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Original Article

Factors Relating to Nurses' Knowledge and Attitudes Regarding Pain Management in Inpatients

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ABSTRACT

Purpose: To describe factors associated with nurses' attitudes or lack of knowledge regarding pain management in adult inpatients.
Design: Transverse descriptive survey-based study.
Methods: This was a transverse descriptive survey-based study. The population was obtained through nonprobabilistic convenience sampling. The *Knowledge and Attitudes Survey Regarding Pain* was made available to 470 nurses at a tertiary level hospital. Associations were sought with the unit where assigned, years of experience, specific training on pain, and postgraduate education.
Results: The sample included 134 nurses with a mean age of 41.6 ± 10.8 years; 87% were women, 64% worked rotating shifts, 64% had more than 10 years of experience, and 31% had specific training in pain management. The greatest number of correct responses was obtained from nurses with specific training in pain management ($p = .001$) and nurses who worked in units of surgical hospitalization ($p = .004$). The lack of training was associated with a deficit in knowledge and inadequate attitudes about pain management. In nurses with less than 10 years of experience, worse results were observed in knowledge, whereas the unit of work was decisive in the results about attitude ($p < .05$).
Conclusions: Among the nurses surveyed, some knowledge gaps were detected, as were certain inappropriate attitudes, associated with lack of training, lack of experience, and being assigned to specific hospitalization units.
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Studies report that over 50% of patients in Spain experience pain while in the hospital setting (Sepúlveda-Sánchez et al., 2016; Torralba et al., 2014). Other publications reveal similar results in the rest of the world (Erazo et al., 2015; Jabusch et al., 2015; Zoëga et al., 2016). All this goes to show poor control of pain suffered by hospitalized patients, contributing to longer hospital stays, increased readmissions and decreased satisfaction among patients and their families (Jabusch et al., 2015).

Managing pain among hospitalized patients is the responsibility of nurses. Hence, pain management depends to a large extent on how nurses go about dealing with an occurrence, how nurses address individual occurrences, and how they evaluate and record it, the latter being an indicator of good clinical practice and quality of care (Sepúlveda-Sánchez et al., 2016). Teamwork and coordination between physicians and nurses is essential for optimal pain management, but it must be kept in mind that nurses' perceptions affect the approach taken to deal with an episode of pain (Zoëga et al., 2016). The reasons that pain is poorly dealt with in a hospital are complex and arise from multiple sources. In the case of healthcare professionals, these can include a lack of knowledge of

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the use of certain medications or their side-effects. At an institutional level, there is the low priority assigned to managing pain. Among patients, there are factors such as a failure to mention pain events because they think these are "normal" or fear that they may bother staff or impose an extra workload on them (Alvarez et al., 2017; Gretarsdottir et al., 2017; Schroeder et al., 2016). Among the barriers faced by nurses preventing them from dealing with episodes of pain, a number of factors are prominent. These include problems of organization or communication with teams, lack of time to learn about pain management, heavy workloads, the reluctance of physicians to prescribe analgesics, or knowledge deficit among nurses about pain and about the administration of opioids (Lewis et al., 2015).

A number of surveys aimed at healthcare providers have been used to investigate their knowledge of, attitudes toward, and practices in dealing with, pain. These have highlighted lack of knowledge, inappropriate attitudes, or deficiencies in recording pain episodes and re-evaluating them (Al-Shaer et al., 2011; Alvarez et al., 2017; Latina et al., 2015; Sepúlveda-Sánchez et al., 2016). Almost all of the surveys derive from two basic tools: the Knowledge and Attitudes Survey Regarding Pain (Ferrell & McCaffery, 2014), available through the City of Hope Pain and Palliative Care Resource Center and the Cancer Pain Role Model Program Questionnaire, specifically directed at managing pain in oncologic cases (Janjan et al., 1996). In the present work, the first of the two tools was used, since it covers knowledge and attitudes relating to pain in general, and not just pain caused by cancer.

Justification for and Benefits of the Study

There is a growing number of initiatives on the part of professional organizations and recognized agencies, like the American Society for Pain Management Nursing or the Sociedad Española del Dolor [Spanish Pain Society], that are intended to establish assessment and management of pain as a strategic health priority. Nevertheless, pain management is still considered to be inadequate. This deficiency is often rooted in erroneous attitudes or deficient knowledge among healthcare professionals about dealing with pain, affecting practice (Erazo et al., 2015; Keen et al., 2017; Torralba et al., 2014).

In light of the considerable prevalence of pain among in-patients, the failings in managing such events by nurses highlighted in the literature, and the lack of conclusive studies regarding the factors linked to deficient knowledge and unsatisfactory attitudes, the aim of this study was to investigate what aspects might be associated with these failings. Among these might be the unit to which staff were assigned, years of experience, specific training on pain, or postgraduate studies. The results of this study may be used to implement training programs develop strategies aimed at improving pain management in hospital departments, or for further research.

Objectives

The aim was to describe which factors could be associated with nurse's inappropriate attitudes or lack of knowledge regarding pain management in in-patients.

Method

Design and Population Studied

This was a transverse descriptive survey-based study. The population was obtained by non-probabilistic convenience sampling. The survey was made available to 470 nurses who were working during the data-collection period. The sample was comprised of nurses from the fixed staff of the following departments: medical, surgical, and special care units, such as the intensive care unit, the anesthesia and reanimation unit (where close observation is provided during the recovery period after major surgery), the coronary unit, and accident and emergency department. Also included were "floater" staff (nurses who rotate among the various departments and units as required). Nurses working in pediatric units were excluded because it was felt that managing pain in children had features and specific elements going beyond the aims of the study.

The Hospital Clínico Universitario de Valladolid (HCUV) is a tertiary referral hospital in the Spanish Public Health System, located in the Autonomous Community of Castile and Leon. It has 777 beds and 22 operating theaters and provides services to a zone with a population of approximately 235,000. At the end of 2018, the staff of nurses was 785.

Variables Studied

Independent Variables

Four factors were investigated with the aim of determining whether they had any possible association with nurses' knowledge and attitudes regarding pain. These were the departments where nurses had worked over the last year, their experience or seniority ($\leq$10 years or >11 years), having had specific training about pain in the last five years, and having completed a postgraduate qualification.

Dependent Variables

Nurses' knowledge and attitudes relating to managing patients' pain were assessed using a validated Spanish version of the Knowledge and Attitudes Survey Regarding Pain (Salvadó-Hernández et al., 2009). This questionnaire was developed by Betty Ferrell and Margo McCaffery (Ferrell & McCaffery, 2014) and has been extensively used over time in a good number of studies (Brant et al., 2017; Grétarsdóttir et al., 2017; Latina et al., 2015). Its content was developed based upon standards for the control of pain, those of the Agency for Health Care Policy and Research, of the World Health Organization and of the American Pain Society (Salvadó-Hernández et al., 2009). It is comprised of 37 questions, of which 21 require a true or false answer and 16 are multiple choice. The version translated into Spanish and validated for that language (Salvadó-Hernández et al., 2009) includes slight modifications. The two questions relating to pediatric patients were removed so that the final version had 35 items, 20 being true or false and 15 multiple choice. With regard to the two dimensions being investigated, 24 items evaluated knowledge and eleven explored attitudes (see Table 1). This questionnaire had a Cronbach's alpha coefficient of reliability of 0.90.

Procedure

The survey was made available on the hospital's intranet from May to October 2018 for voluntary completion. The preamble on the website included a brief presentation indicating the aim of the study, details of informed consent, and an explanation on how to complete the survey. At all times voluntary participation, confidentiality, and anonymity were maintained. The survey ended with a note of thanks and a contact e-mail address for the lead researcher, to allow participants in the survey who so wished to obtain more information about the study.

Statistical Analysis

Qualitative variables are presented in accordance with their frequency distributions, whereas quantitative variables are

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Table 1
Items from the Knowledge and Attitudes Survey Regarding Pain (Salvadó-Hernández et al., 2009)

	Items	Question
Attitudes	1	Patients who can be distracted from pain usually do not have severe pain. [False]
	2	Patients may sleep in spite of severe pain. [True]
	3	Patients should be encouraged to endure as much pain as possible before using an opioid. [False]
	4	Patients' spiritual beliefs may lead them to think pain and suffering are necessary. [True]
	5	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. [False]
	6	Patients should be advised not to resort exclusively to complementary therapies for palliating pain, but to combine them with analgesics. [False]
	7	The most accurate judge of the intensity of the patient's pain is: a) the treating physician; b) the nurse; c) the pharmacist. d) the patient; d) the patient's family. [d) The patient]
	8	Which of the following describes the best approach for cultural considerations in caring for patients in pain: a) There are no longer cultural influences in the country, owing to the diversity of the population. b) Cultural influences can be determined by an individual's ethnicity (e.g., Asians are stoic, Italians are expressive, etc.). c) Patients should be individually assessed to determine cultural influences. d) Cultural influences can be determined by an individual's socio-economic status (e.g., blue collar workers report more pain than white collar workers). [c) Patients should be individually assessed to determine cultural influences]
	9	The percentage of patients who exaggerate the intensity of pain is: a) 0%; b) 10-20%; c) 20-50%; d) > 50%. [a) 0%.]
	10	A smiling patient who has assessed pain at 8 on a VAS scale should be treated as follows: a) 10 mg. of morphine; b) 3 mg. of morphine c) some other analgesic should be tried. [b) 3 mg. of morphine]
	11	A grimacing patient who has assessed pain at 8 on a VAS should be treated as follows: a) 10 mg. of morphine; b) 3 mg. of morphine c) some other analgesic should be tried. [b) 3 mg. of morphine
Knowledge	12	Vital signs are always reliable indicators of the intensity of a patient's pain. [False]
	13	Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases. [False]
	14	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. [True]
	15	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. [False]
	16	The usual duration of analgesia of 1 to 2 mg morphine IV is 4 to 5 hours. [False]
	17	Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics. [False]
	18	Opioids should not be used in patients with a history of substance abuse. [False]
	19	Elderly patients cannot tolerate opioids for pain relief. [False]
	20	After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response. [True]
	21	Aspirin 650 mg (oral) is approximately equal to meperidine 50 mg. [True]
	22	Similar stimuli produce the same intensity of pain in different individuals. [False]
	23	Non-medication interventions (music, heat, images, etc.) are very effective for the control of mild to moderate pain, but are rarely effective for more severe pain. [False]
	24	Heat and cold should only be applied to the painful area to be effective. [False]
	25	From a certain dose of morphine, increasing the dose does not show greater pain relief. [False]
	26	The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is: a) intravenous; b) intramuscular; c) subcutaneous; d) oral; e) rectal. [d) Oral]
	27	The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is: a) intravenous; b) intramuscular; c) subcutaneous; d) oral; e) rectal. [a) Intravenous]
	28	Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients? a) codeine; b) morphine; c) meperidine; d) tramadol. [b) Morphine]
	29	Which of the following IV doses of morphine administered over a 4 hour period would be equivalent to 30 mg of oral morphine given each 4 hours? a) morphine 5 mg IV; b) morphine 10 mg IV; c) morphine 30 mg IV; d) morphine 60 mg IV. [b) Morphine 10 mg]
	30	Analgesics for post-operative pain should initially be given: a) around the clock on a fixed schedule; b) only when the patient asks for the medication; c) only when the nurse determines that the patient has moderate or greater discomfort. [a) Around the clock on a fixed Schedule]
	31	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: a) less than 1%; b) 1% to 10%; c) 11% to 20%; d) 21% to40%; e) > 41%. [a) Less than 1%]
	32	Analgesics for chronic oncological pain should be given: a) On a fixed schedule; b) Only when the patient asks for the medication; c) Only when the nurse determines that the patient has moderate or greater discomfort. [a) On a fixed schedule]
	33	The most likely reason a patient with pain would request increased doses of pain medication is: a) The patient is experiencing increased pain; b) The patient is experiencing increased anxiety or depression; c) The patient is requesting more staff attention; d) The patient's requests are related to addiction. [a) The patient is experiencing increased pain]
	34	Which of the following is useful for treatment of cancer pain: a) Ibuprofen; b) Hydromorphone; c) Amitriptyline; d) All of the above. [a) Ibuprofen]
	35	The likelihood of opioid addiction as a result of opioid analgesic treatment is: a) <1-5%; b) 5-20%; c) > 20%. [a) <1-5%]

indicated as the median value and the interquartile range. The Kolmogorov-Smirnov test was used to check that the distribution was normal. Associations between variables were investigated by means of Pearson's chi-squared test, Fisher exact test, or the likelihood-ratio test, as appropriate. Comparisons of quantitative values were made by means of the Mann-Whitney U test for independent samples. Data were analyzed using the statistical program IBM SPSS Statistics, version 24.0 for Windows. Values for $p < .05$ were taken as statistically significant.

A descriptive analysis was made of the items in the questionnaire. For each item, the number of nurses who answered correctly was established, with a 95% confidence interval. In addition, correlations were sought between frequencies representing under 60% of correct answers with four factors: the units or departments where nurses were assigned, having more than ten years' experience or less than that amount, having undergone specific training about pain, and having undertaken postgraduate studies.

Results

Twenty-nine percent (n = 134) of the nursing sample completed the survey, 116 of whom were women. The average age was 41.6 ± 10.8 (22-62) years. Overall, 64.2% were on rotating shifts (through morning, afternoon, and night), compared with 35.8%

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Table 2
Overall Median Values for Correct Answers in the Population Studied

Variables	Median (IQR)	*p*-Value
Overall correct answers	20 (17-23)	
Without specific training on pain	20 (17-22)	.001
With specific training on pain	22 (19-23)	
Without postgraduate studies	20 (17-22)	.151
With postgraduate studies	21 (18-23)	
Years of experience ≤10	20 (17-23)	.870
Years of experience >11	20 (17-23)	
Special care units	21 (16-24)	.004
Medical units	20 (18-23)	
Surgical units	21 (19-22)	
Floater nurses	17 (16-17)	

IQR = interquartile range.

working a fixed shift. In total, 68.7% had 10 or more years of experience, 31.3% had received specific training about pain in the last 5 years, and 33.6% had obtained a postgraduate qualification. With respect to assignments, 48.5% worked on medical wards and units, 20.9% on surgical, 22.4% in special services (intensive care unit, anesthesia and reanimation unit, coronary unit, and accident and emergency), with 8.2% identified as floater staff.

Overall Analysis of Correct Answers

Half of the respondents scored 20 correct answers at most (interquartile range = 17-23). Those who had undergone specific training concerning pain scored higher than those who had not ($p = .001$). Moreover, nurses working in surgical departments had better scores than those from medical sections and central services, or "floating" staff ($p = .004$). Years of experience and postgraduate studies showed no significant value in overall results (see Table 2).

Spearman's Rho correlation analysis shows a positive correlation of .305 value between the score obtained in the items that explore knowledge and the successes related to attitudes. Significance was ($p < .01$).

No link was sought between correct answers and sex, since the vast majority of respondents were women, nor with age or years of experience. In interpreting the display of results, it should be remembered that Items 1 to 11 refer to questions relating to attitudes and Items 12 to 35 are those investigating knowledge. Suboptimal attitudes and knowledge deficit were taken to be those relating to questions answered correctly by fewer than 60% of the nurses. Table 3 shows the frequencies of correct answers about attitudes and knowledge and Table 4 shows factors associated with attitudes and knowledge.

Table 3
Frequencies of Correct Answers About Attitudes and Knowledge

Items	Successes in %, CI (95%)
1	58.2 (49.8-66.3)
2*	44 (35.8-52.5)
3	98.5 (95.3-99.7)
4	83.6 (76.6-89.1)
5*	58.2 (49.8-66.3)
6	23.9 (17.3-31.6)
7	97.8 (94.1-99.4)
8	91.8 (86.2-95.6)
9*	17.2 (11.4-24.4)
10*	38.2 (30.2-46.7)
11	70.2 (62-77.6)
12	61.9 (53.5-69.8)
13	55.2 (46.8-63.5)
14*	51.5 (43.1-59.8)
15	84.3 (77.5-89.7)
16	27.1 (20-35.3)
17	34.1 (26.2-42.8)
18	70.9 (62.8-78.1)
19	75.4 (67.6-82.1)
20	97.8 (94.1-99.4)
21	24.2 (17.4-32.2)
22	90.3 (84.4-94.5)
23*	17.9 (12.1-25.1)
24	41.8 (33.7-50.2)
25	52.2 (43.8-60.6)
26	41.8 (33.7-50.2)
27	76.7 (69-83.3)
28	71.4 (63.4-78.6)
29	55.1 (46.4-63.6)
30	96.3 (92-98.6)
31*	26.7 (19.4-35.1)
32	93.2 (88-96.6)
33	80.5 (73.1-86.5)
34*	9.2 (5.1-15)
35	0 (0-0)

* Items in which the study factors were associated with knowledge or attitudes with statistical significance ($p < .05$).

Discussion

Overall, more nurses from medical units responded to the questionnaire. Reasons for this may include that the standards developed, the clinical practice guidelines, and the majority of the studies carried out in hospital settings, have evaluated the existence of pain in the postoperative period and in cancer patients, and not so much in medical units (Sepúlveda-Sánchez et al., 2016). In internal medicine patients are usually elderly, with comorbidities and some of them are long-term suffers which could result in high levels of prevalence of pain (Muñoz-Alvaredo et al., 2018). Because of that, these patients usually have longer average hospital stays and need more Care Plans (Muntinga et al., 2016; Zoëga et al., 2016). For these reasons, nurses from the medical areas may have been more motivated to participate in this study.

Table 4
Significant Factors Associated With Attitudes and Knowledge

Items	Associated Factors	Successes in %, CI (95%)	*p*-Value
2	Special care units	23.3 (11.1-40.4)	.045
	Medical hospitalization units	50.8 (38.8-62.7)	
	Surgical hospitalization units	53.6 (35.5-70.9)	
	Floater nurses	36.4 (13.7-65.2)	
5	Special care units	63.3 (45.5-78.7)	.038
	Medical hospitalization units	63.1 (51-74)	
	Surgical hospitalization units	57.1 (38.9-74)	
	Floater nurses	18.2 (4-46.7)	
	With postgraduate studies	73.3 (59.3-84.5)	.012
	Without postgraduate studies	50.6 (40.3-60.8)	
9	Special care units	31 (16.6-49)	.05
	Medical hospitalization units	15.9 (8.5-26.3)	
	Surgical hospitalization units	11.5 (3.4-27.7)	
	Floater nurses	0	
	With postgraduate studies	29.3 (17.1-44.2)	.013
	Without postgraduate studies	11.5 (6.1-19.4)	
10	With postgraduate studies	25.4 (14.4-39.9)	.09
	Without postgraduate studies	44.3 (34.3-54.7)	
14	With specific training on pain	69 (54.2-81.4)	.006
	Without specific training on pain	43.5 (33.7-53.7)	
	Years of experience ≤10	35.7 (22.6-50.8)	.014
	Years of experience >11	58.7 (48.5-68.4)	
23	Years of experience ≤10	7.1 (2.1-17.9)	.028
	Years of experience >11	22.8 (15.2-32.2)	
31	With specific training on pain	45 (30.4-60.3)	.001
	Without specific training on pain	17.5 (10.4-26.9)	
34	With postgraduate studies	0.0	.008
	Without postgraduate studies	14.0 (7.9-22.4)	

CI = confidence interval.

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Overall Analysis of Correct Responses

In the study population, the median of correct answers was slightly higher than studies carried out with the same survey among Spanish nurses (Salvadó-Hernández et al., 2009) and similar to other studies in the rest of the world (Al Qadire and Al Khalaileh, 2014; Grétarsdóttir et al., 2017; Moceri & Drevdahl, 2014). Results such as these are concerning and call into question whether RNs are providing less-than-optimal care based on their knowledge and attitudes. The worst results came from nurses assigned as floaters, followed by those rostered to medical hospitalization units. This may be an outcome of the frequent rotations through different sections of the hospital imposed on floating staff, combined with the fact that they are generally young and inexperienced nurses, which might contribute to their deficiencies in dealing with patients' pain. Other publications give varying outcomes in respect of which departments in hospitals achieve the best results. Some pieces of published work claim that nurses from intensive care and oncology units appear to have the greatest knowledge and the most appropriate attitudes in this area (Latina et al., 2015; Salvadó-Hernández et al., 2009).

Our results suggest that a lack of specific training on pain was significantly linked to questions relating both to knowledge and to attitudes. This finding concurs with published materials demonstrating the effectiveness of educational actions aimed at nurses in improving management and handling of episodes of pain (Alvarez et al., 2017; Schreiber et al., 2014).

Postgraduate studies did not lead to better results in the overall analysis of correct answers. On this point, there is some controversy. Some scholars have claimed that postgraduate education in nursing provided better general knowledge of how to manage pain, while work experience, age, degree of exposure to patients suffering pain, and the area where posted were not linked to better awareness of how to manage episodes of pain (Grétarsdóttir et al., 2017). Other research reached the conclusion that the level of studies completed, having completed a postgraduate qualification, and number of years of experience had no relationship with more appropriate attitudes to pain or better knowledge of it (Moceri & Drevdahl, 2014). Particularly striking was an investigation carried out in the United States in which 96 academic staff from sixteen faculties of nursing were interviewed. The researchers demonstrated that there were weaknesses in the way in which these teachers dealt with pharmacologic approaches and addiction. The academics in question stated that they had not had adequate training on how to manage pain (Voshall et al., 2013).

Analysis of Nurses' Attitudes to Pain

In light of results obtained, most nurses seem to believe that patients often exaggerate the intensity of their pain. They were unclear on recommendations designed to aid patients in terms of combining complementary therapies for palliating pain and analgesic medication. They felt that if patients could get to sleep, they were not in pain or, if patients can be distracted from pain this was an obvious sign that their pain was not severe. Similarly, they believed that intravenous administration of a placebo could be a useful test to determine if the pain was real, even though, placebos are not used in the hospital. It is particularly striking that a patient with a VAS pain value of 8, nurses act differently if the patient is smiling or grimacing in order to administer morphine. Other studies which used the same questionnaire obtained similar results (Latina et al., 2015; Moceri & Drevdahl, 2014; Salvadó-Hernández et al., 2009; Ucuzal & Doğan, 2015). All these investigations describe inappropriate beliefs of nurses that affect correct pain management, proposing training initiatives to overcome the prejudices detected. Some research gives evidence that participation by patients suffering from pain in pro-active self-treatment in collaboration with the nurse might be an effective measure improving management of pain events (Rico-Blázquez et al., 2014).

Nurses should involve patients in self-care programs and health education to manage their painful suffering (Riemondy et al., 2016). To achieve this point, a proactive attitude on the part of nurses is required. Because nurses have a principal role in pain management, it is highly likely that attitudes could be improved by enhancing communication about therapies and by counselling (Zoëga et al., 2016). Effective communication is not possible without a relationship of empathy and confidence, permitting a holistic assessment without value judgments on the part of nurses (Schreiber et al., 2014). Indeed, some scholars consider attitudes to be the most influential feature in nurses' management of pain, more so than training, knowledge, or years of experience. They state that only those nurses adopting an active approach to managing pain provide optimum care for their patients (Mackintosh-Franklin, 2014).

The factors with the greatest influence on attitudes in our study were lack of recent training on pain and the work unit. No correlation was found with years of experience or having postgraduate studies. It was among staff from the special care units that there were the most claims that if patients can get to sleep, they are not in pain. Nurses from the "floating" staff had a greater number of mistaken ideas with regard to the use of placebos and the belief that patients exaggerate the intensity of their pain, followed by those from surgical units. Apart from specific lack of training on pain, the department in which nurses were working played a crucial role. This could be affected by organizational factors, including work culture, organizational structure, and leadership in the work department. This points to organizational barriers and implies a need for changes in the workplace that would give nurses the necessary means and authority when dealing with pain. Some researchers call for an interdisciplinary approach and the use of protocols or guidelines to promote good practice that would reduce the variability of interventions (Albornos-Muñoz, González-María & Moreno-Casbas, 2015).

Analysis of Nurses' Knowledge of Pain

The weak points of the nurses' knowledge in the sample related to the handling of opioids in treating pain. The majority were unfamiliar with the probability of respiratory depression or opioid addiction as potential consequences of these treatments. Likewise, knowledge deficit about the effects, duration, and administration of some opioids was detected. The findings here coincide with those in a number of studies that cite nurses as lacking knowledge of the use of opioids, which probably makes them unsure of how to handle them (Bergeron et al., 2015; Kiekkas et al., 2015; Moceri & Drevdahl, 2014). Furthermore, the study population showed difficulties relating to the use of other, non-opioid, pharmacologic treatments, such as aspirin, ibuprofen, and other non-steroidal anti-inflammatory drugs (NSAIDs), or interventions not based on pharmacologic solutions, such as the application of heat or cold, and other distractors such as music, images, and the like. This coincides with the results published by Al-Shaer, who used the same survey in Chicago (Al-Shaer et al., 2011).

The factors linked to worse results in knowledge were having no specific training on pain and having fewer than ten years of experience. These two factors combined were correlated with failures on questions concerning possible respiratory depression caused by opioids. Nurses with under ten years of experience showed a greater lack of knowledge in the question related to the effectiveness of non-pharmacologic interventions in relieving pain. Regarding nurses with a postgraduate qualification no one gave the right answer to the question concerning treatments useful for pain

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arising from cancer. Some researchers have claimed not to find any differences in knowledge and attitudes among nurses arising from age, years of experience, or academic studies completed (Al Qadire & Al Khalaileh, 2014; Moceri & Drevdahl, 2014). Others do report significant differences affecting nurses with more experience and seniority in postoperative surgical departments (Kiekkas et al., 2015), or those having more than 10 years' experience, who achieved better results in terms of more right answers to questions about the use of opioids with patients after major surgery (Youngcharoen, Vincent & Park, 2017). These latter studies also found differences between the scores recorded in different hospitals, which suggests there is an impact from the policies and lines of strategy adopted by different institutions.

Correlations Between Knowledge and Attitudes

The positive correlation between knowledge and attitudes; nurses who had better attitudes toward pain management also had a greater number of correct answers in the questions related to pain knowledge. Although all the literature consulted coincided in finding this same correlation, most publications insist that good awareness and suitable attitudes do not guarantee change in nurses' practices when managing pain (Brant et al., 2017; Schreiber et al., 2014). In addition, there is a need for a more active and positive stance, in which nurses take on greater leadership in their role as caregivers and implement specific care plans for dealing with pain among patients (Bergeron et al., 2015).

Limitations

The use of a convenience sample, composed entirely of nurses working in one specific hospital, does not allow generalization of results. As in any survey evaluating knowledge on the basis of a questionnaire, there is no way of discovering whether some participants checked up on relevant information before completing the questions. The fact that nurses had been informed of the aims of the study, necessary for compliance with ethical considerations, might favor a social desirability bias, as participants might try to respond about their attitudes toward pain in a way that would put them in a good light. Finally, it is possible that highly motivated nurses responded to the survey, whereas those having little interest in the topic did not, leading to a bias in relation to the actual state of knowledge and attitudes to pain.

Conclusions

Among the nurses surveyed, evidence was found of some gaps in knowledge and suboptimal attitudes regarding pain management for hospitalized patients. However, in the study population, median values for correct answers were similar to, or slightly higher than, those of most of the published studies using the same survey. A lack of specific training about pain was associated with a lower success rate both in knowledge and attitudes. In addition, the hospital unit where nurses work was associated with worst results in misconceptions about the best way to treat pain, while the years of experiences was decisive regarding knowledge.

It would be desirable for hospital institutions to be more involved in designing strategies aimed at improving nurses' competences to manage pain episodes more effectively.

Clinical Implications

Pain management is clearly dependent on the way nurses handle painful episodes: nurses should take more leadership in their role as caregivers to improve the quality of care regarding pain. Identifying factors linked to possible deficiencies in pain management might aid in designing strategies aimed at optimizing the organization of various units in a hospital, such as protocols or best practice guides. It might also assist in establishing nurses' training needs, which could be evaluated in further research. The final goal should always be to achieve a hospital where pain is well managed for all patients.

Ethical Considerations

At all times, the anonymity of those surveyed was maintained, in accordance with Basic Law 3/2018 of 5 December 2018 on the Protection of Personal Data and Guaranteeing of Digital Rights. The work was approved by the Ethics Committee for Medical Research.

Conflicts of Interest

The authors declare no conflict of interest.

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