PARTICIPANT'S PERCEPTION OF NEGATIVE COGNITION IN LOW BACK PAIN: A PILOT STUDY

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Further research in the area of negative cognition and chronic low back pain is needed. (J Chiropr Med 2006;5: 135–143)

Key Indexing Terms: Low Back Pain; Behavior Modification; Depression

ABSTRACT

Objective: It has been theorized that low back pain contributes to the development of negative cognition (negative thinking) which may predispose a person towards chronicity. The objective of this paper is to examine the role of negative cognition in non-depressed participants who have previously experienced low back pain.

Methods: Ten students enrolled in a course at the University of Kansas were involved in a 4 week educational project. The participants completed self-rated assessments of depression using the 21 item Beck Depression Inventory (BDI-21) and the visual analogue pain scale (VAS). The study was broken into 3 phases over 4 weeks. Phase 1 focused on the VAS and the BDI-21 along with questions pertaining to low back pain. Phase 2 included 2 questions with 1 of the questions focusing on common negative distortions. Phase 3 focused on 11 clinical-type questions relating to awareness of negative thinking and chronic low back pain.

Results: Phase 1 showed that 7 of the students had a history of chronic low back pain while 8 students believed they had negative thoughts when low back pain occurred. Conversely, only 1 student had experienced negative thoughts prior to a low back pain episode. The initial BDI-21 scores demonstrated a mean score of 5.5 with a mean VAS of 5.75. After students were exposed to the idea that they may have negative cognition processes (phase 2), 4 students indicated that they noticed themselves thinking negatively and attempted to alter such processes. Phase 3 results indicated that 4 of the students did attempt to change negative thinking after being made aware that negative thinking could be present.

Conclusion: The results of this study showed that a majority of participants believed that a person's negative thoughts can impair a person toward activity yet none of the participants believed that such had occurred to them.

INTRODUCTION

Many adults will experience at least 1 episode of low back pain in their lifetime and is the second most common symptom that prompts visits to the doctor's office.^{1,2} At any given time, around 1 in 5 adults will report symptoms of low back pain, rising to 40% when asked if they have experienced symptoms during the previous month.³ Acute low back pain progresses to chronic low back pain (CLBP) in 5% to 10% of patients.⁴

Depression is a condition that worsens the prognosis of low back pain and is under-recognized and under-treated in primary care.^{5,6} The major role of psychological factors in the etiology of chronic pain disorders is leading to a new conceptualization of illness and cognitive behavioral approach to treatment.² The importance of such a relationship is the notion that 80% of all patients with chronic pain report current or past psychological impairment.⁷ Approximately 50% of people will be affected by a mental disorder during their lifetime with the most common forms being mood and anxiety disorders such as negative cognitions.⁸ Patients with chronic low back pain are frequently diagnosed as cognitively depressed but many of the neurovegetative signs of such depression may also result from pain.⁹ Confounding this is the masking aspect of the hidden state of negative cognition. Masked negative cognition is a mood disorder in which the classic affective and cognitive symptoms of subtle depression are hidden behind a variety of somatic complaints or behavioral problems.¹⁰ There is considerable hidden morbidity regarding overt depression that is being untreated in primary care.¹¹ Bodlund

reported that anxiety and mood disorders are markedly under-diagnosed and under-treated in primary care thus indicating it as a “hidden” problem.¹² Patients do not always present with signs of negative thought distortions and this may complicate the process of diagnosing and starting an adequate treatment.¹³ However, much of the research on the CLBP and the depression connection focus on those who are clinically depressed. Moreover, sub-clinical depression, ranging from the normal up and downs of daily life mild mood disturbance to borderline clinical depression may be present in CLBP. Negative thinking is common in depression but has not been adequately explored in relation to chronic pain.¹⁴

The purpose of this study was to examine the role of negative cognition in CLBP among non-depressed individuals. The rationale for this study was to acknowledge potential negative cognition among those who have experienced or in a current state of CLBP by awareness of negative thinking.

METHODS

A convenience sample of 10 student volunteers who were enrolled in a course at the University of Kansas participated in this study for a period of 4 weeks. A total of 3 surveys were distributed to the subjects over a 4 week time period. Three different sets of surveys encompassing week 1, week 2, and week 4 were distributed to participants. No survey/questionnaires were utilized in week 3. The first survey included the visual analog scale (VAS) and the 21 item Beck Depression Inventory (BDI-21). The VAS (10 centimeter line version) used in this study was the scale recommended by the Agency for Health Care Policy and Research.¹⁵ Participants’ level of pain, as per the VAS, was assessed by asking them to rate on a 0 to 10 scale the intensity of pain when a low back pain experience arose (0 = no pain at all and 10 = unbearable). The BDI-21 was selected because it is perhaps the most commonly used screening instrument for depression in the general population,¹⁶ has fewer items, guided by a strong theoretical premise,¹⁷ and has been validated as a good screening instrument for depression that may be present in other clinical conditions.^{18–21} There were no inclusion or exclusion criteria for participation except that the student was enrolled in the course.

In addition to the 2 measurement instruments, questions were designed that were similar to in-

office clinical questions to assess the respondents encounter with low back pain and negative thinking. The second survey included 2 clinical-type questions. The first question was to be responded with a simple yes or no answer. The second question asked if the person was familiar with or had experience with common negative distortions. Twelve common negative distortions, as per Burns, were presented with a brief explanation of each distortion.²² No survey was administered during the third week. The fourth survey contained 11 clinical-type questions to assess negative thinking and low back pain. Approval for this research was given under the auspices of an educational setting research application at the University of Kansas and under the direction of the professor instructing the course. No intervention was given and students signed consent to participate in this study.

RESULTS

There were 7 males and 3 females who participated in this study with 1 participant dropping out by the second week. Reasons for the 1 drop out were unknown. The age range for the entire sample was 20 to 59 years of age with 6 of the participants in the 40 to 49 age range.

All students had experienced low back pain within the past 5 years with 7 subjects experiencing low back pain at the time of this study. The results from the first survey (n = 10) showed a mean VAS of 5.75 (range 3 to 8). Eight of the subjects believed that they did not perceive themselves engaging in negative thoughts when they suffered low back pain. Only 1 subject believed that he had experienced negative thinking prior to a low back pain episode. Six subjects believed they were able to function normally when low back pain was being experienced. The most common experience reported by the participants indicated frustration during a low back pain episode (Tables 1 and 2).

The results of the BDI-21 demonstrated a mean score of 5.5 with a range of 1 to 8. This range indicated that all subjects were in the normal range with no sign of clinical depression or need for psychological assistance. The data in Table 3 indicated how this study interpreted BDI-21 scores.

The most commonly scored questions were #17 “I get tired more easily than I used to” with 7 responses, #16 “I don’t sleep as well as I used to” and

TABLE 1
FIRST WEEK (PHASE 1) RESULTS: GENERAL SURVEY
QUESTIONS PERTAINING TO LOW BACK PAIN AND
DEMOGRAPHICS

NUMBER OF SUBJECTS: 10				
1. AGE	20-29	2	2. GENDER	MALE 7
	30-39	1		FEMALE 3
	40-49	6		
	50-59	1		
			YES	NO
3. DO YOU HAVE LOW BACK PAIN CURRENTLY?			7	3
4. HAVE YOU HAD LOW PAIN IN THE PAST FIVE YEARS?			10	0
5. HAVE YOU EVER HAD TIMES WHICH, WHEN HAVING LOW BACK PAIN, YOU WERE THINKING NEGATIVELY?			8	2
6. HAVE YOU EVER BEEN AWARE OF ANY NEGATIVE THOUGHTS PRIOR TO LOW BACK PAIN OCCURRING?			1	9
7. WHEN YOU DO EXPERIENCE LOW BACK PAIN ARE YOU ABLE TO DO THE THING YOU NORMALLY WOULD LIKE TO DO?			6	4
8. WHEN YOU EXPERIENCE LOW BACK PAIN DO YOU GET: (MULTIPLE RESPONSES)				
A. FRUSTRATED?			7 RESPONSES	
B. UPSET?			1 RESPONSE	
C. WORRIED?			2 RESPONSES	
D. DEPRESSED?			3 RESPONSES	
E. OTHER?			1 RESPONSE	

#20 "I am worried about physical problems and its hard to think of much else" with 6 responses. Question #11 "I am slightly more irritated now than usual" had 5 responses.

The second week survey had 2 components. The first component had 9 responses. One subject did not respond and dropped out of the study. The first question focused on "has becoming aware of the possibility that your negative thoughts may be part of your low back pain encourage you to make any type of change?" Of the 9 students, 3 people responded "yes" while 5 responded "no" with 1 participant failing to respond to this question. The reason for this non-response is unknown (Table 4).

The second component of the second week survey dealt with the 12 most common negative distortions. Four of the 9 subjects responded to this portion (Fig 1). The most commonly reported negative distortion were "should" statements (3 responses), with "emotional reasoning", "magnification" (catastrophizing), and "jumping to conclusions" having 2 responses (Table 5).

Week 4 involved clinical type of questions only. There were 9 surveys completed. The Week 4 re-

sults indicated 2 of the respondents noticed a decrease in low back pain intensity. Four of the respondents had indicated an effort to change negative thoughts once awareness was made. Four respondents did indicate an increase in physical activity. Interestingly, 5 of the respondents reported an increased physical activity in the presence of low back pain. Eight students believed that a person's negative thoughts can impair a person's physical activity (Table 6).

DISCUSSION

Depression is directly related to both the physical and psychosocial functioning of pain patients.²³ Almost all working adults, more than half in any given year, experience low back pain.²⁴ The findings of this study support this notion since most of the subjects had experienced low back pain or were experiencing such. The etiology of CLBP has been shown to be multi-factorial. Research has found a correlation of poor treatment outcomes in patients with low back pain and abnormal psychological profiles, whereas other research has failed to confirm this correlation.²⁵ A critical feature of this debate has been whether abnormal psychological profiles seen in patients with back pain were the result of the ongoing back pain or whether pre-existing psychological features predispose to a poor clinical outcome.²⁵ This study attempted to ascertain if individuals acknowledge potential negative cognition among those who have experienced or in a current state of CLBP. Although none of the study participants were clinically depressed as per the BDI-21 the possibility exists that patients with pain disorders like CLBP may experience conflict about their pain in the form of negative cognitions.²⁶ The absence of objective physical findings that corroborate the report of pain may be indicative of an underlying mood disturbance.²⁶ Such absence of physical findings may be an indication of an underlying negative thinking process when the experience of a CLBP arises.

The BDI-21 and VAS

This study assessed 10 students to determine their level of psychological function in relation to low back pain. It is possible to distinguish anxiety and depression psychometrically in patients with chronic pain.²⁷ Questionnaire methods can be used to assess thoughts, which are cognitive products often referred to as self-statements, automatic thoughts, or internal dialogue.²⁸ The BDI-21 has

TABLE 2
FIRST WEEK (PHASE 1) RESULTS: BECK DEPRESSION INVENTORY RESPONSES

NUMBER OF SUBJECTS: 10		
MEAN BDI 5.5 (RANGE 1 TO 8)		
QUESTION #		RESPONSES
[1]	0. I DO NOT FEEL SAD.	9
	1. I FEEL SAD.	1
	2. I AM SAD ALL THE TIME AND I CAN'T SNAP OUT OF IT.	0
[2]	3. I AM SO SAD OR UNHAPPY THAT I CAN'T STAND IT.	0
	0. I AM NOT PARTICULARLY DISCOURAGED ABOUT THE FUTURE.	10
	1. I FEEL DISCOURAGED ABOUT THE FUTURE.	0
[3]	2. I FEEL I HAVE NOTHING TO LOOK FORWARD TO.	0
	3. I FEEL THAT THE FUTURE IS HOPELESS AND THAT THINGS CANNOT IMPROVE.	0
	0. I DO NOT FEEL LIKE A FAILURE.	10
[4]	1. I FEEL I HAVE FAILED MORE THAN THE AVERAGE PERSON.	0
	2. I DON'T GET REAL SATISFACTION OUT OF ANYTHING ANYMORE.	0
	3. I FEEL I AM A COMPLETE FAILURE AS A PERSON.	0
[5]	0. I GET AS MUCH SATISFACTION OUT OF THINGS AS I USED TO.	6
	1. I DON'T ENJOY THINGS THE WAY I USED TO.	4
	2. I DON'T GET REAL SATISFACTION OUT OF ANYTHING ANYMORE.	0
[6]	3. I AM DISSATISFIED OR BORED WITH EVERYTHING.	0
	0. I DON'T FEEL PARTICULARLY GUILTY.	10
	1. I FEEL GUILTY A GOOD PART OF THE TIME.	0
[7]	2. I FEEL QUITE GUILTY MOST OF THE TIME.	0
	3. I FEEL GUILTY ALL OF THE TIME.	0
	0. I DON'T FEEL I AM BEING PUNISHED.	10
[8]	1. I FEEL I MAY BE PUNISHED.	0
	2. I EXPECT TO BE PUNISHED.	0
	3. I FEEL I AM BEING PUNISHED.	0
[9]	0. I DON'T FEEL DISAPPOINTED IN MYSELF.	10
	1. I AM DISAPPOINTED IN MYSELF.	0
	2. I AM DISGUSTED WITH MYSELF.	0
[10]	3. I HATE MYSELF.	0
	0. I DON'T FEEL I AM ANY WORSE THAN ANYBODY ELSE.	8
	1. I AM CRITICAL OF MYSELF FOR MY WEAKNESSES/MISTAKES.	2
[11]	2. I BLAME MYSELF ALL THE TIME FOR MY FAULTS.	0
	3. I BLAME MYSELF FOR EVERYTHING BAD THAT HAPPENS.	0
	0. I DON'T HAVE ANY THOUGHTS OF KILLING MYSELF.	9
[12]	1. I HAVE THOUGHTS OF KILLING MYSELF, BUT I WOULD NOT CARRY THEM OUT.	1
	2. I WOULD LIKE TO KILL MYSELF.	0
	3. I WOULD KILL MYSELF IF I HAD THE CHANCE.	0
[13]	0. I DON'T CRY ANYMORE THAN USUAL.	8
	1. I CRY MORE NOW THAN I USED TO.	2
	2. I CRY ALL THE TIME NOW.	0
[14]	3. I USED TO BE ABLE TO CRY, BUT NOW I CAN'T CRY EVEN THOUGH I WANT TO.	0
	0. I AM NO MORE IRRITATED BY THINGS THAN I WAS BEFORE.	5
	1. I AM SLIGHTLY MORE IRRITATED NOW THAN USUAL.	5
[15]	2. I AM QUITE ANNOYED OR IRRITATED A GOOD DEAL OF THE TIME.	0
	3. I FEEL IRRITATED ALL THE TIME NOW.	0
	0. I HAVE NOT LOST INTEREST IN OTHER PEOPLE.	9
[16]	1. I AM LESS INTERESTED IN OTHER PEOPLE THAN I USED TO BE.	1
	2. I HAVE LOST MOST OF MY INTEREST IN OTHER PEOPLE.	0
	3. I HAVE LOST ALL OF MY INTEREST IN OTHER PEOPLE.	0
[17]	0. I MAKE DECISIONS ABOUT AS WELL AS I EVER COULD.	10
	1. I PUT OFF MAKING DECISIONS MORE THAN I USED TO.	0
	2. I HAVE GREATER DIFFICULTY IN MAKING DECISIONS THAN BEFORE.	0
[18]	3. I CAN'T MAKE DECISIONS AT ALL ANYMORE.	0
	0. I DON'T FEEL THAT I LOOK ANY WORSE THAN I USED TO.	3
	1. I AM WORRIED THAT I AM LOOKING OLD OR UNATTRACTIVE.	5
[19]	2. I FEEL THAT THERE ARE PERMANENT CHANGES IN MY APPEARANCE THAT MAKE ME LOOK UNATTRACTIVE.	2
	3. I BELIEVE THAT I LOOK UGLY.	0
	0. I CAN WORK ABOUT AS WELL AS BEFORE.	6
[20]	1. IT TAKES AN EXTRA EFFORT TO GET STARTED AT DOING SOMETHING.	4
	2. I HAVE TO PUSH MYSELF VERY HARD TO DO ANYTHING.	0
	3. I CAN'T DO ANY WORK AT ALL.	0

TABLE 2
CONT'D

QUESTION #	RESPONSES
[16]	0. I CAN SLEEP AS WELL AS USUAL. 4
	1. I DON'T SLEEP AS WELL AS I USED TO. 6
	2. I WAKE UP 1-2 HOURS EARLIER THAN USUAL AND FIND IT HARD TO GET BACK TO SLEEP. 0
	3. I WAKE UP SEVERAL HOURS EARLIER THAN I USED TO AND CANNOT GET BACK TO SLEEP. 0
[17]	0. I DON'T GET MORE TIRED THAN USUAL. 3
	1. I GET TIRED MORE EASILY THAN I USED TO. 7
	2. I GET TIRED FROM DOING ALMOST ANYTHING. 0
	3. I AM TOO TIRED TO DO ANYTHING. 0
[18]	0. MY APPETITE IS NO WORSE THAN USUAL. 8
	1. MY APPETITE IS NOT AS GOOD AS IT USED TO BE. 2
	2. MY APPETITE IS MUCH WORSE NOW. 0
	3. I HAVE NO APPETITE AT ALL ANYMORE. 0
[19]	0. I HAVEN'T LOST MUCH WEIGHT, IF ANY, LATELY. 8
	1. I HAVE LOST MORE THAN 5 POUNDS. 0
	2. I HAVE LOST MORE THAN 10 POUNDS. 0
	3. I HAVE LOST MORE THAN 15 POUNDS. 2
[20]	0. I AM NO MORE WORRIED ABOUT MY HEALTH THAN USUAL. 4
	1. I AM WORRIED ABOUT PHYSICAL PROBLEMS AND IT'S HARD TO THINK OF MUCH ELSE. 6
	2. I AM VERY WORRIED ABOUT MY PHYSICAL PROBLEMS AND IT'S HARD TO THINK OF MUCH ELSE. 0
	3. I AM SO WORRIED ABOUT MY PHYSICAL PROBLEMS THAT I CANNOT THINK ABOUT ANYTHING ELSE. 0
[21]	0. I HAVE NOT NOTICED ANY RECENT CHANGE IN MY INTEREST IN SEX. 9
	1. I AM LESS INTERESTED IN SEX THAN I USED TO BE. 1
	2. I AM MUCH LESS INTERESTED IN SEX NOW. 0
	3. I HAVE LOST INTEREST IN SEX COMPLETELY. 0

TABLE 3
INTERPRETING THE BECK DEPRESSION INVENTORY

TOTAL SCORE	LEVELS OF DEPRESSION
1-10	THESE UPS AND DOWNS ARE CONSIDERED NORMAL
11-16	MILD MOOD DISTURBANCE
17-20	BORDERLINE CLINICAL DEPRESSION
21-30	MODERATE DEPRESSION
31-40	SEVERE DEPRESSION
40+	EXTREME DEPRESSION

* A PERSISTENT SCORE OF 17 OR ABOVE INDICATES NEED FOR PROFESSIONAL HELP.

TABLE 4
SECOND WEEK (PHASE 2) RESPONSES TO QUESTION OF NEGATIVE THOUGHTS WITH LOW BACK PAIN (N = 9)

QUESTION	YES	NO	NR
1. HAS BECOMING AWARE OF THE POSSIBILITY THAT YOUR NEGATIVE THOUGHTS MAY BE PART OF YOUR LOW BACK PAIN ENCOURAGE YOU TO MAKE ANY TYPE OF CHANGE IN THINKING?	3	5	1

* NR: NO RESPONSE.

been widely used to document depressive symptomatology in samples of chronic pain patients and as an outcome measure in studies of psychological management of chronic pain.²⁹ The BDI-21 can be used to generate important information about the severity of interference posed by pain on the functioning of an individual, while allowing for an independent evaluation of subjective indices of depression and somatic disturbances that need to be attended to by clinicians.³⁰ The use of the BDI-21, along with the clinically-related questions that were designed for this pilot study, attempted to generate this information. A drawback of the BDI-21 for this study was that it did not indicate a specific negative thought distortion. The addition of the clinically-related questions attempted to gather further infor-

mation that the BDI could not assess as per automatic thought and self-statements. It was believed that this could be accomplished by having the participants examine definitions of common cognitive distortions and see which ones they identified with as seen in Figure 1. Hence the addition of a separate questionnaire on specific negative thoughts was given to participants.

The importance of the BDI to clinicians and clinical scientists has been demonstrated in earlier use of the psychometric device in the context of low back pain. Studies by Kaplan et al, Slater et al, Walgren et al, Atkinson, and Brown et al have focused on low back pain utilizing the BDI as a measure of mood, depression, distress, and self-efficacy demonstrating

- a. **all or none thinking:** you see thing in black and white categories; if your performance falls short or perfect, you see your as a total failure.
- b. **overgeneralization:** you see a single negative event as a never ending pattern of defeat.
- c. **mental filter:** you pick out a single negative detail and dwell on it exclusively so that your vision of all reality becomes darkened, like the drop of ink that discolors the entire beaker of water.
- d. **disqualifying the positive:** you reject positive experiences by insisting they “don’t count” for some reason or other; in this way you can maintain a negative belief that is contradicted by your everyday experiences.
- e. **jumping to conclusions:** you make a negative interpretation even though there are no definite facts that convincingly support your conclusions.
- f. **mind reading:** you arbitrarily conclude that someone is reacting negatively to you, and you don’t bother to check this out.
- g. **the fortune teller error:** you anticipate that things will turn out badly, and you feel convinced that your prediction is an already-established fact.
- h. **magnification (catastrophizing):** you exaggerate the importance of things (such as your goof-up or someone else’s achievement, or you inappropriately shrink things until they appear tiny such as your own desirable qualities or the other person’s imperfections.
- i. **emotional reasoning:** you assume that your negative emotions necessarily reflect the way things really are; for example, “I feel it, therefore it must be true.”
- j. **“should” statements:** you try to motivate yourself with should have and should not have, as if you had to whipped and punished before you could be expected to do anything; the emotional consequence is guilt; when you direct should statements toward others and things, you feel anger, frustration, and resentment.
- k. **labeling and mislabeling:** this is an extreme form of over-generalization; instead of describing your error, you attach a negative label to yourself; for example, “I am a loser.”; mislabeling involves describing an event with language that is highly colored and emotionally loaded.
- l. **personalization:** you see yourself as the cause of some negative external event which in fact you were not primarily responsible for.

Figure 1. Second week (phase 2) choices of common negative distortions provided to participants.

TABLE 5
SECOND WEEK (PHASE 2) RESPONSES TO COMMON TYPES OF NEGATIVE COGNITION.

	MOST OF THE TIME	SOMETIMES
A. ALL OR NONE THINKING	1	1
B. OVER-GENERALIZATION	0	0
C. MENTAL FILTER	0	1
D. DISQUALIFYING THE POSITIVE	0	0
E. JUMPING TO CONCLUSIONS	2	0
F. MIND READING	1	1
G. THE FORTUNE TELLER ERROR	1	0
H. MAGNIFICATION (CATASTROPHIZING)	2	0
I. EMOTIONAL REASONING	2	0
J. “SHOULD” STATEMENTS	3	0
K. LABELING AND MISLABELING	0	0
L. PERSONALIZATION	1	1

TABLE 6
FOURTH WEEK (PHASE 3) RESPONSES TO CLINICAL-TYPE QUESTIONS (N=9).

	YES	NO
1. IN THE PAST FOUR WEEKS HAVE SEEN A DECREASE IN YOUR LOW BACK PAIN INTENSITY?	2	7
2. IN THE PAST FOUR WEEKS SINCE YOU WERE MADE AWARE OF NEGATIVE THOUGHTS, DID YOU TRY TO CHANGE THESE NEGATIVE THOUGHTS?	4	5
3. IN THE PAST FOUR WEEKS DID YOUR LOW BACK PAIN FLARE UP?	3	6
4. DO YOU GENERALLY BELIEVE THAT A PERSON'S NEGATIVE THOUGHTS IMPAIRS A PERSON'S PHYSICAL ACTIVITY?	8	1
5. WHEN YOU INCREASE YOUR PHYSICAL ACTIVITY IN GENERAL, DO YOU FEEL: (MULTIPLE RESPONSES)		
A. MORE DEPRESSED:	0	
B. LESS DEPRESSED:	6	
C. LESS LOW BACK PAIN:	2	
D. MORE LOW BACK PAIN:	5	
6. IN THE PAST FOUR WEEKS HAVE YOU NOTICED THE INTENSITY OF YOUR LOW BACK PAIN DECREASE?	1	8

the relevance of using the BDI in examining low back pain.^{31–35} Wesley explained that the BDI may prove to be a more accurate measurement of depression in patients with chronic low back pain.⁹ The use of the BDI appears to be well-defined in relation to the study of low back pain.³⁰

An important domain directly related to low back pain is pain intensity.³⁶ An assessment of back pain using the VAS is responsive enough to detect minimally clinically important differences.³⁷ Measuring the participant’s pain levels when CLBP was in process would hopefully explain if magnitude of pain had any type of association with negative thought processes.

The combined use of the BDI with the VAS has been used in other studies. Filiz et al compared 2 different exercise programs versus a control group, after lumbar disc surgery for CLBP.³⁸ Guermazi et al³⁹ studied a population of CLBP sufferers using impairment outcome measures by assessing pain as measured on a visual analog scale and incorporating the Beck depression scale scores. Galantino et al⁴⁰ evaluated a possible design utilizing the BDI and VAS for a 6-week modified Hatha yoga protocol to study the effects on participants with chronic low back pain.

Other studies have utilized the BDI and VAS combination in examining tangentially-related clinical issues. Burchiel et al assessed chronic low back pain utilizing the BDI with the VAS.⁴¹ Goodkin et al utilized the BDI with the VAS in an assessment of trazodone hydrochloride in low back pain patients.⁴² Kjellby-Wendt et al found by using the VAS and BDI psychometric analysis was a valuable tool for predicting the outcome of surgical treatment for lumbar disc herniation.⁴³ The combined use of the BDI and VAS as a research strategy for this pilot study was believed to be justified.

The data in Table 3 describes how BDI scores are to be interpreted. The BDI in this study demonstrated no appreciable signs of clinical depression based on the scoring system. The results from the study indicated that all subjects were within the normal range of mood. According to Burns,²² a score under 10 from the 21-question BDI indicated this level of negative thought to be within a normal range. The results indicated a moderate level of pain (possibly discomforting to mildly intense) from the VAS associated with the low back accounts. The VAS with the BDI scores reported by participants suggested that the level of pain, despite being considered discomforting, did not signify that discomforting CLBP would influence negative thinking.

Cognitive distortions associated with chronic low back pain

Depressed chronic pain patients usually report greater pain intensity, greater interference due to pain and more pain behaviors.⁴⁴ Some research has explained depression as an expected, natural consequence of chronic pain.⁴⁵ Yet, clinically non-depressed patients who have CLBP may exhibit signs of negative thinking that may become persistent. This study did reveal some negative cognitions present when CLBP became present. The BDI scores

indicated that clinically the participants were not depressed. However, it remains undetermined if these cognitions are to be considered normal despite a low BDI score.

This study set out to examine a dimension with the objective of gathering data that would shed light about negative cognition and CLBP beyond the BDI-21. Study participants were asked respond to the common modes of negative thinking (Fig 1) in order to find out specific negative cognitions that could not be ascertained from the BDI. From this portion of the study, specific negative cognition could be recognized. For example, catastrophizing has been related to increased depression and chronic pain.⁴⁶ Non-specifically, anger is a prominent emotion experienced by chronic pain patients.⁴⁷ This study found that the prevailing negative thought process identified was the "should" statement. A "should" statement is usually formulated in the person's mind as a reaction to a mistake, regret, or an error. The person readily admits to himself/herself an error in cognition by making statements in the form of "I should have done this" or "I shouldn't have done this." It is considered a negative cognition because it ascertains something mandatory or some self-imposed rule. In the context of low back pain it would easily be understood to mean "I should not have lifted that", or "This pain should not be limiting me this much."

The beliefs that one is temporarily disabled with CLBP and that any activity should be avoided because pain would signify damage has been associated positively with physical disability.⁴⁸ The most elaborate model for the development of chronic low back pain is fear avoidance. The essential feature of fear avoidance is that exaggerated negative feelings towards pain catastrophizing leads to a fear of movements and the belief that movements will lead to more pain. The result is the perpetuation of avoidance behavior.⁴⁹ Fear-avoidance beliefs have been identified as an important psychosocial variable in patients with chronic disability due to low back pain. Fear-avoidance beliefs are present in patients with acute low back pain, and may be an important factor in explaining the transition from acute to chronic conditions.⁵⁰ If one believes that injury and damage will occur from a task the idea of avoiding the task out of some fear can be readily appreciated. Fear-avoidance beliefs may be present with acute low back pain and is an important factor in explaining the transition from acute to chronic conditions.⁵⁰

Although this study did not specifically seek to find fear avoidance beliefs per se, catastrophizing was found to be a common distortion reported by our sample. Our belief is that if a person increases their perceived control over pain and decreases such negative cognitions such as catastrophizing there should be a decrease in self-reported disability, pain intensity, and depression.⁵¹ The subjects in this study may have had some awareness of their own CLBP situation in which they were able to have some semblance of control over their pain. One interpretation could be that after a person experiences several episodes of increasingly intense CLBP that a person could gain some type of mental control over the situation.

Study limitations

Since the number of subjects was low, no inferences can be made to the general population. However, the information obtained from this study may be useful for further study where CLBP may exhibit borderline clinical depression. Nonetheless, the first limitation deals with the nature of chronic low back pain which can be argued to be multi-etiological and multi-diagnostic entity. This study only took into account chronic low back pain, not the differentiation of a specific diagnostic entity. Patients do not regard themselves as psychologically abnormal and are often resentful and angry when the suggestion that a psychological component may be at fault.⁵² Because of this potentiality our study population (a convenience sample) may have held some hesitancy in delving into deep personal issues. The results of this study showed that a majority of participants believed that a person's negative thoughts can impair a person toward activity yet none of the participants believed that such had occurred to them.

CONCLUSIONS

Although clinicians may not be able to design adequate individualized self-help strategies, nonetheless, acknowledging awareness of negative cognition with those afflicted with chronic low back pain through decreasing the negative thoughts may be encouraged. The clinician's responsibility may lie in the recognition of low back pain-influenced cognitive distortions whether the person is clinically depressed or not. The type of questions designed in this study, in combination with the use of the BDI and VAS, may encourage patients to become self-aware of a low back pain-influenced cognitive dis-

tortion. Future research should include a larger study sample utilizing the BDI-21 with the VAS along with the validation of the clinically-related questions that were designed for this pilot study.

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