the knowledge scoring in posttest were greater in study than control group after program application, showed significant improvement in posttest compared with control group.

2.Comparison significance of participants practices pre and post implementation of the program between study and control group regarding overall domains.

There is a highly significant difference between pre and post-test in the study group, while there is slight significant difference between pre and post-test in the control group. There is no significant difference between both groups (study and control) at pre-test. Participants' practices in the study group have increased significantly at the post-test score; at $p < 0.01$. While there is no improvement in participants' practices in the control group. A slight difference in the mean practice for participants in the control group at the post-test score which is due to the lack of educational program provided to them unlike the study group. A definitive improvement in the results of the participants' practices after receiving the educational program.

This results supported through results obtained by Selman and Ahmed (2018), as well by Hassan and Naseer (2015) which confirmed that the practices score of nurses was insufficient for both study and control group in the pretest however the study group practices score was improved after applying the educational program.

CONCLUSION:

Nurse's knowledge and practices regarding pain management for orthopedic wards patients have been improved after application of the educational program in the study group, which confirmed the effectiveness of the delivered program toward improving knowledge and practices regarding pain management for orthopedic wards patients, the study concluded that there is a significant association between nurses knowledge and practices and their socio-demographic characteristics in term of level of education and years of experience in orthopedic wards.

RECOMMENDATION:

The researcher recommended the necessity of continuing to apply educational programs for pain management for orthopedic wards patients in these hospitals, applying this program to a broader sample, supporting these wards by preparing more nurses, especially graduates of the College of Nursing, promote nursing college to embrace more standardized pain management articles in their curricula, and that future nursing research should focus on applying such educational programs to other hospitals in Iraq.

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