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Original Article

Impact of a Training Intervention on the Pain Assessment in Advanced Dementia (PAINAD) Scale in Noncommunicative Inpatients

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ABSTRACT

Background: Public hospitals in Catalonia (Spain) recommend using the Spanish version of the Pain Assessment in Advanced Dementia (PAINAD-Sp) scale for assessing pain in adult patients unable to self-report. However, since its inclusion in Catalonian nursing care plans in 2010, there have been no training programs for nurses, contributing to its current underuse.
Aims: The aim of this study was to assess the impact of a nurse training intervention on the PAINAD-Sp scale in noncommunicative inpatients unable to self-report.
Design: Before-after study.
Settings: Two public hospitals in Catalonia (Spain).
Participants/Subjects: Four hundred and one nurses participated in the training course and 219 patients received PAINAD-Sp assessments.
Methods: We used a before-after study design, evaluating the use of the PAINAD-Sp scale over two 6-month periods before and after an online training intervention for nurses in February 2017, in two public hospitals. Data were collected from patient records in each center. The primary outcome was the number of patients receiving PAINAD-Sp assessments during admission. Secondary outcomes were the number of assessments undertaken per patient during admission, the total (0-10) and item-specific (0-2) PAINAD-Sp score, and pharmacologic treatment administered.
Results: There were 401 nurses who took part in the training program. Over the study period, 219 patients received PAINAD-Sp assessments: 29 in the preintervention period and 190 in the postintervention period ($p < .001$). Administration of analgesics and antipyretics decreased ($p < .001$) after the intervention, whereas use of hypnotic drugs and sedatives increased.

This study was approved by the Clinical Investigation Ethics Committee of the Hospital Germans Trias i Pujol and the Institut Català d'Oncologia. The participants were informed about the authorship and purpose of the investigation and were assured that all the data obtained would remain anonymous and confidential.

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Conclusions: Theoretical and practical training may be an effective way to improve nurses' approach to identifying, assessing, and managing pain in patients unable to self-report.

The prevalence of acute pain in inpatients is approximately 37%-50%, as reported by diverse studies in Europe (Duncan et al., 2014; Gregory & Mcgowan, 2016; Vallano, Malouf, Payrulet, Baños, & Catalan Research Group, 2006). These results are both discouraging and consistent across countries and populations. In surgical patients, anywhere from 41% (Sommer et al., 2008) to 75% (Chou et al., 2016; Gan et al., 2014) of patients experience moderate to severe pain on the day of the surgery.

This high prevalence calls for comprehensive training in pain for all health professionals (International Association for the Study of Pain, 2010). The International Association for the Study of Pain defends the right of all people to have access to appropriate pain assessment and treatment from properly trained clinicians (International Association for the Study of Pain, 2018). Likewise, Jarzyna et al. (2011) argue that effective pain management is a human right. Assessment, intervention, follow-up, prevention, and reduction of pain should be a care priority for health professionals.

In the clinical setting, many patients cannot report their pain verbally or otherwise because of their physiologic or pathologic conditions. These include elderly patients with advanced dementia, infants and children who are too young to speak, unconscious and critical patients, those suffering from neurologic or language-related disorders, people who are intellectually impaired, and patients with terminal illnesses at the end of their lives (Pasero & McCaffery, 2011). However, the lack of familiarity with pain assessment scales contributes to malpractice and possibly to the low use of these tools (Herr, Coyne, McCaffery, Manworren, & Merkel, 2011).

At present, the working instructions for public hospitals in Catalonia (Spain), issued by the Institut Català de la Salut (Catalan Health Institute) and the Institut Català d'Oncologia (Catalan Oncology Institute; ICO), recommend and include the Spanish version of the Pain Assessment in Advanced Dementia (PAINAD-Sp) (García-Soler et al., 2014) in their nursing care plans based on the ATIC Terminology (Juvé-Udina, 2013; Juvé-Udina et al., 2013) to assess pain in adults who are unable to self-report. Since its implementation in 2010, there have been no training programs for nurses, contributing to its current underuse. The aim of this study was to assess the impact of a training intervention for nurses on the use of the PAINAD-Sp scale in adult inpatients unable to self-report.

Pain Assessment Instrument: PAINAD Scale

The PAINAD scale was created as a tool to assess pain in noncommunicative adult patients with advanced dementia (Warden, Hurley, & Volicer, 2003). This simple instrument comprises five nonverbal items: breathing (independent of vocalization), negative vocalization (e.g., nonverbal expression of pain such as moans and groans), facial expression, body language, and consolability (inability to be consoled). Assessors score each item on an ordinal scale from 0-2: 0 (absence of pain), 1 (moderate pain), and 2 (severe pain). The total score is the sum of all items and gives an overall estimation of the pain experience on a scale of 0-10.

The National Nursing Home Pain Collaborative recommends the PAINAD scale as a clinically useful instrument (Herr, Bursch, Ersek, Miller, & Swafford, 2010). This scale has been translated and assessed for its psychometric properties in patients with advanced dementia in several countries: Singapore (Leong, Chong, & Gibson, 2006), the Netherlands (Zwakhalen, Hamers, & Berger, 2006), Germany (Schuler et al., 2007), Italy (Costardi et al., 2007), the United States (DeWaters et al., 2008), China (Lin, Lin, Shyu, & Hua, 2010), the United Kingdom (Jordan, Hughes, Pakresi, Hepburn, & O'Brien, 2011), Spain (García-Soler et al., 2014), and Brazil (cultural adaptation into Brazilian Portuguese) (Pinto, Minson, Lopes, and Laselva, 2015).

The PAINAD-Sp has been found to have a mean Cronbach α of .69 (range .46-.82), which rises if the breathing item is not considered. Interrater reliability ranges from 0.58 to 0.95. Correlation between PAINAD-Sp scale total measures and the Visual Analogue Scale is statistically significant ($p < .05$) in all measures and ranges from 0.51 to 0.86.

Recently, our research group has undertaken work to validate the PAINAD-Sp in a different population: hospitalized patients with neurologic disorders and cancer, PAINAD-Sp_Hosp (Muñoz-Narbona et al., 2018). The scale yielded a Cronbach α of .72 for assessments at rest and .75 in movement. Interrater reliability was good (weighted $\kappa > 0.80$) in assessments both at rest and in movement and across all items. Confirmatory factor analysis indicated that the model adjusted adequately to a unidimensional structure. In terms of sensitivity to change, the mean difference was greater in movement than at rest (1.15). In consonance with our findings, several studies and meta-reviews have also supported the use of the PAINAD scale, finding its psychometric qualities to be appropriate in terms of both reliability and validity (Lichtner et al., 2014; Stolee et al., 2005; Zwakhalen et al., 2006).

Nurses' Role in Pain Management

Nurses play an essential role in effectively managing pain by assessing it, observing patient behavior, and administering analgesia (Burns & McIlfatrick, 2015; Wuhrman & Cooney, 2011). Thus these professionals need in-depth knowledge of different scales and instruments for evaluating patients according to their life stage and health state. Indeed, pain is a quality indicator for nursing care and for the care process as a whole, so developing training interventions for nurses that guarantee optimum pain management for inpatients is crucial (Drake & de C. Williams, 2017).

In a recent study on practices, attitudes, and management of pain in the nursing profession, Bonkowski et al. (2018) concluded that specific continuous training programs on pain management, together with the use of clinical practice guidelines, improve nursing practice. These programs lead to substantial improvements in nurses' attitudes on pain and its assessment, along with a decrease in the administration of intravenous opioids before discharge.

Literature Review

With the goal of tackling the underestimation of pain and the quality of pain care in inpatients, the American Pain Society (1999) called for assessing pain as the fifth vital sign, with nurses playing a central role in patient evaluation processes. Despite this push, however, a recent study found that the efforts to promote pain assessment in the line of pain as the fifth vital sign over the past two decades have fallen short, with untreated pain remaining a problem (Scher, Meador, Van Cleave, & Reid, 2018).

Optimal pain assessment requires nurses to be knowledgeable on the variables that influence the perception of pain and on validated instruments for pain assessment, especially in patients who cannot self-report (Czarnecki & Turner, 2018; Herr et al., 2011; Registered Nurses' Association of Ontario, 2013). The meta-analysis undertaken by Cummings et al. (2011) on the effectiveness of knowledge translation strategies for pain management in cancer concluded that training programs on pain resulted in significant improvements in pain management. Likewise, a recent systematic literature review on pain assessment and management in elderly patients with dementia concluded that nurses need to establish better empirical evidence that can help to evaluate and address pain in adults with cognitive impairments in the hospital setting (Tsai, Jeong, & Hunter, 2017).

Different before-after studies of training interventions on pain management have reported that nurses can serve an important function in preventing and managing pain in different nursing settings and populations (Damico et al., 2018; Tse & Ho, 2014). Thus different groups have reported that nurse training interventions on pain management improved the number and quality of pain assessments (Barr & Pandharipande, 2013; Cui, Wang, Zaslansky, & Li, 2018; Phillips, Heneka, Hickman, Lam, & Shaw, 2017; Phillips, Heneka, Lam, & Shaw, 2014), and Gunnarsdottir et al. (2017) argued that specific educational programs on pain management in nursing improve the standardized and systematic assessment of pain.

Methods

Design

We used an uncontrolled before-after study design. The training intervention took place in February 2017, and we collected data over the same 6 months (March 1-August 31) in both the preintervention (2016) and postintervention period (2017).

Setting

This study took place in nine wards of two hospitals in Badalona (Catalonia, Spain): a 43-bed oncology ward pertaining to the ICO, but housed in Germans Trias i Pujol Hospital (HGT); plus eight wards of HGT itself, a 672-bed academic medical center. The HGT wards included three general medicine units, three with different surgical specialties, and two polyvalent units, which comprise different medical-surgical specialties. Each ward has 43-52 beds.

Sample

Nurses

The training intervention was offered to nurses working in inpatient wards of participating hospitals. The online course was available on the centers' intranets in February 2017 on a voluntary basis. Professionals who did not give consent to participate in the study were excluded from the survey on satisfaction with the training intervention. In total, we invited a convenience sample of 836 nurses (HGT, N = 776; ICO, N = 60) to take part in the study.

Patients

We included patients who fulfilled the following inclusion criteria: adults (aged ≥18 years) of both sexes who underwent one or more PAINAD-Sp assessments during the study periods. Data collection processes were anonymized and centralized via the Institut Català de la Salut (Catalan Health Institute), with prior authorization from participating centers.

Variables and Data Source

We collected data on the number of pain assessments using the PAINAD-Sp scale from 7,925 inpatient records in participating hospitals (HGT: 7334; ICO: 591) in 2016 (preintervention period) and from 8,436 inpatient records (HGT: 7,776; ICO: 660) over the same months in 2017 (postintervention). Variables included sociodemographic and clinical data for patients: sex, age, length of hospital stay (days), type of admission and discharge, hospital ward, diagnosis on admission *(International Statistical Classification of Diseases, Ninth Revision, Clinical Modification),* and patient care plan (Juvé-Udina et al., 2013).

The primary outcome variable was the number of patients receiving at least one PAINAD-Sp assessment in each study period. These data were derived from audits of patients' clinical histories. Secondary outcomes were the number of assessments undertaken per patient during admission, the total (0-10) and item-specific (0-2) PAINAD-Sp score, and pharmacologic treatment administered. Drugs were categorized based on the classification used at HGT: ATC-4 (Anatomical, Therapeutic, Chemical classification system): analgesics and antipyretics, anxiolytics, antidepressants, hypnotic drugs and sedatives, antipsychotics, and opioids.

In addition, we assessed nurses' satisfaction with the course. On completing the training exercise, professionals were asked to complete an ad hoc survey on their satisfaction with the course. The survey consisted of 10 items developed by the project coordinator and HGT managers, and it covered aspects related to the material, methodology, and media used, as well as the course content and knowledge translation. Nurses scored each item on a 10-point Likert scale (1 = strongly disagree, 10 = strongly agree).

Procedures

Intervention: Online Training Course on the PAINAD-Sp

Following the recommendation of Warden et al. (2003), we developed a specific training program for the PAINAD-Sp scale. We designed a theoretical-practical course lasting 2 hours to educate nurses in hospital units from the two study centers. Participants were evaluated by means of an ad hoc quiz; the minimum grade for passing the theoretical-practical test was 8 out of 10.

Theoretical course content addressed concepts related to introduction to pain management, importance of reporting pain, nurses' role in pain management in hospitals, patient-controlled analgesia and the three-step analgesic ladder, family education about pain management in patients unable to self-report their pain, pain assessment in hospitalization, and pain assessment scales for use in communicative and noncommunicative inpatients. There was also a specific unit on the PAINAD-Sp scale: description and scoring of items, implementation in public hospitals in Catalonia as the instrument of choice for evaluating pain in noncommunicative patients, and electronic registry in nursing care. Resources used for developing the training materials included those derived from the hospital teaching unit as well as professional actors, who performed clinical simulations.

Practical course content consisted of a video to describe and illustrate each score (0-1-2) for each of the five items in the scale (breathing, vocalization, facial expression, body language, and consolability). Moreover, we recorded six videos to evaluate different clinical scenarios in which patients cannot self-report their pain. Two videos illustrated the extremes on the pain spectrum (absence of pain and severe pain), and four videos showed mild to moderate pain affecting different items included in the PAINAD-Sp scale, with varying total scores (0-10).

Statistical Analysis

Data analyses were performed using SPSS for Windows Version 22 (IBM Corp., Armonk, NY, USA). We used the Shapiro-Wilk statistic to assess the distribution and normality of the primary study variables. In the descriptive analysis, we calculated the mean and standard deviation (SD) for the quantitative variables. In the bivariate analysis investigating the relationship between qualitative variables according to study period, we constructed contingency tables and presented absolute and relative frequencies in each cell. We tested associations by means of the χ^2 test or Fisher's exact test, applying the Mann-Whitney *U* nonparametric test of association for quantitative variables according to study period. We established statistical significance at 5% for type I errors ($\alpha = .05$).

Ethical Considerations

The clinical research ethics committees of the two participating hospitals approved the study (CEIC PI-16-062: Hospital Germans Trias i Pujol and the Institut Català d'Oncologia). The collection of anonymized patient data was authorized by the Institut Català de la Salut and the Institut Català d'Oncologia. Before carrying out the study, we obtained permission to use the PAINAD-Sp scale from its authors (García-Soler et al., 2014).

Results

Nurses

A total of 401 nurses participated in the training course: 60 (100%) from the ICO oncologic unit, and 341 of 776 (43.9%) working in the participating HGT wards. Learning module proficiency data generated from the intervention platform indicated that 99% of the participants correctly answered the questions from the course quiz, with a mean score of 94.6 out of 100. Only one participant failed.

The overall satisfaction among nursing participants with regard to the training received and the objectives of the course was 8.6 out of 10. Course participants gave a grade of 8.5 out of 10 with regard to the material, methodology, and media used, 8.6 out of 10 to the knowledge acquired, and 8.6 out of 10 to the translation of knowledge and the applicability to routine clinical practice.

Patients Receiving PAINAD-Sp Evaluation

Over the course of both study periods, 219 PAINAD-Sp records were created for patients who received at least one PAINAD-Sp assessment in the two participating hospitals: 29 in the preintervention and 190 in the postintervention period ($p < .001$). The mean number of assessments per patient during admission was 2.3 (SD = 1.7) postintervention compared with 1.94 (SD = 2.0) preintervention ($p = .082$). Oncologic patients (from the ICO ward) went from not receiving a single PAINAD-Sp assessment to receiving 15 (7.9% of postintervention assessments) after the training course. All 29 of the assessments undertaken in the preintervention phase were performed at HGT, along with 175 (92.1%) from the postintervention phase. In the preintervention period, nurses in the neurology department performed most (n = 23, 79.3%) of the PAINAD-Sp assessments, whereas in the postintervention period, it was nurses in geriatrics (33.2%) and neurology/neurosurgery (31.5%).

Patients' mean age was 66.6 (SD = 13.4) years preintervention, compared with 74.1 (SD = 16.1) years postintervention. More men received assessments in both periods (62.1% preintervention vs. 52.1% postintervention). In the first study period, all the admissions were emergencies, whereas in the second period the proportion of emergency admissions was 88.4% (n = 168). Length of hospital stay was longer in the preintervention phase ($p < .001$). On discharge, only 17.2% (n = 5) of the patients returned to their home in the preintervention phase, whereas 42.6% (n = 81) did so postintervention.

Diagnoses on admission were varied, but neurologic diagnoses predominated overall (90 out of 219) and in both the preintervention (23 out of 29) and postintervention (67 out of 190) periods. In turn, neurologic diagnoses mainly comprised ischemic stroke (N = 52, 23.7%; preintervention n = 15, 51.7%; postintervention n = 37, 19.5%) and hemorrhagic stroke (N = 28, 12.8%; preintervention n = 8, 27.6%; postintervention n = 20, 10.5%). We did not detect cancer patients at the end of life who received a PAINAD-Sp assessment in the preintervention period. Full clinical and sociodemographic data are summarized in Table 1. The care plans associated with included patients were mainly stroke (n = 60, 27.4%), fragile adult (n = 41, 21.6%), end-of-life situation (n = 29, 24.0%), infectious diseases (n = 26, 16.4%), and traumatology (n = 13, 9.9%) (Table 2).

Severity of Pain Assessed

After training, the severity of pain that professionals assessed in patients did not change relative to the preintervention period (Table 3). Patients had signs of mild pain (<3 out of 10 on the PAINAD-Sp) across all areas of expression, with body language being the domain with the highest scores (Table 4).

Pain Management

The therapeutic management that patients received before and after the training intervention had statistically significant differences by type of drug. Specifically, before the intervention the use of analgesics and antipyretic drugs was higher, with 55.2% of assessed patients (n = 16) receiving drugs for their pain before

Table 1
Sociodemographic and Clinical Characteristics of the Patient Sample (N = 219)

Variables	Preintervention (N = 29)	Postintervention (N = 190)
	n (%)	n (%)
Sex		
Women	11 (37.9)	91 (47.9)
Men	18 (62.1)	99 (52.1)
Mean (SD) age in years	66.6 (13.3)	74.1 (16.1)
Mean (SD) length of hospital stay, days	33.6 (28.3)	12.1 (10.4)
Type of admission		
Emergency	29 (100)	168 (88.4)
Planned	0 (0.0)	22 (11.6)
Hospital service		
Neurology/neurosurgery	23 (79.3)	60 (31.5)
Medicine	3 (10.3)	26 (13.7)
Geriatrics	1 (3.4)	63 (33.2)
Surgery	0 (0.0)	17 (8.9)
Oncology	0 (0.0)	15 (7.9)
Pneumonology	1 (3.4)	2 (1.1)
Hospital home care	0 (0.0)	3 (1.6)
Gynecology	0 (0.0)	2 (1.1)
Cardiology	1 (3.4)	0 (0.0)
Nephrology	0 (0.0)	2 (1.1)
Type of discharge		
Exitus	5 (17.2)	47 (24.7)
Residence/nursing home	9 (31.0)	40 (21.0)
Acute hospital	10 (34.5)	22 (11.6)
Home	5 (17.2)	81 (42.6)

SD = standard deviation.

Table 2
Patient Care Plans

Care Plan Description	Preintervention (N = 29)	Postintervention (N = 190)	*p*
	n (%)	n (%)	
Stroke	20 (69.0)	40 (21.1)	.201
Craniotomy	2 (6.9)	1 (0.5)	
Subdural hematoma	1 (3.4)	5 (2.6)	
Subarachnoid hemorrhage	0 (0.0)	2 (1.1)	
Epilepsy	0 (0.0)	3 (1.6)	
Neurodegenerative disease	0 (0.0)	1 (0.5)	
Neurologic examination	0 (0.0)	6 (3.1)	
Fragile adult	0 (0.0)	41 (21.6)	
End-of-life situation	3 (10.3)	26 (13.7)	
Infectious diseases	1 (3.4)	25 (13.0)	
Cardiac disorders	1 (3.4)	3 (1.6)	
Traumatology (total)	1 (3.4)	12 (6.5)	
Postoperative care	0 (0.0)	8 (4.1)	
Anemia	0 (0.0)	1 (0.5)	
Transplants	0 (0.0)	1 (0.5)	
Hepatic encephalopathy	0 (0.0)	1 (0.5)	
Uncontrolled pain	0 (0.0)	1 (0.5)	
Surgery	0 (0.0)	5 (2.6)	
Oncology	0 (0.0)	3 (1.5)	
Syndromic study	0 (0.0)	7 (3.7)	

p Value for χ^2 test.

training and 19.5% (n = 37) afterward ($p < .001$). In contrast, there was an increase in the use of hypnotic drugs and sedatives among the assessed patients (6.9% [n = 2] before intervention vs. 34.7% [n = 66] after intervention; Table 5).

Discussion

Our results indicate a statistically significant increase in the routine clinical use of the PAINAD-Sp scale after an online training intervention. These findings are similar to those in the study by Phillips et al. (2017), who also reported that a nurse training intervention led to a statistically significant ($p < .001$) and sustained increase in pain assessments. However, the number of assessments per patient did not increase after the training course, which may be related to the heterogeneity of patients between study periods; mean length of hospital stay in assessed patients was 33.6 (SD = 28.3) days preintervention compared with 12.1 (SD = 10.4) days postintervention ($p < .001$), resulting in fewer opportunities for assessment in the second study phase.

With regard to the degree of pain, we did not find statistically significant differences (Table 3), although there was a slight increase (11%) in pain >3 on the scale. We cannot relate this rise directly to the effect of training because the characteristics of the patients evaluated were different. For example, there were more cancer patients and patients at the end of their life in the postintervention period, which could be associated with a higher degree of pain and a greater need for opioids and hypnotics in these patients, as shown in Table 5.

Table 3
Total PAINAD-Sp Score on Admission

	Preintervention (N = 29)	Postintervention (N = 190)	*p*
	n (%)	n (%)	
PAINAD-Sp <3	25 (86.2)	141 (75.8)	.214
PAINAD-Sp >3	4 (13.8)	45 (24.2)	

p Value for Fisher's exact test.
PAINAD-Sp = Spanish version of the Pain Assessment in Advanced Dementia.

Table 4
Item-Specific PAINAD-Sp Scores at Pre- and Postintervention Time Points

Ítems	Preintervention (N = 29)	Postintervention (N = 190)	*p*
	M (SD)	M (SD)	
Breathing	0.10 (0.31)	0.21 (0.44)	.229
Vocalization	0.14 (044)	0.24 (0.47)	.182
Facial expression	0.14 (0.35)	0.31 (0.54)	.182
Body language	0.17 (0.38)	0.37 (0.58)	.118
Consolability	0.17 (0.46)	0.22 (0.49)	.557
Total	0.72 (1.56)	1.35 (1.80)	

PAINAD-Sp = Spanish version of the Pain Assessment in Advanced Dementia; M = mean; SD = standard deviation.
p Value for Mann-Whitney *U* test.

The postintervention patient records also indicate a decrease in the use of analgesic and antipyretic drugs, but the opposite occurred with hypnotic drugs and sedatives. Opioids were the drugs administered the least among noncommunicative patients. These results are consistent with those from other studies in reflecting a preference for analgesia and the reduced use of opioids in patients who are fragile or who have neurologic conditions. Sieber, Mears, Lee, and Gottschalk (2011) associated the low use of opioids with a diagnosis of dementia, whereas patients without dementia received analgesics on demand, with significant differences between the two groups ($p < .001$) in the first few days of a hospital stay.

Various studies report that people with a hip fracture and a diagnosis of dementia tend to receive acetaminophen (paracetamol) as the most commonly used analgesic, along with strong opioids, in the postoperative period (Rantala, Hartikainen, Kvist, & Kankkunen, 2014; Titler et al., 2003). Likewise, in another series in patients with cognitive deterioration, acetaminophen (63%) was the most commonly used drug, followed by strong opioids (16%) (Mehta, Siegler, Henderson, & Reid, 2010).

The most prevalent care plan was for stroke; this correlates with the characteristics of the population of noncommunicative patients who may suffer pain without being able to self-report it. These patients can present with motor, sensorial, and visual deficits, along with speech impairment (aphasia) (Basso, Forbes, & Boller, 2013).

Nurses should initiate a pain assessment and make a clinical judgement based on their knowledge. Educating nurses in the detection and treatment of pain in patients with communication disorders enables them to recognize potential signs of pain and to treat that pain accordingly (Rantala, Kankkunen, Kvist, & Hartikainen, 2014). The approach to and treatment of pain should be agreed on by the care team as a whole, but prior training is essential for its correct evaluation.

A recent review on education and skills training in stroke care teams found only nine studies that took a multidisciplinary approach to continuous education in care for these patients; often

Table 5
Drug Treatment Administered

Drug Groups	Preintervention (N = 29)	Postintervention (N = 190)	*p*
	n (%)	n (%)	
Analgesics and antipyretics	16 (55.2)	37 (19.5)	<.001
Anxiolytics	4 (13.8)	32 (16.8)	.794
Antidepressants	6 (20.7)	38 (20.0)	.999
Hypnotics and sedatives	2 (6.9)	66 (34.7)	.002
Antipsychotics	7 (24.1)	58 (30.5)	.663
Opioids	0	11 (5.8)	.367

p value for Fisher's exact test.

nurses underwent training independently (Jones et al., 2018). As Scher et al. (2018) suggested, however, pain assessment should use a multidimensional and interprofessional approach, also incorporating new technologies.

The low registry of this scale in the preintervention phase shows the need and importance of training professionals in its use. According to Mattick, Barnes, and Dieppe (2013), continuous education and training for health professionals can be complex. As with other complex interventions, implementation should follow an action protocol. In the case of the PAINAD-Sp, we found that incorporating a new instrument in the clinical setting without prior training resulted in low adherence to its use.

Limitations

Few patients were assessed with the PAINAD-Sp scale before the intervention, thus the small sample size in the preintervention phase is the primary limitation in the analysis of patient characteristics. Although the lack of control group is inherent to the design of the present study, investigators designing future studies should consider using a control group to compare outcomes.

Another limitation is the fact that the training session was given only once and on a voluntary basis, limiting the strength of its quality assessment. In the future, hospital administrators should establish strategies to implement training interventions continuously and center-wide to take into account nurses' work rotations and turnover. A spaced learning format, also recommended by other authors (Phillips et al., 2017), can contribute to the proper use and registry of the pain scale and, in turn, to the most appropriate action in consequence.

Conclusions

Our results provide evidence that a nurse training intervention in the PAINAD-Sp scale increases use of the scale in hospital units. This online course can be an effective way to improve nurses' approach to identifying, assessing, and managing pain in patients who are unable to self-report.

Implications for Nursing Practice, Education, and Research

Implementing pain assessment scales for use in patients with communication difficulties at a health system level also creates a need for educational and training programs in their use. All hospitals should aim to educate and train health professionals in pain management, developing periodic training courses. Nursing staff play an essential role in detecting and managing pain. The professionals involved should ensure the appropriate use of drugs to manage pain, including in patients with communication disorders.

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References

American Pain Society. (1999). *Principles of analgesic use in the treatment of acute pain and cancer pain*. Glenview IL: American Pain Society.

Barr, J., & Pandharipande, P. P. (2013). The pain, agitation, and delirium care bundle: Synergistic benefits of implementing the 2013 pain, agitation, and delirium guidelines in an integrated and interdisciplinary fashion. *Critical Care Medicine, 41*(9 Suppl 1), S99–S115.

Basso, A., Forbes, M., & Boller, F. (2013). Rehabilitation of aphasia. *Handbook of Clinical Neurology, 110*, 325–334.

Bonkowski, S. L., De Gagne, J. C., Cade, M. B., & Bulla, S. A. (2018). Evaluation of a pain management education program and operational guideline on nursing practice, attitudes, and pain management. *The Journal of Continuing Education in Nursing, 49*(4), 178–185.

Burns, M., & McIlfatrick, S. (2015). Palliative care in dementia: Literature review of nurses' knowledge and attitudes towards pain assessment. *International Journal of Palliative Nursing, 21*(8), 400–407.

Chou, R., Gordon, D. B., De Leon-Casasola, O. A., Rosenberg, J. M., Bickler, S., Brennan, T., Carter, T., Cassidy, C. L., Chittenden, E. H., Degenhardt, E., Griffith, S., Manworren, R., McCarberg, B., Montgomery, R., Murphy, J., Perkal, M. F., Suresh, S., Sluka, K., Strassels, S., Thirlby, R., Viscusi, E., Walco, G. A., Warner, L., Weisman, S. J., & Wu, C. L. (2016). Management of postoperative pain: A clinical practice guideline from the American pain society, the American society of regional anesthesia and pain medicine, and the American society of anesthesiologists' committee on regional anesthesia, executive commi. *Journal of Pain, 17*(2), 131–157.

Costardi, D., Rozzini, L., Costanzi, C., Ghianda, D., Franzoni, S., Padovani, A., & Trabucchi, M. (2007). The Italian version of the pain assessment in advanced dementia (PAINAD) scale. *Archives of Gerontology & Geriatrics, 44*(2), 175–180.

Cui, C., Wang, L. X., Li, Q., Zaslansky, R., & Li, L. (2018). Implementing a pain management nursing protocol for orthopaedic surgical patients: Results from a PAIN OUT project. *Journal of Clinical Nursing, 27*(7-8), 1684–1691.

Cummings, G. G., Armijo Olivo, S., Biondo, P. D., Stiles, C. R., Yurtseven, O., Fainsinger, R. L., & Hagen, N. A. (2011). Effectiveness of knowledge translation interventions to improve cancer pain management. *Journal of Pain and Symptom Management, 41*(5), 915–939.

Czarnecki, M. L., & Turner, H. N. (2018). *Core curriculum for pain management nursing* (3rd ed.). St. Louis, MO: Elsevier.

Damico, V., Cazzaniga, F., Murano, L., Ciceri, R., Nattino, G., & Dal Molin, A. (2018). Impact of a clinical therapeutic intervention on pain assessment, management, and nursing practices in an intensive care unit: A before-and-after study. *Pain Management Nursing, 19*(3), 256–266.

DeWaters, T., Faut-Callahan, M., McCann, J. J., Paice, J. A., Fogg, L., Hollinger-Smith, L., Sikorski, K., & Stanaitis, H. (2008). Comparison of self-reported pain and the PAINAD Scale in hospitalized cognitively impaired and intact older adults after hip fracture surgery. *Orthopaedic Nursing, 27*(1), 21–28.

Drake, G., & de Williams, A. C. (2017). Nursing education interventions for managing acute pain in hospital settings: A systematic review of clinical outcomes and teaching methods. *Pain Management Nursing, 18*(1), 3–15.

Duncan, F., Day, R., Haigh, C., Gill, S., Nightingale, J., O'Neill, O., & Counsell, D. (2014). First steps toward understanding the variability in acute pain service provision and the quality of pain relief in everyday practice across the United Kingdom. *Pain Medicine (United States), 15*(1), 142–153.

Gan, T. J., Habib, A. S., Miller, T. E., White, W., & Apfelbaum, J. L. (2014). Incidence, patient satisfaction, and perceptions of post-surgical pain: Results from a US national survey. *Current Medical Research and Opinion, 30*(1), 149–160.

García-Soler, Á., Sánchez-Iglesias, I., Buiza, C., Alaba, J., Navarro, A. B., Arriola, E., Zulaica, A., Vaca, R., & Hernández, C. (2014). [Adaptation and validation of the Spanish version of the Pain Evaluation Scale in patients with advanced dementia: PAINAD-Sp]. *Revista Espanola de Geriatria Y Gerontologia, 49*(1), 10–14.

Gregory, J., & Mcgowan, L. (2016). An examination of the prevalence of acute pain for hospitalised adult patients: A systematic review. *Journal of Clinical Nursing, 25*(5-6), 583–598.

Gunnarsdottir, S., Zoëga, S., Serlin, R. C., Sveinsdottir, H., Hafsteinsdottir, E. J. G., Fridriksdottir, N., Gretarsdottir, E. T., & Ward, S. E. (2017). The effectiveness of the Pain Resource Nurse Program to improve pain management in the hospital setting: A cluster randomized controlled trial. *International Journal of Nursing Studies, 75*, 83–90.

Herr, K., Bursch, H., Ersek, M., Miller, L. L., & Swafford, K. (2010). Use of pain-behavioral assessment tools in the nursing home: Expert consensus recommendations for practice. *Journal of Gerontological Nursing, 36*(3), 31.

Herr, K., Coyne, P. J., McCaffery, M., Manworren, R., & Merkel, S. (2011). Pain assessment in the patient unable to self-report: Position statement with clinical practice recommendations. *Pain Management Nursing, 12*(4), 230–250.

International Association for the Study of Pain. (2018). *IASP Curriculum Outline on Pain for Nursing*. Retrieved from http://www.iasp-pain.org/Education/CurriculumDetail.aspx?ItemNumber=2052. (Accessed 10 January 2018).

International Association for the Study of Pain. (2010). *Declaration of Montreal*. Retrieved from https://www.iasp-pain.org/DeclarationofMontreal?navItemNumber=582.

Jarzyna, D., Jungquist, C. R., Pasero, C., Willens, J. S., Nisbet, A., Oakes, L., Dempsey, S. J., Santangelo, D., & Polomano, R. C. (2011). American Society for Pain Management Nursing guidelines on monitoring for opioid-induced sedation and respiratory depression. *Pain Management Nursing, 12*(3), 118–145.

Jones, S. P., Miller, C., Gibson, J. M. E., Cook, J., Price, C., & Watkins, C. L. (2018). The impact of education and training interventions for nurses and other health care staff involved in the delivery of stroke care: An integrative review. *Nurse Education Today, 61*, 249–257.

Jordan, A., Hughes, J., Pakresi, M., Hepburn, S., & O'Brien, J. (2011). The utility of PAINAD in assessing pain in a UK population with severe dementia. *International Journal of Geriatric Psychiatry, 26*(2), 118–126.

Juvé-Udina, M. E., Matud, C., Valero, P., Castellà, M., Castro, T., Cadenas, S., Zuriguel, E., & Gonzalez, M. (2013). *Plans de cures estandarditzats per a malalts*

hospitalitzats. Barcelona, Spain: Generalitat de Catalunya, Departament de Salut, Institut Català de la Salut. Retrieved from http://ics.gencat.cat/web/.content/documents/Planscures.pdf. (Accessed 10 January 2018).

Juvé-Udina, M. E. (2013). What patients problems do nursing e-chart? Longitudinal study to evaluate the usability of an interface terminology. *International Journal of Nursing Studies, 50*(12), 1698–1710.

Leong, I. Y.-O., Chong, M. S., & Gibson, S. J. (2006). The use of a self-reported pain measure, a nurse-reported pain measure and the PAINAD in nursing home residents with moderate and severe dementia: A validation study. *Age and Ageing, 35*(3), 252–256.

Lichtner, V., Dowding, D., Esterhuizen, P., Closs, S. J., Long, A. F., Corbett, A., & Briggs, M. (2014). Pain assessment for people with dementia: A systematic review of systematic reviews of pain assessment tools. *BMC Geriatrics, 14*(1), 138.

Lin, P. C., Lin, L. C., Shyu, Y. I. L., & Hua, M. S. (2010). Chinese version of the Pain Assessment in Advanced Dementia Scale: Initial psychometric evaluation. *Journal of Advanced Nursing, 66*(10), 2360–2368.

Mattick, K., Barnes, R., & Dieppe, P. (2013). Medical education: A particularly complex intervention to research. *Advances in Health Sciences Education, 18*(4), 769–778.

Mehta, S. S., Siegler, E. L., Henderson, C. R. J., & Reid, M. C. (2010). Acute pain management in hospitalized patients with cognitive impairment: A study of provider practices and treatment outcomes. *Pain Medicine (Malden, Mass), 11*(10), 1516–1524.

Muñoz-Narbona, L., Cabrera-Jaime, S., Lluch-Canut, T., Pérez de la Ossa, N., Álvarez, J., Zarza, N., … Roldán-Merino, J. (2018). Validation of the Spanish version of the Pain Assessment in Advanced Dementia Scale (PAINA-Sp) in hospitalized patients with neurological disorders and oncological patients unable to self-report their pain. *Pain Management Nursing*. https://doi.org/10.1016/j.pmn.2018.08.004. Advance online publication.

Pasero, C., & McCaffery, M. (2011). *Pain assessment and pharmacologic management*. St. Louis, MO: Mosby.

Phillips, J. L., Heneka, N., Hickman, L., Lam, L., & Shaw, T. (2017). Can a complex online intervention improve cancer nurses' pain screening and assessment practices? Results from a multicenter, pre-post test pilot study. *Pain Management Nursing, 18*(2), 75–89.

Phillips, J. L., Heneka, N., Lam, L. T., & Shaw, T. (2014). Multi-centre pre-post test trial of a complex Qstream© pain assessment intervention on cancer nurses' pain screening and assessment practices. *Asia-Pacific Journal of Clinical Oncology, 10*, 206.

Pinto, M. C. M., Minson, F. P., Lopes, A. C. B., & Laselva, C. R. (2015). Cultural adaptation and reproducibility validation of the Brazilian Portuguese version of the Pain Assessment in Advanced Dementia (PAINAD-Brazil) scale in non-verbal adult patients. *Einstein (Sao Paulo, Brazil), 13*(1), 14–19.

Rantala, M., Hartikainen, S., Kvist, T., & Kankkunen, P. (2014a). Analgesics in postoperative care in hip fracture patients with dementia—reported by nurses. *Journal of Clinical Nursing, 23*(21-22), 3095–3106.

Rantala, M., Kankkunen, P., Kvist, T., & Hartikainen, S. (2014b). Barriers to postoperative pain management in hip fracture patients with dementia as evaluated by nursing staff. *Pain Management Nursing, 15*(1), 208–219.

Registered Nurses' Association of Ontario. (2013). *Assessment and Management of Pain* (Third Edition). Clinical Best Practice Guideline, (December), 97-99. Retrieved from. http://rnao.ca/sites/rnao-ca/files/AssessAndManagementOfPain_15_WEB-_FINAL_DEC_2.pdf. (Accessed 25 January 2018).

Scher, C., Meador, L., Van Cleave, J. H., & Reid, M. C. (2018). Moving beyond pain as the fifth vital sign and patient satisfaction scores to improve pain care in the 21st century. *Pain Management Nursing, 19*(2), 125–129.

Schuler, M. S., Becker, S., Kaspar, R., Nikolaus, T., Kruse, A., & Basler, H. D. (2007). Psychometric properties of the German "Pain Assessment in Advanced Dementia Scale" (PAINAD-G) in nursing home residents. *Journal of the American Medical Directors Association, 8*(6), 388–395.

Sieber, F. E., Mears, S., Lee, H., & Gottschalk, A. (2011). Postoperative opioid consumption and its relationship to cognitive function in older adults with hip fracture. *Journal of the American Geriatrics Society, 59*(12), 2256–2262.

Sommer, M., De Rijke, J. M., Van Kleef, M., Kessels, A. G. H., Peters, M. L., Geurts, J. W., Gramke, H. F., & Marcus, M. A. E. (2008). The prevalence of postoperative pain in a sample of 1490 surgical inpatients. *European Journal of Anaesthesiology, 25*(4), 267–274.

Stolee, P., Hillier, L. M., Esbaugh, J., Bol, N., McKellar, L., & Gauthier, N. (2005). Instruments for the assessment of pain in older persons with cognitive impairment. *Journal of the American Geriatric Society, 53*(2), 319–326.

Titler, M. G., Herr, K., Schilling, M. L., Marsh, J. L., Xie, X. J., Ardery, G., Clarke, W. R., & Everett, L. Q. (2003). Acute pain treatment for older adults hospitalized with hip fracture: Current nursing practices and perceived barriers. *Applied Nursing Research, 16*(4), 211–227.

Tsai, I.-P., Jeong, S. Y.-S., & Hunter, S. (2017). Pain assessment and management for older patients with dementia in hospitals: An integrative literature review. *Pain Management Nursing, 19*(1), 1–18.

Tse, M. M. Y., & Ho, S. S. K. (2014). Enhancing knowledge and attitudes in pain management: A pain management education program for nursing home staff. *Pain Management Nursing: Official Journal of the American Society of Pain Management Nurses, 15*(1), 2–11.

Vallano, A., Malouf, J., Payrulet, P., Baños, J. E., & Catalan Research Group.. (2006). Prevalence of pain in adults admitted to Catalonian hospitals: A cross-sectional study. *European Journal of Pain, 10*(8), 721–731.

Warden, V., Hurley, A. C., & Volicer, L. (2003). Development and Psychometric Evaluation of the Pain Assessment in Advanced Dementia (PAINAD) Scale. *Journal of the American Medical Directors Association, 4*(1), 9–15.

Wuhrman, E., & Cooney, M. F. (2011). Acute pain: Assessment and treatment. Retrieved from https://www.medscape.com/viewarticle/735034. (Accessed 25 January 2018).

Zwakhalen, S. M. G., Hamers, J. P. H., & Berger, M. P. F. (2006). The psychometric quality and clinical usefulness of three pain assessment tools for elderly people with dementia. *Pain, 126*(1-3), 210–220.