IDENTIFYING SEVERITY LEVELS ASSOCIATED WITH COMMONLY USED PAIN DESCRIPTORS USING A NUMERIC RATING SCALE

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OBJECTIVE

- To quantify the severity range of commonly-used descriptors for pain
- To describe the relative relationship of these different pain descriptors in terms of placement on a standardized numeric rating scale (NRS)

METHODS

Data Collection:

Subjects were recruited by web posting and telephone screening. Those self-reporting regular pain pharmacological treatment for Migraine, Low Back Pain (LBP), Osteoarthritis (OA), or Rheumatoid Arthritis (RA) were scheduled for in-person qualitative interviews followed by a card sort exercise. The cards contained 93 different pain descriptors gathered from a combination of existing measures and previous interviews. Subjects were asked to identify those descriptors they would commonly use to describe the pain associated with their condition, and to place them on an 11-point NRS scale at the level of severity they most frequently associated with each particular pain sensation.

Analysis:

- Responses were pooled for all four conditions.
- Pain descriptors identified by 50% or more of the study sample were determined, and presented with descriptive statistics (mean, range), and shown as stacked histograms to identify both distribution along the NRS scale and the relative difference in mean scores for each qualitative descriptor.
- A correlation table was developed to show associations between descriptors with similar mean severity scores.
- Descriptors that showed associations that were significant at the 0.01 level (2-tailed) were highlighted in yellow (See Table 2).

FUNDING
This study was funded by Health Research Associates.

RESULTS

- A total of 72 subjects were enrolled in the study. The ages ranged between 19 and 84 years, with a mean age of 45. Those with low back pain tended to be younger and those with osteo-arthritis tended to be older.
- The majority (68%) was female, 63% were working full- or part-time, and 61% were Caucasian (see Table 1).
- A total of 18 qualitative descriptors of different pain sensations were identified as those most frequently used by the study subjects.

Table 1: Demographic Characteristics

		Migraine N=18	LBP N=19	OA N=19	RA N=16	Total N=72
Age (Years):	Mean	44.7	36.7	53.1	45.6	45.0
	SD	11.6	14.3	14.0	13.0	14.3
	Median	41.0	36.0	55.0	47.0	43.0
	Range	29-63	19-70	24-84	21-66	19-84
Gender:	Male	2 (11.1%)	8 (42.1%)	8 (42.1%)	4 (25.0%)	22 (30.6%)
	Female	16 (88.9%)	11 (57.9%)	10 (52.6%)	12 (75.0%)	49 (68.1%)
	Missing	---	---	1 (5.3%)	---	1 (1.4%)
Household income:	Under $5,000	---	1 (5.3%)	1 (5.3%)	1 (6.3%)	3 (4.2%)
	$5,000 - $9,999	---	1 (5.3%)	1 (5.3%)	1 (6.3%)	3 (4.2%)
	$10,000 - $14,999	---	---	---	2 (12.5%)	2 (2.8%)
	$15,000 - $24,999	2 (11.1%)	3 (15.8%)	3 (15.8%)	4 (25.0%)	12 (16.7%)
	$25,000 - $34,999	3 (16.7%)	3 (15.8%)	4 (21.1%)	2 (12.5%)	12 (16.7%)
	$35,000 - $49,999	3 (16.7%)	2 (10.5%)	1 (5.3%)	2 (12.5%)	8 (11.1%)
	$50,000 and Over	10 (55.6%)	9 (47.4%)	8 (42.1%)	4 (25.0%)	31 (43.1%)
	Missing	---	---	1 (5.3%)	---	1 (1.4%)
Racial and Ethnic group:	White/Non-Hispanic)	11 (61.1%)	11 (57.9%)	13 (18.1%)	5 (31.3%)	40 (55.6%)
	White/ (Hispanic)	2 (11.1%)	---	1 (5.3%)	1 (6.3%)	4 (5.6%)
	Black or African American	3 (16.7%)	4 (21.1%)	3 (15.8%)	10 (62.5%)	20 (27.8%)
	Hispanic or Latin(o/a)	1 (5.6%)	2 (10.5%)	1 (5.3%)	---	4 (5.6%)
	Asian	1 (5.6%)	1 (5.3%)	---	---	2 (2.8%)
	Mixed Race (White and Black)	---	1 (5.3%)	---	---	1 (1.4%)
	Missing	---	---	1 (5.3%)	---	1 (1.4%)

Table 2: Correlation Matrix of Most Frequently used Descriptors

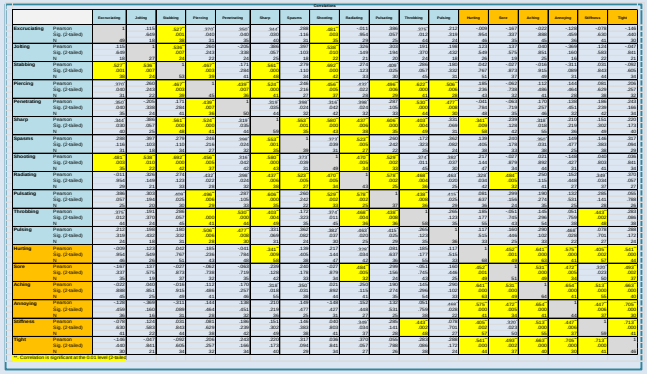
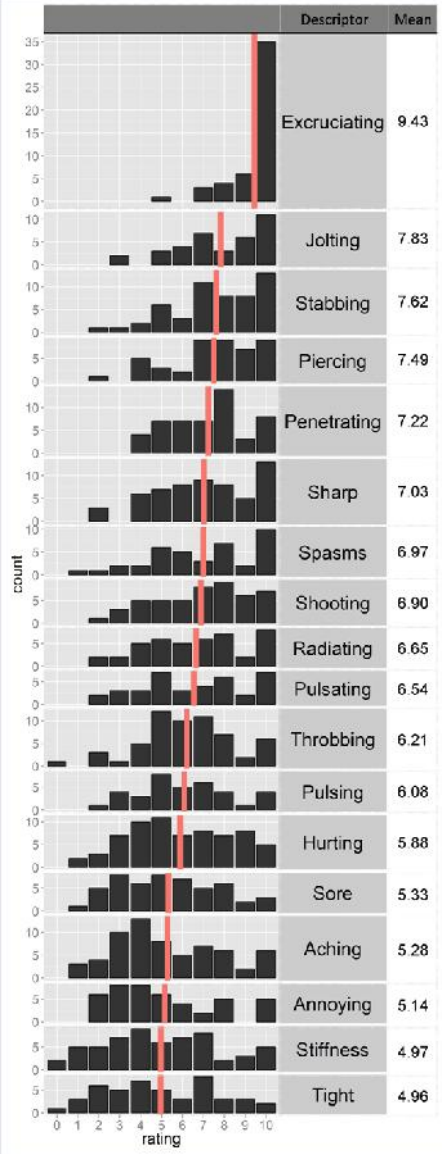


Figure 2: Distribution of Descriptors by Severity



RESULTS

- The highest mean NRS values were found for qualitative descriptors like EXCRUCIATING (mean=9.4), STABBING (7.6), and PIERCING (7.5). Low mean NRS values were found for TIGHT (5.0), STIFFNESS (5.0), and ANNOYING (5.1).
- Some descriptors were rated relatively consistently by subjects, as evidenced by low standard deviation and range (e.g., EXCRUCIATING, sd=1.1, range=5) while others showed more variability in placement on the scale (e.g., STIFFNESS, sd=2.8, range=10).
- In looking at the associations between descriptors, some seem to stand out as more unique concept/sensations. For example, EXCRUCIATING, JOLTING, SPASMS, PULSING are each only significantly correlated with two other descriptors while other terms such as SHARP are significantly correlated with 8 other descriptors.
- The correlation matrix (which is ordered descending by mean) appears to indicate that the most severe descriptors and the lower severity descriptors function differently and are each highly inter-correlated.

CONCLUSIONS

- While the pattern of "usual severity" indicated by patients for each descriptor varied greatly across the NRS scale, the mean severity scores progressed in a logical manner. Those descriptors of pain quality that would be of a more serious and less tolerable nature were, in fact, related to increasingly more severe scores.
- These results suggest that the choice of pain descriptors that are used in questions on patient reported outcome measures may exert their own bias on the study results. Attention should be given to the usual descriptors for a given condition, and where that descriptor would tend to be located on a standard NRS scale. Efforts to assure full coverage of the NRS response scale and appropriate interpretation of scores as they change would be important. For example, if "sharp'" pain is a commonly used descriptor for severe low back pain, and has a mean around 7 on an NRS, what would be the interpretation of an improvement in patient reported scores down to a 2 or 3? These data suggest that it would no longer be appropriate to interpret that score using "sharp" as a descriptor.
- Further research is needed to determine whether or not the choice of the descriptor in a pain question presents a significant bias to the data, and whether or not high or low end anchors on numeric scores should be using the same descriptors as anchors.

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