Original Article

Comparison of Pain Scale Preferences and Pain Intensity According to Pain Scales among Turkish Patients: A Descriptive Study

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Abstract:

Pain scale preferences may vary among patients. Providing a choice of which pain scale to use might be helpful for patients. The aim of this study was to determine patient pain scale preferences and compare the level of agreement among pain scales commonly used during postoperative pain assessment. A total of 621 patients during the early postoperative period were enrolled in this descriptive study. A questionnaire form, the faces pain scale (FPS), visual analog scale (VAS), numeric rating scale (NRS), verbal descriptor scale (VDS), thermometer pain scale (TPS), McGill Pain Questionnaire (MPQ), Short-form McGill Pain Questionnaire (SFMPQ), and Brief Pain Inventory (BPI) were used to collect data. Most patients reported that their pain was not measured with any of the pain scales. Patient preference for pain scales were as follows: 97.4% FPS, 88.6% NRS, 84.1% VDS, 78.1% TPS, 60.1% SFMPQ, 37.0% BPI, 11.4% VAS, and 10.5% MPQ. Education was an important factor in the preferences for all scales ($p < .000$). The level of pain determined by the VAS did not correlate with the level of pain identified by the NRS, TPS, FPS, and VDS ($p < .05$). There was no difference among the levels of pain for the NRS, TPS, FPS and VDS ($p > .05$), but there was for the VAS ($p < .05$). The pain scales chosen should be reliable, valid, and able to evaluate the effects of treatment. The results suggest that the NRS, TPS, FPS, and VDS were appropriate pain rating scales for the participants in this study, and that the VAS should be used in combination with one of these scales.

Pain is one of the most complex human experiences. The clinical management of postoperative pain necessitates careful assessment (Akkaya & Ozkan, 2009; Mackintosh, 2007; Wood, 2004). Research suggests that the prevalence of pain is high (33%–66%) among surgical patients despite improvements in anesthesia, surgical techniques, and pharmacology, and pain control is frequently disappointing

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(Bacaksiz, Cocelli, Ovayolu, & Ozgur, 2008; Yin, Tse, & Wong, 2012). Earlier studies conducted in Turkey have shown that pain is an important problem during the early postoperative period (Buyukyilmaz Esen & Asti, 2010; Gursoy, Kaygusuz, Demirel, Duran, Kafali, & Mimaroglu, 2006; Yildizeli Topcu, 2008).

One possible cause of inadequate pain management is not using a pain scale for pain assessment or using an inappropriate scale to evaluate/measure pain (Akdemir, Akyar, & Gorgulu, 2008; Breivik, Borchgrevink, Allen, et al., 2008; Ene, Nordberg, Bergh, Johansson, & Sjöström, 2008; Young, Horton, Davidhizar, et al., 2006). Adequate assessment of pain, with the use of validated tools appropriate for the individual in a given situation is an essential prerequisite for successful pain management (Mackintosh, 2007). According to the literature on pain (including Turkey), the most common pain scales currently used are the visual analog scale (VAS), numeric rating scale (NRS), verbal descriptor scale (VDS), faces pain scale (FPS), thermometer pain scale (TPS), McGill pain questionnaire (MPQ), short-form McGill pain questionnaire (SFMPQ), and Brief Pain Inventory (BPI) (Breivik et al., 2008; Coll, Ameen, & Mead, 2004; Eti Aslan, 2002; Kelly, 2000). These tools are the common scales currently used for measuring pain; each one has its merits and limitations. It is difficult to choose the most suitable pain scale for a given clinical setting (Gélinas, Loiselle, LeMay, Ranger, Bouchard, & McCormack, 2008; Jensen, 2003). This is because pain is a subjective experience and there are several individual factors involved in an individual's perception of pain (McCaffrey & Beebe, 1989; Sloman, Wruble, Rosen, & Rom, 2006). A scale is selected to determine the patients' perceived pain intensity and an objective measurement of the pain to decide on treatment (Klopper, Andersson, Minkkinen, Ohlsson, & Sjöström, 2006; Williamson & Hoggart, 2005).

Studies have shown that patients vary in their preferences for pain scales. Therefore patient selection of a pain scale might be useful for the assessment of pain. In addition, demonstrating patient preference will raise awareness of this issue (Hjermstad, Gibbins, Haugen, Caraceni, Loge, & Kaasa, 2008; Kremer, Atkinson, & Ignelzi, 1981; Li, Herr, & Chen, 2009; Taylor & Herr, 2003). The goal of the present study was to assess patient pain scale preference, compare different pain scales, and determine the efficacy of such scales for postoperative pain assessment. In this study the following questions were chosen:

Does the surgical patient think the pain scale is necessary to assess his or her pain?

What pain scale does the surgical patient prefer to assess his or her pain?

Does the surgical patient's expression of pain vary depending on scales?

METHODS

Setting and Subjects

This study was performed at the at surgical wards of Cumhuriyet University Health Services Practice and Research Hospital (general surgery, colorectal surgery, urology, cardiovascular surgery, orthopedics, otorhinolaryngology, and neurosurgery). The number of patients per nurse was from 25 to 47 in these units. Patients ≥18 years old were recruited during the postoperative period. Their hearing and vision were intact as well as their ability to use their hands (no arthritis or fracture of the wrist, shoulder, hand, or elbow). The patients received pain treatment, were hospitalized for ≥1 day, and had no difficulty in communicating. All subjects volunteered to participate in this the study.

During the period from January to April 2010, 878 patients received surgical treatment and care at the surgical clinics. Some of the patients were excluded from the sample: 101 patients (11.5%) did not have surgery, 56 patients (6.4%) could not complete the data forms, 31 patients (3.5%) could not establish effective communication (owing to having a tracheotomy, being unconsciousness, and/or problems with hearing), 36 patients (4.1%) were <18 years old, 19 patients (2.2%) could not use their hands (because of an arm cast or traction), and 14 patients (1.6%) did not agree to participate in the study (most were open heart surgery patients). Therefore, the study was conducted with 621 (70.7%) patients.

Ethical Considerations

Cumhuriyet University did not have an Ethics Committee at the time of this research. Instead, the university had an official unit called Cumhuriyet University Scientific Research Project Evaluation Board (CUSRPEB), which evaluates all scientific studies at the university. Therefore, all scientific studies are supposed to be submitted to CUSRPEB initially. CUSRPEB examines all of the studies within the university and checks their compatibility with the Declaration of Helsinki. After CUSRPEB grants written permission, the department where the study is to be conducted is informed about the subject and their permission is sought (in verbal or written form, depending on the department's request). After that, the data collection stage of the research process starts. The present study was approved by CUSRPEB and the Department of Surgical Sciences, Cumhuriyet University Research and Education Hospital, where the study was conducted. Moreover, the participants were informed about the aim of the study and that

they would not be at risk of any physical or emotional harm as a result of their participation, and their written permissions were obtained.

Data Instruments

Two forms were used to collected data. The first was a questionnaire that asked about descriptive characteristics of the participants and their views on the use of pain scales. This form was prepared based on data from relevant literature (Breivik et al., 2008; Kremer, Atkinson, & Ignelzi, 1981; Li, Herr, & Chen, 2009; Ozer, Akyurek, & Basbakkal, 2006). Enough space was available under each item so that the patients could write down their comments. The second form was a list of scales. This form included the VAS, NRS (11 point), VDS (6 point), FPS (6 point), TPS (11 point), MPQ, SFMPQ, and BPI. The scales were classified as one-dimensional or multidimensional. Each scale was on a separate page. The VAS, NRS, and TPS were shown vertically and the VDS and FPS scales horizontally to the patients. To avoid erroneous measurements, the VAS was not shown to patients on paper copies. Each researcher measured pain using a 100-mm cardboard ruler (without marks on it).

In addition, there was space under each scale where the patients could write their views/opinions about each scale. The patients were asked to comment on issues such as clarity, ease of use, and reassurance of the scale. The present article was too long according to APA style so the information about the measurements were not given.

Data Collection

One researcher and six nurses in training collected data. The nurses in training were instructed on data collection. Data collection was started on the first day after the operation. For the patients that had open heart surgery, data collection was performed 2 days after patients were transfered to the cardiovascular surgical ward (CVSW) from critical care unit (after 2–3 days in the intensive care unit). They were very tired and tense on their first day on the CVSW, because they had various drains and catheters (e.g., two chest tubes and a urinary catheter).

All data were collected by face-to-face interviews lasting 25–35 minutes. Owing to the length of the interviews, it was necessary to both keep patients focused and prevent fatigue. The, interviews with the patients were not performed during treatment and care hours. The first step of data collection included introducing the form with the scales. The patients were asked to mark the scale that they preferred, to show their pain level on the scales (in the following order: VAS, NRS, VDS, TPS, and FPS), and to record their opinions about the scales. After the form was completed, the other form inquiring about patient characteristics was completed. The patients completed both forms in 25–35 minutes. If a patient was observed to be tired during data gathering, the interview was suspended and completed later (particularly the part including the patient opinions about the scales). The data were collected after making sure that the patients were able to adequately recognize the scales.

Data Analysis

SPSS (version 15.0) was used for the data analysis. Statistical significance was set at $p < .05$. The descriptive data were categorized and then compared according to the study variables. Calculations of the percent, mean and standard deviation (SD), paired-samples t test, Wilcoxon signed rank test, McNemar test, and Pearson chi-square were used for data assessment.

The scales were grouped for comparisons. In the first group, there were scales that indicated pain with the NRS, TPS, and VAS. First the NRS, TPS, and VAS were compared with each other. Then, these scales (NRS, VAS, and TPS) were compared with the VDS and FPS. For the comparisons, the pain values presented in the NRS, VAS, and TPS were classified by the researcher; the measured pain values were converted according to the following values: 0 no pain, 1–2 very light, 3–4 mild, 5–6 moderate, 7–8 severe, 9–10 very severe/unbearable. Next, comparison of the pain values across different pain scales was assessed. One-dimensional scales could be compared with each other. Multidimensional scales could not be compared; it was not possible to ascertain similarity among the subgroups of these scales.

RESULTS

Patients Characteristics

The patients were 89.9% married, 57.5% male, 15.3% 19–39 years old, 48.1% 40–59 years old, 36.6% were ≥60 years old, mean age 50.12 years (SD 13.51), 57.8% primary school graduates, 17.7% high school or university graduates, and 24.5% who never went to school. Regarding treatment and care, 35.3% of the patients were in general surgery, 21.6% orthopedics, 15.6% in neurosurgery, 15.5% in cardiovascular surgery, and 12.2% in urology. Among the patients, 37.7% had previous hospital experience, and 49.3% had medium, 32.0% minor, and 18.7% major surgical procedures. All of the patients experienced pain.

Among the study patients, 99.5% stated that their pain intensity was not measured by one of the scales that assessed only whether they had or did not have pain; 57.5% reported that they were occasionally asked

whether the pain was "slight" or "severe"; and 51.4% reported that the their pain intensity was assessed by a nurse, 48.6% by both a nurse and a doctor.

Patient Preferences for Pain Scales

Table 1 shows patient preferences for pain scales. Most of the patients (83.9%) wanted pain scales to be used. According to the patients, using pain scales helped them to report their pain intensity better (83.9%), made them feel better and reassured them that their pain was being taken care of (75.4%), helped to better assess the pain (74.9%), was useful for researchers (71.6%), aided the health care workers regarding pain awareness (70.2%), and improved monitoring the effects of analgesics (61.2%).

Table 2 presents a comparison of the pain scale preferences. The VAS and MPQ were the least preferred pain scales. The difference between the patient preferences for these scales (VAS and MPQ) compared with the other scales was statistically significant

TABLE 1.
Patients' Pain Scale Preferences (n = 621)

Opinions/Suggestions and Preferences*	n	%
Using a pain scale		
Must be used	521	83.9
Provides a better expression of pain	521	83.9
Feels good and safe	468	75.4
Helps doctors and nurses assess pain correctly	465	74.9
Provides useful information for researchers	445	71.6
Prevents doctors and nurses from forgetting patients' pain	436	70.2
Helps monitor the effects of pain relievers	380	61.2
Reported opinions about the pain scales used in the present study		
VAS		
Expressing pain with a line seems meaningless … this line is too small … not clear for most people	581	93.5
Too simple/meaningless … not reassuring … does it really express pain?	479	77.1
NRS and TPS		
It is very easy to express pain with numbers and it is not tiring … I am sure what I marked	542	87.3
VDS		
Expressing pain with words is easy … understandable … I am sure what I marked	489	78.7
Meanings of the words in the scale are very close to each other	73	11.7
FPS		
Finding which one is my face in the scale is fun … easy … understandable	574	92.4
Reassuring … I am sure what I marked … it is interesting that it contains pictures.	431	69.4
MPQ, BPI, and SFMPQ		
Scale is too long, difficult to read and understand … I prefer another form†	437	70.4
Understanding and choosing words is difficult … there are a lot of words with the same meaning†	450	72.5
Even completing this increases pain … gives distress†	371	59.7
Understandable … not very tiring … but some words have very similar meanings to each other‡	373	60.1
Its questions are very similar to each other … as if they ask the same thing … but it can be easily completed§	369	59.4
I have no idea … I am undecided … let the doctor/nurse decide†,‡,§	171	27.5
Patients' scale preferences		
FPS	605	97.4
NRS	550	88.6
VDS	522	84.1
TPS	485	78.1
SFMPQ	373	60.1
BPI	230	37.0
VAS	71	11.4
MPQ	65	10.5

*More than one answer were given.
†Opinions about MPQ.
‡Opinions about SFMPQ.
§Opinions about BPI.

($p < .000$), and the difference between the VAS and MPQ was statistically insignificant ($p = .488$; Table 2).

Table 3 presents the preferences for pain scales according to patient characteristics. In general, men showed higher preferences for all of the scales than did women; The differences between the pain scale preferences of the men and women were statistically significant for the VAS, NRS, SFMPQ, MPQ, and BPI ($p < .05$) and were statistically insignificant for the TPS, VDS, and FPS ($p > .05$).

The VAS (6.3%) and MPQ (5.1%) were preferred more by patients in the 19–39 age group compared with other age groups. The NRS (45.7%), TPS (39.9%), VDS (43.3%), FPS (46.2%), SFMPQ (33.0%), and BPI (25.1%) were preferred at higher rates by the patients in the 40–59 age group compared with patients in other age groups. Except for the FPS scale, the differences between preference rates for the other pain scales according to age were statistically significant ($p < .000$).

Patients with a high school or university education preferred the VAS (9.0%) and MPQ (10.5%) pain scales. The primary school graduates preferred the NRS (57.3%), TPS (47.7%), VDS (56.5%), FPS (57.8%), SFMPQ (41.9%), and BPI (20.1%) compared with patients with different educational backgrounds. The differences among preference rates for the pain scales according to patient level of education were statistically significant ($p < .000$; Table 3).

The scale preferences were analyzed by the difficulty of the surgery: The VAS (5.5%) and MPQ (5.6%) were preferred by patients that had minor operations compared with patients that had medium or major operations. This difference was statistically significant ($p < .00$). The NRS (43.3%), TPS (38.8%), VDS (41.1%), FPS (48.6%), SFMPQ (28.2%), and BPI (16.9%) were preferred at higher rates by patients that had medium-difficulty compared with patients that had minor or major operations. However, these differences were not statistically significant ($p > .05$).

Correlation between One-Dimensional Pain Scales

Table 4 presents the measured pain scores with the VAS, NRS, and TPS. The patients reported their pain levels as mean (SD): 4.67 (SD 1.19) for the VAS, 3.89 (SD 1.03) for the NRS, and 3.91 (SD 1.04) for the TPS. The pain intensity reported using the VAS was higher than those presented in NRS and TPS, and the difference was statistically significant ($p = .000$). Pain intensity measured using the TPS was higher than the pain intensity measured using the NRS. However, the difference between those 2 scales was not statistically significant ($p = .109$).

Table 5 presents the correlation between the one-dimensional pain scales. The correlation between one-dimensional scales according to classified pain scores (n = 461) when the pain intensity was assessed using the VAS was compared with the VDS ($p = .048$) and FPS ($p = .050$), and the differences were almost significant. The results of this study show that, except for the VAS, there was no statistically significant difference in the pain levels using the different pain scales (the NRS, VDS, and TPS; ($p > .05$; Table 5).

DISCUSSION

Using a pain scale to assess pain improves patient awareness of pain management, which helps to

Table 2.
Comparison of Pain Scale Preferences (n = 621)

	NRS	TPS	FPS	VDS	MPQ	SFMPQ	BPI
VAS	475.02	402.28	524.15	445.05	0.481	288.54	147.36
P value	.000	.000	.000	.000	.488	.000	.000
NRS	—	27.49	33.52	26.03	483.00	173.05	310.00
P value		.000	.000	.000	.000	.000	.000
TPS	—	—	96.99	8.81	408.28	58.67	199.72
P value			.000	0.003	.000	.000	.000
FPS	—	—	—	60.58	518.79	202.12	335.73
P value				.000	0.000	.000	.000
VDS	—	—	—	—	451.05	139.51	276.17
P value					.000	.000	.000
MPQ	—	—	—	—	—	306.00	171.01
P value						.000	.000
SFMPQ	—	—	—	—	—	—	129.18
P value							.000

Scales were compared with McNemar test.

TABLE 3.
Patient Characteristics and Pain Scale Preferences (n = 621)

	Gender		Age (y)			Education			Size of Surgery		
Scale and test*/*P* value	Female	Male	19–39	40–59	≥60	Did Not Go to School†	Primary (5 or 8 y)	High School (>8 y)	Major	Medium	Minor
VAS	22 (3.5)	49 (7.9)	39 (6.3)	28 (4.5)	4 (0.6)	2 (0.3)	13 (2.1)	56 (9.0)	8 (1.3)	29 (4.7)	34 (5.5)
Test; *P*	4.358; .037			104.50; .000			206.30; .000			9.792; .007	
NRS	217 (34.9)	333 (53.6)	93 (14.9)	284 (45.7)	173 (27.8)	84 (13.5)	356 (57.3)	110 (17.7)	103 (16.6)	269 (43.3)	178 (28.7)
Test; *P*	18.401; .000			54.542; .000			220.50; .000			0.289; .865	
TPS	202 (32.5)	283 (45.6)	86 (13.8)	248 (39.9)	151 (24.3)	87 (14.0)	296 (47.7)	102 (16.4)	91 (14.7)	241 (38.8)	153 (24.6)
Test; *P*	0.674; .412			30.474; .000			56.416; .000			0.258; .879	
VDS	215 (34.6)	307 (49.4)	93 (14.9)	269 (43.3)	160 (25.8)	63 (10.1)	351 (56.5)	108 (17.4)	98 (15.8)	255 (41.1)	169 (27.2)
Test; *P*	2.350; .125			52.571; .000			272.70; .000			0.247; .884	
FPS	261 (42.0)	344 (55.4)	94 (15.1)	287 (46.2)	224 (36.1)	152 (24.5)	359 (57.8)	94 (15.1)	112 (18.0)	302 (48.6)	191 (30.7)
Test; *P*	3.794; .051			4.762; .092			76.293; .000			3.967; .138	
MPQ	18 (2.9)	47 (7.6)	32 (5.1)	31 (5.0)	2 (0.3)	0 (0.0)	0 (0.0)	65 (10.5)	8 (1.3)	22 (3.5)	35 (5.6)
Test; *P*	6.524; .011			76.905; .000			337.20; .000			15.853; .000	
SFMPQ	135 (21.7)	238 (38.3)	76 (12.2)	205 (33.0)	92 (14.8)	3 (0.5)	260 (41.9)	110 (17.7)	73 (11.7)	175 (28.2)	125 (20.1)
Test; *P*	15.260; .000			60.857; .000			309.80; .000			2.079; .354	
BPI	84 (13.5)	154 (24.8)	68 (10.9)	156 (25.1)	14 (2.2)	3 (0.5)	125 (20.1)	110 (17.7)	46 (7.4)	105 (16.9)	87 (14.0)
Test; *P*	8.226; .004			168.0; .000			263.90; .000			4.619; .099	

Preferences are presented as frequency (percent).

*Pearson chi-square.

†8.5% of thise group (13 individuals) were illiterate yet knew numbers; 91.4% of them (139 individuals) were literate.

Table 4.
Pain Scores with the NRS, VAS, and TPS (n = 461)

Paired Scales	Mean ± SD	*t* Test*	*P* Value
VAS-NRS	(4.67 ± 1.19)–(3.89 ± 1.03)	15.594	.000
VAS-TPS	(4.67 ± 1.19)–(3.91 ± 1.04)	15.142	.000
NRS-TPS	(3.89 ± 1.03)–(3.91 ± 1.04)	−1.607	.109

*Paired-sample *t* test.

comfort the patient and with the management of pain (Hjermstad et al., 2008; Ene, et al., 2008; Gunningberg & Idvall, 2007). However, studies have shown that nurses do not use pain scales and instead subjectively estimate pain (Akdemi, Akyar, & Gorgulu, 2008; Bacaksiz, et al., 2008; Manias, Bucknall, & Botti, 2005; Ozer, Akyurek, & Basbakkal, 2006; Sloman, Rosen, Rom, & Shir, 2005). However, studies have confirmed the efficacy of pain scale use by both doctors and nurses (Ene et al., 2008; Gunningberg & Idvall, 2007; Marquié, Raufaste, Lauque, Mariné, Ecoiffier, & Sorum, 2003; Sloman, et al., 2005). According to Manias, Bucknall, and Botti (2005), nurses do not use pain scales because they consider pain to be a normal component of surgery. In the present study, neither nurses nor doctors used pain scales to assess pain, and it was unclear whether the health care providers are too busy to assess pain using a pain scale or they believe it is a normal part of the healing process. Ozer, Akyurek, and Basbakkal (2006), in their study on Turkish nurses, showed that nurses do not know about pain scales and do not believe that they make a difference in patient pain management. The patients in the present study thought that doctors and nurses should use a scale for pain, and this is essential for patients to feel safe.

Table 5.
Correlation Between One-Dimensional Scales According to the Reported Pain Scores (n = 461)

Paired Scales	Test*	*P* Value
VAS-NRS	−3.617	.000
VAS-TPS	−3.451	.001
VAS-FPS	−1.958	.050
VAS-VDS	−1.977	.048
NRS-TPS	−1.000	.317
NRS-FPS	−1.721	.085
NRS-VDS	−1.656	.098
TPS-FPS	−1.523	.128
TPS-VDS	−1.465	.143
FPS-VDS	−.258	.796

*Wilcoxon signed rank test.

Pain scale preferences differed among the patients in this study. The FPS was popular and preferred by almost every patient. The NRS, VDS, and TPS were also popular scales. However, the VAS and MPQ were generally not preferred by most of the patients. From the reports about one-dimensional scales, it appears to be important for the pain scales to have a verbal, visual, or numeric value. Other studies have shown that patients like to report their pain intensity with the use of simple scales that contain words or numbers (Li, Lui, & Herr, 2007; Miró, Huguet, Nieto, Paredes, & Baos, 2005; Ware, Epps, Herr, & Packard, 2006; Williamson & Hoggart, 2005).

According to some earlier studies, the most often preferred pain scales are the NRS (Hjermstad, Fayers, Haugen, et al., 2011; van Tubergen, Debats, Ryser, Londono, Burgos-Vargas, Cardiel, Landewe, Stucki, & van der Heijde, 2002), FPS (Miro, et al., 2005; Li, Liu, & Herr, 2007; Taylor & Herr, 2003), TPS (Herr, Sprath, Garand, & Li, 2007; Li, Herr, & Chen, 2009), and VDS (Briggs & Closs, 1999; Gagliese, Weizblit, Ellis, & Chan, 2005; Herr, Spratt, Mobily, & Richardson, 2004). As in the present study, the VAS is in general the least preferred pain scale (Li, Liu, & Herr, 2007). Some studies using VAS reported that patients find it incomprehensible and can not complete it in long-term pain monitoring (Briggs & Closs, 1999; Williamson & Hoggart, 2005).

According to the patient reports, surgical patients appeared to prefer short scales and scales that have few word groups. Earlier research has shown that it takes too long to complete the MPQ and that patients frequently do not want to complete it because they do not understand the words that describe pain. Evidence suggests that pain scales requiring a long time to complete are not practical in the clinical setting (Coll, Ameen, & Mead, 2004; Flaherty, 1996).

In the present study, age, gender, education, and difficulty of the surgery affected the patients' pain scale preferences. All of these variables were particularly important for the VAS and MPQ scales. Most of the patients were 40–59 years old and primary school graduates. Most of the patients that did not go to school were women. Therefore, age, education, and gender were skewed variables in this study. Taylor and Herr (2003) reported that gender and education were not associated with a significant difference among pain scales, Li, Herr, and Chen (2009) reported that gender was important, but age and education were not important, and Li, Liu, and Herr (2007) reported that age, gender, and education did not show a significant difference regarding pain scales. Comparison of these studies (Li, Herr, & Chen, 2009; Li, Liu, & Herr, 2007; Taylor & Herr, 2003) is difficult owing to the differences in the

populations studied. However, education is a common feature affecting patient pain scale preference.

In the present study, level of pain reported differed on different scales. In particular, the pain levels measured by VAS were different from those measured by all of the other scales. The pain scores on the VAS were significantly higher than those reported on the NRS and TPS. These findings suggest that the patient report on the VAS is affected by some factor that does not affect the other scales. The scale showing the smallest differences from the VAS was the FPS. According to the present study, patients tend to come up with more consistent descriptions of pain with scales that they preferred, whereas they may show their pain inattentively with scales that they do not prefer. In contrast to the results of this study, Breivik et al. (2008) reported a high correlation among the VAS, NRS, and VDS scales in patients with acute surgical pain, Bijur, Latimer, and Gallagher (2003) reported a high correlation between the NRS and VAS, and Fadaizadeh Emami, and Sami (2009) showed a high correlation between the VAS and the FPS. Consistent with the findings of the present study, Kim and Buschmann (2006) showed a correlation between the FPS (11 points) and NRS.

Morover, Williamson and Hoggart (2005), Kremer, Atkinson, and Ignelzi (1981), and Lara-Munoz, de Leon, Feinstein, Puenta, and Wells (2004) reported that the VAS had a higher error rate than the NRS and VDS. The VAS has been associated with a higher frequency of random answers and higher pain scores than other pain scales (Coll, Ameen, & Mead, 2004; Lara-Munoz, et al., 2004). Patients in the present study reported higher pain intensity on the VAS than on other pain scales. These findings suggest that patients might have had difficulty in reporting their pain with the use of this scale.

CONCLUSION

The pain scales chosen should be reliable, valid, and able to evaluate the effects of treatment. However, offering patients a choice of pain scales might improve the information reported and help providers with pain management. The findings of the present study suggest that the FPS, NRS, TPS, and VDS are the most appropriate pain scales to use for post surgical patients that can cooperate with the instructions. Not using the VAS might lead to a more accurate assessment of pain. For surgical patients, it is important that the pain scales are short, simple, and have visual, verbal, or numeric clues. Similarly to the present study, Li, Liu, and Herr (2007) reported that patient pain scale preferences affect the successful completion of pain scales.

Study Limitations

The results of the present study are valid only for patients similar to the group of patients that participated in the study. Further study is needed in a more heterogenous population for further confirmation of the psychometric validity of the scales used.

In the present study, "test-retest" study was not performed for one-dimensional scales. That was because the study's data collection period was very long and the patients could get tired easily, because they were in the early postoperative period. It was considered that this situation could distract them. However, another study was planned to be conducted to include this aspect.

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