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Pain-Related Anxiety as a Mediator of the Effects of Mindfulness on Physical and Psychosocial Functioning in Chronic Pain Patients in Korea

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Abstract: **Mindfulness involves reducing potential influences from aversive cognitions, sensations, and emotions on behavior. Mindfulness may influence the experience of pain-related anxiety, and thereby enhance other aspects of physical and psychosocial functioning. Thus, the purpose of this study was to investigate a potential mediating role of pain-related anxiety between mindfulness and physical and psychosocial functioning in chronic pain patients. This cross-sectional/correlational study used archival data (N = 226) obtained from the larger Korean Pain Study at a university-based pain-management center in Korea. Based on the inclusion criterion for the present study, archival data were analyzed for a final sample of 179 patients with chronic pain. Structural equation analyses showed that both the partial- and full-mediation models had adequate goodness-of-fit indices for physical and psychosocial functioning. Subsequent chi-square tests, however, indicated that the more parsimonious full-mediation model was preferred to the partial-mediation model for physical and psychosocial functioning. Bootstrapping procedures yielded significant mediation effects of pain-related anxiety in the full-mediation models on physical and psychosocial functioning. These findings suggest that being mindful may lead indirectly to a decrease in the disabling influences of pain-related anxiety, thereby contributing to better physical and psychosocial functioning, rather than playing a direct contributing role for better functioning among chronic pain patients in Korea.**

Perspective: ***This article examines the mediating role of pain-related anxiety between mindfulness and physical/psychosocial functioning. Results suggest that mindfulness methods may benefit patients having pain-related anxiety and consequent disability. These benefits may derive from the way processes of mindfulness interact with processes of avoidance and with cognitive influences on emotional suffering.***

Key words: *Chronic pain, Korean, pain-related anxiety, mindfulness, health functioning.*

The experience of pain often includes distressing cognitions, sensations, and emotions, that can adversely impact physical and/or psychosocial functioning of individuals with chronic pain.[39,41] Some individuals with chronic pain make considerable efforts to control these negative covert experiences by suppressing or avoiding them, but doing so can be detrimental to daily functioning.[19] For instance, trying to suppress certain thoughts can inadvertently increase their frequency and intensity,[53] and trying not to experience negative emotions can inadvertently exacerbate their impact.[39] Recently, a psychological flexibility model posited that psychological and physical health problems can result, to some extent, from attempting to control negative covert experiences.[23] According to this model, one can reduce the debilitating effects of distressing cognitions, sensations, and emotions through mindfulness practice. Mindfulness is a process that involves an active

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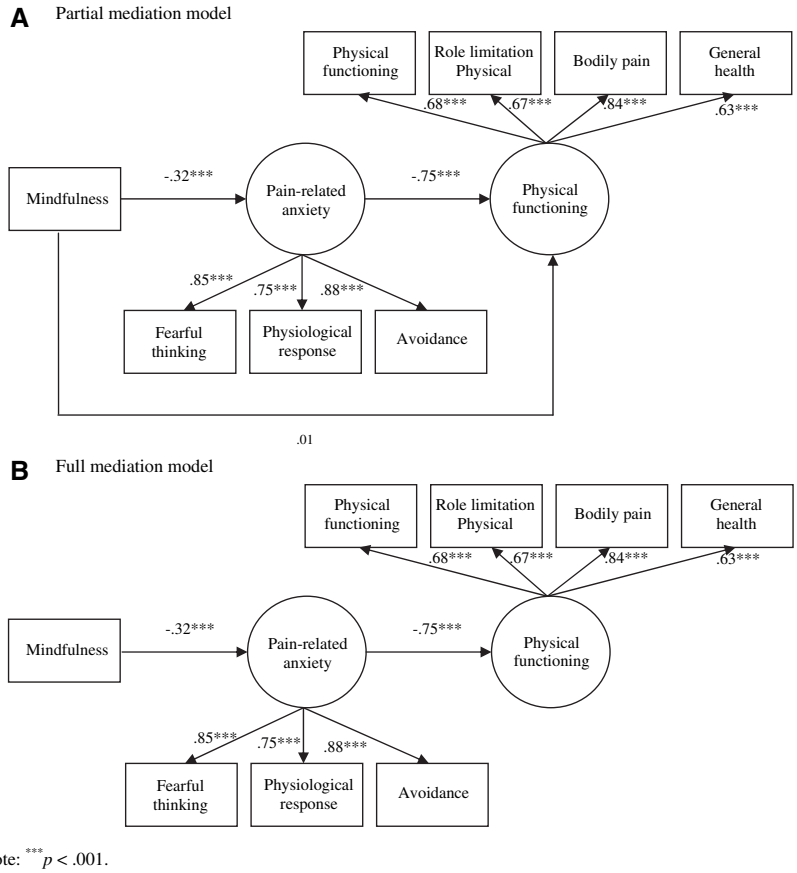

Figure 1. Two models on physical functioning (standardized regression coefficient).

self-awareness of ongoing experiences in a way that leads to a decrease in automatic reactive patterns connected to these experiences.[2,29] Mindfulness-based interventions for chronic pain are designed to help individuals with chronic pain self-observe their thoughts, physical symptoms, and/or affective events induced or accompanied by pain, without cognitively evaluating, suppressing, or avoiding them. In so doing, they can experience that all thoughts are momentary and changing and that actions they take need not be rigidly determined by them.[3,19] The effectiveness of mindfulness training on physical and/or psychosocial functioning among pain patients has been reported in Korea[2,32] as well as Western societies.[28,30,31,44]

It is not surprising that pain sensations can provoke fear or anxiety among patients with pain. In particular, pain-related anxiety has been considered more disabling than pain sensation itself[18] and an important feature in understanding the maintenance or exacerbation of chronic pain.[13,43] It is posited that pain sensation may yield fearful thinking and a consequent self-perpetuating pattern of avoidance of activities, thereby contributing to more durable fear of pain.[36,45] Persistent fear and avoidance can lead additionally to elevated sensitivity to pain, interference with daily activities, physical disability, and poor psychosocial functioning.[17,24,42,43,45]

Although prior studies have mainly examined the independent effects of mindfulness or pain-related anxiety on physical and/or psychological functioning of individuals with chronic pain, to our knowledge, possible interactions between mindfulness and pain-related anxiety, in their relations with physical and psychosocial functioning, have not been empirically investigated. Given that mindfulness involves reducing potential influences from aversive cognitions, sensations, and emotions on behavior,[4,19] mindfulness may influence the experience of pain-related anxiety and thereby enhance other aspects of physical and psychosocial functioning.

The purpose of this study was to examine a potential mediating role of pain-related anxiety between mindfulness and physical and psychosocial functioning in a sample of chronic pain patients seeking outpatient treatment in Korea. Thus, we proposed 2 hypothesized mediation models (ie, partial- and full-mediation models) and predicted that pain-related anxiety would either partially or fully mediate the relationship between mindfulness and physical and psychosocial functioning (see Figs 1 and 2 for models being tested). This study was presented in abstract/poster form at the 2009 annual meeting of the American Pain Society.[16]

Methods

Participants

Archival data for this study were obtained from the larger Korean Pain Study: Phase I. This larger study

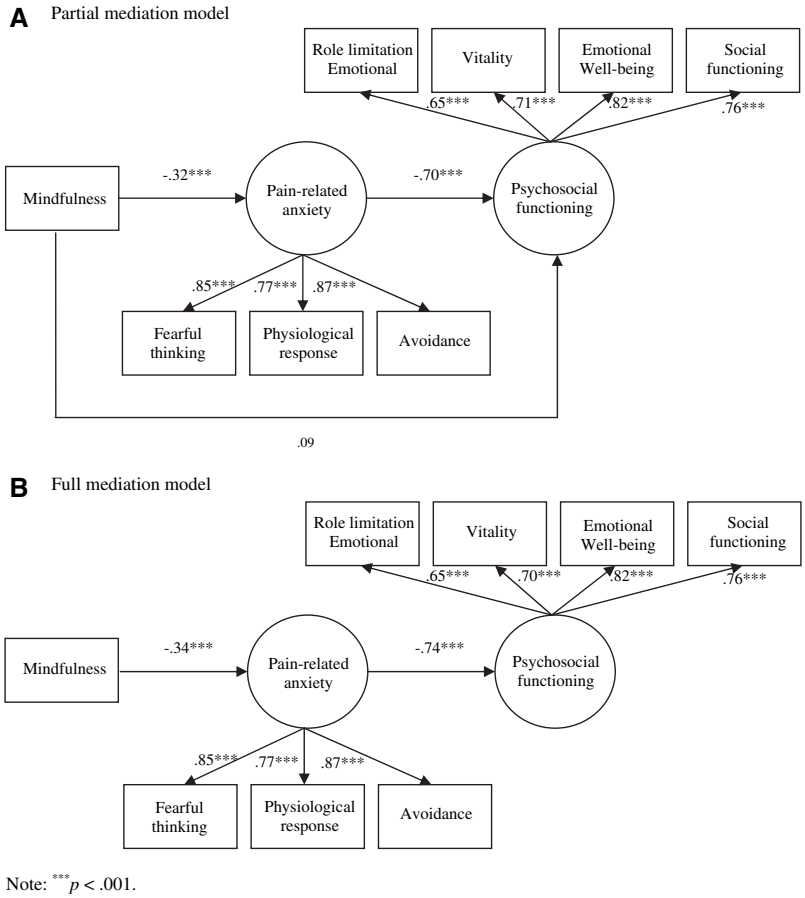

Figure 2. Two models on psychosocial functioning (standardized regression coefficient).

primarily aimed to build the infrastructure for the psychosocial aspects of pain research in Korea, through introducing frequently used pain-related self-report questionnaires. Participants in the larger study (N = 226) were recruited from a university-based pain-management center located in Seoul, Korea. They were told that the purpose of this (larger) study was to examine the effects of feelings and thoughts on adjustment to chronic pain. The inclusion criterion for the present study was having pain duration of at least 3 months. Data from 47 participants were eliminated either because they did not meet the inclusion criterion or withdrew, resulting in a final sample of 179 patients. Of the participants, 70.4% were female; the mean age in years was 48.7 (SD = 13.0); 73.7% were married; and 80.9% had at least a high school education. The median duration of pain in months was 36.0 (range 6–480); 26.3% had surgery at least once and 57.1% were taking pain-related medication. The majority of patients (66.8%) reported primary pain in lower back, neck, head, or shoulder(s). This larger study received the IRB approval and informed consent was appropriately obtained from study participants.

Measures

A Demographic Form first asked participants basic demographic information such as age, gender, marital status, educational level, and employment status. Subsequently, the form included items designed to assess pain quality including location(s) of most significant pain, duration of pain, and pain severity. Finally, participants were asked to indicate other pain-related information such as current pain-medication use, frequency of pain-related surgery, current financial compensation, and litigation due to pain.

The Pain Anxiety Symptoms Scale-20 (PASS-20)[40] is a 20-item measure of pain-related anxiety, consisting of 4 components (ie, cognitive anxiety, escape-avoidance behaviors, fear of pain, and physiological symptoms of anxiety). Each item is rated on a 6-point scale ranging from 0 (never) to 5 (always). Total scores range from 0 to 100, with a higher score representing more severe pain anxiety. The PASS-20 has yielded good reliabilities and validities across clinical[17,40] and nonclinical samples.[1] Cronbach's alpha and the 3-month test-retest stability ranged from .75 to .91 and from .51 to .70, respectively, for its subscale and total scores. In addition, the PASS-20 has yielded good factorial validity, concurrent validity, and discriminant validity between nonclinical group and clinical group scores in all of the subscales. This study used a Korean language version of the PASS-20 (KPASS-20), which went through a translation and back translation process. The KPASS-20 has been shown to have 3 pain-related anxiety components (ie, fearful thinking, physiological response,

avoidance),[15] somewhat different from the factor structure from that in the original PASS-20. However, this 3-factor structure of the KPASS-20 appeared to be theoretically congruent with the basic features of anxiety such as cognitive, physiological, and overt behavioral.[9] The KPASS-20 has demonstrated good reliability and validity estimates in a clinical sample in Korea as a part of the larger Korean Pain Study: Phase I.[15] Cronbach's alpha and the 2-week test-retest stability ranged from .85 to .95 and from .85 to .91, respectively, for its subscale and total scores. In addition, the KPASS-20 has yielded good factorial validity of the 3-factor structure, convergent validity with other self-report measures of anxiety, and concurrent validity with self-report measures of pain severity, depression, physical quality of life, and psychological quality of life.

The Mindful Attention Awareness Scale (MAAS)[12] is a 15-item questionnaire designed to measure mindfulness. Items are rated on a scale from 1 (almost always) to 6 (almost never) and scored by averaging all of the ratings. For this study, item scoring was reversed so that a higher score reflects a higher level of mindfulness. The MAAS has adequate psychometric properties across clinical[14] as well as nonclinical samples.[12,38] Cronbach's alpha and the 4-week test-retest stability ranged from .82 to .87 and .81 respectively. In addition, the MAAS has yielded good factorial validity, convergent validity, criterion validity, discriminant validity between community group and cancer-patient group scores, and incremental validity over a number of well-being variables. This study used a Korean language version of the MAAS (KMAAS), which went through a translation and back translation process. The KMAAS has yielded good reliabilities and validities in a nonclinical sample in Korea.[34] Cronbach's alpha and the 2-week test-retest stability were .80 and .71, respectively. In addition, the KMAAS has yielded good factorial validity of a unidimensional factor structure and adequate criterion validity with depression, anxiety, life satisfaction, and positive and negative affect.

The Short Form-36 (SF-36)[52] is a 36-item scale of general health functioning or health-related quality of life and consists of 8 subscales with 4 physical-functioning subscales (ie, physical functioning, role limitation due to physical problems, bodily pain, general health) and 4 psychosocial-functioning subscales (ie, role limitation due to emotional problems, vitality, social functioning, emotional well-being). Possible scores on each subscale range from 0 to 100, with a higher score indicating a higher level of health functioning. The SF-36 has been found to have good psychometric properties.[10,20,27] Cronbach's alpha and the 2-week test-retest stability ranged from .85 to .95 and from .85 to .91, respectively, for its subscale and total scores. In addition, the SF-36 has yielded good factorial validity, content validity, and criterion validity. This study used a Korean language version of the SF-36 (KSF-36), which went through a translation and back translation process. The KSF-36 has yielded good reliabilities and validities across clinical[21,33] and nonclinical samples.[21] Cronbach's alpha and the 2-week test-retest stability ranged from .51 to .85 and from .71 to .90, respectively, for its subscale scores. In addition, the KSF-36 has yielded good factorial validity of the original factor structure, concurrent validity with sex, age, motor function, and ability of daily life, and discriminant validity between healthy group and patient group scores in all of the subscales.

Statistical Analyses

The SPSS v.16.0 (SPSS, Inc, Chicago, IL) was used for the descriptive and correlational analyses and Amos 16.0 (SPSS, Inc) for a structural equation analysis of the 2 models formulated (ie, full mediation, partial mediation) for the relations among mindfulness, pain-related anxiety, and physical and psychosocial functioning. For testing the mediation models, the 2-step approach using a structural equation analysis[3] was employed instead of a traditional regression method,[6] as the analyses were performed at both the latent and measured-variable levels, and this approach can reduce the standard error by estimating parameters simultaneously.[26] In the first step, a confirmatory factor analysis was conducted to examine the measurement model on each physical and psychosocial functioning. Once the measurement models were identified as having a good fit to the data, the second step was performed in which the structural models were tested on each physical and psychosocial functioning. For the goodness-of-fit indices of the models, root-mean square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root-mean square residual (SRMR) were used. RMSEA values below .10 indicate a good fit to the data, values below .05 a very good fit to the data, and values below .01 an outstanding fit to the data.[50] For the CFI, values above .9 are considered a good fit to the data[8] and for the SRMR, values below .06 indicate a good fit to the data.[25] Subsequently, a chi-square difference test was employed to compare 2 nested models on each physical and psychosocial functioning.[37] Once either model was identified as having a better fit to the data than the other, bootstrapping procedures were performed to determine the significance of the mediation effects in the model retained.[47] For these procedures, 1,000 bootstrap samples were generated from the original dataset (N = 179) by random sampling with replacement. Next, the models retained on each physical and psychosocial functioning were examined 1,000 times with these bootstrap samples, resulting in 1,000 estimates of each path coefficient. The estimation of the mediation effects for mindfulness on physical and psychosocial functioning was calculated by multiplying 1,000 pairs of path coefficients. For the mediation effects, a *t*-test was conducted by comparing the mean mediation effect and zero. Also, we calculated the percent of variance in both physical and psychosocial functioning explained by the mediation effect in the model. For comparison purposes, we also calculated the percent of variance in both types of functioning explained by mindfulness without the mediation effect in the model to gain better understanding of the mediation effect.

Table 1. Descriptive Statistics and Correlations for Scores on the KPASS-20, KMAAS, and KSF-36

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Pain-related anxiety (KPASS-20)	47.06	22.55									
2. Mindfulness (KMAAS)	3.37	.94	–.30‡								
3. Physical functioning (KSF-36)	56.93	25.33	–.48‡	.17*							
4. Role limitation due to physical problems (KSF36)	32.41	40.77	–.46‡	.18*	.42‡						
5. Bodily Pain (KSF-36)	41.98	24.30	–.57‡	.17*	.57‡	.59‡					
6. General health (KSF-36)	42.32	20.84	–.46‡	.26†	.44‡	.40‡	.53‡				
7. Role limitation due to emotional problems (KSF36)	36.70	43.14	–.52‡	.21†	.34‡	.64‡	.46‡	.37‡			
8. Vitality (KSF-36)	38.07	21.14	–.42‡	.26†	.33‡	.41‡	.55‡	.54‡	.38‡		
9. Emotional well-being (KSF-36)	53.68	22.76	–.50‡	.27‡	.36‡	.43‡	.52‡	.53‡	.53‡	.67‡	
10. Social functioning (KSF-36)	59.01	26.63	–.61‡	.17*	.51‡	.52‡	.71‡	.45‡	.51‡	.50‡	.59‡

NOTE. KPASS-20 indicates a Korean language version of the Pain Anxiety Symptom Scale; KMAAS indicates a Korean language version of the Mindful Attention Awareness Scale; KSF-36 indicates a Korean language version of the Short Form-36.
*$P < .05$.
†$P < .01$.
‡$P < .001$.

Results

Descriptive Statistics and Correlation Analyses

Means and standard deviations of the pain-related anxiety, mindfulness, 4 physical-functioning, and 4 psychosocial-functioning scores are presented in Table 1. Two subscales of the KSF-36 (ie, role limitation due to physical problems and role limitation due to emotional problems) were shown to have a skewed distribution. However, since their log-transformed data did not make a significant change in the correlations between these 2 subscales and other study variables, the raw data were used in subsequent analyses. Table 1 also presents Pearson product-moment correlations among these variables. Pain-related anxiety showed significant negative correlations with all the functioning variables at $P < .001$ (the smallest $r = –.42$ for vitality, the largest $r = –.61$ for the social functioning subscale of the KSF-36, average $r = –.50$), indicating that greater pain-related anxiety was associated with poorer health functioning. Mindfulness also yielded significant negative correlations with pain-related anxiety ($r = –.30$, $P < .001$) and significant positive correlations with all the functioning variables, at least at $P < .05$ (the smallest $r = .17$ for physical functioning, bodily pain, and social functioning, the largest $r = .27$ for the emotional well-being subscale of the KSF-36), indicating that greater mindfulness was related to lower pain-related anxiety and greater health functioning.

Measurement Model for Testing Mediation Effects

The measurement model was tested using a confirmatory factor analysis. Separate analyses were conducted for physical- and psychosocial-functioning scores. The goodness-of-fit indices on the measurement models are presented in Table 2. The results indicated that both the measurement models had adequate goodness-of-fit indices. In addition, all of the measured variables were significantly loaded on the latent variables, with factor loadings ranging from .63 to .88, all *P*s < .001, indicating that the latent variables (ie, pain-related anxiety, physical functioning, psychosocial functioning) are adequately measured by their respective measured variables. Thus, these findings suggest that the measurement models on each physical and psychosocial functioning were adequate to further examine their structural models.

Table 2. Goodness-of-Fit Indices on the Measurement Model

	χ^2 (*DF*)	*RMSEA (90% CI)*	*CFI*	*SRMR*
Physical functioning	12.6 (18)	.00 (.00 to .04)	1.00	.03
Psychosocial functioning	46.6 (18)	.09 (.06 to .13)	.96	.05

Abbreviations: RMSEA, root-mean-square error of approximation; CFI, comparative fit index; SRMR, standardized root mean square residual.

Table 3. Goodness-of-Fit Indices on Physical Functioning for the Models

	χ^2 (DF)	RMSEA (90% CI)	CFI	SRMR
Partial mediation model	12.6 (18)	.00 (.00 to .04)	1.00	.03
Full mediation model	12.6 (19)	.00 (.00 to .04)	1.00	.03

Abbreviations: RMSEA, root-mean-square error of approximation; CFI, comparative fit index; SRMR, standardized root mean square residual.

Structural Model for Testing Mediation Effects

Structural equation analyses were conducted for 2 mediation models. Separate analyses were conducted for physical- and psychosocial-functioning scores. For physical functioning, the results indicated that the partial-mediation model (Fig 1A) and full-mediation model (Fig 1B) had adequate goodness-of-fit indices (Table 3). A subsequent chi-square difference test showed that the partial-mediation and full-mediation models did not differ significantly in their fit, indicating that the more parsimonious full-mediation model is preferred for physical-functioning scores. Furthermore, in the partial-mediation model, a path coefficient (ie, mindfulness to physical functioning) was not significant (Fig 1A), suggesting a failure to support the partial-mediation model. Given the above, the full-mediation model on physical functioning had advantage over the partial-mediation model.

For psychosocial functioning, the results also indicated that the partial-mediation model (Fig 2A) and full-mediation model (Fig 2B) had adequate goodness-of-fit indices (Table 4). Again, a chi-square difference test showed that the partial-mediation and full-mediation models did not differ significantly, indicating that the more parsimonious full-mediation model is preferred for psychosocial-functioning scores. However, as with the results in the models on physical functioning, a nonsignificant path coefficient (ie, mindfulness to psychosocial functioning) failed to support the partial-mediation model (Fig 2A). Given the above, the full-mediation model on psychosocial functioning had advantage over the partial-mediation model.

Bootstrapping Analyses of the Mediation Effects

The full-mediation models for both physical and psychosocial functioning were selected for the subsequent bootstrapping analyses for testing the significance of the mediation effects. For physical functioning, the results showed that the mean mediation effects for mindfulness on physical functioning was significant, $b = 4.50$, CI: 2.25–6.95, $t(999) = 3.30$, $P = .001$. In addition, 24% of the variance in physical functioning was explained by the mediation effect in the full-mediation model (β = –.32 * –.75 = .24), and 6.0% of the variance in physical functioning was explained by mindfulness without the mediation in the model. For psychosocial functioning, the results showed that the mean mediation effects for mindfulness on psychosocial functioning was also significant, $b = 7.50$, CI: 3.67–11.46, $t(999) = 3.10$, $P = .002$. Twenty-five percent of the variance in psychosocial functioning was explained by the mediation effect in the full mediation model (β = –.34 * –.74 = .25), and 9.7% of the variance in psychosocial functioning was explained by mindfulness without the mediation in the model.

Table 4. Goodness-of-Fit Indices on Psychosocial Functioning for the Models

	χ^2 (DF)	RMSEA (90% CI)	CFI	SRMR
Partial mediation model	46.6 (18)	.09 (.06 to .13)	.96	.05
Full mediation model	48.1 (19)	.09 (.06 to .13)	.95	.05

Abbreviations: RMSEA, root-mean-square error of approximation; CFI, comparative fit index; SRMR, standardized root mean square residual.

Discussion

This present study of chronic pain patients in Korea aimed to investigate the mediating role of pain-related anxiety between mindfulness and physical and psychosocial functioning, on the basis of prior studies suggesting that being anxious about pain is related to such functioning[13,43] and being mindful of pain can ameliorate dysfunctional effects of some negative cognitions, sensations, and emotions.[4,19] The findings provided support for the full mediating role of pain-related anxiety between mindfulness and both physical and psychosocial functioning. This suggests that being mindful may contribute to a decrease in the disabling influences of pain-related anxiety, which, in turn, may contribute to better physical and psychosocial functioning among chronic pain patients in Korea (Figs 1B and 2B).

Although the partial-mediation and full-mediation models performed equally well in terms of goodness-of-fit indices, nonsignificant chi-square difference tests showed that the partial-mediation model has no advantage over the full-mediation model, and, moreover, significant path coefficients were not found between mindfulness and physical- and psychosocial-functioning scores (Figs 1A and 2A). These findings further supported the advantage of the full-mediation model over the partial-mediation model in that the partial mediation cannot be validated without significant direct linkages between mindfulness and physical and psychosocial functioning. This suggests that mindfulness may lead to a lower level of pain-related anxiety, thereby contributing to the increase in either physical or psychosocial functioning, rather than playing a role as a direct contributing factor for better functioning among chronic pain patients in Korea. Given the findings above, the hypothesis (ie, mediating role of pain-related anxiety: either partial or full) of the present study was supported. These findings are consistent with the psychological flexibility model and fear-avoidance model. According to the psychological flexibility model, psychological inflexibility is a primary source of suffering. Psychological inflexibility is partly derived from an inability to willingly experience unwanted thoughts, sensations, and emotions, which will manifest itself in avoidance, inactivity, and struggles for control over pain.[23] The fear-avoidance

model posits that these responses can amplify pain-related anxiety, resulting in a consequent self-perpetuating pattern of avoidance of activity. In this pattern, patients are unable to learn that no harm will occur with activity, and they suffer increasing physical and psychosocial disability as a result.[35] Further research and analysis may help to better integrate these models, which to this point differ in the therapeutic processes they imply.

Cultural values in Korea encourage suppression of emotions,[48] which was confirmed in chronic pain patients who exhibited suppression or denial of depression, anxiety, and/or anger across subgroups identified by cluster analysis.[49] Mindfulness practice may be one of the appropriate ways for facilitating acquisition of adaptive thought and emotion-regulation skills, as it helps to reduce psychological inflexibility, thus expanding behavioral repertoires to provide patients more healthy options to deal with their own problems. Specifically, through introducing nonjudgmental awareness skills, health professionals may assist patients to reduce their automatic overengagement (eg, worry about pain) or underengagement (eg, pain avoidance) with anxious emotions and to enhance exploration of healthy responses.[22] Two recent treatment studies in Korea have revealed that culturally adapted mindfulness practice significantly reduced levels of negative emotions including anxiety in chronic pain patients.[2,32] They imply potential clinical utility of mindfulness-based treatments as one of the treatment options for chronic pain patients having pain-related anxiety and corresponding physical and/or psychosocial disability.

Future studies may benefit from examining whether mindfulness-based interventions reduce the level of pain-related anxiety and thus enhance physical and psychosocial functioning. In addition, future studies may be able to identify the relative contribution to treatment effects of mindfulness-based interventions and other interventions (eg, cognitive behavioral techniques) aiming to reduce pain-related anxiety. Finally, given that mindfulness-based interventions are conceptually originated from Eastern culture, particularly in relation to Buddhism, it would be interesting to compare the effects of mindfulness-based interventions in chronic pain patients who follow Buddhism with those who do not.

Our findings appear to be consistent with other studies, demonstrating that mindfulness is associated with physical and/or psychosocial functioning among a variety of clinical samples such as cancer[14] and pain[41] patients and nonclinical samples.[5,12] In addition, these findings are comparable to the ones from nonclinical samples in Korea.[34,54] More specifically, these studies have generally yielded evidence that mindfulness is moderately or highly associated with physical and/or psychosocial functioning. The magnitude of the relations observed in the current study were somewhat smaller (r = .17 to –.30; Table 1) compared to the ones shown in prior studies.[5,12,14,34,41,54] Mindfulness measured in this study involved a general reaction to life experiences including pain-related ones and this may lead to smaller correlations in the particular population under study here. Nevertheless, current findings suggest that being mindful may convey beneficial effects on patient physical and psychosocial functioning to some extent.

Some limitations of the current study should be noted. First, a relatively small sample size (N = 179) was employed and used on all models presented in this study. Small sample sizes for testing many variables may lead a risk of overfitting the model.[51] Second, a structural equation analysis performed in this study employed a single observed variable for the construct of mindfulness. Although the psychometric studies of the (K)MAAS have consistently shown its unidimensional factor structure,[12,14,34,38] a single observed variable may reflect only 1 aspect of mindfulness.[46] Third, this study did not utilize competing models in order to confirm our favored model. Although the favored model yielded a good fit to the data here, this does not rule out possibilities that other competing models (eg, a reversed or changed path direction) may have a good or even better fit to data than does the favored model.[11] In addition, this study employed a cross-sectional design and correlational data, which cannot provide clear evidence on the causal relations. Accordingly, these relations must be viewed with care and investigated further, including possible competing models, in longitudinal, experimental, or treatment studies.[7,11] Fourth, the sample of this study was heterogeneous in chronic pain complaints and from a tertiary care pain clinic. Thus, generalizability of the findings needs to be investigated across a variety of pain groups (eg., fibromyalgia, lower back pain, headache) or other settings (eg, primary care clinic, community).

In conclusion, the findings of the study indicate that pain-related anxiety has a full mediating role in the relationship between mindfulness and physical and psychosocial functioning. These findings suggest that mindfulness-based treatments may improve physical/psychosocial functioning by lowering the disabling impacts of pain-related anxiety. It may be useful to further introduce mindfulness-based treatments in pain management clinics in Korea and elsewhere.

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