



ELSEVIER

Contents lists available at ScienceDirect

Pain Management Nursing

journal homepage: www.painmanagementnursing.org

Original Research

Knowledge about Pain in Spanish Nursing Students

David Zuazua-Rico^{a,f}, Maria Pilar Mosteiro-Diaz^a, Eladio Collado-Boira^b, Maria del Carmen Casal-Angulo^c, Ana Isabel Cobo-Cuenca^{d,1}, Julio Fernandez-Garrido^{c,g}, Jesús María Lavado-García^e, Alba Maestro-Gonzalez^{a,f}

^a Medicine department, Nursing Area. University of Oviedo, Spain^b Department of Health Sciences. Jaume I University, Castelló de la Plana, Spain^c Faculty of Nursing and Podiatry. University of Valencia, Spain^d Faculty of Physiotherapy and Nursing. Group IMCU. University of Castilla-La Mancha. Toledo, Spain^e University of Extremadura, Faculty of Nursing and Occupational Therapy. Cáceres, Spain^f Hospital Universitario Central de Asturias. Oviedo, Spain^g Conselleria de Sanitat Universal i Salut Pública. Generalitat Valenciana, Spain

ARTICLE INFO

Article history:

Received 27 February 2021

Received in revised form 14 March 2022

Accepted 14 March 2022

ABSTRACT

Background: All nurses should receive training and education regarding pain as part of their pre-graduate stage, as its assessment and appropriate management when treating patients largely depends on them. With the right knowledge it is possible to reduce its high prevalence, as well as the serious consequences it can lead to.

Aim: To determine the level of knowledge and attitudes towards pain of final-year nursing students in Spain.

Methods: Descriptive cross-sectional study using a convenience sample of five Spanish universities during the academic year 2020-2021. The Spanish version of the Knowledge and Attitudes Survey Regarding Pain (KASRP) was used. In addition, socio-demographic variables such as age, sex, relationship status, employment status, and the number of dependants were collected. The specific palliative or oncology subjects of each university was also assessed.

Results: A total of 224 questionnaires were collected. One of the nursing universities obtained the best score in the KASRP (59.75%) which was significant ($p = .001$). This university was the only one that offers specific subjects in palliative or oncologic care. A training deficit in aspects related to pain assessment and pharmacologic concepts was detected. We found no relationship between the KASRP and the different sociodemographic variables.

Conclusions: Specific training in palliative care improves the students' knowledge regarding pain, although the results did not reach an acceptable minimum. The universities' training programs for Spanish students need to be adapted in order to achieve better results.

© 2022 The Authors. Published by Elsevier Inc. on behalf of American Society for Pain Management Nursing.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Despite the many technologic advances in the field of medicine, pain continues to be a health problem in our society that causes discomfort and suffering. It has been estimated that between 30%-70% of hospital inpatients experience pain despite the different recommendations for its treatment (Jaksch et al., 2015; Sawyer et al., 2010; Sawyer et al., 2008; Xiao et al., 2018).

Several studies have shown that a high prevalence of pain in patients is associated with an increase in healthcare costs (Pasero et al., 2009), resulting in a poorer quality of life (Langley, Pérez Hernández, et al., 2011; Langley, Ruiz-Iban, et al., 2011) and increased mortality rates (Dunwoody et al., 2008; Payen et al., 2007). There are several circumstances that make it difficult to manage and reduce pain in patients. The patient's clinical situation or cultural determinants can make diagnosis particularly difficult. Moreover, desensitization of hospital staff may result in a lower prioritization of pain management in favor of other parameters, such as hemodynamics, which can limit elements for

¹ Address correspondence to Ana Isabel Cobo-Cuenca, University of Castilla-La Mancha. Avenida de Carlos III s / n. 45071 Toledo, Spain.

E-mail address: anaisabel.cobo@uclm.es (A.I. Cobo-Cuenca).

<https://doi.org/10.1016/j.pmn.2022.03.006>

1524-9042/© 2022 The Authors. Published by Elsevier Inc. on behalf of American Society for Pain Management Nursing. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Please cite this article as: D. Zuazua-Rico, M.P. Mosteiro-Diaz, E. Collado-Boira et al., Determinants of Knowledge and Attitudes Towards Pain Among Nurses in a Tertiary Hospital in Spain, Pain Management Nursing, <https://doi.org/10.1016/j.pmn.2022.03.006>

Table 1
Socio-Demographic Variables (n = 224).

Variable		University				
		A (n = 70)	B (n = 34)	C (n = 51)	D (n = 44)	E (n = 25)
Sex	Female	61 (87.1%)	29 (85.3%)	41 (80.4%)	33 (75%)	22 (88%)
	Male	9 (12.9%)	5 (14.7%)	10 (19.6%)	11 (25%)	3 (12%)
Relationship status	In a relationship	31 (44.3%)	20 (5.9%)	31 (60.8%)	19 (43.2%)	14 (56%)
	Divorced	0	0	1 (2%)	0	0
	Single	39 (55.7%)	14 (41.2%)	19 (37.25%)	25 (56.8%)	11 (44%)
Health-related job (yes)		1 (1.4%)	1 (2.9%)	10 (19.6%)	1 (2.3%)	-
Dependants (yes)		-	1 (2.9%)	-	-	-
Age (SD)		22.4 (4.05)				

SD = standard deviation.

a good diagnosis or proper pain control (Pasero et al., 2009; Rose et al., 2011; Sigakis & Bittner, 2015). In addition, a low level of knowledge on the part of professionals has been shown to be one of the most important limitations that contributes to poor pain management (Medrzycka-Dabrowka, et al., 2017; Pretorius, et al., 2015; van der Woude et al., 2016).

The role that nurses play in the management of pain is of utmost importance as they spend far more time with patients than any other professional. Different aspects such as pain identification, the performance of a proper initial assessment, and the effectiveness of the treatment depend on nursing professionals. However, different studies show that their level of knowledge on this subject is inadequate (Al-Atiyyat et al., 2019; Alnajjar et al., 2019; Ho et al., 2013; Latina et al., 2015; Utne et al., 2018).

In Spain, health authorities are calling for improvements in pain management education and training for health professionals from the undergraduate stage (Ministerio de Sanidad & Servicios Sociales e, 2014). Despite this, the subject does not exist specifically in any Spanish university, but it is an essential part of the subjects that address palliative care or oncology. Moreover, recent studies in our country have shown that nurses who have already graduated from university have inadequate knowledge on this topic (González Prieto, 2020; Maestro-Gonzalez, Mosteiro-Diaz, Fernandez-Garrido, & Zuazua-Rico, 2020; Salvadó-Hernández et al., 2009; Taínta, 2020). That is why the objective of our study is to determine the level of knowledge and attitudes towards pain of final-year nursing students in Spain.

Method

Study Design and Sample

A cross-sectional descriptive study was conducted with final-year nursing students from a convenience sample of five Spanish universities during the academic year 2020-2021. During one of their classes, students of three centers were informed of the objective of this study and were asked to fill out the informed consent form together with the questionnaire in paper. In addition, due to the beginning of the COVID-19 pandemic situation, two universities had to be virtually surveyed using Google Forms by a private link for each student; all data were sent to a private database created to this purpose. The presence of subjects directly related to palliative or oncologic care in each university was evaluated. All of the students were informed about the voluntary and anonymous character of the survey.

Instruments

The Spanish version of the "Knowledge and Attitudes Survey Regarding Pain" (KASRP) (Ferrell & McCaffery, 2014; Zuazua-

Rico et al., 2019) was used to evaluate the level of knowledge and attitudes towards pain of nursing students. The survey consists of 39 items divided into three sections (22 true or false questions, 15 multiple-choice questions, and two clinical cases). Each question answered correctly was awarded one point while those that were not answered or were answered incorrectly were awarded zero points. The maximum score being 41 points and the minimum being zero points. The final score was stated both as an absolute value and as a percentage of correct answers. Content validity for the KASRP was established by specialists in the field of pain management. Internal consistency reliability was determined to be satisfactory (Cronbach's $\alpha > 0.70$). Construct validity was determined by assessing the results of nurses at differing stages of education and expertise (students, new graduates, oncology nurses, graduate nurses, and senior pain experts). Professionals who obtained a percentage of $\geq 80\%$ were considered to have an adequate level of knowledge (McCaffery & Robinson, 2002).

Analysis

A descriptive analysis of each variable was carried out, providing the frequency distribution for qualitative variables (sex, relationship status, health related job, and dependants) and the measures of position (mean, median, standard deviation, and range) for quantitative variables (KASRP, age, and nursing university).

Statistical comparisons were performed using nonparametric tests (Kruskal Wallis) for quantitative variables after the normal distribution of each variable had been assessed by the Kolmogorov-Smirnov test. The Kruskal Wallis H test was used to compare KASRP scores according to demographic data and participant groups because of violation of normality assumption. A significance level was set at $p < .05$. The statistical analysis was carried out using the SPSS v.21.

Ethical Considerations

This study has been developed in accordance with the principles set forth in the Declaration of Helsinki, the Belmont Report, the CIOMS Guidelines, and the provisions of Organic Law 3/2018 of 5 December 2018 on Personal Data Protection and Guarantee of Digital Rights. It was approved by the Regional Committee on Ethics and Research (n° 2020.451). The submission of the completed questionnaire was considered as the students' acceptance and consent to participate in the study.

Results

A total of 224 questionnaires were collected from 604 student samples (37.02% response rate), broken down as follows: 70 from the nursing university A (31.3%), 34 from university B (15.2%), 51

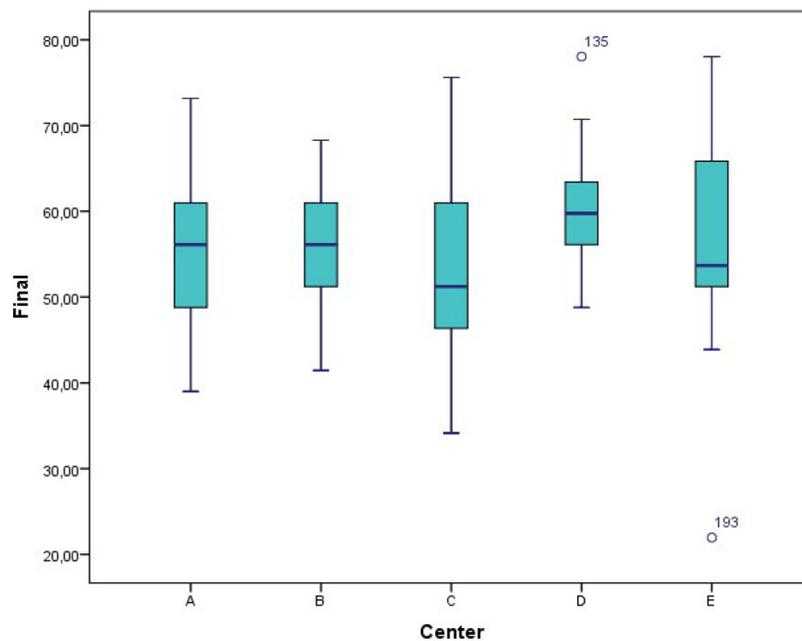
Table 2

Post hoc Analysis of Differences of the Knowledge and Attitudes Survey Regarding Pain Scores (n = 224).

Sample 1 – Sample 2	Test statistic	SE	Standard test statistic	Sig.	Adj. Sig.
University C – University A	18.430	11.887	1.550	.121	1.000
University C – University E	-22.700	15.764	-1.440	.150	1.000
University C – University B	22.216	14.296	1.694	.090	.903
University C – University D	50.969	13.285	3.836	.000	.001
University A – University E	-4.270	15.044	-.284	.777	1.000
University A – University B	5.785	13.497	.429	.668	1.000
University A – University D	32.539	12.422	2.619	.009	.088
University E – University B	1.515	17.011	.089	.929	1.000
University E – University D	28.269	16.172	1.748	.080	.805
University B – University D	26.753	14.744	1.815	.070	.696

Each row tests the null hypothesis that the sample 1 and sample 2 distributions are the same. Asymptotic significance (2-sided tests) is displayed. The significance level is .05.

SE = standard error; Sig = significance; Adj = adjusted.

**Fig. 1.** Comparison of Correct Answers.

from university C (22.8%), 44 from university D (19.6%), and 25 were received from the nursing university E (11.2%). A total of 17% of participants were men with a mean age of 22.40 years (standard deviation [SD] 4.05); 51.3% were married or in a relationship (0.4% separated/divorced), and 3.1% had children or dependants (Table 1).

The mean score of correct answers of the KASRP was 55.80% (SD 9.07). The distribution of scores by university was as follows: university A 55.40% (SD 8.41), university B 55.81 (SD 7.93), university C 52.84% (SD 10.20), university D 59.75% (SD 6.07), university E 55.99% (SD 12.00). None of the respondents achieved a percentage score >80%, which was the stipulated minimum score required to pass the questionnaire (Fig. 1).

The Kruskal-Wallis H test revealed no significant differences between KASRP scores and age ($p = .565$), sex ($p = .184$), relationship status ($p = .148$), health-related employment status ($p = .121$), or having children or dependants ($p = .500$). We found a relationship between the KASRP score and the students' university of origin ($p = .005$), and post hoc testing revealed that students enrolled in the nursing university D obtained a higher score than those enrolled in university C ($p = .001$) (Fig. 2 and Table 2). Table 3 shows the percentages of correct answers.

Discussion

This study assessed the level of knowledge and attitudes towards pain of final-year nursing students, which proved to be inadequate according to the minimum score set by the authors. Considering the overall mean KASRP score (55.8%), our population scored higher than other students in Saudi Arabia (42.6%), Turkey (40.64% and 45.85%), Jordan (34.1%), Iran (37%), and Egypt (<50%) (Al-Khawaldeh et al., 2013; Erol Ursavaş & Karayurt, 2020; Gadallah et al., 2017; Karaman et al., 2018; Rahimi-Madiseh et al., 2010; Shdaifat et al., 2020), and lower than other studies conducted in Canada (>60%) and the USA (>70%) (Duke et al., 2013; Hroch et al., 2019).

We found no association between the KASRP and the rest of variables analyzed, such as sex, relationship status, or having children or dependants. In this regard, these results are in line with other studies which found no association either (Al-Khawaldeh et al., 2013; Gadallah et al., 2017; Karaman et al., 2018; Rahimi-Madiseh et al., 2010). Only one study carried out in Saudi Arabia by Shdaifat et al. (2020) found that the sex of students was associated with their KASRP scores.

Table 3
Distribution of Correct Answers Among Spanish Nursing Students.

Item no.	Question	% mean correct answer	% correct answer by university				
			University A	University B	University C	University D	University E
1	Vital signs are always reliable indicators of the intensity of a patient's pain. (False)	82.6	82.9	76.5	80.4	86.4	88.0
2	Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences. (False)	76.8	85.7	76.5	72.5	68.2	76.0
3	Patients who can be distracted from pain usually do not have severe pain. (False)	60.7	68.6	58.8	54.9	52.3	68.0
4	Patients may sleep in spite of severe pain. (True)	36.2	35.7	41.2	27.5	34.1	52.0
5	Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases. (False)	33.5	35.7	41.2	29.4	29.5	32.0
6	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. (True)	17.9	11.4	8.8	25.5	29.5	12.0
7	Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic agent. (True)	74.1	74.3	82.4	62.7	79.5	76.0
8	The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours. (False)	29.5	38.6	26.5	15.7	22.7	48.0
9	Opioids should not be used in patients with a history of substance abuse. (False)	58.5	54.3	76.5	52.9	65.9	44.0
10	Elderly patients cannot tolerate opioids for pain relief. (False)	95.1	95.7	100	88.2	100	92.0
11	Patients should be encouraged to endure as much pain as possible before using an opioid. (False)	92.4	94.3	94.1	90.2	93.2	88.0
12	Children <11 years old cannot reliably report pain so clinicians should rely solely on the assessment of the parent's child's pain intensity. (False)	97.3	95.7	94.1	100	100	96.0
13	Patients' spiritual beliefs may lead them to think pain and suffering are necessary. (True)	95.1	90.0	88.2	100	100	100
14	After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response. (True)	87.9	87.1	85.3	92.2	84.1	92.0
15	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. (False)	61.2	52.9	82.4	51.0	72.7	56.0
16	Zaldiar® (tramadol 37.5 mg + acetaminophen 325 mg) PO is approximately equal to 5-10 mg of morphine PO. (True)	24.6	32.9	20.6	27.5	13.6	20.0
17	If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain. (False)	26.8	34.3	29.4	21.6	15.9	32.0
18	Anticonvulsant drugs such as gabapentin (neurontin) produce optimal pain relief after a single dose. (False)	54.5	61.4	64.7	45.1	56.8	36.0
19	Benzodiazepines are not effective pain relievers and are rarely recommended as part of an analgesic regimen. (True)	31.3	28.6	14.7	31.4	47.7	32.0
20	Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving. (True)	82.1	88.6	79.4	82.4	75.0	80.0
21	The term "equianalgesia" means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief. (True)	84.8	85.7	88.2	78.4	86.4	88.0
22	Sedation assessment is recommended during opioid pain management because excessive sedation precedes opioid-induced respiratory depression. (True)	90.6	92.9	91.2	92.2	84.1	92.0
23	The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is. (Oral)	25.0	15.7	2.9	25.5	59.1	20.0
Multiple choice questions							
24	The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is. (Intravenous)	71.0	57.1	58.8	82.4	77.3	92.0
25	Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients? (Morphine)	58.0	61.4	64.7	25.5	88.6	52.0

(continued on next page)

Table 3 (continued)

Item no.	Question	% mean correct answer	% correct answer by university				
			University A	University B	University C	University D	University E
26	A 30-mg dose of oral morphine is approximately equivalent to. (Morphine 10 mg IV)	46.9	28.6	73.5	23.5	84.1	44.0
27	Analgesics for post-operative pain should initially be given. (Around the clock on a fixed schedule)	81.7	88.6	82.4	78.4	88.6	56.0
28	A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is. (<1%)	6.7	10.0	8.8	5.9	4.5	0.0
29	The most likely reason a patient with pain would request increased doses of pain medication is. (The patient is increased pain)	84.8	72.9	91.2	90.2	93.2	84.0
30	Which of the following is useful for treatment of cancer pain? (All of the above)	43.3	50.0	41.2	35.3	43.2	44.0
31	The most accurate judge of the intensity of the patient's pain is. (The patient)	91.1	90.0	91.2	96.1	90.9	84.0
32	Which of the following describes the best approach for cultural considerations in caring for patients in pain. (Patients should be individually assessed)	82.1	75.7	76.5	86.3	88.6	88.0
33	How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem? (5%-15%)	50.4	52.9	38.2	54.9	34.1	80.0
34	The time to peak effect for morphine given IV is. (15 minutes)	63.8	62.9	52.9	66.7	72.7	60.0
35	The time to peak effect for morphine given orally is. (1-2 hours)	44.2	37.1	26.5	51.0	65.9	36.0
36	Following abrupt discontinuation of an opioid, physical dependence is manifested by the following. (Sweating, yawning, diarrhea and agitation...)	24.6	20.0	38.2	13.7	38.6	16.0
37	Which statement is true regarding opioid induced respiratory depression. (Obstructive sleep apnea is an important risk factor)	33.5	28.6	32.4	33.3	38.6	40.0
Clinical cases							
38*	Case study: Andrew is 25 years old and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8. On the patient's record, you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain. (8)	29.9	18.6	17.6	43.1	29.5	52.0
38B	Your assessment, above, is made 2 hours after he received morphine 2 mg IV. Half-hourly pain ratings following the injection ranged from 6-8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time. (Morphine 3 mg IV now)	5.8	5.7	2.9	3.9	4.5	16.0
39A	Robert is 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain: (8)	50.9	44.3	50.0		36.4	80.0
39B	Your assessment, above, is made two hours after he received morphine 2 mg IV. Half hourly pain ratings following the injection ranged from 6-8 and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1-3 mg q1h PRN pain relief." Check the action you will take at this time. (Morphine 3 mg IV now)	18.8	24.3	17.6		13.6	20.0

NSAID = nonsteroidal anti-inflammatory drug; IV = intravenous; PO = by mouth; BP = blood pressure; HR = hazard ratio; R = respiration; PRN = as needed.

Pairwise Comparisons of Center

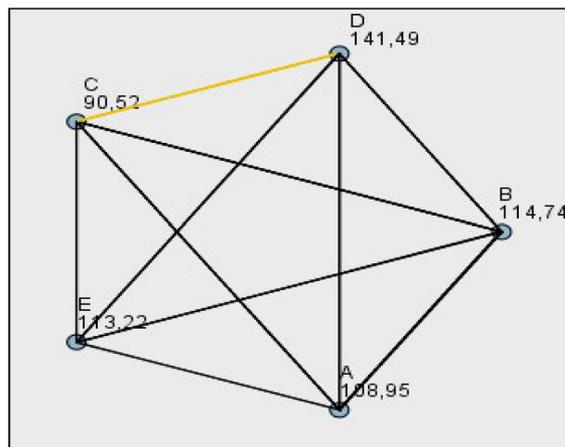


Fig. 2. Post hoc Analysis of Differences of the KASRP between Nursing Universities.

In our case, we analyzed five nursing universities in the same country with the same legislation regarding mandatory training programs, which allows for the adaptation of their curricula to a certain degree. The results showed that the students enrolled in university D obtained a higher percentage of correct answers than those in the rest of the universities, although they still did not reach the minimum score required for it to be considered acceptable. It should also be noted that this university is the only one with two subjects specifically focusing on oncology and palliative care. This does not mean that the rest of the centers do not provide pain training, but this could have led to students obtaining a higher level of knowledge. In this regard, we believe that the best pain training of nursing students is based on the need of having teachers with solid knowledge and experience in this subject. Other studies (Goodrich, 2006; Voshall et al., 2013), found that even when teachers had a strong knowledge in pain topics, it was still possible for both students and professionals to perform poorly.

When assessing individual KASRP items, results revealed a low score in pharmacologic concepts and patient assessment, in line with other studies carried out in other countries such as Jordan, the United States, Egypt, Canada, Turkey, and Saudi Arabia (Al-Khawaldeh et al., 2013; Duke et al., 2013; Evans & Mixon, 2015; Hroch et al., 2019; Karaman et al., 2018; Shdaifat et al., 2020). The same issue can be seen in the case of nurses who have already graduated, and studies have shown that it continues to be the main problem regarding nurses' knowledge about pain (Al-Atiyyat et al., 2019; Alkhatib, Al Qadire, & Alshraideh, 2019; Yu, Li, Lu, Yang, & Ma, 2020). It is striking that all the universities obtained a high percentage of correct answers in the item related to appropriateness of dose of an opioid depending on the patient's response, but then failed to apply this knowledge in both practical cases like other studies conducted in professionals (Salameh, 2018; Samarkandi, 2018; Yu, Li, Lu, Yang, & Ma, 2020). We believe that it is necessary to reinforce the nurses' decision-making capacity regarding pharmacologic aspects, as well as to reinforce the credibility of the patients with regard to their expression of pain, and avoid falling into prejudice in these situations. We believe that the promotion of pain awareness in nursing students throughout their training plan should focus on a more patient-centered vision and less on the nursing intuition itself. To do this, both teachers and professionals must have this same vision and believe in it. We must manage to implement values that allow us to free ourselves from the existing prejudices in our lives with regard to pain, thus

improving the quality of care. Starting from basic concepts in analgesia, reinforcing them on an annual basis, and improving assessment aspects during clinical practice, including these, not only in subjects related to oncological or palliative care. We believe that a more human approach to the patient from a realistic point of view would be of special interest, for example, having specific rotations that deal exclusively with pain in its different forms throughout the various medical specialties during their training as nurses, since the advantages of pain-free care have been amply demonstrated.

Limitations

The main limitation of this study was the COVID-19 pandemic, which resulted in some of the universities having to be surveyed using alternative systems such as Google Forms, which we believe may have influenced the low rate of student participation.

Conclusions

Spanish students taking subjects related to palliative care or oncology obtained better scores in aspects related to pain. However, they do not reach the level established as acceptable for the KASRP. Current curricula, as well as governmental recommendations, are not sufficient to achieve better training in this regard, although the results are comparable to other countries studied. Spanish universities should encourage greater training and empowerment of nurses in pharmacologic and decision-making aspects in order to provide better quality care.

Conflict of Interest

The authors declare no conflict of interest.

References

- Al-Atiyyat, N., Salim, N. A., Tuffaha, M. G., Abu Nigim, H. A., Saleh, M. M., Alkhodary, M. E., & Brant, J. M. (2019). A Survey of the knowledge and attitudes of oncology nurses toward pain in United Arab Emirates oncology settings. *Pain Management Nursing*, 20(3), 276–283.
- Alkhatib, G. S., Al Qadire, M., & Alshraideh, J. A. (2019). Pain management knowledge and attitudes of healthcare professionals in primary medical centers. *Pain Management Nursing*, 21(3), 264–270.
- Al-Khawaldeh, O. A., Al-Hussami, M., & Darawad, M. (2013). Knowledge and attitudes regarding pain management among Jordanian nursing students. *Nurse Education Today*, 33(4), 339–345.
- Alnajar, M. K., Darawad, M. W., Alshahwan, S. S., & Samarkandi, O. A. (2019). Knowledge and attitudes toward cancer pain management among nurses at oncology units. *Journal of Cancer Education*, 34(1), 186–193.
- Duke, G., Haas, B. K., Yarbrough, S., & Northam, S. (2013). Pain management knowledge and attitudes of baccalaureate nursing students and faculty. *Pain Management Nursing*, 14(1), 11–19.
- Dunwoody, C. J., Krenzischek, D. A., Pasero, C., Rathmell, J. P., & Polomano, R. C. (2008). Assessment, physiological monitoring, and consequences of inadequately treated acute pain. *Pain Management Nursing*, 9(1), 11–21.
- Erol Ursavaş, F., & Karayurt, Ö. (2020). The effects of pain management education on knowledge, attitudes, and beliefs in nursing students in Turkey: A quasi-experimental study. *Perspectives in Psychiatric Care*, 57(2), 499–506.
- Evans, C. B., & Mixon, D. K. (2015). The evaluation of undergraduate nursing students' knowledge of post-op pain management after participation in simulation. *Pain Management Nursing*, 16(6), 930–937.
- Gadallah, M. A. E.-A., Hassan, A. M., & Shargawy, S. A. E. H. (2017). Undergraduate nursing students' knowledge and attitude regarding pain management of children in Upper Egypt. *Journal of Nursing Education and Practice*, 7(6), 100.
- González Prieto, N. (2020). Conocimientos sobre el dolor en el paciente postquirúrgico del personal de enfermería de los servicios de Reanimación y Unidades de Recuperación Post-anestésica en un Hospital de tercer nivel [Knowledge about pain in the postoperative patient of the nursing staff of the Reanimation Unit and URPAS services in a level III hospital]. *J. RqR Enfermería Comunitaria*, 8(3), 5–15.
- Goodrich, C. (2006). Students' and faculty members' knowledge and attitudes regarding pain management: A descriptive survey. *Journal of Nursing Education*, 45(3), 140–142.

- Ho, S. E., Ho, C. C. K., Pang Yuen, H., Lexshimi, R., Jaafar, M. A., Cardoso, M., & Das, S. (2013). A study of knowledge and attitudes of registered nurses towards pain management in an urban hospital. *La Clinica Terapeutica*, 164(3), 215–219.
- Hroch, J., VanDenKerkhof, E. G., Sawhney, M., Sears, N., & Gedcke-Kerr, L. (2019). Knowledge and attitudes about pain management among Canadian nursing students. *Pain Management Nursing*, 20(4), 382–389.
- Jaksch, W., Neuwersch, S., Reichhalter, R., Gustorff, B., Handl, G., Köstenberger, M., & Likar, R. (2015). Schmerz im Krankenhaus: Erfassung der Schmerzsituation österreichischer Patienten [Pain in hospital: Assessing the pain situation in Austrian patients]. *Der Schmerz*, 29(6), 625–631.
- Karaman, E., Dođru, B. V., & Yıldırım, Y. (2018). Knowledge and attitudes of nursing students about pain management. *Ađrı*, 31(2), 70–708.
- Langley, P., Pérez Hernández, C., Margarit Ferri, C., Ruiz Hidalgo, D., & Lubián López, M. (2011). Pain, health related quality of life and healthcare resource utilization in Spain. *Journal of Medical Economics*, 14(5), 628–638.
- Langley, P., Ruiz-Iban, M. A., Molina, J. T., De Andres, J., & Castellón, J. R. G. E. (2011). The prevalence, correlates and treatment of pain in Spain. *Journal of Medical Economics*, 14(3), 367–380.
- Latina, R., Mauro, L., Mitello, L., D'Angelo, D., Caputo, L., De Marinis, M. G., Sansoni, J., Fabriani, L., & Baglio, G. (2015). Attitude and knowledge of pain management among Italian nurses in hospital settings. *Pain Management Nursing*, 16(6), 959–967.
- Maestro-Gonzalez, A., Mosteiro-Díaz, M. P., Fernandez-Garrido, J., & Zuazua-Rico, D. (2020). Determinants of knowledge of pain among nurses in a tertiary hospital in Spain. *Pain Management Nursing*, 22(3), 394–401.
- McCaffery, M., & Robinson, E. S. (2002). Your patient is in pain—Here's how you respond. *Nursing*, 32(10), 36–45.
- Medrzycka-Dabrowka, W., Dąbrowski, S., Gutysz-Wojnicka, A., Gawroska-Krzemińska, A., & Ozga, D. (2017). Barriers perceived by nurses in the optimal treatment of postoperative pain. *Open Medicine (Warsaw, Poland)*, 12(1), 239–246.
- Ministerio de Sanidad, Servicios Sociales e Igualdad. (2014). Documento marco para la mejora del abordaje del dolor en el SNS. Retrieved Month 01, 2021, from https://www.msbs.gob.es/organizacion/sns/planCalidadSNS/pdf/excelencia/CISNS_DocumentoMarcoDolor.pdf.
- Ferrell, B., & McCaffery, M. (2014). Knowledge and attitudes survey regarding pain. Retrieved Month 04, 2017, from <http://prc.coh.org/Knowldege%20%20&%20Attitude%20Survey%207-14.pdf>.
- Pasero, C., Puntillo, K., Li, D., Mularski, R. A., Grap, M. J., Erstad, B. L., Varkey, B., Gilbert, H. C., Medina, J., & Sessler, C. N. (2009). Structured approaches to pain management in the ICU. *Chest*, 135(6), 1665–1672.
- Payen, J.-F., Chanques, G., Mantz, J., Hercule, C., Auriant, I., Leguillou, J. L., Binhas, M., Genty, C., Rolland, C., & Bosson, J. L. (2007). Current practices in sedation and analgesia for mechanically ventilated critically ill patients: A prospective multi-center patient-based study. *Anesthesiology*, 106(4), 687–695.
- Pretorius, A., Searle, J., & Marshall, B. (2015). Barriers and enablers to emergency department nurses' management of patients' pain. *Pain Management Nursing*, 16(3), 372–379.
- Rahimi-Madiseh, M., Tavakol, M., & Dennick, R. (2010). A quantitative study of Iranian nursing students' knowledge and attitudes towards pain: Implication for education: Knowledge and attitudes towards pain. *International Journal of Nursing Practice*, 16(5), 478–483.
- Rose, L., Haslam, L., Dale, C., Knechtel, L., Fraser, M., Pinto, R., McGillion, M., & Watt-Watson, J. (2011). Survey of assessment and management of pain for critically ill adults. *Intensive and Critical Care Nursing*, 27(3), 121–128.
- Salameh, B. (2018). Nurses' knowledge regarding pain management in high acuity care units: A case study of Palestine. *International Journal of Health Sciences (Qassim)*, 12(3), 51–57.
- Salvadó-Hernández, C., Fuentelsaz-Gallego, C., Arcay-veira, C., López-Meléndez, C., Villar-arnal, T., & Casas-Segala, N. (2009). Conocimientos y actitudes sobre el manejo del dolor por parte de las enfermeras de unidades de cirugía y oncología de hospitales de nivel iii [Knowledge and attitudes on pain management by nurses in surgery and oncology in level III hospitals]. *Enfermería Clínica*, 19(6), 322–329. <https://doi.org/10.1016/j.enfcli.2009.07.004>.
- Samarkandi, O. A. (2018). Knowledge and attitudes of nurses toward pain management. *Saudi Journal of Anaesthesia*, 12(2), 220–226.
- Sawyer, J., Haslam, L., Daines, P., & Stilos, K. (2010). Pain prevalence study in a large Canadian teaching hospital. Round 2: Lessons Learned? *Pain Management Nursing*, 11(1), 45–55.
- Sawyer, J., Haslam, L., Robinson, S., Daines, P., & Stilos, K. (2008). Pain Prevalence Study in a Large Canadian Teaching Hospital. *Pain Management Nursing*, 9(3), 104–112.
- Shdaifat, E., Al-Shdayfat, N., & Sudqi, A. (2020). Saudi nursing students' pain management knowledge and attitudes. *Nursing Open*, 7(6), 1833–1839.
- Sigakis, M. J. G., & Bittner, E. A. (2015). ten myths and misconceptions regarding pain management in the ICU. *Critical Care Medicine*, 43(11), 2468–2478.
- Táinta, M. (2020). Conocimientos y actitudes de las enfermeras de una unidad de cuidados intensivos acerca del dolor de los pacientes [Knowledge and attitudes of intensive care unit nurses regarding pain in patients]. *Anales del Sistema Sanitario de Navarra*, 43(2), 177–187.
- Utne, I., Smástuen, M. C., & Nyblin, U. (2018). Pain knowledge and attitudes among nurses in cancer care in Norway. *Journal of Cancer Education*, 24(4), 677–684.
- van der Woude, M. C. E., Bormans, L., Hofhuis, J. G. M., & Spronk, P. E. (2016). Current use of pain scores in Dutch intensive care units: A postal survey in the Netherlands. *Anesthesia & Analgesia*, 122(2), 456–461.
- Voshall, B., Dunn, K. S., & Shelestak, D. (2013). Knowledge and attitudes of pain management among nursing faculty. *Pain Management Nursing*, 14(4), e226–e235.
- Xiao, H., Liu, H., Liu, J., Zuo, Y., Liu, L., Zhu, H., Yin, Y., Li, S., Yang, B., Li, J., & Ye, L. (2018). Pain prevalence and pain management in a Chinese hospital. *Medical Science Monitor*, 24, 7809–7819.
- Yu, W., Li, D., Lu, Y., Yang, H., & Ma, X. (2020). Knowledge and attitudes of Chinese oncology nurses regarding cancer pain management—A cross-sectional study. *Journal of Cancer Education*, 36(5), 1115–1123.
- Zuazua-Rico, D., Maestro-González, A., Mosteiro-Díaz, M. P., & Fernández-Garrido, J. (2019). Spanish version of the Knowledge and Attitudes Survey Regarding Pain. *Pain Management Nursing*, 20(5), 497–502.