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Healthcare Professional Knowledge on Pain Definition and Management, Pre-test and Post-test Results of Short Courses

Ağrı Tanımı ve Yönetimi Konusunda Sağlık Profesyoneli Bilgisi, Kısa Kursların Ön Test ve Son Test Sonuçları

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ABSTRACT

Objective: Most medical professionals pick up pain management skills on the job and are frequently unprepared to work as a team in the real world. This study aims to assess the knowledge of pain management among allied health professionals and their post-graduation training requirements in pain management.

Methods: A prospective survey/scale study was conducted between April 1, 2021, and June 15, 2021. A total of 578 allied health professionals, including nurses, midwives, health officers, and anaesthetic technicians who work in all wards of our university hospital, were enrolled with the ethics committee's approval.

Results: Participants were asked about basic pain definitions. Following education, there was a significant increase in the correct assessment of visual analog scale (VAS) ($p<0.001$) and neuropathic pain definitions ($p<0.001$). Participants' knowledge of opioid administration routes significantly increased from 44.6% (n=164) in group 1 to 65.7% (n=251) in group 2 ($p<0.001$). Participants who were aware that meperidine/pethidine would not be used in chronic pain were 14.1% (n=52) in group 1 and 38.5% (n=147) in group 2 ($p<0.001$).

Conclusion: We think that it is difficult to provide appropriate pain management with healthcare professionals who have not received pain training or whose knowledge has not been renewed. However, comprehension and awareness can be improved with post-graduation pain management education.

Keywords: Allied health personnel, pain management, post-graduation training

ÖZ

Amaç: Çoğu sağlık çalışanı, ağrı yönetimi becerilerini çalışma hayatında edinir. Genellikle iş hayatında bir ekip olarak çalışmak için hazırlıksızlardır. Bu çalışma, yardımcı sağlık profesyonelleri arasında ağrı yönetimi bilgisini ve ağrı yönetimi konusundaki mezuniyet sonrası eğitim gereksinimlerini değerlendirmeyi amaçlamaktadır.

Yöntem: Bu çalışma, 1 Nisan 2021-15 Haziran 2021 tarihleri arasında prospektif anket/ölçek çalışması olarak yapılmıştır. Etik kurul onayı alınarak, üniversite hastanemizin tüm servislerinde görev yapan hemşire, ebe, sağlık memuru ve anestezi teknikeri olmak üzere toplam 578 yardımcı sağlık personeli ile görüşülmüştür.

Bulgular: Katılımcılara temel ağrı tanımları soruldu. Eğitim sonrasında Vizüel Analog Skalanın (VAS) doğru değerlendirilmesinde ($p<0,001$) ve nöropatik ağrı tanımlarında ($p<0,001$) anlamlı artış görüldü. Katılımcıların opioid veriliş yollarına ilişkin bilgisi grup 1'de %44,6'dan (n=164) grup 2'de %65,7'ye (n=251) yükseldi ($p<0,001$). Kronik ağrıda meperidin/petidin kullanılmadığını bilen katılımcılar grup 1'de %14,1 (n=52), grup 2'de %38,5 (n=147) idi ($p<0,001$).

Sonuç: Ağrı eğitimi almamış ya da bilgisi yenilenmemiş sağlık personelleri ile uygun ağrı yönetimini sağlamanın zor olduğunu düşünüyoruz. Ancak mezuniyet sonrası ağrı yönetimi eğitimi ile kavrama ve farkındalık geliştirilebilir.

Anahtar sözcükler: Yardımcı sağlık personeli, ağrı yönetimi, mezuniyet sonrası eğitim

INTRODUCTION

Complex experiences like pain have an impact on well-being, productivity, and health. It calls for a cooperative team approach with a shared vocabulary and a distinct understanding of roles and duties (1). Most medical professionals pick up pain management skills on the job and are frequently unprepared to work as a team in the real world (2).

Even though there is a known need for better education in all forms of pain, professional education in pain is not frequently provided (3). Early 1990s studies identified a key impediment

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to successful pain management: a lack of knowledge. This impediment is still present in more current literature. Deficits exist in understanding the physiology of pain, evaluation criteria, the distinction between addiction, tolerance and physical dependency, and the significance of self-report as the best predictor of one's own pain (4,5). Education is crucial in preparing medical professionals to provide effective pain management (6).

Insufficient attitudes and knowledge about pain management have been shown in the literature. Previous studies have revealed that nurses and other healthcare professionals would benefit significantly from additional, rigorous continuing education that is updated with current treatment standards and staff development (7). The classification of pain as the fifth vital sign highlighted the significance of pain assessment, along with any deficiencies and the necessity for education on this issue (8). This study aims to assess the knowledge of pain management among allied health professionals and their post-graduation training requirements in pain management.

MATERIAL and METHODS

Study design: A prospective survey/scale study was conducted between April and June 2021, A total of 578 allied health professionals, including nurses, midwives, health officers, and anaesthetic technicians who work in all wards of Mersin University hospital, were enrolled with the ethics committee's approval (date: 17.03.21, issue no: 2021/241).

Sample and settings: Of the 578 participants, 368 Group 1 completed the survey before education. The post-test was administered 3 months after the course and participants (Group 2) completed it.

Course: All of the allied health professionals employed by our hospital attended lectures as part of their post-graduate education. A medical professional (SR) delivered a total of 10 courses, three sessions per week. The definition of pain, pain types, measurement methods, and treatment methods (drug and interventional management) were explained in the course content. The course was carried out with interactive training methods.

Measurements: The tests included 22 questions in a set order. The participants were asked 1 multiple-choice closed-ended, 7 open-ended, 6 true or false, and the others closed-ended questions.

Pretest and posttest online survey services were used to complete the survey.

When choosing the answer possibilities, the principles of objectivity and avoiding directing the participant toward a certain response were followed. We only gathered fundamental demographic information from participants using short, close-ended questions; we did not ask them for personal information like their names. The beginning of the course included a letter informing the participants of the questionnaire's purpose and format.

The answers to the open-ended questions were accepted as correct as follows:

- Pain definition:
  - An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage (9).
- At which step of the World Health Organization's (WHO) analgesic ladder are invasive treatments used?
  - Applicable at all steps.
- Which parameters are configured in the Patient Controlled Analgesia (PCA) device?
  - Infusion dose, bolus dose, lock-out time, total volume
- What are the symptoms of neuropathic pain?
  - Shooting, burning, stabbing, or electric shock-like pain or pins and needles feeling.
- Can you give an instance of acute pain?
  - Postoperative pain, injuries, appendicitis etc.
- Can you give an instance of chronic pain?
  - Headache, cancer pain, fibromyalgia etc.

Statistical Analysis

The Statistical Package for Social Sciences version 24 (SPSS v.24) program was used to enter the data for the statistical analysis. Additionally, calculations were performed using the E-PICOS tool in accordance with the MedicReS Good Biostatistical Practice guidelines. Descriptive statistics were used for categorical variables, and frequency calculations were expressed as a percentage. The chi-square method was used to evaluate categorical variables, and the Paired-Samples T-test was used to compare means between groups. Results with $p<0.05$ were considered statistically significant.

RESULTS

The pre-test was completed by 368 of the 578 who received pain training, and the post-training questionnaire by the same subjects. The demographic data are summarised in Table I.

Participants were asked about basic pain definitions. Following education, there was a significant increase in the correct assessment of visual analog scale (VAS) ($p<0.001$) and neuro-

Table I: Demographic Data

	Group 1	Group 2	p-value
Age mean (years, mean ± SD)	31.8 ± 6.9	31.3 ± 6.4	0.259
Clinical experience mean (years, mean ± SD)	8.8 ± 7.2	8.1 ± 6.5	0.184

Table II: Pain Definitions

Correct definition	Group 1 (n) (%)	Group 2 (n) (%)	p-value
Pain	247 (47.2)	276 (52.8)	0.074
VAS*	136 (37)	278 (72.8)	<0.001
Neuropathic pain	304 (82.6)	343 (89.8)	0.005
Acute pain	287 (77.9)	317 (83)	0.134
Chronic pain	292 (79.3)	316 (82.7)	0.020

*__VAS:__ Visual analog scale.

Table III: True-False Questions

Question (answer; True or False)	Correct responses		
	Group 1 (n) (%)	Group 2 (n) (%)	p-value
Just opioids, provides adequate analgesia in cancer pain. (False)	192 (52.1)	312 (81.7)	<0.001
Opioids can be more or less addictive in a short time. (True)	112 (30.4)	136 (35.6)	<0.001
Pain treatment method should be determined specific according to the patient's pain intensity. (True)	338 (91.9)	361 (94.5)	0.119
One of the most important issue in pain assessment is the patient's self-report. (True)	224 (60.9)	279 (73)	<0.001
The sensory pain threshold is the same for all patients. (False)	317 (86.1)	350 (91.6)	0.016
Insomnia, anxiety and depression, reduce pain tolerance. (True)	276 (75)	311 (81.4)	0.004

pathic pain definitions (p<0.001). Those who could give proper examples of acute pain types increased without a significant difference (p=0.134) but, true responses of chronic pain types increased significantly (p=0.02) (Table II).

With a statistically significant difference (p<0.001), the percentage of participants who indicated that they were aware of the WHO analgesic ladder increased from 29.3% (n=108) in Group 1 to 60.4% (n=231) in Group 2. When the analgesic ladder was specifically questioned, both Groups' erroneous responses were higher (n=317 (86.1%) in Group 1 and n=333 (87.1%) in Group 2).

Before courses, 61.9% of participants (n=228) reported having heard the phrase PCA, and after education, that number increased to 83.7% (n=320) (p<0.001). However, 8.6% (n=31) in group 1 and 22.8% (n=84) in group 2 of participants had complete knowledge of the parameters that needed to be programmed into the PCA device (p<0.001).

Peripheral nerve block (PNB) awareness rates among participants were 50.5% (n=186) in Group 1 and 76.4% (n=292) in Group 2 (p<0.001). True knowledge that local anaesthetic was used to produce analgesia in PNB increased from 42.4% (n=156) in Group 1 to 54.5% (n=208), with a significant difference (p=0.001).

Participants were asked about the administration routes of opioids. One could select multiple options at once. Participants' knowledge of more than four routes significantly increased from 44.6% (n=164) in Group 1 to 65.7% (n=251) in Group 2 (p<0.001). Participants who were aware that meperidine/pethidine would not be used in chronic pain were 14.1% (n=52) in Group 1 and 38.5% (n=147) in Group 2 (p<0.001).

The true-false questions are thoroughly demonstrated in Table III.

DISCUSSION

The overall findings of this study show that the healthcare professionals employed by our institution had a limited understanding of the concepts and language related to pain management. These findings indicate that providing appropriate pain management is not simple. However, knowledge and awareness have improved due to post-graduation pain management training.

The impact of education on nurses' knowledge and attitudes about pain treatment was studied by van Dijk et al. They claimed that compared to those without such education, nurses with additional pain education had greater knowledge levels and fewer impediments to pain management (10). An additional study looking at nurses' awareness of pain found that education about pain raises knowledge scores (11). Although our participants had an average of nine years of clinical experience, it was found that only 50% of them correctly defined pain. In pre-test, the percentage of people who accurately defined the VAS was lower (39.4%). Following the pain lecture, a significant difference was observed in the percentage of people who correctly characterised the VAS (89.9%). As we continue to examine several definitions of pain terminology, we have seen an increase in those who correctly identified neuropathic pain following the course (from 82.6% to 89.8%). Around 80% of participants before and after training could describe real-world examples of acute and chronic pain. According to our study, education led to an increase in the establishment of common pain terminology.

In a recent study, the knowledge of 1262 medical professionals—including 459 doctors, 486 nurses, and 317 pharmacists—was evaluated. A remarkable 85% of participants claimed to have a thorough understanding of the WHO analgesic ladder. Physicians have greater knowledge than nurses had. However, the level of awareness among healthcare workers was very high. Furthermore, respondents who had undergone training reported having more knowledge than those who hadn't (12). Our study showed that our participants had a higher awareness of the WHO analgesic ladder after the course (60.4% vs. 29.3%). Unfortunately, only a small percentage of both groups (13.9% and 12.9%, respectively) correctly answered the detailed WHO analgesic ladder question. The lack of appropriate responses to this question indicates that it may have been beyond the employees' professional knowledge scope. The results of the current investigation showed that there was not enough agreement on terminology and a clear knowledge of the subject.

Kang and Kwon recently investigated the understanding and mindset of surgical ward nurses toward PCA. They observed that nurses who received PCA education had noticeably better attitudes than those who did not. Additionally, older nurses with more clinical expertise had a more positive outlook on PCA (13). In this study, the rate of hearing PCA expression was 83.7% after the course. However, only a small percentage of people in both groups (8.6% and 22.8%, respectively) were familiar with the parameters that must be programmed into PCA devices. The course did not involve any hands-on work. This can be attributed to a lack of sufficient understanding of the issue.

The responsibilities of nurses in regional anaesthesia have frequently been highlighted in the literature. In an overview, Pincus highlighted the crucial role of nurses in monitoring patients who had received injections of local anaesthetics due to the possibility of systemic toxicity (14). Per Hunter et al., nurses should be knowledgeable about and confident in their ability to work effectively with clinicians in the management of patients having PNB (15). Additionally, McCamant highlighted the involvement of nursing in PNB (16). In the current study, there was a significant increase in the percentage of participants who said they had heard the term PNB, rising from 50.5% to 76.4%. Additionally, after training, a significant increase in the number of individuals who knew local anaesthetics being administered in PNB was observed. In light of all of this, it seems to reason that healthcare professionals should be knowledgeable about PNB and the administration of local anaesthesia. The education provided on this topic has expanded this knowledge.

Authors of a recent study provided healthcare workers with opioid education and training to assess their present knowledge and practice. They found that supplying formal, up-to-date opioid education to nurses promoted greater collaboration and patient safety (17). In the current study, the healthcare professionals scored better regarding opioid delivery methods after training compared to before (65.7% to 44.6%). Additionally, after the education, the percentage of individuals recognizing that meperidine shouldn't be used to treat chronic pain increased (from 14.1% to 38.5%). We assume that the off-label use of meperidine in wards may be the source of this situation.

In a study by Latchman, it was found that only 4 of the 41 nursing students who were in their last year had attended pain lectures. The study also examined the knowledge and skills of 41 nursing students. The author claimed that the undergraduate nursing curriculum lacked knowledge and attitudes towards pain treatment (18). In a cross-sectional study, Nusbaum et al. found that nurses lacked knowledge about opioid usage. They suggested that continuing nursing education programs be used to address this condition (19). A study on nurses' understanding of opioids indicated that their study group had high knowledge of multimodal analgesia (20). The aim of Prempreet et al. was to describe the amount of expertise that exists among healthcare professionals in opioid treatment. They found that nurses and physician's assistants were familiar with the interdisciplinary approach for management chronic pain (21). In our study, knowledge of multimodal analgesia in the treatment of cancer pain increased (from 52.1% to 81.7%) after education. Additionally, knowledge of opioids' propensity for addiction increased significantly (from 45.4% to 62.6%). In our analysis, there is a startling lack of knowledge and experience with opioids.

It was noted in the literature that patient-centred strategies can prevent overtreating or insufficient care (22). About 90% of the healthcare professionals in our sample believed that patient-specific pain management was essential in both groups. Given the subjectivity of pain experience, the literature stressed the need for self-reporting pain (23). Following education, there was an increase in those who understood the significance of self-report in pain assessment (from 60.9% to 73%). Thus according to Guldogus et al., different individuals and even the same person at other times might experience pain in different ways, expressing it differently and having different pain threshold levels (24). Participants in the current study were aware that patients' sensory pain thresholds varied. It was shown in a controlled clinical trial by Vossen et al. that psychosocial and cognitive factors like anxiety and depression moderate pain threshold (25). In our study, also, after receiving pain education, awareness of how pain tolerance is impacted by sleeplessness, anxiety, and depression considerably increased (75% to 81.4%). In light of all of this, it is obvious how important education is in the assessment and management of pain, which is referred to as the fifth vital sign.

A limitation of the study is that it is a single-institution study; there is sampling bias, and as such may not be applicable to all other institutions. Additionally, all individuals did not answer some survey questions, thereby showing a slight discrepancy between data sets.

CONCLUSION

In conclusion, it is difficult to provide appropriate pain management with healthcare professionals who have not received pain training or whose knowledge has not been renewed. However, comprehension and awareness can be improved with post-graduation pain management education.

AUTHOR CONTRIBUTIONS

Conception or design of the work: SR
Data collection: MB, SR, AO
Data analysis and interpretation: MB, SR
Drafting the article: MB, SR, AO
Critical revision of the article: MB, SR
The author (MB, SR, AO) reviewed the results and approved the final version of the manuscript.

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