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Pain-related self-efficacy, pain catastrophizing, and function in individuals with chronic low back pain: further evaluation of the validity of the T-UW-PRESE6 and T-UW-CAP6

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KEYWORDS
Pain catastrophizing; Self-efficacy; Quality of life; Musculoskeletal disorder.

ABSTRACT

Evidence shows the important role of pain-related cognitions, such as catastrophizing and self-efficacy beliefs, on quality of life in patient with chronic low back pain. Thai versions of two new measures of psychological factors: the Thai 6-item short form of the University of Washington Pain Related Self-Efficacy scale (T- UW-PRSE6) and the Thai 6-item short form of the University of Washington Concerns About Pain scale (T-UW-CAP6) have been developed. Reliable and valid measures of such measurements are important to evaluate the catastrophizing and self-efficacy on this domain as well as to understand its role in quality-of-life domain of individuals with chronic pain. The aim of this study was to evaluate the reliability and validity of T-UW-PRSE6 and T-UW-CAP6. A total of 424 individuals with chronic low back pain completed three questionnaires assessing (1) pain self-efficacy (T-UW-PRSE6), (2) catastrophizing (T-UW-CAP6), and (3) seven quality of life domains (Thai version of Patient-Reported Outcomes Measurement Information System-29 scale; T-PROMIS-29). Cronbach's alphas were calculated to estimate internal consistency of the T-UW-PRSE6 and T-UW-CAP6, and multiple linear regressions were used to estimate the contributions of each measure to the association of pain intensity and the seven quality of life domains. The Cronbach's alphas of the T-UW-PRSE6 and T-UW-CAP6 were 0.84 and 0.89, respectively. T-UW-PRSE6 and T-UW-CAP6 each made significant and independent contributions to the association of each quality-of-life domain assessed by the T-PROMIS-29 (p's < 0.01). The findings support the reliability and validity of the T-UWPRSE6 and T-UW-CAP6 as measures of pain-related self-efficacy and catastrophizing, respectively. These brief measures appear to provide viable alternatives to the legacy measures of these important constructs.

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Introduction

Chronic low back pain is the most common chronic pain problem, with an annual prevalence in the working population from 24% to 61%[1]. In Thailand, chronic low back pain affects between 27% and 30% of the adult population annually[2] and the number of people with chronic low back pain conditions is expected to increase substantially over the next decades[3]. Low back pain leads to a great socioeconomic burden on both individual and society.

Chronic low back pain is a multidimensional syndrome affecting many qualities of life domains, including physical activity, physical function, and psychological function. Theory (i.e., biopsychosocial models) supports the conclusion that psychological factors play an important role in the adjustment to chronic low back pain severity and pain-related disability[4]. Two psychological factors that have been consistently shown to play an important role in function in individuals with chronic pain are pain self-efficacy (i.e., a belief that one is able to manage pain and its effects on function) and pain catastrophizing (i.e., a pattern of negative cognitive-emotional responses to pain that includes rumination, magnification, and helplessness)[5-8].

Research has shown that individuals with chronic musculoskeletal pain who endorse higher levels of pain-related self-efficacy possess higher levels of physical function, self-perceived health status, and employment status, and lower levels of pain intensity, disability, depressive symptoms, and fatigue, than individuals who endorse lower levels of pain-related self-efficacy[8]. Moreover, pain self-efficacy has also been shown to mediate the effects of interdisciplinary pain treatment, supporting this construct as key mechanism variable in effective pain treatment[9]. Pain self-efficacy has also be shown to mediate the association between psychological function (e.g., fear and depression) and disability, again supporting the role of self-efficacy as a central mechanism variable that explains the differences in function observed in individuals reporting similar levels of pain intensity[10].

Support for the important role that pain catastrophizing plays in function in individuals with chronic pain comes from research showing that measures of catastrophizing have been shown to be positively associated with pain severity, disability, poor treatment outcomes for patients with chronic low back pain[11]. Moreover, catastrophizing has been shown to predict both (1) the development of chronic pain in previously pain-free individuals, and (2) those with acute back pain[11], and, like pain self-efficacy has been shown to mediate the beneficial effects of interdisciplinary pain treatment[10].

Research to evaluate the effects of self-efficacy and catastrophizing on pain requires the availability of reliable and valid measures of these constructs. Previous studies have used a variety of such measures, including the Pain Self-Efficacy Questionnaire (PSEQ)[12] to assess pain self-efficacy, and the Pain Catastrophizing Scale (PCS)[13] to assess catastrophizing. However, each of these legacy measures was developed using classic measure development theory, which is associated with a number of weaknesses. These include the requirement that all of the items be administered, which can be challenging in situations where assessment burden is an issue. In addition, measures developed using classic measure development theory are not usually scored into a common metric (e.g., a T-score, with a mean of 50 and SD of 10 in the development sample), which limits the ability to easily interpret scale scores and compare them between different samples[14]. Item response theory (IRT), a statistical analysis technique used to develop and evaluate questionnaire-based measurement tools, addresses these limitations. With IRT, banks of items can be created, any combination of which can be used to assess the domain of interest and create a standardized score that can be directly compared to scores obtained using any other combination of items from that same item bank. In addition, the items from the item banks can be used to either create static scales of varying number of items, or can be administered using computer assisted testing (CAT), with each subsequent item selected based on an individual's responses to previous items.

Recently, item banks to assess pain-related self-efficacy and catastrophizing were created using IRT: the University of Washington Pain Related Self-Efficacy Scale (UW-PRSE) and the University of Washington Concerns About Pain Scale *(*UW-CAP*)*[15]. Static 6-item versions of these measures have been translated into Thai (T-UW-PRSE6 and T-UW-CAP6)[16,17], and preliminary evidence supports the psychometric strengths of these static measures, including internal consistency, test–retest reliability, and ability to detect changes over time in individuals with chronic low back pain[16-18]. Khampanthip et al[16] showed that the T-UW-PRSE6, a measure of pain-related self-efficacy, was negatively correlated with fear avoidance and positively associated with a number of key quality of life domains (i.e., general health, physical functioning, role limitation related to physical and emotional problems, social functioning, bodily pain, vitality, and mental health) in individuals with chronic low back pain. In the same study sample, Youprasart et al[17] found that the T-UW-CAP6, a measure of pain-related catastrophizing, was positively correlated with fear avoidance and negatively associated with social functioning, vitality, and mental health. As a group, these studies provide preliminary support for the validity of the T-UW-PRESE6 and T-UW-CAP6. However, drawing conclusions regarding the psychometric properties of new measures requires multiple studies, especially when those measures are being considered in light of the existence of legacy measures. Thus, further evaluation of the psychometric properties of the T-UW-PRSE6 and T-UW-CAP6 is needed before they can be recommended for use over the legacy measures of these constructs. In particular, to date, no study has investigated the associations between T-UW-PRSE6/T-UW-CAP6 and a variety of additional quality-of-life domains; namely pain intensity, pain interference, fatigue, depressive symptom severity, anxiety, and sleep disturbance.

The aim of this study was to provide additional evaluations of the reliability and validity of the UW-PRSE and UW-CAP; in this case, the static 6-item Thai versions of these measures: the T-UW-PRSE6 and T-UW-CAP6, in individuals with chronic low back pain. We hypothesized that if the measures were reliable, their internal consistency coefficients (Cronbach's alphas) would be ≥ 0.70 in both samples. We also hypothesized that if valid, the T-UW-PRSE6 and T-UW-CAP6 would make independent contributions to each of six domains of quality of life (i.e., measures of pain intensity, pain interference, fatigue, depressive symptoms severity, anxiety, and sleep disturbance). Finally, we hypothesized the opposite pattern of associations of the two measurement scales with two-domain of quality-of-life measures, including physical function and perceived ability to participate in social roles and activities.

Materials and methods

Subjects and study design

This study used a cross-sectional design. Data for the current analyses came from two studies of individuals with chronic low back pain[16,19]. One sample was recruited from August 2018 through February 2019 (n = 241)[16]. The other was recruited from November 2018 through October 2019 (n = 183)[19]. Both samples were recruited via referrals from physical therapy clinicians working in the outpatient physical therapy departments of seven large public hospitals and one physical therapy clinic in the Bangkok metropolitan area. Of the 424 participants, 267 participants received one or more of a variety of standard physical therapy treatments for low back pain (e.g., physical therapy, self-exercise, or massage), tailored to their specific needs, and which therefore varied from patient to patient. The remaining 157 participants did not receive any treatment for low back pain.

Study inclusion criteria included being a native Thai speaker who could read, write, and speak in the Thai language, being aged 18 years or older, and having chronic low back pain, as defined by the NIH Task Force on Research Standards for chronic Low Back Pain as "a back-pain problem that has persisted at least 3 months and has resulted in pain on at least half the days in the past 6 months"[20]. Exclusion criteria included

having a serious medical condition or complication in addition to low back pain that might affect the ability to participate in the study procedures.

Measures

Thai version of the University of Washington Pain Related Self-Efficacy scale

As noted previously, the UW-PRSE item banks contains 29 items[15]. A static 6-item short form has been developed, and translated into Thai (T-UW-PRSE6)[16]. The T-UW-PRSE6 items assess the respondent's perceived ability to: (1) perform daily activities despite pain, (2) manage pain, (3) engage in valued activities despite pain, (4) keep pain from interfering with their social life, (5) stay in a good mood despite pain, and (6) get a good night's sleep, despite pain. Respondents indicate their agreement with each self-efficacy item on a 5-point Likert scale with 1 = "Not at all," 2 = "A little bit," 3 = "Somewhat," 4 = "Quite a bit," and 5 = "Very much." The total raw score when all six items are administered can range from 6 to 30. Higher scores indicate higher levels of pain-related self-efficacy. The raw scores were transformed to a T-score, with a mean of 50 and SD of 10 in the normative sample (in this case, consisting of individuals with a variety of chronic pain conditions). The T-UW-PRSE6 had shown good internal consistency (i.e., Cronbach's alpha = 0.85) and adequate test–retest stability ($ICC_{(2,1)}$ = 0.72)[16].

Thai version of the University of Washington Concerns About Pain scale

The University of Washington Concerns About Pain Scale *(*UW-CAP*)* is an item bank consisting of 24 items[15]. A static 6-item short form has been developed, translated into Thai (T-UW-CAP6)[17]. The T-UW-CAP6 asks respondents to rate the frequency with which they have the catastrophizing response represented by each item in the past 7 days using a 5-point Likert scale, ranging from 1 ("Never") to 5 ("Always"). Sample items include "My life will only get worse because of my pain" and "My pain is more than I can manage." The total raw score for the T-UW-CAP6 potentially range from 6 to 30. Higher scores indicate more catastrophizing. The raw scores were transformed to a T-score metric, with a mean of 50 and SD of 10 in the original normative sample. The T-UW-CAP6 has evidenced good internal consistency (i.e., the Cronbach's alpha = 0.89) and adequate test-retest stability (i.e., $ICC_{(2,1)}$ = 0.72)[17].

Study criterion variables

Pain intensity, pain interference, fatigue, depressive symptom severity, anxiety, sleep disturbance, physical function, and perceived ability to participate in social roles and activities were assessed using the Thai version of the 29-item Patient-Reported Outcomes Measurement Information System-29 (PROMIS-29)[21]. Twenty-eight of the measure's items (excluding the Pain Intensity item) ask respondents to rate the symptom or item using 1 to 5 Likert scales; the single item assessing pain intensity is measured using a 0 to 10 numerical rating scale with 0 = "No pain" and 10 = "Worst pain imaginable." The T-PROMIS-29 scale scores were transformed into T-scores (means 50 and SD 10) according to the PROMIS adult profile instrument guideline (http://www.healthmeasures.net). A translated and cross-cultural adapted Thai version of the PROMIS-29 that has demonstrated good to excellent reliability as measured by the Cronbach's alphas (range, 0.84 to 0.94) and adequate stability as measured by the $ICC_{(2,1)}$ (range, 0.57 to 0.74)[21].

Procedures

After signing the informed-consent form, participants were asked to provide demographic information (i.e., age, sex, height, weight, pain location, duration of pain, diagnoses, and employment status) and were asked to complete paper-and-pencil version of the study measurement (i.e., the T-UW-PRSE6, T-UW-CAP6, and T-PROMIS-29 items). They returned completed measures to the researchers at the hospital/clinic or by mail, if they elected to complete them at home. All measurements were collected only once and were used to assess internal consistency as well as construct validity. The study participants were at various stages of treatment when they completed the study questionnaires. Ethical approval was obtained from the Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group,

Chulalongkorn University (COA No. 156/2018) and Lerdsin Hospital Human Research Ethics Committee, Lerdsin Hospital (No. 112/2019).

Statistical analysis

Descriptive statistics for the demographic and pain history variables were reported as means and standard deviations (SDs; continuous variables) or as number and percentages (categorical variables). In order to determine if the two samples could be combined into a single sample for purposes of analyses here, the two samples were compared with respect to all demographic variables and study measures using a series of chi-square (categorical variables) and t-test (continuous variables) analyses. In the event that the two samples differed to a great extent, we planned to test the study hypotheses in the two samples separately. With nonsignificant difference, the two samples would be combined into a single sample.

In order to test the study hypothesis regarding the reliabilities of the two scales, we computed the Cronbach's alpha for both. Next, to test the study hypothesis regarding the validity of two scales, we conducted a series of eight multiple linear regression analyses. In these analyses, the eight variables assessed by the T-PROMIS-29 were the criterion variable (i.e., pain intensity, pain interference, fatigue, depressive symptom, anxiety, sleep disturbance, physical function, and perceived ability to participate in social roles and activities). In order to evaluate the extent to which each of the scales made independent contributions (i.e., when controlling for the other) to the association of the criterion variables, we entered the two variables a block in the regression analyses. All analyses were conducted using SPSS statistical software, version 22.0 (SPSS Inc, Chicago, IL, USA). Statistical significance was set at the 5% level.

Results

Baseline comparisons between participants from the two samples indicated no significant differences in any demographic variable, except for low back pain treatment received status. The participants from the study that was conducted earlier reported higher percent of treatment received (n (%) = 175 (73%) versus 92 (50%), *p*-value < 0.001). The two samples had similar scores on the T-UW-CAP6, T-UW-PRSE6, and most of the T-PROMIS-29 score. Exceptions were pain intensity and sleep disturbance domains. The participants from the study that was conducted earlier reported less pain intensity (mean (SD) = 4.7 (2.0) versus 5.2 (1.8), *p*-value = 0.009) and reported having a lower levels of sleep disturbance (mean (SD) = 48.8 (7.7) versus 50.2 (7.2), *p*-value = 0.014) compared to participants from the study that was conducted later. Nevertheless, these statistically significant differences were trivial as the values were less than the minimal clinically important differences of the T-PROMIS-29 which were 1.03 points for pain intensity and 5.0 points for sleep disturbance[19]. Given the similarity of the two samples (i.e., similar on 6 (75%) out of 8 measures), the two samples were combined into a single sample to test the study hypotheses. The 424 participants had a mean age of 46.9 (SD = 17.2) years (Table 1). The majority of the sample were women (69%). Their average BMI 24 (4.4) kg/m^2 was at the upper limit of normal ranges for Asians[22]. Their average low back pain duration was 50 months.

Table 1 Characteristics of study population (n = 424)

Demographic Characteristics	Total sample n = 424	Sample 1 n = 241	Sample 2 n = 183	*p*-value
	n (%) or mean ± SD			
Gender				0.297
Male	130 (31)	69 (29)	61 (33)	
Female	294 (69)	172 (71)	122 (67)	
Age (years; mean ± SD)	46.9 ± 17.2	46.2 ± 16.9	47.7 ± 17.5	0.375
BMI (kg/m^2; mean ± SD)	24.2 ± 4.4	23.9 ± 4.4	24.6 ± 4.2	0.103
Employment status				0.058
Working full- or part-time	332 (78)	194 (80)	138 (75)	
Unemployed	92 (22)	47 (20)	45 (25)	
Duration of chronic low back pain (months)	49.7 ± 70.2	52.3 ± 76.4	46.2 ± 61.1	0.377
Being treated for chronic low back pain?				< 0.001
Yes	267 (63)	175 (73)	92 (50)	
No	157 (37)	66 (27)	91 (50)	
T-UW-PRSE6 (T-score)	52.9 ± 7.5	53.3 ± 7.6	52.4 ± 7.4	0.489
T-UW-CAP6 (T-score)	53.7 ± 8.4	53.5 ± 8.4	54.1 ± 8.3	0.225
T-PROMIS-29 (all scores on a T-score metric, except pain intensity, which can have a range of 0 to 10)				
Pain intensity (0-10)	4.9± 1.9	4.7 ± 2.0	5.2 ± 1.8	0.009
Physical function	43.3 ± 7.3	43.6 ± 7.2	42.9 ±7.4	0.338
Anxiety	57.3 ± 9.2	57.0 ± 9.3	57.6 ± 9.1	0.510
Depression	49.3 ± 9.4	48.9 ± 8.7	50.7 ± 9.1	0.292
Fatigue	51.4 ± 3.46	51.2 ± 7.8	51.6 ± 8.9	0.678
Sleep disturbance	49.2 ± 7.6	48.8 ± 7.7	50.2 ± 7.2	0.014
Ability to participate in social roles and activities	51.3 ± 7.9	51.9 ± 7.7	50.5 ± 8.1	0.073
Pain interference	57.6 ± 6.2	57.3 ± 6.2	58.0 ± 6.2	0.226

Internal consistency

The Cronbach's alphas of the T-UW-PRSE6 and T-UW-CAP6 were 0.84 and 0.89, respectively.

Construct validity

Multiple linear regression analyses showed that the T-UW-PRSE6 and T-UW-CAP6 scales made independent and statistically significant contributions to the association of each one of the eight criterion variables (Table 2). T-UW-PRSE6 was associated negatively with pain intensity, anxiety, depression, fatigue, pain interference, and sleep disturbance (R^2's range, 0.19 to 0.40, ß's range, -0.14 to -0.33, all *p*'s < 0.004), and associated positively with physical function and ability to participate in social roles and activities (R^2's range, 0.31 to 0.33, ß's range, 0.23 to 0.31, all *p*'s < 0.001). The T-UW-CAP6 was associated negatively with physical function and perceived ability to participate in social roles and activities (R^2's range, 0.19 to 0.40, ß's range, -0.35 to -0.39, all *p*'s < 0.001), and positively with pain intensity, anxiety, depression, fatigue, pain interference, and sleep disturbance (R^2's range, 0.31-0.33, ß's range, 0.17 to 0.49, all *p*'s < 0.001).

Table 2 Results of multiple linear regression analyses for prediction of patient function in a sample of individuals with chronic low back pain (n = 424)

	Pain self-efficacy (T-UW-PRSE6)						Pain catastrophizing (T-UW-CAP6)					
	R^2	*β*	95% CI	*SE*	*t*	*p*-value	R^2	*β*	95% CI	*SE*	*t*	*p*-value
Pain intensity	0.26	-0.14	-0.06 to -0.01	0.01	-2.89	0.004	0.26	0.42	0.08 to 0.12	0.01	8.70	< 0.001
Physical function	0.31	0.23	0.07 to 0.15	0.02	5.07	< 0.001	0.31	-0.39	-2.0 to -0.12	0.02	-8.34	< 0.001
Anxiety	0.40	-0.22	-15 to -0.07	0.02	-5.12	< 0.001	0.40	0.49	0.17 to 0.25	0.02	4.9	< 0.001
Depression	0.25	-0.29	-0.17 to -0.09	0.02	-5.87	< 0.001	0.25	0.29	-08 to -16	0.02	5.99	< 0.001
Fatigue	0.19	-0.19	0.13 to -0.04	0.02	-3.72	< 0.001	0.19	0.31	0.08 to 0.17	0.02	5.99	< 0.001
Pain interference	0.38	-0.27	-0.17 to -0.09	0.02	-6.16	< 0.001	0.38	0.43	0.14 to 0.22	0.02	9.70	< 0.001
Sleep disturbance	0.19	-0.33	-0.19 to -0.10	0.02	-6.47	< 0.001	0.19	0.17	0.03 to 0.11	0.02	3.97	0.001
Ability to participate in social roles and activities	0.33	0.31	0.10 to 0.19	0.02	6.75	< 0.001	0.33	-0.35	-0.18 to -0.11	0.02	-7.65	< 0.001

Note: T-UW-PRSE6, Thai university of Washington pain-related self-efficacy scale; T-UW-CAP6, Thai university of Washington - concerns about pain scale; β, standardized coefficients; CI, confidence interval, *SE*, standard error.

Discussion

The results support the reliability and validity of both the T-UW-CAP6 and T-UWPRSE6 scales, as evidenced by good internal consistency reliability coefficients and by their ability to make statically significant and independent contributions to the association of a variety of pain-related quality of life domains in individuals with chronic low back pain. Pain self-efficacy appeared to be more strongly associated with sleep disturbance, while pain catastrophizing was more strongly associated with pain intensity, physical function, anxiety, fatigue, and pain interference. Both factors were similarly associated with depression and perceived ability to participate in social roles and activities in the study sample.

Both the T-UW-PRSE6 and T-UW-CAP6 evidenced at least adequate internal consistency (i.e., 0.80 to 0.89). This finding supports the conclusion that the items in each scale assess a single over-arching domain (i.e., self-efficacy and catastrophizing, respectively), and that the items together provide a fairly precise measure of these domains. These internal consistency coefficients are similar to those found by previous researchers assessing the internal consistency of legacy measures (e.g., PSEQ assess self-efficacy, range 0.70 to 0.95[23] and PCS assessing catastrophizing, range 0.53 to 0.92)[24,25]. The internal consistency findings reported here are also consistent with previous studies of the T-UW-PRSE6 and T-UW-CAP6[16,17].

The findings also support the association of the T-UW-PRSE6 and both physical and psychological function in a sample of chronic low back pain individuals. This finding is in line with previous studies which have examined the validity of primary legacy self-efficacy measure (i.e., the PSEQ), with respect to its negative associations with measures of pain intensity, pain interference, fatigue, depression, anxiety, and sleep disturbance[12,26] and positive associations with measures physical function and perceived ability to participate in social roles[8,26,27]. The finding not only provides additional support for the role that self-efficacy plays in patient function but for the ability of the T-UW-PRSE6 to assess pain self-efficacy in a way that demonstrates that role. The current results also suggest that pain self-efficacy as assessed by the T-UW-PRSE6, is more strongly associated with sleep disturbance than is the T-UW-CAP6. This finding is consistent with prior research, showing a negative association between sleep quality and self-efficacy[28] and the mediating role of self-efficacy to the relationship between sleep disturbance and musculoskeletal symptom severity[29]. Because causal conclusions cannot be drawn from cross-sectional data, we are unable to conclude that pain self-efficacy has an influence on sleep quality (or vice versa). An important next step would be to determine if treatments which target this domain specifically might be viable as treatments for sleep disturbance in individuals with chronic pain.

The directions and magnitudes of the associations between the T-UW-CAP6 and patient function are consistent with the findings from previous studies that have examined the associations between the primary legacy measure of catastrophizing (i.e., the PCS) and measures of pain-related quality of life[13,30]. Catastrophizing has been established as a fairly consistent predictor of patient function across many pain populations in many countries[27,31]. The current findings replicated this well-established finding in a new sample of individuals from a country (and culture) that differs from all of the other samples that have examined these associations to date, providing support for their reliability and generalizability. The findings also support the UW-CAP6 items as being valid for evaluating these associations. The current results revealed that pain catastrophizing assessed by T-UW-CAP6 is more strongly associated with a number of pain-related quality of life domains with chronic low back pain individuals, including pain intensity, physical function, anxiety, fatigue, and pain interference, than is pain self-efficacy, as assessed by the T-UW-PRSE6. An important next step would be to evaluate the extent to which catastrophizing as measured by this scale mediates the beneficial effects of pain treatments that target this domain for change, such as cognitive behavior therapy.

To our knowledge, this was the first study to evaluate the association and compare the ability of measures of both catastrophizing and self-efficacy to patient function in the same sample of chronic low back pain individuals, while controlling for the effects of the other. The fact that each made *independent* contributions to the association of each quality-of-life domains provides strong support for the importance of both measures. Within the limitation of the study, the findings are consistent with the possibility that low back pain treatments should not focus only on decreasing catastrophizing cognitions or increasing self-efficacy beliefs, but instead focus on both. These findings also indicate that research to evaluate the causal role of both variables in the same sample, i.e. research that would allow for a direct head-to-head comparison of the relative importance of each, is warranted.

A number of limitations should be considered when interpreting the results. First, as noted several times already, all of the measures were administered at a single time point. Thus, no causal conclusions about the associations among the study variables can be drawn. Second, the study sample included patients who had not received any physical therapy treatment yet (37%) as well as patients who had received a variety of different physical therapy treatments (63%). It is possible that having already received some treatment may have impacted on how the participants responded to the study measures. Different results may therefore have emerged if all of the study participants had either no treatment or some treatment. Third, the study sample was one of convenience (i.e., the sample was limited to individuals with chronic low back pain who were eligible and willing to participate in the original studies). The majority of the sample (67%) were women. The sample was middle-aged people with mean age of 46.9 years old. All of the individuals with the study were residents of Bangkok and nearby provinces. Thus, the sample is not representative of general Thai population, or even the Thai population with chronic pain. Because of this, we are unable to determine the extent to which the findings could be generalized to men with low back pain, to younger or older individuals, and to individuals from Thailand living outside of Bangkok and nearby provinces. That said, the fact that the findings were consistent with those from other studies examining self-efficacy and catastrophizing in other samples around the world suggest that the findings are reliable. Still, further research to evaluate the relative contribution of pain-related self-efficacy and pain catastrophizing to pain intensity, physical function, pain interference, fatigue, depression, anxiety, sleep disturbance, and ability to participate in social roles and activities in other samples of individuals from Thailand with chronic pain conditions is needed to confirm the generalizability of the current findings.

Conclusions

This study showed the two new measures of pain-related self-efficacy and catastrophizing, i.e. the T-UW-CAP6 and T-UW-PRSE6, are reliable and valid. The results support the conclusion that the pain-related cognitions, specifically catastrophizing and pain self-efficacy, are significantly and independently associated with a variety of quality-of-life domains in individuals with chronic low back pain. They replicate findings from other studies in different countries that used legacy measures of these constructions, supporting the generalizability of the importance of both domains in adjustment to chronic pain across countries and cultures. Research to evaluate the relative causal role of both domains in additional samples of individuals with chronic pain is warranted.

Take home messages

The findings provide further support of the reliability and validity of the Thai 6-item short form of the University of Washington Pain Related Self-Efficacy scale and the Thai 6-item short form of the University of Washington Concerns About Pain scale as measures of pain-related self-efficacy and catastrophizing, respectively. These brief measures appear to provide viable alternatives to the legacy measures of these important constructs.

Conflicts of interest

The authors declare no conflict of interest.

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