Pk Heart J 2025:59(01)
ISSN:0048-2706 E-ISSN:2227-9199

Effect of a Pain Management Program on Critical Care Nurses' Performance at One of the Cancer Treatment Hospitals

Shimaa Elmghwry Mohamed[1], Dr. Warda Youssef Mohamed Morsy[2], Dr. Hanaa Ali Ahmed Elfeky[3], Dr. Mamdouh Mahmoud Mostafa[4]

[1]Bsc, and Master Degree in Critical Care Nursing, Cairo University
[2]Professors of Critical Care and Emergency Nursing, Cairo University
[3]Professors of Critical Care and Emergency Nursing, Cairo University
[4]Assistant Professor of Anesthesia, Intensive Care and Pain management, Cairo University

Abstract

Background: Pain management is one of the most important responsibilities and is an integral part of role of the Intensive Care Unit nurses, especially those who are caring for cancer patients. Therefore, updating nurses' knowledge and practices are essential for provide high-quality nursing care. Aim of the study: to investigate the effect of a pain management program on Critical Care nurses' performance at one of the cancer treatment hospitals in Egypt. Research Design: A quasi-experimental pretest-posttest research design was utilized in this study. Research hypothesis: two research hypotheses were formulated. Setting: This study was carried out at the adult surgical and medical ICUs affiliated to one of the cancer treatment hospitals –Egypt. Sample: A sample of convenience consisting of 34 critical care nurses was included. Tools of data collection: three tools were utilized to collect data in the current study: Critical Care Nurses' Demographic Data Sheet; Pre / Post Critical Care Nursing Knowledge Assessment Questionnaire about Pain Management and Pre / Post Critical Care Nurses' Practice Observational Checklist Regarding Pain Management (Pre-test and Post-test). Result: the great majority (97.1%) of the study sample had unsatisfactory knowledge level in first assessment (pre-test) before attending pain program. However all (100%) of the study sample had satisfactory knowledge level immediately after implementing of pain program and after one month. Also, all (100%) of the study sample had unsatisfactory practice level before implementing pain program. However approximately two third (62%) had satisfactory practice level immediately after implementing pain program and after one month. The both research hypotheses were supported. Conclusion: critical care nurses in the critical study showed significant improvement in their knowledge and practices regarding pain management cancer patients which could reflect the importance and the effect of the educational program. Recommendations: enrichment of critical care cancer knowledge and practices regarding pain management cancer patients; up to date pain assessment and management to be periodically required for great benefits; as well, replication of this study on a larger probability sample is highly recommended.
.

Keywords: Critical Nurses' knowledge, practices, pain assessment, nursing management.

Introduction

Pain is one of the most feared, yet commonly experienced symptoms of advanced cancer. It is an “unpleasant sensory and emotional experience associated with actual or potential tissue damage (El-Aqoul, et al., 2020). Most cancer patients experience moderate to severe pain. It may occur at all stages of the disease, although it may increase in intensity and frequency if cancer progresses. Over one third of patients may suffer pain even after curative treatment (Daud & Simone, 2024). More specifically, patients admitted to Intensive Care Unit (ICU) are at a high

risk of suffering from pain as a result of the disease processes, surgical procedures / complications, invasive procedures, and most commonly due to everyday care and treatment (Zakeri, et al., 2024). Therefore, effective management of pain is a key responsibility of the critical care nurses (Aslanidis, Nouris, 2024).

Unalleviated pain triggers physiological and psychosocial stress responses that affect the patient's body systems, resulting in harmful effects such as fear, anxiety, sleep disturbance, hopelessness, weak memory, decreased cognitive function, social isolation, and a lowered quality of life (Nguyen, et al., 2021). Undertreated pain delays mobilization of the patient, depresses immunity, slows wound healing /recovery, and increases the risk of complications, hospital stay, and healthcare costs (Alnajar, et al., 2021).

Ineffective pain management results in a sizable reduction in desirable clinical and psychological outcomes, as well as the patient's overall quality of life (Innab, Alammar, Alqahtani, Aldawood, Kerari, & Alenezi, 2022). Unrelieved cancer pain gives rise to negative physiological and psychological events that can be detrimental to critically ill patients' health outcomes (Liyew, Dejen Tilahun, Habtie Bayu, & Kassew, 2020). It causes behavioral, emotional, and spiritual problems resulting in a significant negative impact on patients' quality of life. It also impedes the performance of daily activities, interferes with patients' lifestyle, diminishes social interaction and increases family encumbrance (Basinska et al., 2021).

Critical care nurses play a vital role in alleviating patient's pain through assessment, management, and patients' education. The accurate assessment and effective management of pain require nurses to understand the concept, acquire up to date knowledge, an appropriate attitude, and effective skills (AL-Sayaghi et. al., 2022). The fundamental and multidimensional roles of the nurse in cancer pain includes continuous assessment and management using pharmacological and non-pharmacological approaches, teaching patients and their families about medication, and being the patients' advocate to assure that patients get their rights in pain treatment (Fares, 2020, and Hyland et al., 2021). However, many barriers were reported to affect adequate cancer pain management such as insufficient assessment of pain, patients' reluctance to report pain and poor knowledge about pain management (Kwon, Kim, Park, & Jeon, 2020). Therefore, there is a need to carryout actions that update nurses' knowledge and pain management practices.

Significance of the study

The burden of morbidity and mortality from cancer is increasing globally, with more than 19 million new cases diagnosed and 9.9 million deaths (The International Agency for Research in Cancer, 2020). Although high income countries (HICs) have overall higher cancer incidence rates, 70% are occurring in the developing world (World Health Organization, 2020). In Egypt statistical reports revealed a number of 150, 578 new cases, and numbers of 95,275 deaths (WHO, Global Cancer Observatory, 2022). More specifically; the prevalence of extreme pain among medical and surgical ICU patients is more than 80%; and the prevalence rate of cancer pain in adult patients was 39.3% after curative treatment; 55% during anticancer treatment; and 66.4% in advanced, metastatic, or terminal diseases (National Institute for Health and Care Excellence / NIHCE, 2022).

Many studies revealed that nurses' knowledge about pain assessment and management remains inadequate which could negatively affect the patients and lead to increased readmission, longer hospital stay, inconsistent health results, reduced patient satisfaction, and development of chronic pain syndromes (Chatchumni, Eriksson, Mazaheri, & Kasai, 2020). A study conducted by Gunathiaka, Walopa, Seneviwickrama, (2025) about knowledge and attitudes on cancer pain management among nurses at the National Cancer Institute in Srilanka revealed significant gaps in both knowledge and attitudes among

nurses regarding cancer pain management, with most participants exhibiting poor knowledge and attitudes. These findings suggest that educational background plays a crucial role in shaping nurses' knowledge and attitudes toward cancer pain management. As well; a study conducted by Alsaiari, Alhofaian, Tunsi, (2023) about nurses' knowledge, perceived barriers and practices regarding cancer pain management revealed that nurses play a crucial role in addressing this issue, but they often lack the necessary knowledge and training, therefore, they recommended nurses' education to enhance the quality of life for cancer patients. In addition; a study conducted by Imeraj, Veseli, Pirushi, (2022) about the role of nursing staff in pain management of patients with cancer revealed that nurses had limited knowledge of pain management. Also, a study conducted by Innab A., et al., (2022) about barriers to effective pain management among nurses working with cancer patients revealed inadequate training and education, poor teamwork, heavy workload, limited nurse-patient communication and lack of available time.

Also, from the researcher's experience, most of cancer patient in critical care complain from pain; the level of pain experienced by ICU cancer patients can be affected significantly by the nurses' level of knowledge and practices of pain management. For this reason, enhancing nurses' knowledge and practices toward pain management will reflect positively on control patient's level of pain or alleviation also might have positive wide impact on decreasing length of hospital stay and increasing patients' satisfactions. Consequently; carrying-out this study is expected to provide evidence based data about the critical care nurses' knowledge and practices regarding pain management among cancer patients. It is expected to upgrade knowledge, practices, and strengthen nurses' capacity to participate in pain management among cancer patients.

Aim of the study

The aim of the current study is to examine effect of a pain management program on critical care nurses' performance at one of the cancer treatment hospitals, Cairo University.

Research Hypotheses

To achieve the aim of this study, the following research hypotheses were formulated:

H:1:The post-test mean knowledge scores of critical care nurses who will attend a pain management program will behave higher as compared to their mean pre-test scores.

H:2: The post-test mean practice scores of critical care nurses who will attend a pain management program will behave higher as compared to their mean pre-test scores.

Theoretical Framework

Nursing process will be adopted as a theoretical framework for the current study (Orlando 1958). It guides nursing care as a systematic approach to care using the fundamental principles of critical thinking, client-centered approaches to treatment, goal-oriented tasks, evidence-based practice (EDP) recommendations, and nursing intuition. Holistic and scientific postulates are integrated to provide the basis for compassionate, quality-based care. It consists of five steps: assessment, diagnosis, planning, implementation and evaluation. (Butler; Thayer, 2023).

Research Design

A quasi- experimental pre-post-test research design was utilized in the current study. It is a type of experimental design that is very similar to the true experimental design except in missing one criterion. It is useful in real-world settings, such as healthcare (Miller et al., 2020). It is used to evaluate the effects of an intervention, or in other words, to establish a cause-and effect relationship between independent and dependent variables. The intervention could be a

training program, a policy change or a medical treatment (Sreekumar, 2024).

Sample

A sample of convenience consisting of 34 nurses representing all nursing staff working at the surgical and medical intensive care units (ICU) at a cancer treatment institute, Cairo University was included.

Setting

The current study was carried out at two adult intensive care units (ICU) affiliated to a selected cancer treatment institute – Egypt. The first unit was the post-operative ICU which is located at the first floor and includes three rooms; the first room includes nine beds, the second room (the isolation room) includes two beds, and the third room (for dialysis) includes one bed. A regards to the second unit (the medical ICU); it is located in the 6th floor and includes two rooms; each room includes four beds. The units are well equipped with monitors, mechanical ventilators, equipment, and the needed supplies.

Tools of data collection

Three tools were developed by the researcher after extensive literature review and utilized to collect data pertinent to the current study. These tools are: Critical Nurses' Demographic Data; Pre / Post Critical Care Nursing Knowledge Assessment Questionnaire about Pain Management, and Pre / Post Critical Care Nurses' Practice Observational Checklist Regarding Pain Management.

Tool (1) Critical Care Nurses' Demographic Data Sheet:

It consists of five (5) main items: nurses' age, gender, level of education, and years of experience, and attended training courses about pain.

Tool (2) Pre / Post Critical Care Nursing Knowledge Assessment Questionnaire about Pain Management. It consist of 34 items divided into four main domains: pain as a concept (definition, description, mechanism, and classification) (questions from 1-9); pain assessment (pain assessment, scoring system, and patient's education) (questions from 10- 16); pharmacological management (pain management using WHO analgesics ladder, and side effects of medications) (questions from 17 - 29); and non-pharmacological pain management (relaxation technique and distraction) (questions from 30-34).

Scoring system:

One score was allocated to each right answer (considering that some questions had more than one correct answer) and zero for the wrong. The total scores are 43. Scores equal to or more than 75% (33 grades) were considered satisfactory and scores less than 75% (33 grades) are unsatisfactory.

Tool (3) Pre / Post Critical Care Nurses' Practice Observational Checklist Regarding Pain Management (Pre-test and Post-test): It consisted of 51 items and divided into 5 main domains: pain assessment(items from 1-12), symptoms related to pain(items from 13-28), others factors related to pain(items from 29-37), pharmacological management of pain (items from 38-42) and non-pharmacological management of pain (questions from 43-51).

Scoring system:

Three scores were allocated for completely and accurately done actions; two scores for incompletely done actions; one score for not applicable actions; and zero score for not done actions. The total scores are 153. Scores equal or more than 75% (114) are considered satisfactory practice and scores less than 75% (114) are considered unsatisfactory practice.

Pilot study

A pilot study was carried out on three nurses (10 % of the total sample) to test for feasibility, objectivity, and applicability of the study tools. Based on the results of the pilot study, the needed refinements and modifications were done

and the three nurses were excluded from the study.

Ethical considerations

Protection of Human Rights was assured through obtaining the approval of the ethical committee at the Faculty of Nursing Cairo University, with an IRB. Involved nurses were informed about the purpose, procedure, benefits, and nature of the study. They were ensured that participation in this study was voluntary. Confidentiality and anonymity of each subject were assured through coding of all data and they had the right to withdraw from the study at any time without any rationale. Then written consents were obtained from them.

Procedure

The current study was conducted on three phases: Preparation, Implementation and Evaluation.

As regards to the preparation phase; it was concerned with comprehensive review of relevant literature to develop the pain management program, different data collection tools; and the educational materials (booklets, presentations, and videos) which were prepared in Arabic, English language. As well this phase was concerned with obtaining official approvals to conduct the study from the research ethical committee, hospital administrators, heads of the intensive care units and requesting official agreements to allow teaching the theoretical part for nurses (during the working shifts) for 60- 90 minutes and observing and observing their practices. This phase ended with testing and piloting the data collection tools.

Concerning the implementation phase; it was carried out once official agreements were obtained. It covered actual data collection which started from February 2020 to September 2020. After revising the daily schedule (to specify the time / shift) the researcher met each nurse during the working shift (morning or afternoon), on individual level or small groups (1-3 nurses) to explain the purpose and nature of the study. Nurses who accepted to participate in the study were asked to sign the informed consents, and fulfill the knowledge assessment questionnaire (too 2). The researcher was available for more clarifications and explanations. A well, base line nurses' practices were assessed using the observational checklist (tool 3) while providing care for the patients.

Actual implementation of the pain management program sessions was carried out in the specified place / room by dividing nurses into small groups (1-3 nurses) according to the work load. The total theoretical parts of the protocol was taught over a period of ten sessions; each session lasted about 60 – 90 minutes aimed to promote understanding of pain definition, mechanism, classification of pain, pain scoring system, pain assessment, general information about pain management, and side effects of pain medications, patient's educations and non-pharmacological pain management. Interactive teaching sessions incorporating lectures, discussions, demonstrations, re-demonstration and role play were done, with the use of audiovisual aids such as videos power point presentations and illustrated booklets. practical training to enhance comprehension and retention of knowledge. Then immediate post knowledge assessment was done using tool (2).

After teaching the theoretical part; the researcher carried out hands on training for each involved nurse on daily basis during their working shifts (morning / afternoon) through demonstration in real situation, different diagnosis and for both conscious and unconscious patients. Then they were observed while providing care and assessing pain by using different pain assessment tools, assessing related symptoms of pain for conscious and unconscious patients. As well as, observing nurses when were provided health educations about pharmacological management (action, side effects, and special instructions for patients). Also, observing nurses when were provided different non-pharmacological management as applicable. The researcher reinforced the correct actions and

corrected misconceptions; then scores were calculated. The researcher was demonstrated for ICU nurses who didn't achieve the satisfactory scores by adding an additional observation of their practices. Then immediate post practices assessment was done using tool (3).

Concerning the evaluation phase, it was concerned with re-assessment of nurses' knowledge and practices immediately after implementing the pain management program, and then after one month to assess knowledge retention (using tool 2) and sustained practice (using tool 3).

Results and data analysis

Table (1): Frequency Distribution of the Study Sample as Regards to Demographic Characteristics (N =34).

%	N	Variable
		Age
26.5	9	23-26
64.7	22	30 27-
8.8	3	31 & More
28.03 ± 3.92		X ± SD
		Gender
85.3	29	Male
14.7	5	Female
		Level of education
5.9	2	Baccalaureate
91.2	31	Technical nursing institute
2.9	1	Secondary school iploma
		Years of experience
52.9	18	Less than 5 years
35.3	12	5-10
5.9	2	11- 15
5.9	2	>15
7.32 ± 5.026		X ± SD
		Attended training program
11.8	4	Yes
88.2	30	No

Table (1) shows that most of the study sample was at the age group of 27-30 with a mean age of 28.03 ± 3.92, males, technical nursing institute graduates, had less than 5 years of experience (with a mean of 7.32 ± 5.026), and didn't attend any training program about pain assessment and management in percentages of 64.7 %, 85.3%, 91.2%, 52.9%, and 88.2% respectively.

Figure (6) show that the great majority (97.1%) of the study sample had unsatisfactory knowledge level in first assessment (pre-test) before attending pain program. However all (100%) of the study sample had satisfactory knowledge level immediately after implementing of pain program and after one month.

Figure (6) Percentage Distribution of the Study Sample according to knowledge Level in Different Assessment Times (N= 30).

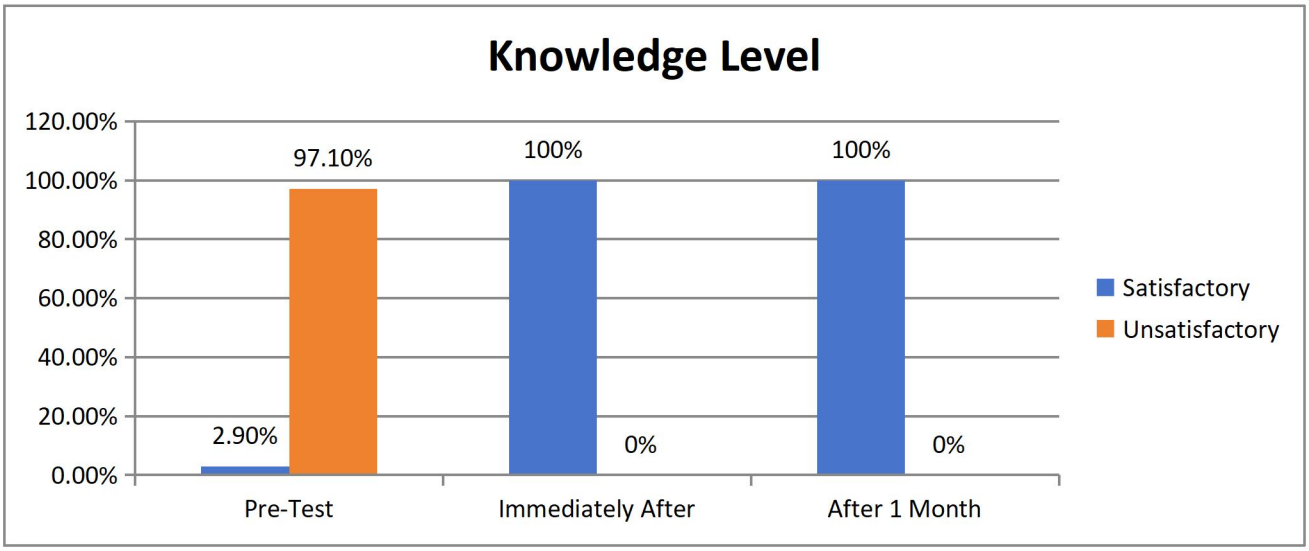

Table (2) shows that there is a significant statistical difference in total and subtotal mean knowledge score in different assessment times indicating higher mean scores immediately after implementing pain program and after one month (F= 113.98, 151.72, 96.05, 204.86, 212.18, 309.36) respectively.

Table (2) Comparison of Critical Care Nurses' Total and Subtotal mean Knowledge Scores in Different Assessment Times (N= 30).

Domains / X ±SD	Assessment (pre-test)	Assessment (immediate post-test)	Assessment (follow up post-test)	F	P. value
General knowledge about pain	1.41 ± 1.15	3.85 ± 0.35	3.76 ± 0.49	113.98	0.00*
Pain classification	2.94 ± 1.79	6.91 ± 0.28	6.85 ± 0.43	151.72	0.00*
Pain assessment	4.97 ± 1.91	8.79 ± 0.59	8.55 ± 0.92	96.05	0.00*
Pharmacological pain management	6.29 ± 2.52	13.61 ± 0.88	13.23 ± 1.12	204.86	0.00*
Non-pharmacological pain management	2.38 ± 1.85	7.61 ± 0.60	7.52 ± 0.70	212.18	0.00*
Total knowledge scores	18 ± 6.98	40.71 ± 1.29	39.94 ± 2.1	309.36	0.00*

*: Significant statistical difference

Figure (7) shows that all (100%) of the study sample had unsatisfactory practice level before implementing pain program. However approximately two third (62%) had satisfactory practice level immediately after implementing pain program and after one month

Figure (7) Percentage Distribution of the Study Sample according to Practice Level in Different Assessment Times (N= 30).

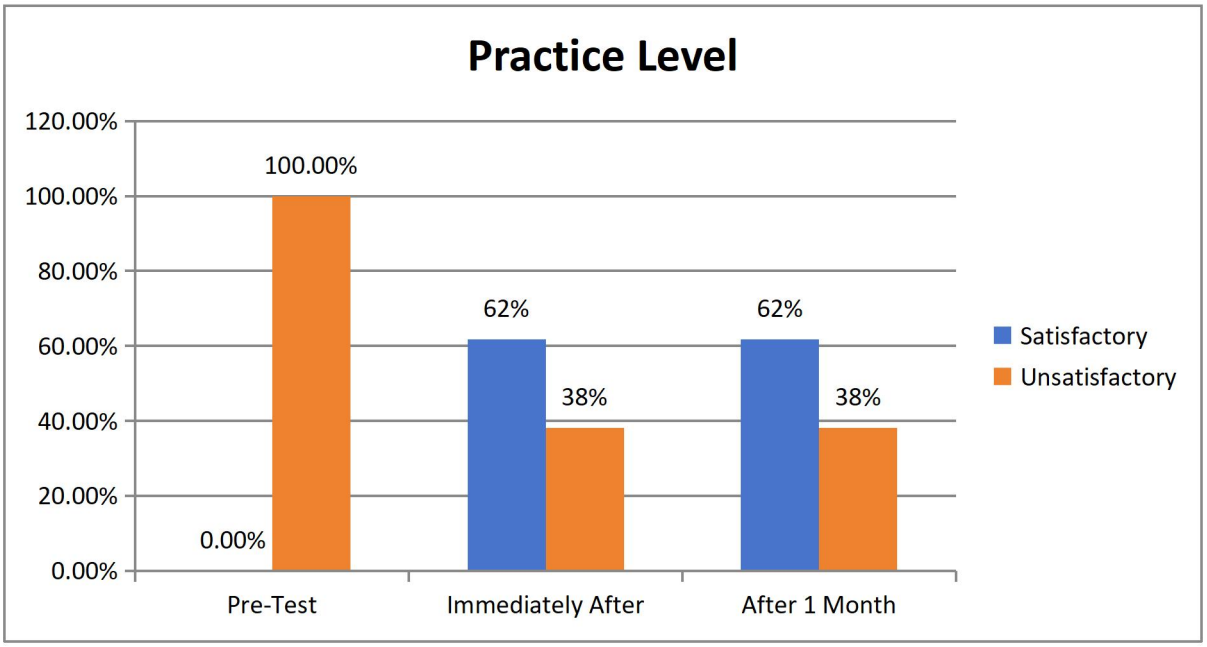

Table (3) shows that there is a significant statistical difference in total and subtotal mean practice scores in different assessment times indicating higher mean scores immediately after implementing pain program and after one month (F=143.72, 97.93, 85.61, 281.38, 130.35, 166.69) respectively.

Table (3) Comparison of Critical Care Nurses' Total and Subtotal mean Practice Scores in Different Assessment Times (N= 30).

X ±SD	Assessment (pre-test)	Assessment (immediate post-test)	Assessment (follow up post-test)	F	P. Value
Pain characteristics	12.38 ± 7.29	32.55 ± 4.65	32.11 ± 4.40	143.72	0.00*
Pain symptoms	9.97 ± 8.21	37.44 ± 10.31	34.88 ± 8.11	97.93	0.00*
Pain assessment tools	7.29 ± 5.66	21.20 ± 4.81	20.35 ± 4.14	85.61	0.00*
Pharmacological management	3.05 ± 1.84	13.23 ± 2.45	13.35 ± 1.80	281.38	0.00*
Non-pharmacological management	7.82 ± 4.10	21.41 ± 4.16	21.50 ± 3.77	130.35	0.00*
Total practice scores	40.52 ± 23.13	125.85 ± 23.54	122.20 ± 18.29	166.69	0.00*

* Significant statistical difference

Table (4) show that there is a significant correlation between total knowledge scores (immediate post-test and total knowledge scores (follow up test) after one month from implementation of pain program

Table (4) Correlation between Age, Total mean Knowledge and Practices Scores Different Times Assessment Times (N= 30).

Variables		Age	Total knowledge scores (immediate post-test)	Total knowledge scores (follow up- test)
Age	r p			
Total knowledge scores (immediate post-test)	r p	-.058- .744		
Total knowledge scores (follow up- test)	r p	.147 .406	.451** .007	
Total practices scores (immediate post-test)	r p	.299 .086	-.321- .064	-.224- .202
Total practices scores (follow up- test)	r p	.157 .375	-.132- .457	.078 .663

**. Correlation is significantn is significant at the 0.05 level

Based on the current findings the researcher concluded that:
Therefore the findings of the study supported the first stated research hypothesis which is H 1: Critical Care Nurses who attend educational program about pain management have higher post-test mean knowledge scores as compared to their pre-test mean scores. As well as, the findings of the study supported the second hypothesis which is H 2: Critical Care Nurses who attend the educational program about pain management have higher post-test practices scores as compared to their pre-test scores.

Discussion

The following part covers discussion and interpretation of findings related to the present study, considering three sections: demographic characteristics; nurses' knowledge regarding pain assessment; and nurses' practice regarding pain management.

As regards to demographic characteristics of studied sample the current study finding revealed that the majority of the study sample was in the middle age, group. This finding matched with Kang & Se (2022) who conducted a study about factors affecting nurses' performance of cancer pain management in a tertiary hospital who confirmed that the majority of the study sample their age ranged from 26-30 years. Also, Zoheir, Abd El Aty, Mohamed & Moussa (2022) conducted a study about nurses' performance regarding palliative care among patients with cancer and the result revealed that the majority of the studied sample age's ranged from 31-40 years.

In relation to gender, the current study showed that, the majority of nurses was males. This finding consistent with Salameh, (2018) who conducted a study about nurses' knowledge regarding pain management in high acuity care units and found more than half of the study sample was males. This finding is supported by Rababa, & Al-Sabbah, (2022) who carried out a study about nurses' pain assessment practices for cognitively intact and impaired older adults in intensive care units and revealed that the majority was males. As well Mohammed, AL-Sharkawi & Adly (2023) in a study conducted about Nurses' Performance Regarding Application of Acupressure Technique for Children undergoing Chemotherapy showed that about three-quarters of the studied nurses were males.

On the other hand, this finding is inconsistent with Eleke et al., (2020), in study conducted

about Knowledge of palliative care among professional nurses in south east Nigeria: A needs assessment for continuing education revealed that the majority of the studied subjects were females. From the researcher point of view this finding might be due to nursing profession in Egypt at the past was limited to females only, but recently become for both genders.

In contrast Rababa, & Al-Sabbah, (2022) conducted a study about nurses' pain assessment practices for cognitively intact and impaired older adults in intensive care units revealed that the majority of the study sample bachelor's degree. From the researcher point of view this result might be related to shortage of gradated nurses and lack of interest to engagement of new nursing staff to oncology unit and could be due to the highly qualified nurses usually involved in administrative work.

In relation to years of experience, the current study showed that, more than half of studied nurses had more than 5 years and less than 10 years of experience, the current study finding with the same line with Imera, Veseli, & Pirushi (2022) conducted about The Role of Nursing Staff in Pain Management of Patients with Cancer and reported that near half of nurses had 5-10 years in oncology hospital, In addition to this finding accordance with Farmani et al., (2019) conducted about "Dataset on the nurses' knowledge, attitude and practice towards palliative care" who reported that, half of study subjects had less than 5 years of experience. From the researcher point of view, this result could be due to the nurses don't continue for a long period of time in the ICU oncology unit due to increasing workload and responsibilities on the nurses.

However, the importance of continuing education for nurses in cancer pain management is critical for enhancing professionals' knowledge and practices regarding cancer pain management, the current study finding concerning to training course, cleared that, the majority of studied nurses didn't have attended any training programs regarding pain management. This result supported by Ibrahim et al., (2017) in study conducted about "Impact of Palliative Care Program on Nurse's Knowledge and practice Regarding care of Patients with End- Stage Renal Disease" Who revealed that, the majority of the studied sample didn't receive a training program about palliative care.

Furthermore, the finding agreed with Imera, Veseli, & Pirushi (2022), revealed that the minority of the study sample had pain training and education. This result supported by study done in Ethiopia by Admass etal., (2020) who revealed that more than half of the study participants did not receive pain management training and the majority of nurses did not attend training courses on cancer, cancer pain in the elderly, or the impact of ageing on cancer pain.

The current study showed unsatisfactory knowledge scores that (pre-test) regarding total items of general knowledge about pain considering (pain definition, stages of pain, and pain transmission) which in general. From the researcher point of view it could be explained due to un trained on pain courses, limited attention to nurses' continuing education, nurses' did not have formal training in pain management either at the local level, lack of supervision, lack of continuous evaluation of nurses performance, increased number of patients, and nurses' work load. In addition to the nurses' practices were based on traditions and imitations.

In addition, the current study revealed that more than half of the study sample reported unsatisfactory knowledge scores regarding (pain classification, types of pain as well as assessment of pain), in addition to the majority of the study sample reported unsatisfactory knowledge scores concerning (phantom limb pain and accurate pain assessment). While regarding patient's description of pain, pain assessment and responsibility of specifying pain severity, the highest percent revealed satisfactory knowledge scores. From the researcher point of view, this might be due to insufficient time and workload as the most common barrier, also, nurse-to-patient ratios and the unavailability of pain assessment and management guidelines.

These findings are in agreement with study carried out by Al-Sayaghi et al., (2022) about

nurses' knowledge and attitudes regarding pain assessment and management in Saudi Arabia, reported that the majority of the study sample had unsatisfactory level of knowledge. Furthermore, another similar study conducted by Ahmadi, Vojdani & & MortezaBagi, (2023) in a study conducted about study of nurses' knowledge and attitudes regarding pain management and control in emergency departments revealed that inadequate knowledge of nurses concerning pain information and management in the emergency departments in East Azerbaijan province hospitals. Additionally, the current study is congruent with (Zoheir, Abd El Aty, Mohamed & Moussa, 2022) in a study conducted about Nurses' Performance Regarding Palliative Care among Patients with Cancer that more than three quarters of studied nurses had unsatisfactory level of knowledge toward palliative and most of them had unsatisfactory level of practice.

A meta-analysis done by McCabe, Feeney, Bas, Eustace-Cook, & McCann, (2023) conducted about Nurses knowledge, attitudes and education needs towards acute pain management in hospital settings found that half of the study sample had inadequate or lower adequate levels of knowledge about acute pain management however, only more than one half of the study sample has satisfactory knowledge level. Also,The study finding also supported by Systematic Review conducted about Nurses' Perceived Barriers to and Facilitators of Pain Assessment and Management in Critical Care Patients by Rababa, Al-Sabbah, & Hayajneh. (2021) found that fifteen of the selected studies reported poor knowledge among nurses regarding critically ill patients' pain as being a barrier to effective pain relief. Eight of the 15 studies reported nurses' lack of knowledge regarding pain assessment, and five reported poor knowledge regarding pain management. Additionally, an established study done by Nguyen et al., (2021) for Assessing knowledge and attitudes regarding pain management among nurses working in a geriatric hospital in Vietnam, found that the majority of nurses had unsatisfactory knowledge regarding cancer pain.

Another supporting study by Al-Sayaghi, et al. (2022) conducted about Nurses' Knowledge and Attitudes Regarding Pain Assessment and Management in Saudi Arabia concluded that the majority of the participants had unsatisfactory knowledge scores and the minority of the study sample had the satisfactory knowledge level scores. From the researcher point of view it might be result of a lack of attention given to pain related topics and the lack of sufficient time devoted to this topic in nursing school curricula. This results in the insufficient preparation of nurses during their undergraduate education, as well as the lack of in-service education programs related to pain.

A study done by Waladani, Setianingsih, Sutrisno, & Bahri (2022), entitled Knowledge of Nurses in Using Critical-Care Pain Observation Tools to Assess Pain of Unconscious Patient in Intensive Care Unit revealed that the majority of the study sample had unsatisfactory knowledge scores about pain.In contrast, the current is congruent with the study conducted by Liyew, Dejen Tilahun, & Habtie Bayu, (2020), about knowledge and attitude towards pain management among nurses working at university of Gondar comprehensive specialized hospital, who revealed that more than half of nurses had good knowledge about pain management. Also, the studies done in Tasmania (Island States of Australia) revealed satisfactory knowledge scores of pain management.

The current study finding revealed that more than half of the studied sample report right answers regarding pain assessment, patient's description of pain, pain assessment and responsibility of specifying pain severity, which could be explained that appropriate nurse handling of patient complain and proper nurse patient communication, this finding in accordance with Ayenew, Melaku, Gedfew, Amha, & Bishaw, (2021). About Nurses' knowledge, practice, and associated factors of pain assessment in critically

ill adult patients at public hospitals, revealed that the majority of nurses were aware of pain assessment.

The current study finding showed that in the immediate and follow up post-test assessment (after implementation of the program) the majority of the studied sample had satisfactory knowledge about pain including (pain definition, assessment, stages and transmission, classification, types assessment of pain, in addition to phantom limb pain and accurate pain assessment, patient's description of pain, pain assessment and responsibility of specifying pain severity), this means that nurses recognized the importance of pain management program as an important indicator for their pain management practices. This means that nurses become habitually committed to the pain assessment and aware to the importance of documenting pain response.

The result is supported by El-Aqoul, Obaids, Jarrah, Al-Rawashdeh & Al Hroub. (2020), conducted a study about Effectiveness of Education Program on Nursing Knowledge and Attitude toward Pain Management who revealed that and the mean knowledge scores of the studied sample increased and knowledge improved after the pain education program. Additionally the current results of this study were consistent with other studies, conducted by Khaled et al. (2022) studying about Nurses' Knowledge and Attitudes Regarding Pain Assessment and Management in Saudi Arabia, revealed that a pain education program was effective in improving nurses' pain knowledge and recommended that nursing schools and educators have to focus on teaching and training nursing students in this vital subject and educational curricula should be revised to include a dedicated unit with sufficient hours to teach the physiopathology, assessment, and management of pain. As well, Taínta, Arteche, Martín, Salas & Goñi, (2020) conducted a study about Knowledge and attitudes of intensive care unit nurses regarding pain in patients revealed that ICU nurses show insufficient knowledge about pain.

In an accordance with a study carried out by Innab et al., (2022), about impact of a 12-hour educational program on nurses' knowledge regarding pain management revealed that nurses showed moderate levels of knowledge regarding pain before pain management education, which were significantly higher after the intervention, indicating that the education was effective in enhancing nurses' knowledge and attitudes, regardless of nursing education level. In Egyptian study carried out by Badr, Morsy & Ali (2015) about Critical care Nurses' Knowledge and Practices regarding Pain assessment and management at Cairo University Hospitals, revealed that unsatisfactory knowledge scores about sub items questions regarding pain assessment as well, the current study findings revealed that the majority of studied subjects have unsatisfactory knowledge scores in questions related to different assessment tools, pain intensity and the accurate indicators of pain among conscious patients.

Regarding the general knowledge about pain assessment pretest, the current study finding revealed that more than half of the study sample reported unsatisfactory knowledge scores regarding quality assessment of pain and nursing care plan for pain might be attributed to nurses' neglect reading and updating their knowledge and practices about pain management after graduation and un availability of successful pain assessment tools. In addition to the majority of them revealed unsatisfactory knowledge scores regarding tools of pain assessment, as well, near three quarters unsatisfactory knowledge scores related to pain assessment for unconscious, while only more than one third report unsatisfactory knowledge regarding nursing assessment of acute pain.

Even though immediate posttest, the current results showed that the majority of the study sample had higher percent of correct answers regarding all the items of pain assessment knowledge, as well, in the follow up post-test assessment (after implementation of the program). The researcher point of view, it was explained that nurses would be able to use the

pain assessment scale successfully when the tool was provided and the knowledge was learned. Additionally, the current study finding agreed with (Almazan, Santos, & Cruz, 2022), that conducted a quasi-experimental study about the impact of a 12-hour educational program on nurses' knowledge and attitudes regarding pain management and revealed that there was significant improvement in knowledge about pain assessment and management among ICU nurses; it was evident after delivering pain management education program so pain assessment and management can be improved through implementing pain management educational programs.

Concerning tools for pain assessment, the current study finding that revealed that the majority of them reported wrong answers regarding tools of pain assessment, this finding come with Waladani, Setianingsih, Sutrisno & Bahri, (2022), who stated that, assessment of pain in critically ill patients is a challenge for nurses because the complexity and pain behavior of each patient is different between verbal and non-verbal. Critical patients in the Intensive Care Unit (ICU) who feel pain especially those using mechanical ventilation or who have decreased consciousness are unable to convey the pain they feel, and recommended that it is necessary to measure pain in patients using mechanical ventilation or those who have decreased consciousness through using he Critical-care Pain Observation Tool to obtain valid results.

In relation to pain assessment for unconscious as mentioned near three quarters answered wrong related to pain assessment for unconscious this might be explained that critical care nurses believed that there was no need to use pain assessment scales when a patient received sedative infusions and unconscious, also, there is no appropriate non-verbal pain assessment scale to evaluate pain in ICU patients. This results come in accordance with Sedighie, Bolourchifard, Rassouli, & Zayeri, (2020) conducted on Effect of Comprehensive Pain Management Training Program on Awareness and Attitude of ICU Nurses that revealed the lack of the implementation of a nonverbal pain scale.

In relation to knowledge sub items questions related to pharmacological pain management, more than three quarters of the study sample report wrong answers regarding effective drugs for control of pain transmission and analgesia dose for pain, this could be due to that nurses focus mainly on how to tackle the disease that resulted in pain rather than the cause of the pain itself, despite their knowledge in managing patients with pain also, may be due to the nursing curriculum which covers pain management in education and training. Furthermore, few participants attended pain management courses at their workplace. This explains the shortage of the continuing medical education courses on topics such as pain management skills and updates.

This study in accordance with Liyew, Tilahun, Bayu & kassew, (2020), about Knowledge and Attitude towards Pain Management among Nurses Working at University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia revealed that more than half of nurses working at University of Gondar hospital had acceptable knowledge towards pain management, and the result indicate that nurses' knowledge towards pain management was higher than that in the studies done in Mekelle, Ethiopia, revealed that about half of the studied sample had acceptable knowledge towards pain management. Moreover, Zimbabwe revealed that about one third of the studied sample had acceptable knowledge towards pain management, as well as in Iran, but in less than half of the studied sample in Turkey, Australia and Malaysia had acceptable knowledge towards pain management.

In relation to the main cause for increasing the dose of pain medication, the current findings revealed that about half of the participants gave incorrect answers. This result aligns with recent evidence indicating that nurses often lack sufficient knowledge regarding opioid use, dose adjustment, and recognition of side-effects. Such knowledge gaps can lead to incorrect responses

or practices in pain management. A recent cross-sectional study by Samara et al. (2024) reported that many nurses highlighted the need for additional training on pharmacological pain interventions, particularly opioids, to improve patient safety and effective pain management in clinical practice.

In respect to nursing care of opioids side effect, the current study finding showed that only one third reported wrong answers this could be due to nurses viewed having larger choices of opioids disadvantageous, possibly because it reduces familiarity and confidence. Also, nurses were more anxious of overdosing and employing opioids and fear of opioid addiction especially for patients with a history of drug misuse, therefore they have satisfactory knowledge regarding side effects of opioids.

The current study pretest finding revealed that more than half of studied nurses had right answers regarding knowledge about pharmacological pain management at drug used for cancer pain and best route of using analgesia for acute pain, as well nurses rely on physicians' prescriptions without negotiating physician orders this result is matched with Mahedy, Mohamed, & Mustafa, (2021) about nurses' knowledge and practice regarding post-operative pain management for orthopedic patients who stated that about half of studied nurses had satisfactory practice of pharmacological management.

In a similar study about Does Education Improve Nurses' Knowledge, Attitudes, Skills, and Practice in Relation to Pain Management? Done by Achaliwie, Wakefield & Mackintosh-Franklin, (2023) which highlighted several issues, including low baseline scores, "treatment gaps" in pain management, misconceptions regarding opioid use and the reliability of children in self-reporting pain, and issues with long-term retention of knowledge. The review revealed considerable gaps in participants' baseline knowledge towards pain management, with some studies (three) revealing relatively low baseline scores and others (two) revealing relatively high baseline.

Also regarding immediate and follow up posttest regarding general knowledge about pharmacological pain management, the current results illustrated that the majority of the study sample have right answers in relation to sub items of general knowledge about pharmacological pain management, this finding in accordance with Salim, Joshua. AbuBaker, Chehab & Jose, (2020) In study about 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 concluded that, nurses in the experimental group were scored higher in the post-test, which concludes that nurses who received the pain management program significantly increased both pain assessment, practice and education so pain knowledge were improved after the educational session.

Also, this study confirmed with study conducted by Nazly, Khamis, & Al Khatib, (2021). About the knowledge and educational needs of nurses regarding pain management, this qualitative analysis indicated that nurses are not fully aware of various strategies for pain management. Nurses' perception of pain and pain management was found to be limited to pain assessment and some non-pharmacological management strategies. It has been revealed that nurses require educational interventions regarding pain management in practice.

The current study finding showed that in the first assessment (pre-test) the majority of the studied sample provided wrong answers regarding nursing decision in patient suffering from pain and mention non-pharmacological management for pain and nurse explain imagery to patient, also, more than half of them report wrong answers in relation to benefits of relaxation and imagery and management based on gate theory. From the researcher's point of view, the current study result reflected a lack of training program intervention for the studied nurses that is may limit the chance to be updated their knowledge as well, as learn new strategies regarding non-pharmacological management.

The result of the current study is in agreement with Shuyi,` & Yiyi, (2022). About non-pharmacological interventions related to pain in patients with breast cancer: A descriptive review. who illustrated that although we have found that a wide variety of methods can be associated with the reduction of pain in cancer cases, in the practice of clinical application, each intervention has its range of suitability, oncology nurses' knowledge about the non-pharmacological management of cancer pain is inadequate and based on the results of the current study, it can be concluded that more than two-thirds of studied nurses had a poor level of knowledge related to chemotherapy-induced pain, and, the majority of them had a poor level of knowledge regarding the application of acupressure as well as all of them were incompetent in their practice level regarding the application of acupressure technique.

Another congruent study established by Mahedy, Mohamed, & Mustafa, (2021) who documented that most of the studied nurses of studied nurses had unsatisfactory total practice of non-pharmacological pain management, but the majority of them had satisfactory practice level regarding establish trust relationship, positioning and breathing exercise. Additionally, Zeleke, Kassaw, & Eshetie, (2021) conducted about non-pharmacological pain management practice and barriers among nurses working in Comprehensive Specialized Hospital, Ethiopia stated that, majority of nurses didn't apply non-pharmacological pain management practices for their patients in pain and the majority of nurses had incorrect overall practice level. The major identified obstacle factors for the poor practice of non–pharmacological pain management methods were nurses' fatigue, heavy workload, multiple responsibilities of nurses, and insufficient number of nurses per patient ratio and unfavorable attitude of nurse on non-pharmacology pain management.

The current study findinga also come in accordance with Tekletsadik, Desta, & Workneh, (2021). Who study Knowledge, attitude, and associated factors towards non-pharmacological pain management among nurses working at Amhara region comprehensive specialized hospitals, Ethiopia. which summarized that, the overall knowledge of nurses about non-pharmacological pain management were low. Less than half of the studied sample strongly agreed with the idea that nurses are the best judges of the patient's pain intensity than doctors because they spend 24 hours with the patient, and one third of the studied sample agreed with the idea of nurses willingness to provide non-pharmacological methods of pain management to patients who have pain.

Furthermore, Jira, Weyessa, Mulatu, & Alemayehu, (2020), conducted a study about Knowledge and Attitude Towards Non-Pharmacological Pain Management and Associated Factors Among Nurses Working in Benishangul Gumuz found that half of nurses had adequate knowledge and aware of the benefits of non-pharmacological pain management, but about one third of studied sample did not know any methods of non-pharmacological pain management. On the other hand, a study conducted by Tsegaye, Yazew, Gedfew, Yilak, & Yalew, (2023) conducted a study about Non-Pharmacological Pain Management Practice and Associated Factors among Nurses Working at Comprehensive Specialized Hospitals revealed that knowledge and practices were at a satisfactory level. However, the percentage of applied non-pharmacological pain management was low in hospitals because of a lack of time. As well, there was a positive relationship between knowledge and practice of the nursing staff regarding non-pharmacological methods. Finally, concluded that nurses have a satisfactory level of knowledge and a high level of efficiency in applying non-pharmacological methods for pain management. The overall evaluation of nurses' knowledge revealed a good understanding of the importance of sedation assessment for patients receiving opioids for pain management.

`Findings regarding Knowledge about Non-Pharmacological Pain Management in the immediate post-test assessment, the current

study showed that the majority of the studied sample provided right answers regarding benefits of relaxation and imagery, nurse explain imagery to patient, nursing decision in patient suffering from pain and mention non-pharmacological management for pain and only less than quarter of the studied sample provided wrong answer about management based on gate theory. From the researcher point of view, this might be due to rest and relaxation in bed causing muscle relaxation and decrease strain of muscles leading to decrease the pain also, imagery cause distraction about pain stimulus leading to closure of gate theory and decreasing pain.

Also, the current study showed that in the follow up post-test assessment the majority of the studied sample provided right answers regarding benefits of relaxation and imagery, management based on gate theory, nurse explain imagery to patient and nursing decision in patient suffering from pain and the minority of the studied sample provided wrong answer about mention non-pharmacological management for pain. This finding from the researcher point of view, this improvement was most likely attributed to the contents of the program which were based on nurses' identified needs and priorities, the simplicity of the language, and avoiding purely scientific terms that could have made the nurses reluctant to learn. While the improving knowledge is thus not enough – it also needs to be reinforced and supported over time. Therefore, the regular dissemination of updates non pharmacological pain management in newborn information is an essential component of other educational program.

This study matched with Bassam & Sabaq, (2021) conducted about Enhancing Pediatric Nurses' Performance Regarding Selected Non-Pharmacological Techniques to Alleviate Pain: An Educational Program who revealed that nurses' practices at the post-test immediately after conducting the program improvement in all areas of practice with a statistically significant after the program implementation, the post-test had shown a highly statistically significant improvement in the nurses' total knowledge scores compared with the pretest phase of all selected non- pharmacological techniques to alleviate pain. About two third of nurses had a satisfactory level of knowledge that reflects the impact of conducting the educational program.

As regards Pretest Practice Regarding Pain; the current study showed that the majority of the studied sample in pretest practices level not done in onset, severity, quality, radiation and aggravating and alleviating factors of pain. While, the minority of the studied sample not done is vital signs during pain. From the researcher's viewpoint the reasons for nurses' lack of practice might be that a specific educational course on pain assessment was not offered at all levels for nurse education, and pain management was not one of the areas of interest in continuing education for nurses. If nurses would use a task-oriented approach to their work, adding pain assessment as a part of their routine work, this might be a helpful way to encourage them to implement pain relief and pain assessment measures. another reasons for not documenting pain assessment were lack of guidelines, lack of pain charts, pain assessment not being part of routinely documented patient care data, patient load, and difficult of pain assessment in ICU patients and patient's instability.

This result is in harmony with that of Mengesha, Lencha, & Digesa, (2022) about pain assessment practice and associated factors among nurses working at adult care units in public hospitals in Wolaita Zone, Southern Ethiopia, which conveyed that in the current study, less than half of the study nurses documented pain assessment scores and the proportion of nurses with good pain assessment practice was found to be one third and concluded that nurses' pain assessment practice was found to be low, most nurses did not discuss pain assessment scores during a nurse-to-nurse report. The problem of reporting pain is magnified by low documentation practice, which was below half.

Moreover, these findings are corresponded with Birhan, (2020) who assessed practice of nurses and associated factors towards pain assessment

in critically Ill adult patients in referral hospitals of Amhara Region, and reported that more than half of nurses` had inadequate pain assessment practices. Also Rababa, & Al-Sabbah, (2022) studied Nurses' Pain Assessment Practices for Cognitively Intact and Impaired Older Adults in Intensive Care Units, and gave the same result as though the use of pain assessment tools is important for effective pain assessment and management, our study results showed that the majority of participant nurses felt that the use of pain assessment tools for cognitively intact and impaired older adult ICU patients is somewhat to not at all important this could be due to the high prevalence of misconceptions regarding pain assessment among nurses caring for critically ill patients in particular the misconceptions that the patients usually overestimate their levels of pain

The current study findings are also supported by findings of the case scenario study done by Al-Sayaghi et al., (2022), to investigate Nurses' Knowledge and Attitudes Regarding Pain Assessment and Management in Saudi Arabia. The case scenarios demonstrated additional inconsistency as less than one third only correctly assessed the level of pain of the smiling and joking patient, and less than half the level of pain of the grimacing and quiet patient. When there were no behavioral manifestations of the pain, the sample tended to ignore the patient's verbalization of the pain score in favor of the objective clinical assessment, which is supported in the literature.

Another agreement study carried out by Moyano-Acevedo, Molina-Arteta, Matute-Gonzales, CamargoSánchez, (2020). About determinants of pain assessment documentation in intensive care units.In this research, pain intensity was reported in only half of the patients seen by doctors and in half of the patients seen by nurses and concluded the need to improve pain control through a better evaluation of the intensity assessment made by nurses. The lack of correlation between the rating of pain intensity by the nurses and physicians may reflect the lack of a systematic approach to pain measurement.

This study in the same line with Zaabi, Al-Saadi, Alaswami, & Al-Musalami, (2023). About Assessing Nurses' Knowledge and Attitudes towards Cancer Pain Management in Oman, reported that the Although a majority of the nurses acknowledged the subjective nature of pain and the importance of relying on the patient's self-assessment a considerable portion of participants expressed a belief in using a placebo to assess the authenticity of pain despite it being considered an unethical practice. Additionally, over two-thirds of the nurses relied on vital signs to determine the severity of pain and mistakenly assumed that stable vital signs indicated the absence of pain.

The current study finding highlighted that highest percent about three quarters report correct answers toward measuring vital signs (temperature, pulse and respiration) while pain assessment as vital signs(VS)is the main routine nursing care and the most indicators of the patient's condition, this study matched with Kırca, Özveren, & Karabey, (2025), about Evaluation of Future Nurses' Beliefs and Fears About Pain: A Descriptive and Correlational Study, reported that pain should be assessed as a fifth vital sign. With regard to the reasons for assessing pain, the following stated reasons were of particular note: it is beneficial for the patient's well-being; pain affects other vital signs; and it can support diagnosis and treatment decisions.

Another congruent study established by Khan, Abidin, Aziz, & Shahid, (2025). Evaluating the Association Between Vital Signs and Pain Scores in the Emergency Department of a Tertiary Care Hospital, which reported that the majority of the studied sample considered the subjective report of patients as the most reliable indicator of pain, and the majority of the participant also related vital signs as an important pain determinant and facial expression when rating pain. While in immediate posttest, the current study finding showed that the majority of the studied sample practice level completely done onset, anatomical location, severity, quality, duration, aggravating factors of pain and vital signs (T., P., R., B.P) during pain, while, the minority of the studied

sample not applicable in duration, radiated of pain, aggravating and relieving factors of pain, additionally, the minority of the studied sample not done in quality, duration, radiated, aggravating and relieving factors and vital signs (T., P., R., B.P) during pain. This might be as a result of the program's content's simplicity, clarity, and focus on the needs of nurses, and applicability to their field of work. This means that nurses put the learned knowledge into practice and the program has achieved the hypothesis on which it was conducted.

These findings in accordance of EIbrahim, Mohammed, & Mahmoud, (2023) who conducted a study about Effect of an Educational Program on Pain Assessment on Nurses' Performance and Critically Ill Patients' Outcome, and revealed that nurses' practices regarding pain assessment pre and post implementation of educational program had satisfactory level of total practices regarding pain assessment for critically care patients. Pre - program implementation. However, more than three quarters of them had satisfactory level of total practices with highly statistically significant differences among all items of practices pre and post educational program implementation. This study's findings are consistent with Abdelmoaty Sabry, ElSebaie & Kenawy (2020) who conduct their study to evaluate effect of training on nurses' knowledge and skills and found a highly statistically significant difference between levels of acquired nurses' practices pre/post the interactive training.

The current study finding in pretest practices showed that the majority of the studied sample practice level not done in lab. values R/T nutrition, physical S. of deficiency, bed time habits during pain, sleep interruption during pain, Difficulty falling, remaining sleep during pain, increase or decrease sleep during pain, assess patient diary during pain, assess patient restlessness and fatigue during pain, also, more than half of them showed in pretest practices level not done in dietary history during pain Wt. loss during pain, and assess body language. As well, the majority of the studied sample done completely in the assessment of ambulating aids during pain.

This result could be attributed to nursing workload and sedation interfering with pain assessment practice was significantly associated with pain assessment practice of nurses. This could be due to workload interfering with the time required for pain assessment, as well as the subjective nature of pain, in which sedated patients were unable to report their feelings of pain, making it difficult to obtain information about their pain.

While, in immediate posttest practice the current study finding showed that the majority of the studied sample level completely done in physical signs of deficiency, assess appetite changes during pain, sleep interruption during pain, hours of sleep / night and naps, assess ambulating aids during pain, assess fatigue using fatigue numeric scale and assess body language.

On the other side, the minority of the studied not done dietary history during pain in weight loss during pain, physical sign of deficiency, assess appetite changes during pain, bed time habit during pain, sleep interruption during pain, hours of sleep /night and naps, difficulty falling, remaining sleep during pain, increase or decrease sleep during pain, assess ambulating aids during pain, assess patient diary, assess fatigue using fatigue numeric scale and assess body language. Even though, the minority of the studied sample not applicable in dietary history during pain, physical sign of deficiency and assess restlessness during pain in percentage with a mean score of post-test practice score regarding assessment other symptoms related to pain.

This finding is supported by Ayenew, Melaku, Gedfew, Amha, & Bishaw, (2021) conducted about nurses' knowledge, practice, and associated factors of pain assessment in critically ill adult patients at public hospitals, Addis Ababa, Ethiopia, who stated that the majority of ICU patients have unrecognized pain, accompanied by insomnia and anxiety and more than half have significant pain during procedures or routine care, less than half only reported that nurses, provide an accurate rating of pain intensity and symptoms.

And recommended that, it is crucial for nurses to assess a patient's pain profile, assess signs and symptoms of pain and pain medication should be chosen based on individual needs and the desired analgesic effect.

Regarding pretest practice of pain assessment, the current study finding showed that the majority of the studied sample in level not done in assess Pt. pain experience, assess pain relief expectation, assess pain at regular interval, document in pain scale & vital sign V.S., encourage patient (PT.) to keep diary and more than three quarters of the studied sample done completely in assess pain relief at past, and near half report assess ability of Activity of Daily Livings (ADLs), and report alarming signs to doctor with a mean score of pre-test practice score regarding assessment of pain.

While, in immediate posttest practice level that the majority of the studied sample completely done in assess pain relief at past, assess ability of activity of daily living (ADLs) assess pain at regular interval, document in pain scale & vital signs (V.S) and report alarming signs to doctor. On the other hand, the minority of the studied sample not done in assess pain relief at past, assess Pt. pain experience, assess ability of ADLs, assess pain at regular interval, accept patient (PT.) pain description, document in pain scale & vital signs (V.S), report alarming signs to doctor and encourage (PT.) to keep diary.

On other side, the current study finding revealed that the minority of the studied sample not applicable in assess pain relief at past, assess ability of ADLs and document in pain scale & V.S in post-test practice score regarding pain assessment. Also, the minority of the studied sample done incompletely in assess pain relief at past, assess ability of ADLs, assess pain at regular interval and encourage PT. to keep diary. This study in the same line with Muñoz-Narbona, et al., (2020) conducted about E-Learning course for nurses on pain assessment in patients unable to self-report reported following the course, virtually the majority of the participants passed the quiz. Thus, the e-learning course was effective and acceptable for training nurses on pain assessment using validated tools and was effective in preparing the nurses to assess pain in non-communicative patients and was acceptable to the nursing staff.

These finding come in agreement with study carried out by El-Aqoul, Obaid, Jarrah, Al-Rawashdeh, & Al Hroub, (2020). To evaluate Effectiveness of Education Program on Nursing Knowledge and Attitude toward Pain Management who stated that there were significant differences at three measurement points among the intervention group. There were no differences in the three measurement points among the control group and concluded that nurses have essential roles in cancer pan. A pain management education program can improve nurses' knowledge and attitude toward cancer-related pain assessment.

Furthermore, Salim, Tuffaha, & Brant, (2020) to investigate the impact of a pain management program on nurses' knowledge and attitude toward pain in United Arab Emirates showed that there was significant improvement in practice for most test items following the educational intervention. Moreover, the level of knowledge and attitudes were maintained over three months. The pain management program proved to be effective in improving nurses' pain knowledge, attitudes, and assessment practices and concluded that the program can improve nurses' pain assessment practice and competence.

As regards to practice regarding pharmacological management of pain taking into account the effect of sedation administration on patient safety, sedation assessment should be considered equally as vital as any other cardiopulmonary parameter assessment, and should be part of standard intensive care monitoring parameters. Educational initiatives focusing on developing sedation assessment and management competencies in critical care nurses should be part of ICU practice improvement efforts. Ongoing educational programs with current updates on sedation practice are also necessary to enhance understanding and knowledge

retention among nurses, as knowledge and skills may decline over time.

According to the current finding, the majority of the studied sample in pretest practice level not done in assess use appropriate tool for assessing pain, assess response to pain medication, observe side effect of pain medication and teaching PT. about side effect of medication and in the highest percent of the studied sample done completely in prepare analgesia using TEN rights with a mean score of pre-test practice score regarding pharmacological management. This indicates that there could be a misconception that sedation can eliminate the need for pain assessment and management. This could be due to a lack of knowledge that some sedatives can increase pain perception As a result, providing training on the goals of sedation and pain management should be an important task for hospitals. Also, this finding was in line with the fact that the nurses' exposure to sedation assessment was very limited. Most of the nurses had never received sedation assessment training and they were unaware of existing sedation management guidelines. While in immediate posttest practice and post-test practice score regarding pharmacological management the current study finding showed that the majority of the studied sample practice level completely done in use appropriate tool for assessing pain, assess response to pain medication and observe side effect of pain medication. On the other side, the minority of the studied sample not applicable in assess response to pain medication.

The current finding in accordance with Grommi, Vaajoki, Voutilainen, & Kankkunen, (2023). To evaluate Effect of Pain Education Interventions on Registered Nurses' Pain Management: A Systematic Review and Meta-Analysis, who revealed that, The number of adverse drug events (ADEs) related to administration errors decreased by 17% and that of opioid-related ADEs decreased by 2.6% in three Plan-post intervention and the educational interventions improved knowledge of medical pain management, pain assessment, and pain indicators. Implementation and adherence to pain management protocols improved, as did communication between professional groups. Physicians' and nurses' contentment with their knowledge about pharmacological pain treatment increased.

In similar study carried out by Wissman, et al., (2020). About improving pain reassessment and documentation rates: A quality improvement project in a teaching hospital's emergency department who declared that in this 8-month pre-post interventional, inter professional quality improvement project using focus groups, daily audits, and weekly newsletter communication, pain reassessment and documentation rates increased from the pre intervention period to the post intervention period. Among the encountered patients with successful documentation of pain reassessment, those who received opioid as the initial analgesic medication were twice as likely to be given a rescue pain medication. And concluded that it is unclear pain management intervention increasing pain reassessment rates and documentation leading to practice improvement. Promote communication, improve the documentation of pain score reassessment rates, and provide patients with enhanced pain management in the emergency department.

Concerning critical care nurses practice regarding non-pharmacological management of pain; the current study finding revealed that the majority of the studied sample in pretest practice level not done in massage, relaxation technique, praying and guided imagery although, more than two third of the studied sample done completely in comfortable PT. position and more than half of the studied sample not applicable cold and hot application, more than three quarters reporting distraction. From the researcher point of view, it might be attributed to nurses' lack of knowledge, the absence of sufficient continuing training experiences to upgrade and improve these nurses' practices, heavy workload, less time and limited equipment's, lack of pain management policies, lack of proper pain assessment tool, interruptions of activities relating to pain and unavailability of alternative non-pharmacologic therapy.

While, in immediate posttest practice level the highest percent of the studied sample completely done in comfortable PT. position, quiet & comfortable room and document, reassess and follow up. Also, only few of the studied sample not applicable cold & hot application, massage, relaxation technique, praying and guided imagery, as well, in post-test practice level, the current study cleared that the minority of the studied sample not done in cold & hot application, massage, relaxation technique, distraction, praying, guided imagery and document, reassess and follow up. Also, the minority of the studied sample done incomplete in quiet & comfortable room and document reassess and follow up which indicates the effect of applying the educational program because of nurses' willingness to learn.

These findings are validated by findings Bayoumi, Khonji, & Gabr, (2021). To investigate are nurses utilizing the non-pharmacological pain management techniques in surgical wards?, found that the cognitive method that had the highest score was distraction, followed by positive reinforcement, relaxation, and breathing techniques While nurses can apply the physical method, a massage, followed by thermal regulation (cold/heat) positioning among all non-pharmacological techniques. Additionally, nurses reported the demonstration rate of non-pharmacological techniques, with the highest rate of demonstration occurring once a month post intervention.

In another supported study by Kidanemariam, Elsholz, Simel, Tesfamariam, & Andemeskel, (2020), about utilization of non-pharmacological methods and the perceived barriers for adult postoperative pain management by the nurses at selected National Hospitals in Asmara, Eritrea. Stated that among the physical methods, alleviating pain by positioning the patient was responded by most of the nurses followed by heat\ cold application. Emotional support and therapeutic touch was also reported.

At last, the undesirable nurse-to-patient ratio in the ICUs and nurses' heavy workload forced nurses to disregard some clinical practices and prevented them from the frequent use of pain assessment and management. Unfortunately, the time limits could also interfere with the quality of care and were thus considered as a barrier to optimal care. On the other hand, limited time forced nurses to prioritize duties of equal importance.

After the program implementation, the post-test had shown a highly statistically significant improvement in the nurses' total knowledge scores as well as nurses' practice compared with the pretest phase that reflects the impact of conducting the educational program. This improvement was most likely attributed to the contents of the program which were based on nurses' identified needs and priorities, the simplicity of the language, and avoiding purely scientific terms that could have made the nurses reluctant to learn. Therefore, the regular dissemination of updates cancer pain management information is an essential component of other educational program.

Recommendation

In the light of the current study finding, the following recommendation is suggested:

- Providing continuous hands on training considering evidence based guidelines to improve their knowledge and practice related pain assessment and management;

-Periodical assessment of nurses' performance in relation to pain management;

-Availability of illustrated booklets or guidelines about pain assessment and management;

-Availability of pain assessment tools for conscious and unconscious patients in ICU to be used in the daily nurses' documents,

-Replication of this study on a larger probability sample is highly recommended.

References

1. Alkhatib, G. S., Al Qadire, M., & Alshraideh, J. A. (2020). Pain management knowledge and attitudes of healthcare professionals in primary medical centers. Pain Management Nursing, 21(3), 265-270.
2. Almazan, J., Santos, R., & Cruz, L. (2022). The impact of a 12-hour educational program on nurses' knowledge and attitudes regarding pain management: A quasi-experimental study. Journal of Nursing Education and Practice, 12(4), 45–53. https://doi.org/10.5430/jnep.v12n4p45
3. Alnajar, M. K., Shudifat, R., Mosleh, S. M., Ismaile, S., N'erat, M., & Amro, K. (2021). Pain assessment and management in intensive care unit: Nurses' practices, perceived influencing factors, and educational needs. The open nursing journal, 15(1).
4. Al-Sayaghi, K. M., Fadlalmola, H. A., Aljohani, W. A., Alenezi, A. M., Aljohani, D. T., Aljohani, T. A., ... & Khan, M. F. (2022, March). Nurses' Knowledge and Attitudes Regarding Pain Assessment and Management in Saudi Arabia. In Healthcare (Vol. 10, No. 3, p. 528). MDPI.
5. Al-Sayaghi, K. M., Fadlalmola, H. A., Aljohani, W. A., Alenezi, A. M., Aljohani, D. T., Aljohani, T. A., ... & Khan, M. F. (2022, March). Nurses' knowledge and attitudes regarding pain assessment and management in Saudi Arabia. In Healthcare (Vol. 10, No. 3, p. 528). MDPI.
6. Aslanidis, T., Nouris, C., & Pignatello, R. (2024). Pain Management: From Acute to Chronic and Beyond. BoD–Books on Demand.
7. Basinska, K., Wellens, N. I., Simon, M., Zeller, A., Kressig, R. W., & Zúñiga, F. (2021). Registered nurses in expanded roles improve care in nursing homes: Swiss perspective based on the modified Delphi method. Journal of Advanced Nursing, 77(2), 742–754.
8. Chatchumni, M., Eriksson, H., Mazaheri, M. (2020). A scoping review of pain management education programs (PMEPs): Do they prepare nurses to deal with patients' postoperative pain? Pain Research and Management, 2020, 1–7
9. Chatchumni, M., Eriksson, H., Mazaheri, M., & Kasai, S. (2020). A Scoping Review of Pain Management Education Programs (PMEPs): Do They Prepare Nurses to Deal with Patients' Postoperative Pain?. Pain Research and Management, 2020 1–7.
10. Darawad, M., Alnajar, M. K., Abdalrahim, M. S., & El-Aqoul, A. M. (2019). Cancer pain management at oncology units: comparing knowledge, attitudes and perceived barriers between physicians and nurses. Journal of Cancer Education, 34, 366-374.
11. Ecancer 2024, 18:1821 https://doi.org/10.3332/ecancer.2024.1821 Published: 12/12/2024 Received: 31/08/2023 Publication costs for this article were supported by ecancer (UK Charity number 1176307). Copyright: © the authors; licensee ecancermedicalscience. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http:// creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
12. El-Aqoul, A., Obaid, A., Jarrah, I., Al-Rawashdeh, K., & Al Hroub, A. (2020). Effectiveness of Education Program on Nursing Knowledge and Attitude toward Pain Management. Asia-Pacific journal of oncology nursing, 7(4), 382–388. https://doi.org/10.4103/apjon.apjon_17_20
13. Fares M, Impact of educational program about acute cancer pain management on nurses at intensive care unit, Advanced Nursing Research 2020, 50th World Congress on Advanced Nursing Research; Vienna, Austria- May 11-12, 2020
14. Khalil, N. S. (2018). Critical care nurses' use of non-pharmacological pain management

methods in Egypt. Applied Nursing Research, 44, 33-38.
15. Khan, M. A., Abidin, S. Z. U., Aziz, K., & Shahid, N. (2025). Evaluating the Association Between Vital Signs and Pain Scores in the Emergency Department of a Tertiary Care Hospital in Peshawar, Pakistan. Journal of Health, Wellness and Community Research, e666-e666.
16. Kwon, S. H., Kim, H., Park, S., & Jeon, W. (2020). Development of knowledge and attitudes survey on pain management for Korean long-term care professionals. Asian Nursing Research, 14(2), 105–113. https://doi.org/10.1016/j.anr. 2020.04.002
17. Liyew ,B., Dejen Tilahun, A., Habtie Bayu, N., Kassew, T.(2020). Knowledge and attitude towards pain management among nurses working at university of Gondar comprehensive specialized hospital, Northwest Ethiopia. Pain Res Manag. 2020;2020:e6036575. doi: 10.1155/2020/6036575.
18. Miyoshi Y., Kawahara T., Yao M., Uemura H. (2020). Clinical outcome of surgical management for symptomatic metastatic spinal cord compression from prostate cancer. BMC Urol. 2020; 20(1):143-50.
19. National Institute for Health and Care Excellence. NICE pathways: metastatic spinal cord compression. 2019. https://tinyurl.com/y4qmbdj6 (accessed 17 September 2020).
20. Nazly, A., Khamis, E., & Al Khatib, H. (2021). The knowledge and educational needs of nurses regarding pain management of patients on maintenance hemodialysis: a qualitative study. The Open Nursing Journal, 15(1).
21. Nguyen, A. T., Dang, A. K., Nguyen, H. T. T., Nguyen, T. X., Nguyen, T. N., Nguyen, T. T. H., ... & Vu, H. T. T. (2021). Assessing knowledge and attitudes regarding pain management among nurses working in a geriatric hospital in Vietnam. Journal of Multidisciplinary Healthcare, 799-807.
22. Panlican, A. S., Pasay-an, E. A., Gonzales, F. M., Alreshidi, M. S., Ibno, N. L., & Alenzi, S. S. (2020). A survey on the knowledge and attitude on pain management among nurses employed in the government hospitals. Saudi Journal for Health Sciences, 9(2), 97.
23. Rababa, M., Al-Sabbah, S., & Hayajneh, A. A. (2021). Nurses' perceived barriers to and facilitators of pain assessment and management in critical care patients: A systematic review. Journal of pain research, 3475-3491.
24. Roos-Blom, M. J., Dongelmans, D., Stilma, W., Spijkstra, J. J., de Jonge, E., & de Keizer, N. (2020). Association between organizational characteristics and adequate pain management at the intensive care unit. Journal of critical care, 56, 1-5.
25. Shah S, Kutka M, Lees K, AbsonCh, Hadaki M, CookeD, Neill Ch, Sheriff M, Karathanasi A, Boussios S. Management of Metastatic Spinal Cord Compression in Secondary Care: A Practice Reflection from Medway Maritime Hospital, Kent, UK.Journal. 2021; 11(2), 110.
26. Shuyi, W., & Yiyi, P. (2022). Non-pharmacological interventions related to pain in patients with breast cancer: A descriptive review. J Clin Anesthesiol, 2(2), 106.
27. Taínta, M., Arteche, Y., Martín, I., Salas, V., & Goñi, R. (2020, August). Knowledge and attitudes of intensive care unit nurses regarding pain in patients. In Anales del Sistema Sanitario de Navarra (Vol. 43, No. 2, pp. 177-187).
28. Tate D., Wheeler T., Lane G.,Forchheimer M., Anderson, K., Sorensen F. Recommendations for evaluation of neurogenic bladder and bowel dysfunction after spinal cord injury and/or disease. Journal of spinal cord medicine, 2020;43(2):141-64.
29. Tosunöz, İ. K., Yurtseven, Ş., & Doğan, S. D. (2024). Perceptions of Nurses Regarding Opioid Administration: A cross-sectional study. Pain Management Nursing, 25(4), 363-368.
30. Zaabi, A. A., Al-Saadi, M., Alaswami, H., & Al-Musalami, A. (2023). Assessing Nurses'

Knowledge and Attitudes towards Cancer Pain Management in Oman. Cancers, 15(15), 3925. https://doi.org/10.3390/cancers15153925

31. Zakeri, H., Mahtosh, P., Radmehr, M., Rahbani, R., Montazeri, L., Moalemi, S., ... & Karimi, A. (2024). Pain Management strategies in Intensive care unit: challenges and Best Practice. Galen medical journal, 13, e3264.