

The Effectiveness of Mindfulness Training on the Grieving Process and Emotional Well-Being of Chronic Pain Patients

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Losses in relationships, work, and other areas of life often accompany the physical discomfort of chronic pain. Often the depth and intensity of the grief associated with chronic pain are overlooked or possibly misdiagnosed and treated as depression. We used an 8-week mindfulness meditation program to determine its effectiveness in addressing the grieving process among 39 patients diagnosed with chronic pain. Eighteen patients volunteered to be in a comparison group. The study was conducted in a regional hospital's pain clinic and patients completed the Response to Loss Scale (measuring grief), the Beck Depression Inventory, and the State Trait Anxiety Inventory. Results indicated that the treatment group advanced significantly more quickly through the initial stages of grieving than the comparison group. In addition, the treatment group demonstrated significant reductions in depression and state anxiety, but no significant differences emerged when comparing groups on the final stages of grieving or trait anxiety.

KEY WORDS: chronic pain; mindfulness meditation; grief; depression; anxiety.

The psychological and social effects of chronic pain and the personal losses associated with chronic pain can be extremely taxing. Intense physical and emotional pain can often lead to substance abuse, difficulty in relationships, depression, and suicidal ideation (Dersh, Polatin, & Gatchel, 2002; Gureje, Simon, & Von Korff, 2001; Monsen & Havik, 2001; Slesinger, Archer, & Duane, 2002). Often there are difficulties sleeping because of the intensity of the pain (Morin, Gibson, & Wade, 1998). Fatigue from sleep difficulties coupled with the chronic pain also often affects work performance (Richardson, Richardson, Williams, & Featherstone, 1994). In addition, because the disability may not be visible, many people in the person's life may question the veracity of the pain.

Improving the life experience of people suffering from chronic pain has long been a difficult challenge for health care professionals. Current medical treatments may include analgesics, narcotics, nerve blocks, and surgery. Unfortunately, these treatments often fall short of providing reliable relief (Kabat-Zinn, 1982). Pain, difficulty working, difficulty in relationships, sleep disturbances, substance abuse, and trust issues within family, friends, and work relationships may combine to propel the chronic pain sufferer into a psychological downward spiral. Considerable grieving can occur when physical activities, relationships, careers, and hobbies are lost. Without awareness, the effect of grieving may be repressed or expressed only as unresolved anger; such strategies are likely to compound the problem. In addition, Schneider (2000) has argued that when people present to health care providers with symptoms of grief they may be misdiagnosed as being depressed and then are prescribed antidepressant medication. Consequently, over time, the unresolved grief may result in increased depression and anxiety.

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Although little can be medically done for many chronic pain sufferers, psychological treatments are being developed to assist the intense discomfort. Kabat-Zinn (1990) has developed a program, using mindfulness meditation to assist people with chronic illnesses to better cope with their situations. Mindfulness is a nonjudgmental awareness of one's present moment experience. It is similar to cognitive approaches to therapy (e.g., Beck & Weishaer, 1989) in that, during mindfulness, one becomes aware of self-dialogue that can be debilitating. For example, chronic pain sufferers employing cognitive or mindfulness strategies may become more aware of self-defeating thoughts such as, "this pain is killing me," "this is the worst it has ever been," "it is never going to go away," "I'd be better off dead." However, mindfulness differs from cognitive approaches in that it does not attempt to replace maladaptive cognitions with adaptive ones. Rather, mindfulness involves disengaging from creating additional thoughts, positive or negative, and encourages the nonjudgmental observation and of experiencing of thoughts and feelings. From this perspective, the relationships between thoughts and feelings can be seen more objectively and less reactionary. A person suffering from chronic pain can begin to experience how their judgments or self-dialogue about the pain often make the entire experience more agonizing. Experiencing pain mindfully enables one to help eliminate the psychological agony of the physical pain. When one utilizes mindfulness with their pain, they no longer fight or resist the pain. Instead, they nonjudgmentally experience it as part of their present moment experience. Generally, this does not take away from the extreme physical discomfort of the pain, but it does provide more energy to deal with the discomfort because the patient is no longer fighting or resisting the pain. This can make the life of someone with chronic pain much less stressful.

Kabat-Zinn (1982) investigated the effectiveness of a 10-week mindfulness meditation program in the treatment of chronic pain. Fifty-one participants who were referred to the program took part in the study. The types of pain reported consisted of low back, upper back, and shoulder pain, cervical pain, and headaches. The average number of years participants reported with their pain problem was 8.4. The results indicated that 65% of the patients reported a reduction of at least 33% on a pain rating index and 50% showed at least a 50% reduction. There was also a significant reduction in the number of reported medical symptoms and total mood disturbance. Unfortunately, Kabat-Zinn (1982) did not employ a control

group and relied entirely on self-reported data in that study.

In a follow-up study, Kabat-Zinn, Lipworth, and Burney (1985) investigated differences between pain patients participating in a 10-week mindfulness meditation program and a group of pain patients receiving traditional treatment protocols (nerve blocks, physical therapy, analgesics, antidepressants). The results indicated significant reductions in anxiety and depression as well as reductions in present moment pain, negative body image, and inhibition of activity by pain for the treatment group. In addition, pain-related drug utilization decreased and activity levels and self-esteem increased for the treatment group. The results of the chronic pain patients receiving traditional treatments demonstrated no significant improvement on any of the indices measured. The improvements with the treatment group and lack of changes in the comparison group were maintained at a 15-month follow-up, with the exception of present moment pain, which returned to preintervention levels at follow-up. Indeed, in an even more ambitious extension of this research over a 4-year period, Kabat-Zinn, Lipworth, Burney, and Sellers (1987) found no deterioration in postintervention gains on all but one of the measures of reported pain and medical symptoms. Thirty to 55% of the participants rated their pain as greatly improved and 60–72% reported at least moderate improvement in their pain since taking the meditation program.

More recently, Mills and Allen (2000) investigated the effectiveness of a mindfulness of movement program for people diagnosed with multiple sclerosis. The treatment group showed improvement over a broad range of symptoms relating to multiple sclerosis, including improved balance, whereas the comparison group tended to deteriorate in terms of functioning. The results were verified by independent ratings from a relative or friend, and were maintained at 3-month follow-up.

Although these results indicate that the mindfulness meditation program outlined by Kabat-Zinn (1990) can be an effective treatment in helping chronic pain patients cope with many of the stressors brought about by their condition, there have been no studies investigating how meditation may influence chronic pain patients response to the associated losses and the resulting grieving process. However, utilizing mindfulness as an intervention with grief is not unique. For example, Linehan (1993) has identified inhibited grieving as one of a number of other important factors relating to borderline personality disorder and

has incorporated mindfulness as a core component of Dialectical Behavioral Therapy.

For purposes of our study, we applied Schneider's (1994) model of grieving to the experiences of loss associated with chronic pain and to mindfulness meditation principles. In this model of grieving, the first stage begins with awareness of what is lost. When practicing mindfulness, the present moment experience is not cognitively defended against. Therefore, awareness of unresolved issues increases. After awareness of what is lost has increased to a sufficient level the second stage of the grieving process occurs where a deeper perspective and integration of the issue can take place and a determination of what is left after the loss begins to be realized. The final stage involves reformulation and transformation, or what is now possible. Therefore, those who utilize a mindfulness meditation program may not only be able to cope with chronic pain better because of more practice time consciously responding to aversive states rather than habitually reacting to them, but they may also have a greater opportunity to realize growth from unresolved loss issues.

The mindfulness meditation program proposed by Kabat-Zinn (1990) appears to be effective in helping people with chronic pain cope better with their situation. However, what is not known is what effect meditation has on the progress through loss issues. Therefore, the primary purpose of this study was to investigate the effects of meditation on the grief process for chronic pain patients. Also, as noted earlier, other studies that have found significant decline in depression and anxiety as a result of mindfulness meditation. Another purpose of this study was to extend that line of inquiry by examining the effects of meditation on depression and anxiety for a sample of chronic pain patients.

METHOD

Participants and Procedures

A total of 71 patients began the study. Forty-nine participants comprised the treatment group and were recruited from those seeking psychological assistance in coping with their chronic pain condition at a pain clinic. Recruitment took place through psychologists at the clinic informing their clients of the program, as well as through brief presentations given during group psychoeducational and psychotherapy programs at the pain clinic. These participants were

assigned to an 8-week mindfulness meditation group. Twenty-two people seeking or receiving medical assistance, or who were on a waiting list for psychological assistance in response to their chronic pain condition, were recruited to serve as a comparison group.

Fourteen participants did not complete the study. *Dropouts* were defined as participants who completed the pretest but failed to complete the program or any other questionnaires. A total of 29 women and 10 men in the treatment group completed the study with another 11 women and 7 men in the comparison group. There were no differences in the gender distribution between the treatment and comparison groups, $\chi^2(1, N = 57) = 1.01, p > .10$. Seventy-six percent of the participants identified themselves as White/European American, 2% Black/African American, 2% as Hispanic, and 2% as Native American. The balance of participants did not identify their racial/ethnic background.

Instruments

Grieving Process

The short-form of the Response to Loss Scale (RTL; Schneider & Deutsch, 1997) was used in this study to measure how participants responded to the grieving process associated with a recent, self-identified loss. The short form contains 262 questions answered on a 5-point Likert-type scale. Seven subscales correspond to the different stages of grieving according to Schneider's (1994) model. Each of these stages, with the exception of Transformation, is measured on dimensions of behavioral, cognitive, emotional, physical, and spiritual characteristics. The seven subscales are as follows: Holding On, which is an attempt by the individual to overcome the loss by keeping busy (behavioral), being angry (emotional), and believing that the loss is reversible (spiritual); Letting Go, which involves responses that attempt to avoid the grief by drinking (behavioral), doomsday thinking (cognitive), and pessimism, (spiritual); Awareness, which involves exhaustion (physical), longing (emotional), and emptiness (spiritual); Perspective begins when the loss no longer feels like an overwhelming burden, yet the grief is still clearly present, the person is able to relax (physical), experience pleasure (emotional), and find meaning (spiritual); Integration is recognized when there is a renewed sense of passion (physical), new relationships (emotional), and forgiveness

(spiritual); Reformulation begins when the person is self-confident (cognitive), spontaneous (behavioral), and more able to extend increased unconditional positive regard (spiritual); and Transformation, which involves a merge of the five dimensions with less distinction beginning when the person has a greater sense of balance and wholeness, and can experience their relatedness to other people and events more readily.

Consistent with previous research (Schneider & Deutsch, 1997), two higher-order composite scales were scored on RTL: Cope/Awareness (151 items) and Growth (99 items). The Cope/Awareness scale consisted of the Holding On, Letting Go, and Awareness subscales whereas the Growth factor consisted of the Perspective, Integration, and Reformulation subscales. Following Schneider and Deutsch's (1997) scoring procedures, the scores on each scale were converted to range from 0 to 1, and in this way, yield a percentage intensity for each scale. Cope/Awareness incorporates items and scales tapping the initial phases of grieving and consists of questions focused on developing greater awareness of what is lost. Higher scores on this factor reflect a higher intensity in the beginning phases of the grieving process. The second composite, Growth, involves items and scales in which the respondent considers what is left after the loss and what is now possible. Higher scores on this factor indicate that the loss has been more deeply integrated.

Reliability of the short form of RTL has not been reported. However, unpublished results revealed Cronbach coefficient alphas in the range of .90 for each scale (Schneider, personal communication, November 26, 1997). Picone and Hoogterp (1990) reported significant correlations between the long version of the RTL scores and the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). They found positive correlations in the early stages of grieving and substantial negative correlations in the final stages of grieving. McGovern (1983) found a negative correlation between the Awareness scale of RTL and the Beck Depression Inventory.

Depression. The Beck Depression Inventory—Short Form (BDI; Beck & Beck, 1972) was used to measure the presence and the intensity of depressive symptomatology. Because of the length of RTL, the short form of BDI was chosen over the standard form in an effort to keep response fatigue to a minimum. BDI uses 13 of the 21 items from the longer version of the measure (Beck et al., 1961). For each item, the respondent is asked to choose which of four statements describes the way he or she has been feeling in the past week, including today. BDI takes about 5 min to

complete. Scores can range from 0 to 39, with higher scores indicating more depression.

Internal consistency of the short form of BDI has ranged from .74 to .81 (Foelker, Shewchuk, & Niederehe, 1987; Knight, 1984). With respect to validity of the BDI short form, Doetch, Alger, Glasser, and Levenstein (1994) found that it correlated so well with the longer Geriatric Depression Scale that they recommended it be substituted for it. The BDI short form also was found to correlate better with clinician's ratings of depression than the BDI standard form and was found to correlate 0.96 with the standard form (Beck & Beck, 1972).

Anxiety. The State-Trait Anxiety Inventory (STAI; Spielberger, 1983) is composed of two 20-item self-report subscales. The items for both subscales are answered using a 4-point Likert scale. Items pertaining to state anxiety deal with how the person is feeling "right now, in this moment," whereas those on the trait anxiety scale concern how the respondent "generally" feels.

With respect to the reliability of STAI, Cronbach coefficient alphas have ranged from 0.83 to 0.92 for State Anxiety and 0.86 to 0.92 for Trait Anxiety (Spielberger, Gorsuch, & Lushene, 1970). In terms of validity, Trait Anxiety correlated in expected directions with other anxiety measures (Cattell, 1957; Taylor, 1953). The validity of State Anxiety was supported by significant positive correlations with the Mooney Problem Checklist subscales of aggression, impulsivity, and social recognition (Mooney & Gordon, 1950).

The Mindfulness Meditation Program

Participants in the mindfulness program used in this study attended eight weekly 90-min group sessions and agreed to practice mindfulness meditation once per day for the instructed length of time. Group sizes ranged from 7 to 10 participants and were led by the first author, who had attended a training in Mindfulness-Based Stress Reduction by Kabat-Zinn and Saki Santorelli. Participants were instructed to meditate at least 20 min each day and provided a meditation log to record the actual time they spent in daily meditation. Much of the emphasis of this program was on self-responsibility (Kabat-Zinn, 1982). It was emphasized that participants must use and develop their own internal resources for self-healing. The long-term perspective of using mindfulness meditation in the healing process was also emphasized. The initial

8-week program was described as only a first step towards gaining greater insight about themselves and the healing process.

The practice of mindfulness meditation in this program consisted of three different techniques: (a) the body scan, (b) mindfulness on the breath, and (c) hatha yoga. The body scan technique involved gradual attention to the body and observation of the different bodily sensations with a nonjudgmental awareness. Mindfulness on the breath consisted of observing the respiration as well as the continual flow of thoughts and feelings as they appeared and faded in awareness. Hatha yoga postures were used to “reverse disuse atrophy of the musculoskeletal system while developing mindfulness during movement” (Kabat-Zinn, 1982, p. 36).

The general outline for the mindfulness program consisted of initially practicing the body scan, followed by yoga and mindfulness of the breath meditation. During the eight weekly sessions, instructions on the various meditation techniques were provided and didactic information on the psychology and physiology of stress and coping was covered. Participants were also given a tape containing a guided body scan and mindfulness of the breath meditation to aid them in their weekly practice.

RESULTS

Descriptive statistics and reliability estimates for the measures are reported in Table I. These data generally were consistent with other studies using the same measures with comparable samples. Analysis of the RTL data indicated that a number of participants did not respond to many of the 262 items, or responded with a “0” response indicating that the item in question “isn’t true about my current response to this loss.” If over half of the items were left blank, or responded to with a zero, then the loss the participant selected in completing the instrument did not result in a severe level of grieving, and therefore that person’s RTL results were considered invalid for purposes of analysis. Seventeen questionnaires were determined invalid using this decision rule (12 from the treatment group and 5 from the comparison group). Thus, remaining analyses of RTL were based on complete data from 27 patients in the treatment group and 13 in the control group.

Initial univariate analyses of variance (ANOVAs) were performed to assess pretreatment differences between groups. This analysis revealed

Table I. Descriptive Statistics and Instrument Reliabilities for Study Completers

Inventory	<i>N</i>	Pretest	Posttest
Cope/Awareness	40		
<i>M</i>		0.37	0.29
<i>SD</i>		0.14	0.10
α		0.97	0.93
Growth	40		
<i>M</i>		0.58	0.61
<i>SD</i>		0.17	0.16
α		0.96	0.94
Beck Depression Inventory	57		
<i>M</i>		8.95	5.58
<i>SD</i>		7.40	5.48
α		0.92	0.88
State Anxiety Inventory	57		
<i>M</i>		45.60	38.23
<i>SD</i>		11.93	10.85
α		0.93	0.92
Trait Anxiety Inventory	57		
<i>M</i>		47.25	41.26
<i>SD</i>		11.91	10.16
α		0.93	0.92

no significant pretreatment differences on any of the measures: Cope/Awareness, $F(1, 39) = 0.43$; Growth, $F(1, 39) = 0.51$; BDI, $F(1, 55) = 0.01$; State Anxiety, $F(1, 55) = 0.26$; and Trait Anxiety, $F(1, 55) = 1.14$, $p > .05$. Effect sizes for these analyses ranged from $\eta^2 = .00$ to $.02$.

Because of the absence of statistically significant differences at pretest levels of the dependent variables, univariate analyses of variance were conducted with posttest values of RTL, BDI, and STAI scores serving as the dependent measures. The means and standard deviations for the pre- and posttest comparisons between groups are displayed in Table II.

The primary expectation for this study was that the intensity of the two different stages of grieving would be significantly different between the two groups. The results indicated that this hypothesis was partially supported. There was a significant difference between the treatment and comparison groups in intensity of the initial stages of grieving a loss issue (Cope/Awareness), $F(1, 38) = 5.83$, $p < .05$, $\eta^2 = .13$. As shown in Fig. 1, the direction of this effect indicated that the treatment group decreased on this dimension at a greater rate than the comparison group. However, there was no significant difference between groups with respect to the second stage of grieving (Growth), $F(1, 38) = 0.41$, $p > .10$, $\eta^2 = .01$.

A significant difference in posttest BDI scores emerged between the treatment group when contrasted with the comparison group, $F(1, 55) = 4.02$,

Table II. Measurement Means and Standard Deviations by Group

Measure	Group	N	M (SD)	
			Pretest	Posttest
Cope/Awareness	Treatment	27	0.36 (0.12)	0.27 (0.09)
	Comparison	13	0.39 (0.17)	0.34 (0.11)
Growth	Treatment	27	0.56 (0.16)	0.60 (0.18)
	Comparison	13	0.60 (0.14)	0.63 (0.19)
Beck Depression Inventory	Treatment	39	9.00 (6.46)	4.62 (3.88)
	Comparison	18	8.83 (9.34)	7.67 (7.66)
State Anxiety	Treatment	39	45.05 (11.63)	36.38 (9.94)
	Comparison	18	46.78 (12.83)	42.22 (11.91)
Trait Anxiety	Treatment	39	46.10 (12.24)	40.15 (10.12)
	Comparison	18	49.72 (11.08)	43.67 (10.11)

$p < .05$, $\eta^2 = .07$. Likewise, there was a significant difference between the two groups on State Anxiety, $F(1, 55) = 3.74$, $p < .05$, $\eta^2 = .06$, but not on Trait Anxiety, $F(1, 55) = 1.49$, $p > .10$, $\eta^2 = .03$ (see Table II). The significant effects for depression and state anxiety are depicted in Figs. 2 and 3.

Attrition

Dropouts from the study were defined as patients who completed the initial questionnaire and attended at least one session, but then failed to complete the program or any other questionnaires. Most of the participants who dropped out of the program elected to do so by the third session, with no one dropping out after the fourth session. ANOVAs of the pretreatment data were conducted to determine if there were any differences between those who completed the program and those who did not. The results of these analyses revealed no significant differences between

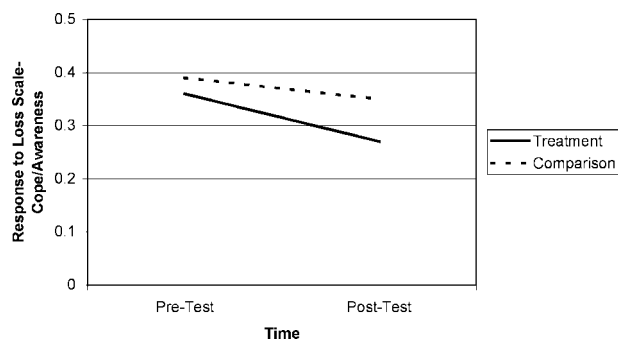


Fig. 1. The effects of mindfulness meditation on the early stages of grief.

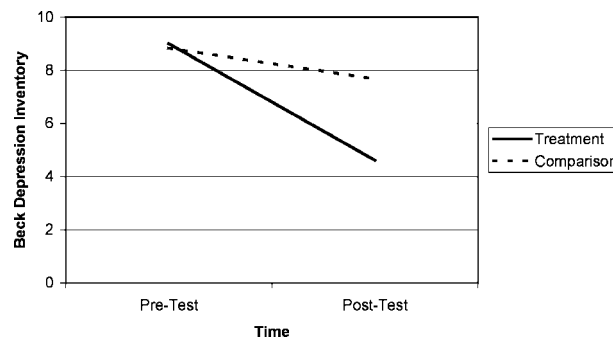


Fig. 2. The effects of mindfulness meditation on depression.

these groups on any of the dependent measures. However, because of the exploratory nature of this analysis and our relative small sample size to detect effects, we adjusted the $p < .05$ criterion to determine if possible trends existed within our data. There were two such effects: Cope/Awareness, $F(1, 33) = 3.05$, $p < .09$, $\eta^2 = .09$; and State Anxiety, $F(1, 51) = 2.84$, $p < .10$, $\eta^2 = .05$, with the study completers reporting lower scores on both dimensions.

DISCUSSION

There is considerable support for the effectiveness of mindfulness meditation in helping people cope more effectively with a variety of stressors. More specifically, Kabat-Zinn et al. (1985, 1992) demonstrated significant reductions in depression and anxiety with participants diagnosed with anxiety disorders and with chronic pain using a mindfulness meditation program. Teasdale et al. (2000) demonstrated that mindfulness-based cognitive therapy prevented the relapse/recurrence of depression in recovered

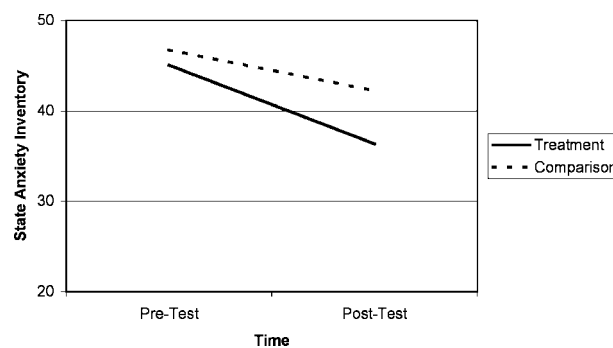


Fig. 3. The effects of mindfulness meditation on state anxiety.

recurrently depressed patients. In addition, Linehan (1993) has used mindfulness as a core component of her treatment in working with people with borderline personality disorder, which she indicates consists of, in part, a considerable degree of unresolved grief issues. However, no study has investigated how a mindfulness meditation practice might specifically influence the grieving process. The purpose of this “in-the-field” study was to investigate the effect of a mindfulness meditation program with chronic pain patients on grieving, depression, and anxiety.

We found a significant treatment effect in the expected direction for the Cope/Awareness composite of early grieving stages but there was not a significant effect for the Growth composite. The decrease of intensity in initial phases of grieving for the participants in the treatment group as compared to those in the comparison group appears to support Levine’s (1994) theory that the first issue that presents when a meditation practice is undertaken is grieving. Mindfulness may enable the loss issue to be more fully grieved because it fosters a nonjudgmental attitude of emotional and cognitive material, thereby reducing defenses such as intellectualization, rationalization, and denial. This result may be related to the possible trend for patients who dropped out to demonstrate more intensity than completers in the beginning stages of the grieving process, and to apparently experience more state anxiety. A possible explanation for this is that the dropouts may not have been capable of increasing their awareness of a loss they were grieving. Schneider (1994) has commented that in the first stages of grieving, defensive attempts are made to minimize awareness of the loss in an effort to lessen its emotional impact. Because mindfulness increases awareness, a person who may already be emotionally overwhelmed might consequently discontinue their participation in the program. Therefore, beginning a mindfulness meditation practice during the very early phases of grieving may increase anxiety above an already elevated level and is not recommended. However, the current study did find that once the loss begins to be integrated, rather than defended against, a mindfulness meditation practice may help patients progress through grieving more quickly. Future research could explore using RTL as a screening instrument for a mindfulness program. For example, participants who demonstrate high scores on the Holding On, Letting Go, or Awareness subscales could be recommended to seek alternative treatments, such as individual therapy, group therapy, or

a support group focused on their loss issue(s) prior to undertaking a mindfulness meditation program.

A possible explanation for the decrease in the initial stages of grieving while not also realizing a significant increase in the Growth aspects of grieving may be that moving from the initial stage of grieving (determining what is lost) to the Growth stage (determining what is left) may not be a clear, stage-wise progression. This is consistent with Schneider’s (1994) theory in which he states that, although the stages are organized in a linear fashion, “people do not go through a linear progression of grief stages . . . we go through the grief process many times, often cycling through the same loss several times as we get new information or a new perspective” (p. 66). The increased awareness fostered through mindfulness meditation may offer this “new information or new perspective,” which may instigate a recycling of the initial stages of the grieving process, and therefore minimize progression into the growth stages of grieving. The significant drop of intensity in the Cope/Awareness stage of grieving for those in the treatment group may reflect this recycling. However, Schneider (1994) added that, “in the larger picture there is a progression toward integration and growth” (p. 66). Schneider (1994) also commented that entering into the full awareness of what is lost (the first stages of grieving) are “the most painful, lonely, helpless, and hopeless times we will ever face” (p. 158), and therefore the most difficult. Thus, it may take considerable time to move through the initial stages of grieving, and once this happens there may not be an immediate increase in the growth phase. Future research might profit from conducting a follow-up study after several months or years to determine if mindfulness does indeed accelerate the growth aspects of grieving.

The significant difference between the treatment group and the comparison group on the BDI indicates that, for people seeking treatment for chronic pain, participation in an 8-week mindfulness meditation program may result in significantly lower levels of depression. This finding is consistent with Kabat-Zinn et al. (1985), who found reductions in depression for those who participated in a mindfulness meditation program compared to a comparison group seeking other traditional treatments for chronic pain. This finding also is consistent with Teasdale et al. (2000, 2002), who found that a mindfulness-based cognitive therapy program was helpful in the prevention of relapse/recurrence of major depressive disorder (see also Segal, Williams, & Teasdale, 2002). Therefore, although our results support the use of mindfulness

meditation for depressed chronic pain patients, it should also be noted that the advocacy of mindfulness meditation as a preventive measure in terms of depression relapse suggests a broader possible benefit for pain patients, over time. Of course, future research would need to conduct follow-up studies of chronic pain patients to determine if such an inference is warranted.

Significant effects of mindfulness in reducing state anxiety also were found in this study. This finding was consistent with the report by Kabat-Zinn et al. (1985), who found lower levels of anxiety in chronic pain patients who participated in a mindfulness meditation program. It is possible that a daily meditation program may reduce anxiety in a similar manner as desensitization does, by making the anxiety-arousing object less threatening. During a daily practice, participants were encouraged to notice their thoughts and feelings without reacting to them. Therefore, if a person began to feel slightly threatened by a situation and consequently began to experience some anxiety, she or he was instructed to respond to this by taking an internal "step back" and simply attend to the situation as objectively as possible. In doing so, the patient becomes aware of self-generated judgments about the situation that are exacerbating anxiety. Once patients realize that they are creating the threatening judgments, they are instructed to shift the focus of attention from those thoughts. For example, a person may react to a pain situation with a judgment "there is no way I can make it through this meditation with this pain in my leg," or "I can't make it another minute." By noting that these thoughts were self-generated and by not overidentifying with them, the person is better positioned to respond with a nonjudgmental dialogue such as, "judgmental thoughts are going on" or "I'm noticing intense sensation in my leg." Although the pain in the patient's leg may be very intense, using a mindfulness technique decreases pain exacerbation by decreasing the internal, cognitive reactions to the pain. Likewise, the patient is not attempting to deny the pain through distraction. Rather, she or he attempts to remain as relaxed as possible and acknowledges the experience as it is, without attempting to alter the experience. Through the development of this type of attitude, many difficult situations in the person's life might become less threatening and therefore generate less anxiety.

There were no significant differences between the groups on trait anxiety. It is difficult to compare these results with previous research comparing treatment to nontreatment groups of chronic pain patients

because only one other study reviewed employed STAI. For example, Kabat-Zinn et al. (1985) determined anxiety levels with SCL-90, which measures symptoms of anxiety occurring over the past week, similar to state anxiety described earlier. In contrast, the Trait Anxiety Inventory instructs participants to complete the measure reflecting how they "generally feel." Therefore, apparent inconsistencies of these results with previous research may be partially due to measuring different aspects of anxiety. In addition, it is also possible that no between-group differences were found on this variable because 8 weeks is not a sufficient period of time to change a trait variable. Again, longer, longitudinal investigations might reveal changes in personological variables in addition to the symptom relief reported here and elsewhere.

Limitations and Future Research

One of the limitations of this study was the small sample size. It is possible that a larger sample size might have been more representative of the chronic pain population. This limitation is especially noteworthy with respect to the representation of racial/ethnic minorities in this study. Because some minorities are subject to increased stress due to being in the minority (Jackson & Sears, 1992), mindfulness meditation programs incorporating representatives from a broad array of minority groups is essential.

Another limitation of this study was the complete reliance on self-report data. The participants might have provided responses in biased manners due to their feelings towards the researcher or research in general. Using data collection methods other than self-report might help address potential response bias in future studies.

Another limitation, owing to the "in-the-field" nature of the study, is the use of a comparison group rather than a randomly assigned control group. Although we found no significant differences between these groups on pretest measures, we nevertheless are unable to determine whether the groups might have differed on some unmeasured dimension, which, without random assignment to groups, limits the internal validity of the study.

Future research might follow up on the results with respect to meditation and grieving. More specifically, studies could modify the RTL scale to serve as a screening assessment for mindfulness meditation programs. Prospective participants who score high in the first stage of grieving might be referred for an

alternative form of treatment prior to participation in this type of program. In addition, future research could employ 6- or 12-month follow-up assessments to investigate the aspects of grieving and psychological adjustment more completely than was accomplished in this study.

CONCLUSION

The major result of this study was that, for people suffering from chronic pain, a mindfulness meditation program incorporating a daily meditation period of at least 20 min can be effective in accelerating the initial stages of grieving. In addition, and consistent with previous research (Kabat-Zinn, 1985), this program also can help reduce depression and state anxiety with this same population. More than 100 mindfulness meditation programs are being offered in the United States (Roth & Creaser, 1997) that follow the format offered by Kabat-Zinn (1990). Much of the enthusiasm for this program has been generated through the research conducted by Kabat-Zinn and colleagues at the Stress Reduction Clinic at the University of Massachusetts. Therefore, replication and extension of this line of research, particularly in clinical settings as accomplished in this study, will aid confidence in the effectiveness of mindfulness meditation for a wide range of patient populations.

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