ORIGINAL STUDY



The nurse: skills and training in ICU pain management. An observational study.

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Abstract - The paper explores pain management in intensive care units, recognising the crucial role of nurses in this context. The descriptive-observational study, uses the Knowledge and Attitude Survey About Pain (KASRP) questionnaire to assess nurses' knowledge and attitudes towards pain management. The results indicate an average correct response rate of 63%, highlighting gaps in skills, particularly in pharmacological pain management and patient involvement in decision-making. In addition, the discrepancy between pain assessment and actual clinical action appeared to be significant. The conclusions emphasise the urgent need to improve nurse education to ensure more effective pain management, stressing the importance of a collective commitment to continuing education and the adoption of evidence-based approaches to provide effective care for critically ill patients.

Keywords: nursing, intensive care, lack of knowledge, pain.

Key messages:

- The timely implementation of improved training of nurses in intensive care units can optimise pain management and improve recovery outcomes of critically ill patients.

Introduction

Pain is a pervasive and significant health problem worldwide.

The prevalence of extreme pain in medical and surgical intensive care unit (ICU) patients is over 80% (1), for a variety of reasons, including traumatic injury, infection, immobility and surgery.

In the United States of America, it is known that approximately one hundred million people seek medical care primarily because of pain (2). In Europe, almost 19% of the adult population have been found to experience moderate or low intensity pain, but the management of this pain is often inadequate (3).

In developing countries, the prevalence of pain in the general population is around 18% (4).

Effective pain management in intensive care unit (ICU) patients is essential to prevent serious complications, including delirium, prolonged mechanical ventilation and physical imbalance (5). Nurses, who play a central role in the care of critically ill patients, are responsible for pain management. However, despite increasing awareness of the importance of pain control in the ICU, nurses' education and skills in this area are often lacking (6), as evidenced by several studies, including a recent meta-analysis

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by Ortiz et al (7). This gap between theory and practice requires in-depth investigation. Therefore, this work aims to investigate the knowledge and skills of ICU nurses in pain management (5), with the aim of improving the quality of care provided to critically ill patients and addressing gaps in nursing education. The aims of such a study include analysing nurses' knowledge of pain assessment and management and observing their attitudes towards these practices. This could also contribute to the development of future educational programmes.

Materials and Methods

The aim of the study was to assess nurses' knowledge and attitudes towards pain management in intensive care units. The methodological approach is descriptive-observational.

The choice of the Knowledge and Attitude Survey About Pain (KASRP) instrument was guided by a systematic literature review performed on PubMed, which identified it as an effective data collection tool for assessing nursing competence in the ICU setting. The 39-item questionnaire focused on six core pain-related dimensions aligned with the American Pain Society, World Health Organization, and National Comprehensive Cancer Network guidelines. A socio-demographic questionnaire was structured to define the profile of the sample unit.

Sampling, based on a convenience strategy, involved ninety (90) nurses from Italian intensive care units, with the exclusion of six participants who did not meet the inclusion criteria *(**Tab. 1**)*. Data collection was carried out using Google Forms between June and September 2023, maintaining anonymity. Data anal-

Tab. 1 - Sampling inclusion and exclusion criteria..

Exclusion Criteria	Inclusion Criteria
Not yet have a bachelor's degree (students)	Have obtained at least a bachelor's degree.
Serve in operating units other than ICU and resuscitation	To play one's role in contexts such as ICU and resuscitation
Serving in hospitals outside Italy	Be employed in Italian hospitals

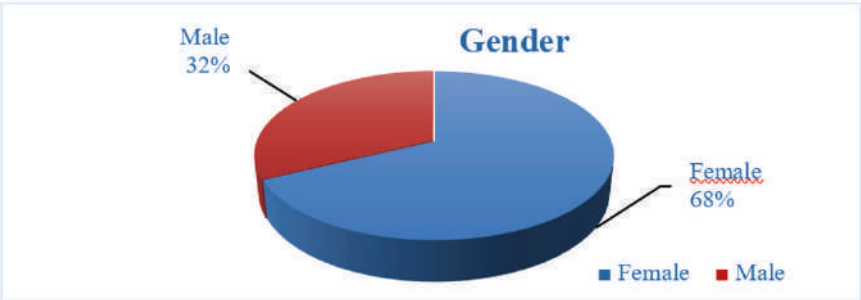


Fig. 1 - Socio-demographic characteristics.

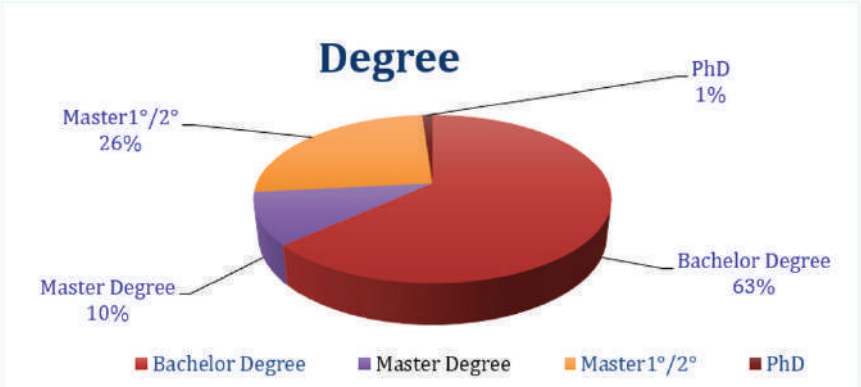


Fig. 2 - Socio-demographic characteristics Educational qualification.

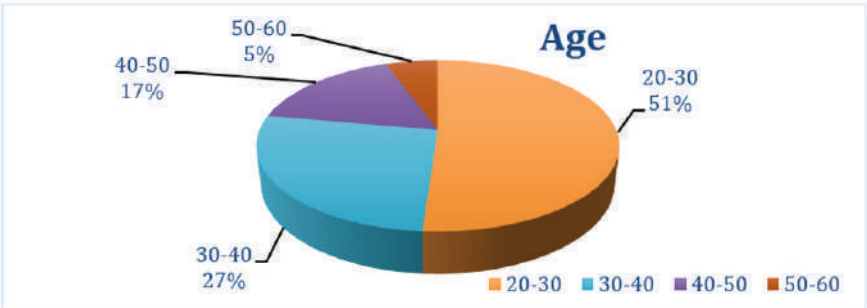


Fig. 3 - Socio-demographic characteristics. Age

ysis was carried out using SPSS software v. 21.

The socio-demographic data were analysed using descriptive statistics. Cronbach's alpha and Pearson's intra-item correlations were analysed to highlight the reliability of the data collection instrument and possible correlations. Limitations of the study include the sample unit and the time constraints of data collection.

Results

Looking at the demographic characteristics of the sample, the prevalence of female gender (67.8%) and the majority of nurses in the 20-30 age group (51.1%), more than half of whom (63.3%) have only a three-year degree ***(Fig. 1, 2, 3)***.

In terms of work experience, 67.8% of nurses have less than 10 years of work experience, while 24.4% have between 10 and 20 years of service and only 7.8% of nurses have more than 20 years of experience in the field. The study involved professionals from different Italian regions such as Lazio, Lombardy, Piedmont, Marche, Abruzzo, Veneto, Basilicata, Tuscany, Liguria, Campania and Apulia ***(Fig. 4)***.

Statistical analysis was carried out using SPSS and a descriptive scale analysis was performed by analysing mean, standard deviation, skewness and kurtosis ***(Tab. 2)***.

The instrument showed medium-low reliability with a Cronbach's alpha of 0.330, but this was justified by the small sample size, as it was less than 100. The results of the study were evaluated according to the minimum score, which was divided into four categories: good, fair, fair and poor. These categories correspond to correct response rates of 80%, 70%, 60% and 50% respectively

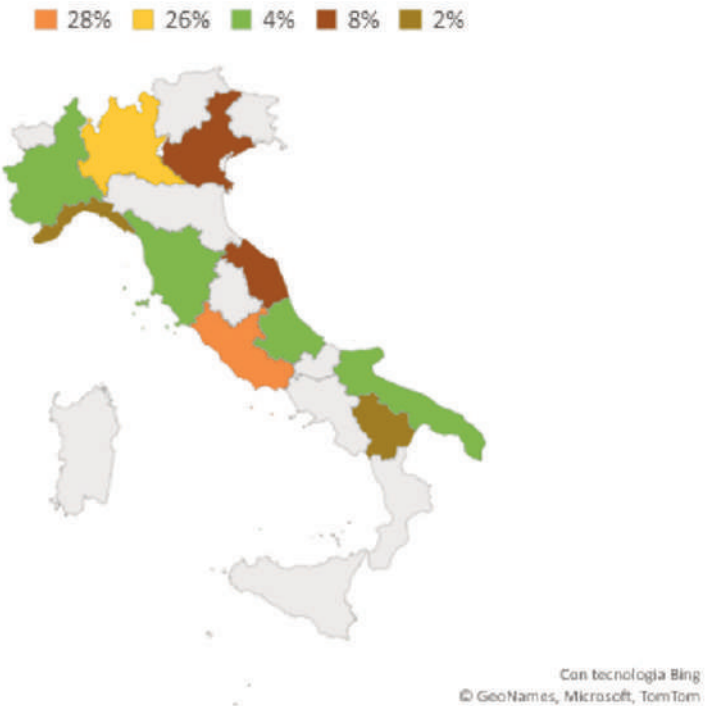


Fig. 4 - Sample origin.

(3). In addition, questions with a correct response rate of less than 80% were considered as areas of knowledge deficit according to the previously established criterion (8).

The calculation of the Pearson correlation index has shown certain trends in the responses, such as a strong correlation between male gender and item 11 (r 0.210) "Patients should be encouraged to endure as much pain as possible before taking an opioid (false)", since 60% of the participants who incorrectly answered this statement as true were male ***(Fig. 5, 6, 7, 8)***. This association could be due to a number of factors, such as the influence of gender stereotypes or personal experience. It is important to conduct further research to better understand the reasons for this correlation and whether there are confounding factors that could influence it.

A particular association was also noted between the age (40-60) of the sample and an increase in incorrect answers to items 12, 31 (r 0.223, r -0.220). The two questions deal with the centrality of the patient in different ways, but both show the importance of listening to and respecting the patient's perspective (gold standard) in decision-making and pain management. The association between the age of nurses and incorrect answers to the questions just described underlines the importance of continuing education for healthcare professionals, especially for those who have been at university longer. It is particularly important to ensure that nurses understand and correctly apply current evidence-based approaches to pain management and thus remain up to date. There does not appear to be a particular decrease in error rate with increasing level of education.

In terms of intra-item correlations, there appears to be an interesting association between questions 1 and 11, 17, 31, 38 (r 0.267, r 0.211, r -0.243, r -0.246), i.e. it

Tab. 2 **-** item analysis with SPSS.

ITEM	MEDIA	DS ±	ASYMMETRY	KURTOSIS
Item 1	1,27	0,445	1,073	-0,868
Item 2	1,33	0,474	0,719	-1,517
Item 3	1,37	0,485	0,563	-1.722
Item 4	1,32	0,470	0,774	-1,434
Item 5	1,76	0,432	-1,210	-0,550
Item 6	1,67	0,474	-0,719	-1,517
Item 7	1,91	0,286	-2,938	6,785
Item 8	1,51	0,503	-0,045	-2,044
Item 9	1,56	0,500	-0.227	-1,993
Item 10	1,13	0,342	2,194	2,877
Item 11	1,11	0,316	2,517	4,443
Item 12	1,06	0,230	3,947	13,884
Item 13	1,94	0,230	-3,946	13,884
Item 14	1,93	0,251	-3,534	10,724
Item 15	1,51	0,503	-0,045	-2,044
Item 16	1,30	0,461	0,888	-1,240
Item 17	1,62	0,488	-0,513	-1,777
Item 18	1,47	0,502	0,136	-2,027
Item 19	1,76	0,432	-1,210	-0,550
Item 20	1,90	0,302	-2,712	5,477
Item 21	1,91	0,286	-2,938	6,785
Item 22	1,88	0,329	-2,346	3,583
Item 23	2,39	1,304	0,109	-1,638
Item 24	1,383	0,912	2,738	6,227
Item 25	2,18	0,801	1,273	1,342
Item 26	2,03	0,814	0,451	-0,255
Item 27	1,30	0,644	1,952	2,344
Item 28	2,44	1,191	0,502	-0,715
Item 29	1,58	1,398	4,050	22,745
Item 30	3,29	0,974	-0,763	-1,183
Item 31	2,87	0,603	-0,566	5,670
Item 32	2,59	0,685	-0,972	0,348
Item 33	1,82	0,856	0,794	-0,092
Item 34	1,17	0,503	3,013	7,984
Item 35	2,48	0,622	0,658	-0,157
Item 36	2,97	1,361	-0,649	-1,504
Item 37	2,34	0,938	0,089	-0,882
Item 38	6,09	2,373	-0,815	-0,717
Item 38b	1,88	0,946	0,901	-0,068
Item 39	7,02	1,767	-1,671	2,841
Item 39b	2,36	1,125	0,273	-1,295

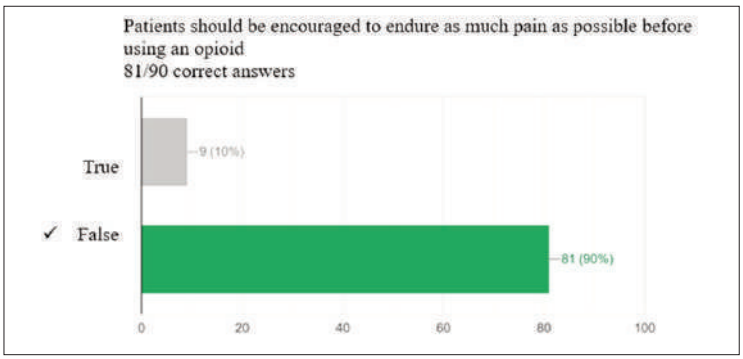


Fig. 5 **-** answer item 11.

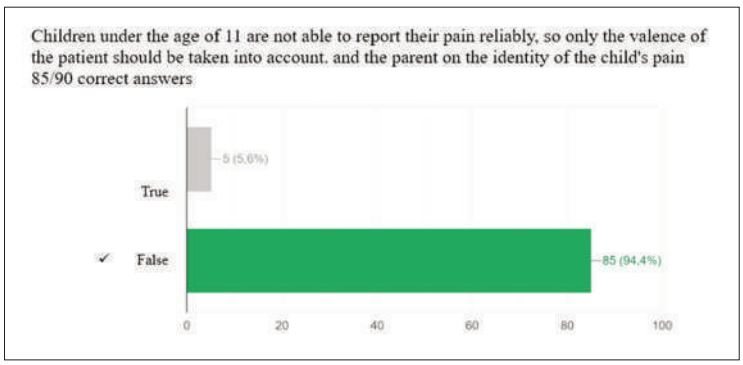


Fig. 6 **-** answer item 12.

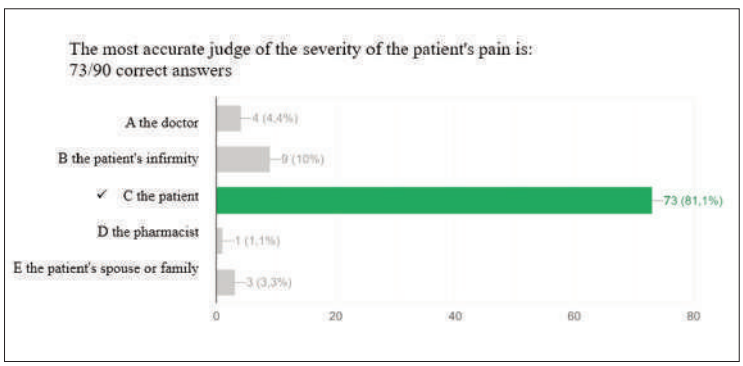


Fig. 7 **-** answer item 31

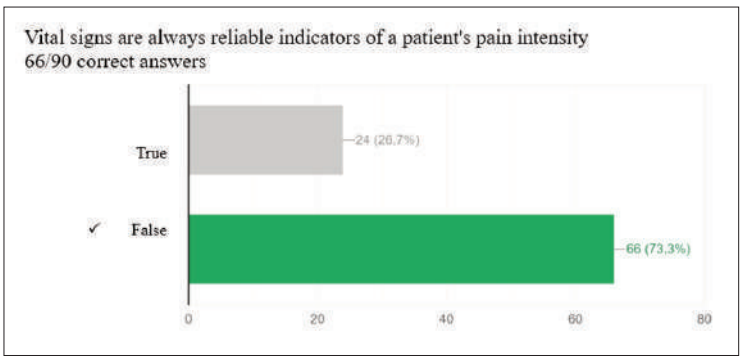


Fig. 8 **-** answer item 1.

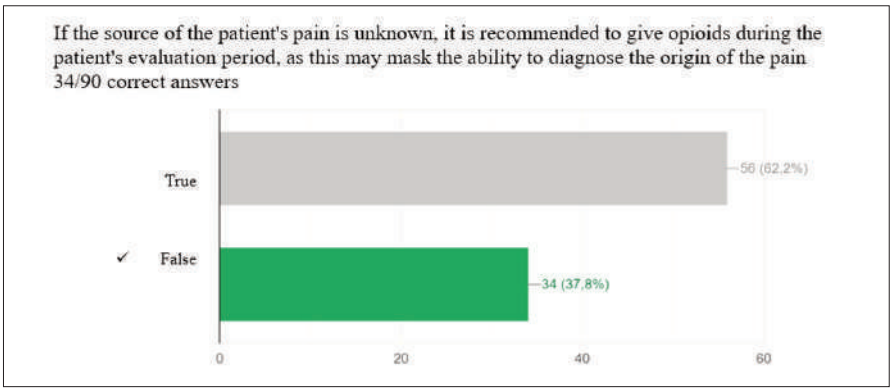


Fig. 9 - answer item 17.

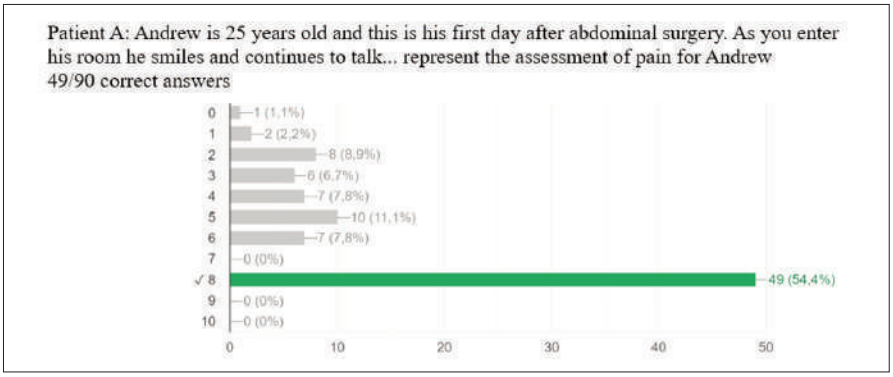


Fig. 10 - clinical case 1 evaluation (item 38).

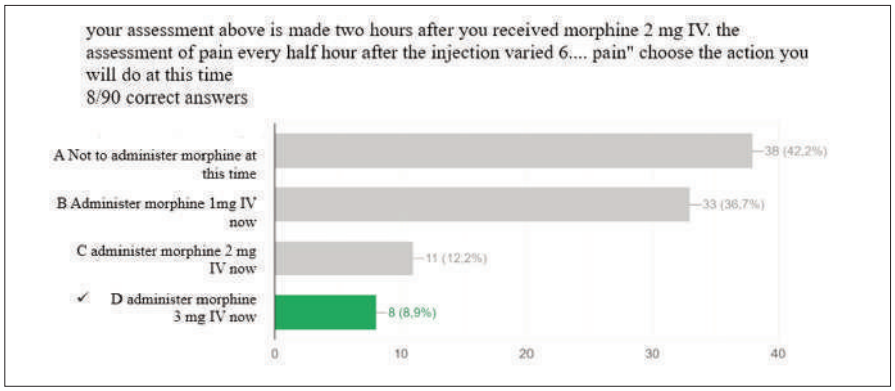


Fig. 11 - clinical case 1 intervention (item 38b).

appears that incorrect answers to one of these items are associated with incorrect answers to the other items in a good proportion of cases ***(Fig. 9, 10)***.

These questions, most of which are based on misconceptions about pain management and assessment, show a remarkable relationship. Curiously, those who hold one of these misconceptions tend to share the others in parallel, suggesting the presence of distorted or backward knowledge. This trend underlines the urgency of continuing education; as such, misconceptions can have a profound effect on the quality of treatment offered to patients. In addition, it seemed appropriate to us to point out that, although items 38 and 39, concerning the assessment of pain based on a clinical case, do not belong to the categories with the highest number of incorrect answers. Their second part, i.e. items 38b and 39b, in which the choice of an intervention was envisaged based on the previous assessment do seem to belong to this category ***(Fig. 11, 12, 13).***

This phenomenon highlights a discrepancy between the ability to objectively assess pain and the ability to intervene appropriately based on that assessment. Thus, a significant dichotomy emerges in the participants' ability to manage patients' pain; whilst they demonstrated competence in assessing the level of pain expressed by the protagonists of the questions, as in the case of Andrew, they seemed to have difficulty in translating this assessment into appropriate clinical action ***(Figures 14, 15)***. This discrepancy suggests that although health professionals recognise and validate a patient's self-report of pain, they may be reluctant or uncertain about how to act on this information. There may be several reasons for this reluctance:

- Fear of opioids: Pain management with opioids is a controversial topic. Fear of side effects, addiction or possible overdose may make health professionals reluctant to administer such drugs, even when appropriate. This concept seems to be reinforced by the high number of wrong answers in questions 9 and 33.
- The need for objective data for assessment. Healthcare professionals are trained to rely on objective signs and symptoms. In Andrew's case, although they recognised his level of pain, the lack of obvious clinical symptoms may have prevented them from administering an appropriate dose of analgesia.
- Misunderstanding patient comfort:

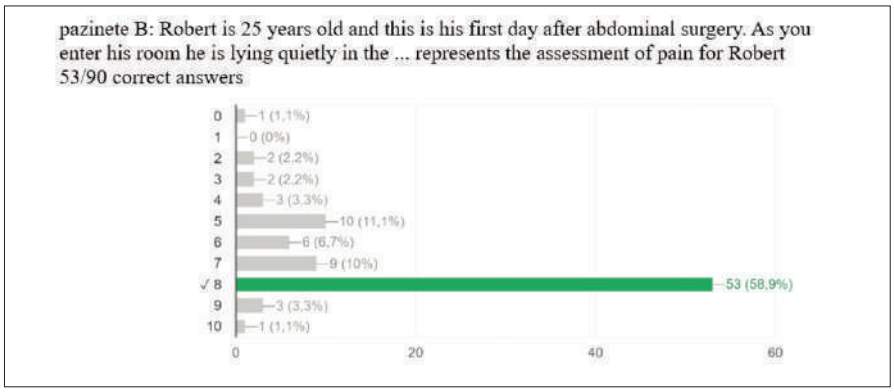


Fig. 12 - clinical case 2 evaluation (item 39).

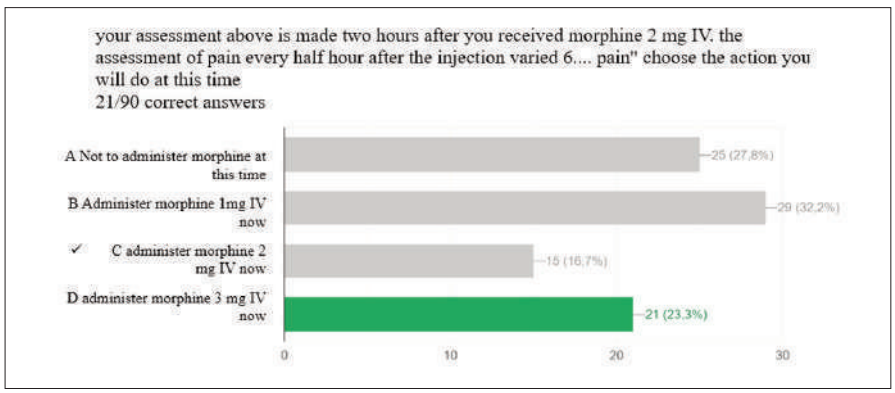


Fig. 13 - clinical case 2 intervention (item 39b).

Even if the initial assessment of pain was correct, the importance of achieving the patient's desired level of comfort may not have been fully understood.

Discussion

The results of the study showed the general trend of the sample and a detailed analysis of the total scores obtained showed that the average score was 24.48 out of a maximum of 39, with a range of 12-34 points, giving a correct response rate of 63%. This figure underlines that a significant number of participants did not achieve a comprehensive knowledge of pain management, demonstrating deficiencies in their preparation. Although a large proportion demonstrated sound knowledge, the identification of these lower scores indicates an opportunity to improve the level of preparation of healthcare professionals in pain management.

If we compare our study with the other two studies that used the same instrument we used (KASRP), carried out by Jamal et al., in Saudi Arabia in 2023 (5), and by Damico et al. in Italy in 2021 (9) – which are discussed in detail in the literature review - the picture of knowledge we found seems to be something in between that described by both authors. If, on the one hand, it appears that nurses in the context of intensive care are poorly prepared in terms of pain management, on the other hand, in the national scenario the situation seems to be improving, as shown by an average of scores obtained equal to 31.21. Although the situation does not reflect a total lack of knowledge, we do not fully agree with the conclusions of the Italian study, since the preparation of the participants does not seem to be adequate to the standards needed to guarantee the reduction of pain levels in hospitals, especially in delicate areas of care such as intensive care and resuscitation.

Despite the fact that some professionals appear to be well versed in the subject, many others seem to have a background of knowledge that has been modified by backward and stereotyped ideas, especially with regard to pharmacological management, emphasising commonplaces regarding the use of opioids that seem difficult to eradicate, often leading to the phenomenon of "oligo analgesia" (10). Not to mention the widespread belief that failure to treat pain facilitates the diagnostic process of underlying pathologies, or that it is necessary to wait for the worst possible pain before intervening, when it

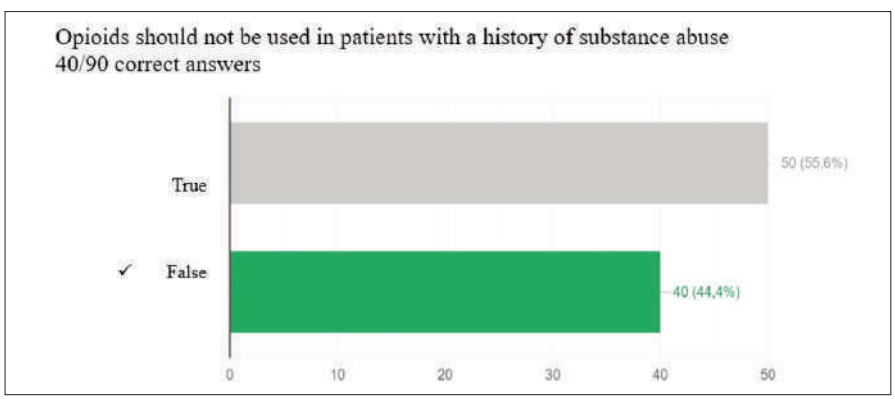


Fig. 14 - answer item 9.

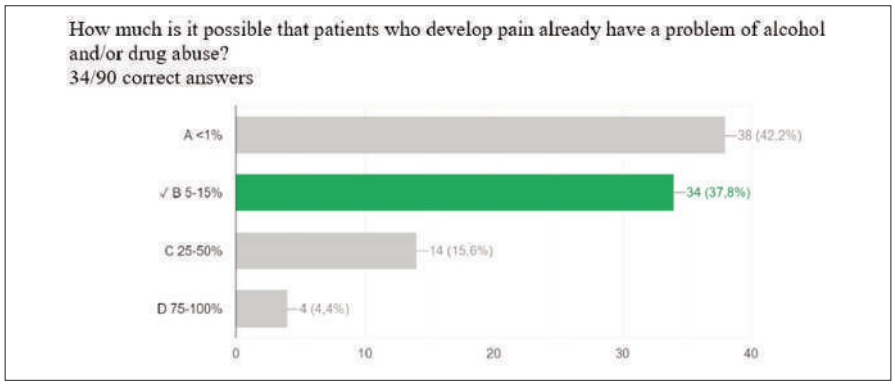


Fig. 15 - answers item 33

is now known that relief strategies should be used as early as a pain state of 5 on a scale of 0 to 10. In most cases, there is evidence of the benefits that can be gained by anticipating the patient's suffering, particularly in situations where it is known that the patient will experience pain because of medical procedures or treatments. This preventive approach not only improves the patient's well-being, but also helps to avoid possible sensitisation of the nervous system to nociceptive signals (11). In other words, preventing pain, rather than waiting for it to become intolerable, can help to reduce the perception of pain and improve the patient's overall experience.

In addition, we feel it is appropriate to point out that 24% of responses to question 31 and 33% of responses to question 12 relied on third parties (e.g. spouse or parents) to assess the pain, although it is widely accepted that self-report is the most reliable measure of the presence and intensity of pain (12).

In confirmation of what has already been said, even if the patient is unable to communicate the discomfort explicitly, it is not advisable to rely on the considerations of external persons, but we must rely on the behavioural signals that the latter send us by means of instruments, i.e. the case-specific assessment scales (BPS, C-CPOT, PAINAD, FLACC). In conclusion, the results of our study show that there is a real need to improve the training of health professionals in pain management, especially in critical contexts. Promoting the adoption of preventive approaches, respecting patients' judgement of their pain when they are able to express it, and overcoming outdated beliefs are crucial steps to reduce patient suffering and improve the quality of healthcare. Our efforts should be aimed at ensuring optimal pain management, enabling patients to have a more comfortable and positive experience of care.

Conclusions

The study's conclusions highlight a critical issue that requires in-depth reflection and decisive action. The comprehensive review clearly demonstrated that, despite medical advances, there are still significant gaps in pain management in this crucial setting. Analysis of the KASRP questionnaires revealed partial preparedness and entrenched preconceptions that hinder the provision of effective care.

Looking to the future, however, important lessons emerge. It is imperative that the medical community and healthcare professionals work together to redefine the approach to pain management in the ICU. This will require a collective commitment to education and training aimed at dispelling myths about opioids and overcoming stereotypes that prevent timely and effective pain control.

Ongoing technology and research offer promising prospects for the future. The adoption of EBN-based protocols, the use of innovative therapies and the use of advanced monitoring systems can greatly improve pain management in the ICU. We must seize these opportunities to ensure that pain management is based on science, humanity and empathy.

With this in mind, change is possible, but it requires commitment, education and the adoption of approaches based on the best available evidence. The future of pain management in critical care is a journey that will require constant effort, but with awareness and commitment, we can ensure more humane and effective care for critically ill patients worldwide.

For the future, therefore, ICU nurses must be proactive and continually educate themselves to meet the evolving challenges and ensure quality care. Multidisciplinary collaboration and an evidence-based approach are necessary to make informed and comprehensive therapeutic decisions. The development of advanced communication skills can help nurses establish an empathic bond with patients, contributing to pain control. Advocates of patients' rights, their regular assessment of pain and monitoring of responses to treatment are essential to dynamically adapt the care plan.

Disclosures:

The author declares that he has no competing interests.

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