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Surgeon confidence in an outpatient setting

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Abstract
Background We have the impression that provider uncertainty arises from either nonspecific pathology or disproportionate symptoms and disability, both of which correlate with symptoms of depression, heightened illness concern, and low patient self-efficacy. This study tested the primary null hypothesis that there is no correlation between provider confidence and patient self-efficacy.
Methods Eighty-five patients visiting an orthopedic hand and upper extremity surgeon completed the Pain Self-Efficacy Questionnaire (PSEQ). The surgeon's confidence in the diagnosis, optimal treatment, expected outcome, and the anticipated satisfaction of the patient and the referring doctor were measured with five questions rated on 5-point Likert scales (Physician Confidence Scale).
Results Overall physician confidence was high and there was no correlation between the PSEQ score and the Physician Confidence Scale. Provider confidence was significantly lower for nonspecific diagnoses, but there was no significant difference between the mean PSEQ for the 72 patients with a specific diagnosis and the 12 patients with nonspecific diagnoses.
Conclusions Physician confidence did not relate with self-efficacy in this study.
Level of Evidence: Prognostic, level II

Keywords Physician confidence · Self-efficacy · Patient confidence · Specific and nonspecific diagnosis

Introduction

For each patient, potential diagnoses have various probabilities based on symptoms, examination, and diagnostic tests. Low provider confidence results when there are either several diagnoses with equal and therefore lower probabilities or the findings are so nonspecific that no discrete pathophysiological process can be regarded as high probability. Low provider confidence is associated with an increased likelihood of incorrect diagnosis [4, 5].

Nonspecific upper extremity conditions are associated with heightened illness concern (the sense that one has a serious problem in spite of evidence and reassurance to the contrary) [13]. More symptoms and disability than expected are associated with lower self-efficacy (ability to complete tasks and reach goals) and greater symptoms of depression [10]. It is unclear whether nonspecific or non-characteristic symptoms are associated with low physician confidence. Low patient self-efficacy (one type of low patient confidence) and low physician confidence are measurable and quantifiable aspects of the human illness experience [1, 11] and they might be linked.

The relationship between patient and physician confidence may be useful during a patient encounter: when a provider lacks confidence, an objective measure of self-efficacy might help increase confidence in proceeding with a nonspecific diagnosis and addressing the low self-efficacy, while monitoring for discrete verifiable pathophysiology. This approach might also reduce inappropriately specific diagnoses, which introduce the potential for unhelpful treatment, iatrogenic harm, and distraction from more treatable aspects of the illness.

The purpose of this study was to test the null hypothesis that there is no correlation between provider confidence and patient self-efficacy.

Methods

Using an IRB-approved protocol, we enrolled new patients visiting one of the six surgeons at the orthopedic hand and upper extremity outpatient offices between May 2012 and July 2012. As mandated by our IRB, we excluded pregnant patients and those who could not complete enrollment forms due to mental status or language problems. Informed

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consent was obtained from each study subject. We enrolled 85 patients, but one declined to complete the questionnaires leaving 84 patients for analyses (Table 1).

Evaluation

Prior to the medical encounter, patients completed the Pain Self-Efficacy Questionnaire (PSEQ), which measures confidence completing tasks and achieving goals in spite of pain [10]. The PSEQ contains ten 7-point Likert scale questions. The total score ranges from 0 to 60 with a higher score reflecting greater self-efficacy [9].

The confidence of the physician was measured with five questions about the physician's confidence in the diagnosis, the treatment, and the outcome of the medical encounter with the participating patient. Each question was answered on a 5-point Likert scale from strongly disagree, somewhat disagree, neutral, somewhat agree to strongly agree. For analyses, the questions were given 1 to 5 points and a total score ranging from 0 to 25; higher scores indicating more physician confidence. The physician recorded the primary diagnosis.

Table 1 Demographics patients, $n=84$

	Mean	SD	Range
Age	45	16	18–80
Education	15	2.8	7–22
	N	%	
Sex			
Men	55	66	
Women	29	35	
Race			
White	68	81	
Black or African American	3	4	
Asian	6	7	
American Indian or Alaskan Native	2	2	
More than one race	1	1	
Other or unknown	4	5	
Work status			
Working full time	50	60	
Working part time	5	6	
Homemaker	0	0	
Retired	9	11	
Unemployed, able to work	9	11	
Unemployed, unable to work	7	8	
Workers compensation	0	0	
Currently on sick leave	4	5	
Marital status			
Single	36	43	
Living with partner	5	6	
Married	35	42	
Separated/divorced	5	6	
Widowed	3	4	

Statistical Issues

The power analysis for the primary null hypothesis, with a mean effect size of 0.3, with alpha=0.05, revealed that 82 patients would provide 80 % power. The reliability of the Physician Confidence Scale was assessed with Cronbach's alpha coefficient. The two main dependent variables were not normally distributed. In bivariate analysis, we used the Spearman correlations for continuous variables, the Mann–Whitney *U* test for dichotomous, and the Kruskal–Wallis test for categorical variables. We entered significant ($p<0.05$) or near significant ($p<0.08$) relationships into linear regression analyses using backwards conditional elimination. We had two missing values on the PSEQ and two missing values for the Physician Confidence Scale. We used mean imputation to complete these missing values. We categorized the different diagnoses in seven groups and analyzed as a dichotomous variable: specific- or nonspecific diagnosis (Table 2).

Results

Demographics

Of the 84 patients enrolled, 55 were men and 29 were women. The mean (±SD) age was 45±16 years (range 18–80), the level of education was 15±2.8 years (range 7–22), and more than half the patients worked full time (Table 1). There were 72 patients with a specific diagnosis and 12 with a nonspecific diagnosis (Table 2).

Confidence Questionnaires

The mean PSEQ was 44 (median, 48; range, 0 to 60). Overall physician confidence was high (Table 3). The

Table 2 Diagnostic information, $n=84$

	Number	Percent
Trauma	42	50.0
Nonspecific hand or arm pain	12	14.3
Other	12	14.3
Carpal tunnel	6	7.1
Trigger finger	4	4.8
Arthritis	4	4.8
Ganglion cyst	4	4.8
Specific diagnoses	72	85.7
Nonspecific diagnoses	12	14.3

Table 3 Patient PSEQ and Physician Confidence Scale

	Mean (±SD)	Median	Range
Patient PSEQ total score	44 (15)	48	0–60
Physician Confidence Scale	19.6 (5.3)	22	5–25

Physician Confidence Scale had good internal consistency, with a Cronbach alpha coefficient reported of 0.90.

Bivariate Analysis

There was no correlation between patient age, education, and PSEQ score and the Physician Confidence Scale. There was no correlation between sex, age, or education and the PSEQ score. Specific diagnoses were associated with greater physician confidence: trigger finger had the highest median (24), followed by carpal tunnel and trauma (23). Nonspecific arm pain had the lowest median confidence score [12] ($p<0.001$). There was a significant association between different diagnosis categories and the PSEQ ($p=0.009$): the category "other" had the highest median (53), followed by nonspecific arm pain (52) and ganglion cyst (50). Arthritis (44) and trauma (42) had the lowest mean. Provider confidence was significantly lower ($p\leq0.001$) for nonspecific diagnosis (11.9±4.3) compared to specific diagnoses (21.0±4.2). There was no significant difference in the PSEQ for specific (43.0±14.8) and nonspecific diagnoses (49.6±12.7) ($p=0.081$) (Table 4).

Table 5 Linear regression

Model	Adjust R^2	p value
Physician confidence		
Specific diagnoses	0.36	<0.001

Multivariable Analysis

Linear regression was used to predict the level of physician confidence, having the physician subscales as dependent variable, while controlling for the influence of the demographics and specific- and nonspecific diagnosis. In the final model, specific diagnosis was consistently the strongest predictor ($p<0.001$) (Table 5).

Discussion

Physician confidence did not correlate with patient self-efficacy in this study. Nonspecific diagnoses were associated with lower physician confidence, but unexpectedly higher self-efficacy. It is not clear whether this is sample specific, or whether the issue with nonspecific diagnoses relates more to health anxiety or some other measurable illness behavior rather than self-efficacy [3, 8, 12]. It might be worthwhile to study the correlation with heightened illness concern specifically. The finding that providers are less confident when applying a nonspecific diagnosis is

Table 4 Bivariate statistical analysis

	Provider Confidence Scale			PSEQ score		
Spearman test	Correlation		p value	Correlation		p value
Age of patient	0.12		NS	−0.035		NS
Education	0.025		NS	0.091		NS
Provider confidence value	X		X	−0.10		NS
PSEQ	−0.10		NS	X		X
Mann–Whitney U test	Z	Mean	p value	Z	Mean	p value
Sex	−1.6		NS	−0.94		NS
Diagnoses:						
Specific diagnoses	−4.7	21	<0.001	−0.5	43	0.08
Nonspecific diagnoses		12			50	
Kruskal–Wallis test	Mean	Median	p value	Mean	Median	p value
Diagnoses:						
Trauma	21	23	<0.001	40	42	0.009
Nonspecific arm pain	12	12		50	52	
Ganglion cyst	17	17		52	50	
Carpal tunnel Syndrome	23	23		37	40	
Trigger finger	24	24		51	49	
Arthritis	17	16		40	44	
Other	21	23		54	53	

expected but worth emphasizing, as providers might try to resolve low confidence by applying an inappropriately specific diagnosis.

Misdiagnoses are documented as a significant cause of morbidity, mortality, and wasted resources in the USA [2, 6, 7]. Proposed sources of misdiagnosis include limitation of physicians' knowledge, heuristics, and pressure to provide a specific diagnosis even in spite of nonspecific symptoms [2, 4–7].

The study results should be interpreted in light of the fact that the physician confidence scale is a new questionnaire. The questionnaire had a good internal consistency but has not been officially validated. On the other hand, it is relatively straightforward and might have inherent construct validity. The participating hand surgeons in this study are three experienced hand surgeons who may not be a representative sample of the average hand surgeon. Physicians with less experience may show less confidence, for specific diagnosis than shown in this study [5]. Although analysis showed that specific diagnosis was consistently the strongest predictor of confidence, further study is needed to study this for a large sample of nonspecific diagnosis.

Nonspecific arm pain is common and associated with heightened illness concern, which is amenable to treatment with cognitive behavioral therapy. Future investigations should look for other measurable patient factors that might increase provider confidence with nonspecific diagnoses and lead to evidence-based effective treatments.

Conflict of Interest None of the authors has a conflict of interest related directly to the subject matter.

Ethical Statement This research was approved by our human research committee and was performed in accordance with the Helsinki Declaration. Informed consent was obtained from each subject.

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