

Comparison of the Different Pain Assessment Scales Used in Adult Patients Seen at the Philippine General Hospital Rheumatology Out-Patient Clinic

Juneth Ria R. Limgenco-Hipe, M.D.*; Angeline Magbitang, M.D.**; Allan Corpuz, M.D.**; Ana Hernandez, M.D.**; Kenneth Tee, M.D.**; Evelyn O. Salido, M.D.***

Abstract

Background: Valid and reliable assessment of pain is essential in the management of rheumatologic conditions. Standardized pain assessment scales have been developed and used in clinical trials, but remain underutilized in clinical practice.

Objective: To evaluate the use of the different pain assessment scales: Numeric Rating Scale (NRS), Verbal Descriptive Scale (VDS), Visual Analog Scale (VAS) and Wong Baker Face Scale (FACES) among adult patients with musculoskeletal pain seen in the Rheumatology Out-Patient Clinic in a tertiary government hospital in Manila, Philippines.

Methods: This is a cross sectional study of adult patients with symptoms of musculoskeletal pain seen in a rheumatology out-patient clinic. The patients answered the different pain assessment scales and ranked them according to ease of use and preference. We checked for correlation of results of the different pain assessment scales using Spearman correlation.

Results: Ninety-four patients are included in this

study. Eighty-one percent are females, with mean age of 52 ($\pm$ SD 14.12) years old. Majority (73%) have low level of education. Forty-one percent have rheumatoid arthritis, 21% have osteoarthritis and 12% have gout. NRS is preferred and ranked easiest to use by 41.5% of patients. FACES is a close second; preferred by 39.4% and considered easy to use by 36.2%. VAS ranks last on over-all preference and ease of use. On subgroup analysis, VDS was preferred by male patients while FACES was preferred by those with low educational status. The pain score obtained using NRS was significantly correlated with VDS, VAS, and FACES ($p < 0.005$).

Conclusion: The NRS is a validated tool that is easy to use and preferred by patients. The FACES is a good alternative if the patient has difficulty with the NRS. We recommend the use of these pain scales in clinical practice in the Philippines to standardize the assessment and monitoring of pain among patients with rheumatic conditions.

Keywords: pain assessment, rheumatology, scale

Introduction

Pain is an unpleasant feeling that is conveyed to the brain by sensory neurons. The discomfort signals actual or potential injury to the body. However, pain is more than a sensation, or the physical awareness of pain. It also includes perception and the subjective interpretation of the discomfort.¹ Pain is the most common symptom of injury and disease, and descriptions can range in intensity from a mere ache to unbearable agony. Since pain is a subjective experience, it may be very difficult to communicate its exact quality and intensity to other people.

*University of the Philippines- Philippine General Hospital

**Fellow in training, Section of Rheumatology, University of the Philippines- Philippine General Hospital

***Consultant, University of the Philippines-Philippine General Hospital

Corresponding Author: Juneth Ria R. Limgenco-Hipe, MD, University of the Philippines- Philippine General Hospital, Manila
Email: junethria@yahoo.com

Assessment of pain is a critical step to providing good pain management. In a sample of physicians and nurses, Anderson and colleagues² found lack of pain assessment as one of the most problematic barriers to achieving good pain control. The most critical aspect of pain assessment is that it is done on a regular basis using a standard format.³ Pain tools must be easy to use and their purpose easy for patients with diverse backgrounds to understand. Numerous pain intensity measures that were developed and validated for use in clinical trials can also be used for daily patient encounters.^{4,5} The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requires that hospitals select and use the same pain assessment tools across all departments.⁶ JCAHO standards do not specify how pain should be assessed; rather, they allow organizations to develop their own pain assessment policies. The commission provides organizations with the option to choose among scales such as the Numeric Rating Scale (NRS), the Visual Analog Scale (VAS), the FACES scale, and a verbal descriptor

scale⁷. It also mandates that documentation of monitoring of the quality of pain management within the institution be done.

The pain NRS, wherein patients rate their current pain intensity from 0 ("no pain") to 10 ("worst possible pain"), has become the most widely used instrument for pain screening. Although it was not developed as a screening test, the NRS is ubiquitous as a screener in many health care environments. Its use is currently mandated throughout the Veterans Affairs health care system as part of its "Pain as the fifth vital sign" campaign.⁸ The NRS is short, easy to administer, and has been validated as a measure of pain intensity in populations with known pain.⁹

This research focuses on the four most commonly used pain assessment scales: the widely used NRS or Verbal Numeric Rating Scale (NRS/VNRS), the Verbal Descriptive Scale (VDS), the VAS and the FACES.

Significance/Rationale

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requires that hospitals select and use the same pain assessment tools across all departments. At the PGH Rheumatology Out-Patient Clinic, we use the NRS/VNRS in pain assessment. We want to determine how it performs compared to other pain assessment scales with regards to ease of use and patient preference. This will enable the Section of Rheumatology to finalize its choice of standard pain assessment tool and recommend its use in the hospital.

General Objective

To evaluate the use of four pain assessment scales (NRS; Verbal Descriptive Scale, VDS; VAS, and FACES) among adult patients with musculoskeletal pain seen at the Philippine General Hospital Rheumatology Out-Patient Clinic.

Specific Objectives

1. To evaluate ease of use of the different pain scales.
2. To determine pain scale preference of patients with rheumatologic conditions.
3. To compare ease of use and patient preference for the four pain scales.

Methods

Study Design: Cross sectional study

Inclusion criteria: Patients, 19 years old and above, with symptoms of musculoskeletal pain at the time of index consultation at the PGH Rheumatology Out-

Patient Clinic, who signify agreement in joining the study through an informed consent document.

Exclusion criterion: Patients who are psychologically incapacitated.

Setting: University of the Philippines-Philippine General Hospital Rheumatology Out- Patient Clinic

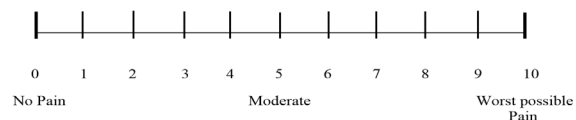
Sampling procedure: Non-probability sampling

Methodology: After obtaining a written informed consent of patients who meet the inclusion criteria, we collected data on demographics and disease characteristics. The patients answered the different pain assessment scales and ranked them based on ease of use and preference.

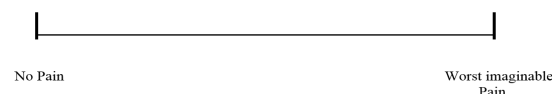
Statistical analysis: The sample size was estimated to be 69 based on a maximum tolerable error of 5% and a confidence interval of 95%. Descriptive statistics were expressed as means, standard deviation, and percentages. We checked for correlation of results of the different pain assessment scales using Spearman correlation, with a p-value of 0.05 to detect statistical significance.

Definition of Terms

1. The NRS is an 11-point scale (0-10) with end points of 0 (no pain) and 10 (the worst pain). The patient is asked to select the number on the scale that best represents his or her pain score.



2. The Verbal Descriptive Scale (VDS) consists of a list of adjectives describing the levels of pain intensity: no pain, mild pain, moderate pain, severe pain, and most intense pain imaginable.
3. The VAS is a 10-cm line where the patient draws a perpendicular line to the point that corresponds to intensity of the pain. It has two anchoring points from No pain to worst pain ever imagined.



4. The FACES is a self-reporting pain scale used mainly for children and adults who cannot understand the other scales. The patient chooses a face that describes how he is feeling. The numbers corresponding to the faces: 0,2,4,6,8, or 10 are used

for documentation.



Ethical Considerations

Conduct of this research was approved by the UPM Research Ethics Board (UPMREB). All subjects signed a written informed consent. All patient information were coded and kept confidential. There were no conflicts of interest for this study.

Results

A total of ninety- four patients with musculoskeletal pain were included in this study. Table I shows their demographic characteristics. Eighty-one percent are females, with mean age of 52 ($\pm$ SD 14.12) years old. Majority (73%) have low level of education. Most of them have previous or current employment.

Table I: Demographic characteristics of 94 patients with musculoskeletal pain at the Rheumatology Out-Patient Clinic

CHARACTERISTICS	FREQUENCY	PERCENTAGE
FEMALE GENDER	76	81
EDUCATIONAL ATTAINMENT		
None	3	3
Elementary education	20	21
High school	39	41
Vocational	5	5
College	25	27
Post graduate	2	2
EMPLOYMENT BACKGROUND		
Unemployed	16	17
Previously employed	48	51
Current employment	30	31

Table II shows the primary rheumatologic diagnosis, 41% have rheumatoid arthritis, 21% have osteoarthritis, and 12% have gout.

Ease of use is shown in Table III and Figure 1. Overall, 41% consider NRS and 36% FACES as the easiest to use. On subgroup analysis, the male patients had an easier time using VDS (44%) and NRS (33%) while the females had ease with NRS (43%) and FACES (39%). Those below and above 60 years old chose NRS as easiest and FACES as second easiest-to-use instruments.

The patients who attained secondary or lower levels of education chose FACES as easiest to use and NRS as the second. Those with higher levels of education chose NRS as easiest to use and

FACES as second. There were two patients with postgraduate level of education; one chose NRS as easiest and the other chose FACES.

Table II: Primary rheumatologic diagnosis of 94 patients seen at the rheumatology out-patient clinic

	FREQUENCY	PERCENTAGE
Primary Rheumatologic Diagnosis		
Osteoarthritis	20	21
Rheumatoid arthritis	39	41
Soft tissue rheumatism	6	6
Gout	11	12
Spondyloarthropathy	9	10
Others	9	10

Table III: Ease of use by gender, age and educational attainment, n=94

	NRS	VDS	VAS	FACES
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Over-all	39 (41)	18 (19)	3 (3)	34 (36)
Gender				
Male (n=18)	6 (33)	8 (44)	0 (0)	4 (22)
Female (n=76)	33 (43)	10 (13)	3 (3)	30 (39)
Age				
< 60 (n=58)	24 (41)	9 (15)	2 (3)	23 (40)
≥ 60 (n=36)	15 (41)	9 (25)	1 (3)	11 (31)
Educational attainment				
None (n=3)	1 (33)	0 (0)	0 (0)	2 (67)
Elementary (n=20)	10 (50)	1 (5)	1 (5)	8 (40)
High school (n=39)	11 (28)	10 (26)	2 (6)	16 (41)
Vocational (n=5)	4 (80)	0 (0)	0 (0)	1 (20)
College (n=25)	12 (48)	7 (28)	0 (0)	6 (24)
Post graduate (n=2)	1 (50)	0 (0)	0 (0)	1 (50)

Legend: NRS-Numerical Rating Scale, VDS-Verbal Descriptive Scale, VAS-Visual Analog Scale, FACES- Wong Baker Face Scale

Pain scale preference is shown in Table IV and Figure 2. Overall, NRS was first preference for 41% and FACES for 39%. The male patients preferred VDS (44%) and FACES (42%) while females preferred NRS (44%) and FACES (42%). For both age groups, NRS was first choice and FACES as second. Those who achieved secondary and lower levels of education preferred FACES while those with higher levels of education chose NRS. In addition, the pain scores obtained using VDS, VAS and FACES correlated well with the score obtained through NRS.

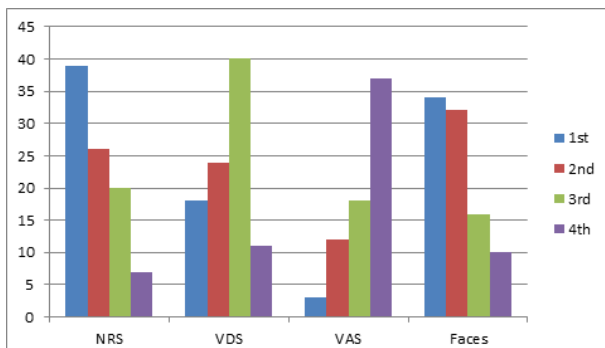


Figure 1: Ranking of pain scales based on ease of use

Table IV: Pain scale preference by gender, age and educational attainment

	NRS	VDS	VAS	FACES
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Over-all Preference	39 (41)	16 (17)	2 (2)	37 (39)
Gender				
Male (n=18)	5 (28)	8 (44)	0 (0)	5 (28)
Female (n=76)	34 (45)	8 (11)	2 (3)	32 (42)
Age				
< 60 (n=58)	25 (43)	8 (14)	1 (2)	24 (41)
≥ 60 (n=36)	14 (39)	8 (22)	1 (3)	13 (36)
Educational attainment				
None (n=3)	1 (33)	0 (0)	0 (0)	2 (67)
Elementary (n=20)	8 (40)	2 (10)	1 (5)	9 (45)
High school (n=39)	12 (31)	10 (26)	1 (3)	16 (41)
Vocational (n=5)	5 (100)	0 (0)	0 (0)	0 (0)
College (n=25)	11 (44)	4 (16)	0 (0)	10 (40)
Post graduate (n=2)	2 (100)	0 (0)	0 (0)	0 (0)

Legend: NRS-Numerical Rating Scale, VDS-Verbal Descriptive Scale, VAS-Visual Analog Scale, FACES- Wong Baker Face Scale

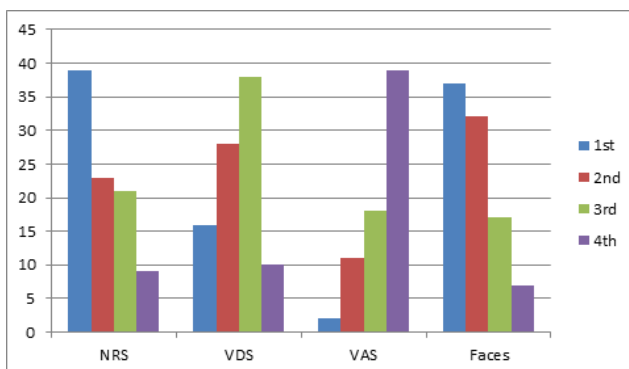


Figure 2: Ranking of pain scales based on preference

Discussion

Assessment of pain is a critical step in providing

good pain management. Tools to assess pain must easily be used and understood by patients belonging to different cultural groups and educational levels. The pain scales used in this study have been studied in other countries and are globally used and accepted. In 2011, Ferreira-Valente, et al compared the relative validity of VAS, NRS, Verbal Rating Scale (VRS), and Faces Pain Scale-Revised (FPS-R) in detecting differences in pain intensity among men and women in response to different experimentally induced painful stimuli. Their findings are consistent with previous studies supporting the validity of each scale. The most support emerged for NRS as both (1) most responsive and (2) able to detect differences in pain intensity between genders.¹⁰ Similarly, our research reveal that the pain score obtained using VDS, VAS and FACES correlate well with the score obtained using NRS. Our findings show that the majority of the patients seen at the PGH Rheumatology Out-patient Clinic preferred the NRS and consider it the easiest to use. The FACES is a close second preference. These pain scales can thus be recommended for use in the hospital as uniform tools for pain assessment.

Although the study has promising findings, its limitations are recognized. The study included a small number of male patients and the majority of our patients have low levels of education, some of whom had difficulty understanding some of the pain assessment scales, especially VAS. However, one may look at the latter (inclusion of more patients with low levels of education) as an advantage too because in our hospital setting these are the usual patients attended and through this study we were able to determine the pain scale that would be easiest for them to use.

Conclusion

The NRS is a validated tool that is easy to use and preferred by patients seen at the PGH Rheumatology Out-Patient Clinic. The FACES is a good alternative tool if the patient has difficulty with the NRS. We recommend the use of these pain scales in clinical practice in our institution to standardize the assessment and monitoring of pain among patients with rheumatic conditions.

References

1. The American Heritage® Medical Dictionary Copyright © 2007, 2004 by Houghton Mifflin Company. Published by Houghton Mifflin Company
2. Anderson KO, Mendoza TR, Valeroo N, et al. Minority cancer patients and their providers: Pain management attitudes and practice. Cancer. 2000;88:1929-1938. [PubMed]
3. A Train Education. Continuing education for health professionals. www.etraineeu.com/course_oregon_pain-module-07

4. Nancy Wells; Chris Pasero; Margo McCaffery. Improving the Quality of Care Through Pain Assessment and Management. <http://www.ncbi.nlm.nih.gov/books/NBK2658/#ch17.r21>
5. Breivik H, Borchgrevink PC, Allen SM, Rosseland LA, Romundstad L, Hals EK, Kvarstein G, Stubhaug A. Assessment of Pain. Br J Anaesth. 2008 Jul;101(1):17-24. doi: 10.1093/bja/aen103. Epub 2008 May 16.
6. JCAHO. Comprehensive hospital accreditation manual. Oakbrook Terrace, IL; 2001.
7. Fox JD, Gordon DB. Joint Commission pain standards: a progress report. APS Bulletin. 2002;12.
8. National Pain Management Coordinating Committee, Veterans Health Administration. Pain as the 5th vital sign toolkit, revised edition. Washington, DC: National Pain Management Coordinating Committee, Veterans Health Administration; 2000.
9. Jensen MP, Karoly P. Self-report scales and procedures for assessing pain in adults. In: Turk DC, Melzack R, eds. Handbook of Pain Assessment. Second ed. New York: Guilford Press; 2001:15-34.
10. Ferreira-Valente MA, Pais-Ribeiro JL, Jensen MP. Validity of four pain intensity rating scales. Pain. 2011 Oct;152(10):2399-404. doi: 10.1016/j.pain.2011.07.005

0-10 Numeric Pain Intensity Scale *		
VERBAL DESCRIPTIVE SCALE NO PAIN MILD MODERATE SEVERE MOST INTENSE PAIN IMAGINABLE		
c. Visual Analog Scale (VAS)[†]		
Wong-Baker FACES™ Pain Rating Scale		

APPENDIX I

Comparison of the Different Pain Assessment Scales Used In Adult Patients Seen at the Philippine General Hospital Rheumatology Out Patient Department Data Collection Form

ID No.	Case #
Name	Contact #
Sex 0 = Male 1 = Female	
Civil Status: (encircle corresponding number) 0=single; 1=married; 2=separated; 3=widow	Primary Rheumatologic Diagnosis: 0=Osteoarthritis 1=Rheumatoid arthritis 2=Soft tissue rheumatism 3=Gout 4=Spondyloarthropathy 5=Others: _____
Educational: (encircle corresponding number) 0=no formal schooling; 1=elem; 2=HS; 3=vocational; 4=college; 5=post graduate	Age of diagnosis: _____ Duration of disease (in months/ years): _____
Employment: 0=never employed; 1=currently employed Occupation (current): _____	
Pain scale assessment tool: Ranking based on Ease of Use: (1=easiest, 4=hardest) ____ Numerical Rating Scale (NRS) ____ Verbal Descriptive Scale (VDS) ____ Visual Analog Scale (VAS) ____ Wong Baker Pain Rating Faces Scale (FACES)	Pain scale assessment tool: Ranking based on Preference: (1=most, 4=least) ____ Numerical Rating Scale (NRS) ____ Verbal Descriptive Scale (VDS) ____ Visual Analog Scale (VAS) ____ Wong Baker Pain Rating Faces Scale (FACES)

FOR RANKING	PREFERENCE	EASE OF USE
-------------	------------	-------------