

**THE INITIAL PERCEIVED WELLNESS OF PATIENTS WITH CHRONIC PAIN  
AND THE EFFECT OF MULTIMODAL TREATMENT  
ON PERCEIVED WELLNESS**

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**By**

**Jennifer Lynn Brown, B.A.**

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## ABSTRACT

# THE INITIAL PERCEIVED WELLNESS OF PATIENTS WITH CHRONIC PAIN AND THE EFFECT OF MULTIMODAL TREATMENT ON PERCEIVED WELLNESS

by

JENNIFER L. BROWN  
Southwest Texas State University  
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Supervising Professor: Janet R. Bezner, PhD, PT

**Background and Purpose** Assessment of wellness perceptions may be useful to obtain qualitative information of the health status of individuals with a specific diseased condition. The problem of chronic pain is evident in its prevalence, lack of successful outcomes due to a lack of understanding of the nature of chronic pain, and subsequent high costs. The purpose of this research was to identify the initial wellness perceptions of subjects referred for treatment of chronic pain and to determine the effect of multimodal treatment intervention on perceived wellness. **Subjects** The population studied was a convenience sample of 24 patients diagnosed with chronic pain referred for treatment to pain management programs or to an out-patient physical therapy clinic. **Methods** The Perceived Wellness Survey (PWS) was administered, following signed consent, to patients both pre- and post-treatment, regardless of program



completion status. Information regarding subject variables, including age, gender, number of visits, treatment facility, anatomical source of chronic pain, program completion status, and initial pain level, was collected from patient charts. The data were analyzed using t-tests for paired samples to compare perceived wellness pre- and post-treatment, regression analysis to examine if there was a predictive relationship between PWS scores or pain level and number of visits, and Pearson product moment correlation coefficients to determine if there was a relationship between perceived wellness and initial pain level. Also, subscale means for subjects completing treatment versus subjects not completing treatment were visually examined. **Results** Initial PWS scores of a chronic pain population were lower than scores of a normal population. No significant change in PWS scores was observed between pre- and post-treatment PWS scores. There was no predictive relationship between perceived wellness or initial pain level and number of visits and a relationship was identified between perceived wellness and initial pain level. PWS subscale means of subjects who did not complete treatment were lower in all dimensions except the physical dimension compared to subjects who did complete treatment.

**Discussion and Conclusion** The literature is supportive of the use of health perceptions in designing treatment and predicting outcomes. While the results of this study are inconclusive, it is suggested that future research improving on the limitations of the present study be conducted to further explore the use of perceived wellness in the assessment of patients with chronic pain.



## **CHAPTER I**

### **GENERAL INTRODUCTION**

For physical therapists and other health care providers, a primary initiative in recent years has been to preserve quality of care under the subsequent restrictions mandated by managed care. It has become essential to determine the most effective care/successful treatment that can be delivered in the most efficient least costly manner for all patient types. One of the more challenging patient groups to assess and treat is the group with chronic pain. Though not a technical diagnosis, this condition is responsible for a large percentage of health care resources in the Western world.<sup>1</sup> Because the impact of chronic pain reaches beyond physical limitations, effective treatment of patients with chronic pain is dependent on assessing other affected personal dimensions.

Health care has shifted its focus in defining “successful” outcomes. There is a growing belief that quality of life is a better measure of “success” than previously used physically and functionally focused measures.<sup>2,3</sup> Assessment tools, such as the Perceived Wellness Survey, provide insight into the psychological, emotional, social, spiritual, physical and intellectual needs of the individual and can be utilized to tailor treatment to the patient's specific needs. This tool can be especially useful in a patient population such as chronic pain in



which the needs of the patient are multidimensional, reaching beyond physical limitations.

The purposes of this study were two-fold: 1) to provide a wellness composite picture of patients with chronic pain, and 2) to judge the effectiveness of a multidisciplinary chronic pain program in changing wellness perceptions.

### **Problem**

The problem of chronic pain is undeniable, from its inherent abstract qualities making diagnosis and intervention choices difficult, to the high costs of treatment. Pain is perceived uniquely by each individual. Due to the intangible, unpredictable nature of the chronic pain condition, effective, valid, and objective evaluation methods are difficult to develop, much less to rely upon as an accurate assessment of the overall influence of chronic pain on an individual. Because function is impaired with chronic pain, functional assessment tools have commonly been used to evaluate and re-assess the impact of the disorder.<sup>4</sup> However, as the pain experience is known to be highly subjective, it makes sense to utilize a more subjective tool to observe the phenomenon.

The multidimensional nature of chronic pain requires assessment which encompasses more than physical function. Functional assessment is an important component of the evaluation of individuals with chronic pain but is insufficient for a thorough and effective evaluation of the person with the condition. Likewise, treatment of individuals with chronic pain should not focus merely on functional return. Function and pain can co-exist. A person's quality



of life may not change with increased function if his/her pain level does not improve. On the other hand, it might. When judging effectiveness of treatment, physical therapists and other health care practitioners treating individuals with chronic pain should not rely solely on functional status as a measure of success.

### **Purpose**

The intent of this study was to describe perceived wellness of patients entering a pain management program using a paper and pencil wellness survey. Secondly, the effect, if any, of multimodal treatment intervention based on measurement of wellness perceptions following completion of the program was investigated.



### **Definition of Terms**

**chronic pain** - Chronic pain has been defined as pain that persists for at least three months.<sup>5</sup> It may originate from acute injury or disease which persists beyond the normal healing time and/or does not respond to traditional medical/surgical intervention. Chronic pain may also present in conjunction with other chronic diseases which display mechanical or degenerative changes or which have neurological effects. There are incidences of chronic pain which have no known etiology and no identifiable organic cause.<sup>5</sup>

**wellness** - Wellness is the sense that one is living in a manner that permits the experience of consistent, balanced growth in the physical, spiritual, emotional, intellectual, social, and psychological dimensions of human existence. It is an individualistic concept which can be measured only by self-report.<sup>6</sup>

**multimodal** - Multimodal refers to multiple types of treatment intervention as offered at one clinic.<sup>5</sup> (Also, multidisciplinary).



### **Research Hypothesis**

Given that chronic pain is a multidimensional, individual experience, it was hypothesized that there is a relationship between the experience of chronic pain and perceived wellness of individuals with chronic pain; and that multimodal intervention should have an effect on the wellness status patients with chronic pain.

### **Significance**

Researchers and clinicians in pursuit of successful treatment outcomes for patients with chronic pain have not yet achieved the goal and their efforts are still evolving in response to new research. The incidence and resulting monetary costs associated with chronic pain are far reaching: multiple diagnostic tests, multiple treatment interventions, pharmacotherapeutic interventions, compensation costs, and time lost from work.<sup>2,3</sup> The number of pain management programs offering multidisciplinary services has increased in response to the need for a comprehensive approach to the management of pain. Reports of successful outcomes from multidisciplinary clinics have increased, but the high incidence of poor outcomes persists.<sup>2</sup> Finding more efficient and effective interventions is both a quality of care as well as an economic matter.

Subjective measures of health, quality of life, and wellness have recently gained acceptance as viable outcome measures.<sup>4,7,8,9</sup> Further, some tools are useful for directing treatment and measuring progress.<sup>9</sup> Wellness perceptions can provide qualitative information to the assessment process. In chronic pain



populations where the diagnosis and treatment is not an exact science, patients' wellness perceptions can be especially helpful to clinicians, revealing their specific areas of need. Despite documented support of the value of health perceptions, many clinicians fail to utilize subjective measures in conjunction with other assessments. The resistance to using such assessments clinically should be eliminated. Continued research reporting the utilization of subjective assessments in particular patient populations should assist this cause.

Physical therapy is one of several disciplines offered in pain management. In clinics where the use of patients' health perceptions are not a part of the assessment process, the physical therapist is in a prime position to introduce the benefits of such a measure. The physical therapist can benefit from knowing patients' wellness perceptions, integrating wellness education along with functional training during treatment. As part of a team, the physical therapist is in a position to share the clinical value of patients' perceptions of their health with other health care professionals. Introducing the utilization of patients' health perceptions in pain management clinics can enhance the health care delivery process by assisting with patient rapport and development of an appropriate combination of treatment interventions, and by serving as an adjunct to established outcomes assessments.



## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

#### **Introduction**

Selecting the right treatment for patients with chronic pain is dependent on accurate assessments of health status. A thorough and current understanding of health assessments, along with knowledge of the pathological condition of the patient whose health is being assessed, is required. This review will begin with a brief overview of the evolution of health assessments with an emphasis on the emergence of subjective measures; and definitions of health, quality of life and wellness will be reviewed.

Next, the focus will shift to chronic pain by providing an account of its incidence and impact in modern Western society. Definitions and a more in-depth discussion of the nature of chronic pain will be presented. Traditional and current treatment approaches to chronic pain will be reviewed, with a specific look at multidisciplinary treatment and the role of the physical therapist in pain management. Finally, this section will conclude by examining the need for, as well as the appropriate and potential use of, subjective multidimensional assessments in chronic pain settings.



## **Health Assessment**

Just as the health needs of a population change, so must assessments of health. The measurement of health in a population has evolved significantly throughout the history of health care, beginning with mortality, then shifting to an assessment of physical function and independence, and now more recently the emphasis on health measures has lead to the inclusion of quality of life assessments.<sup>10</sup> Keith reported that, since 1990, health-related quality of life has been added as a health status indicator in response to criticism that previous indicators were primarily of mortality and morbidity.<sup>3</sup>

Health assessments are useful for clinical, outcome, and research purposes.<sup>3</sup> Some of the applications for health measures include: 1) guiding treatment in clinical practice and monitoring clinical outcomes; 2) investigating clinical and epidemiological determinants of health, the causes of disease and illness, and efficacy of treatment; 3) evaluation of policies and programs for effectiveness and to determine allocation of resources; and 4) monitoring trends in the population including comparing health status among different disease and population groups.<sup>3,11</sup>

Since the advent of managed care, health care workers have been urged to rely heavily on measures of physical function as an outcome indicator.<sup>12</sup> However, researchers have challenged the notion that physical function is sufficient to evaluate the effectiveness of treatment intervention on an individual's health or well-being.<sup>4,13</sup> In fact, *health*, as defined by the World Health Organization, is not limited to the physical aspect of a person, rather, "it is a state



of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”<sup>14</sup> Oh and Kim<sup>15</sup> defined health as “a living experience, or as a perception of wellness,” and explained that health “exists independently, regardless of illness or disability, because the individual is able to perceive wellness within limitations imposed to him/her.” These definitions support a multidimensional conceptualization of health rather than physical function alone.

### ***Quality of life***

Other definitions of health and wellness have risen from research efforts aimed toward the inclusion of health perceptions in health assessment. A subset of overall quality of life, health-related quality of life (HRQOL) refers to an individual’s ability to function in a variety of social roles and to derive satisfaction from them.<sup>16</sup> Patrick and Erickson<sup>17</sup> defined HRQOL as “the value assigned to duration of life as modified by the impairments, functional states, perceptions and social opportunities that are influenced by disease, injury, treatment, or policy.” Quality of life, or wellness, has also been defined as “the sense that one is living in a manner that permits the experience of consistent balanced growth in the multiple dimensions (physical, psychological, social, intellectual, spiritual, and emotional) of human existence.”<sup>6</sup> Oh and Kim defined health promotion as a process of enhancing the experience or perception of wellness.<sup>15</sup>

By definition, it would be presumptuous to say that “quality of life” is the same experience for every individual. Increased interest in subjective reports of health has lead to their integration as independent health assessments and as an adjunct to objective functional measures.<sup>4,6,10,13</sup> Certainly, objective



measurements alone would be neither sufficient nor appropriate to represent all aspects of the human condition. Likewise, objective measures are over-represented in assessing change in health status. Jette<sup>13</sup> advocated the use of quality of life measures as a more complete measure of the effects of health interventions. Major dimensions of health-related quality of life include signs and symptoms of disease; performance of basic ADL's; performance of social roles; emotional state; intellectual functioning; and general satisfaction, perceived well-being.<sup>13</sup> Of the two approaches generally used to measure the magnitude of change in health status, norm-based versus criterion-based, the latter method is preferred because the change relates to a more clinically understood and valued phenomenon: the patient's rating of improvement.<sup>11</sup>

### ***Subjective measures***

Part of the interest in subjective measures came from a general concern that in comparison to other's appraisals of quality of life, subjective assessments were notably different.<sup>4</sup> The literature reflects the gradual inclusion of self-report or subjective measures of health.<sup>3,4,7-11,13,18-20</sup> A 1982 study of the natural history of back pain stated that scores of self-rated measures of disability correlate more closely with other subjective measures than with objective criteria."<sup>21</sup> In 1994, researchers weighted disability perception with objective aspects of the disability to assess the impact of disability and determine the needs of the client.<sup>10</sup> Use of patient-oriented surveys administered in the clinic by healthcare providers has increased dramatically in recent years.<sup>8</sup>



Self-report measures have been used to describe a particular population. Lichtenstien et al<sup>7</sup> compared perceived health status and functional health status in an elderly population and determined the subjective measure to be more suitable as a descriptor of the population. Mossberg and McFarland<sup>8</sup> used a self-report measure, SF 36, to assess the initial health status of a population. Subjective measures have been especially useful in areas of health care in which the phenomenon of pain, which is highly subjective, is the primary complaint or concern.<sup>2,22</sup> According to Fuhrer,<sup>4</sup> subjective assessments are more accurate than objective assessments for measuring QOL. Measures of functioning and well-being reflect what is important to the patient.<sup>19</sup> Subjective, or perceptual, measures have been used to effectively predict a variety of health outcomes and are even purported to predict health care expenditures and death.<sup>6,13,19</sup> Hildebrandt et al<sup>23</sup> demonstrated that the most important factor indicating treatment success was perception of decreased disability.

Many researchers have documented the simple, safe, and relatively inexpensive use of health status surveys and encouraged their use in outcomes and cost-containment.<sup>24,25</sup> In spite of the documented support for the use of subjective, quality of life or wellness measures, clinical use has not been the standard.<sup>26</sup> Several reasons have been offered in explanation. The majority of clinical measures assessed physiological, clinical, and behavioral factors, avoiding the constructs of psychological, mental, subjective, and general well-being; morale, happiness, life satisfaction and hardiness are also not usually considered for measurement.<sup>6</sup> Deyo and Carter<sup>26</sup> suggest that attitudinal,



methodological and practical barriers, clinical unfamiliarity with instruments, and lack of resources have prevented wider use of health status measures in clinical research and care.

Physical therapists' lack of use of quality of life measures has been attributed to the tendency of therapists to focus rehabilitation efforts on physical impairments.<sup>13,27</sup> They either ignore health status or do not know how to interpret the data obtained by health status measures.<sup>13,26,27</sup> Awareness of the effectiveness of subjective assessments in guiding the choice and quality of subsequent therapeutic intervention is needed for physical therapists to break away from the convention of using only physical and functional assessment tools.

## **Chronic Pain**

### ***Cost and incidence***

Chronic pain has been regarded for many years as one of the nation's largest health problems.<sup>5,14,28</sup> "Pain is the most common symptom for which patients seek medical advice and treatment, and chronic pain takes a heavy toll in patient suffering and disability, reduced quality of life, and economic costs."<sup>5</sup> Delitto et al<sup>29</sup> and Binkley et al<sup>30</sup> reported that a small percentage (5-10%) of patients with low back syndrome develop chronic problems which have costly repercussions. Delitto et al<sup>29</sup> go on to say that 90% of those cases which resolve are likely to recur. Mathias et al<sup>31</sup> reported that chronic pain affects one in seven women in the U.S.

Although contemporary medical intervention frequently extends the lives of patients, it also leaves survivors with chronic problems.<sup>13,32</sup> The rise in the



elderly population due to increased longevity of life has also increased the number of cases of chronic disease.<sup>13</sup> A 1995 German study reported that chronic pain is one of the most common complaints associated with quality of life among the elderly.<sup>33</sup>

It has been reported that the majority of the nation's health care resources has been devoted to the management and research of chronic conditions.<sup>13,19,28,33-34</sup> Chronic non-malignant pain costs the American economy \$40 billion a year.<sup>35</sup> Accompanying steep financial losses, there are psychosocial stresses, functional loss and varying levels of vocational dysfunction with chronic pain.<sup>36</sup>

The costs for the research and treatment of chronic pain consume the majority of the nation's health care resources.<sup>13</sup> There is a strong impetus to provide outcomes research in the area of pain management in order to identify ways to maximize treatment while minimizing costs.<sup>37</sup> Until recently, outcome measures in the chronic pain population excluded the assessment of the multidimensional aspects of the patient and quality of life.<sup>38-40</sup> And yet, combining objective measures with perceived measures of health has been shown to offer a more accurate interpretation of patient conditions.<sup>18</sup>

### ***The nature of chronic pain***

Before an appropriate assessment tool can be chosen to measure the perceived wellness of patients with chronic pain, the full impact of the disease must be understood. The nature of chronic pain is such that the search for an effective treatment intervention is ongoing. "Chronic pain differs from acute pain



in that it serves no useful function, causes suffering, limits activities of daily living, and increases costs of healthcare payments, disability, and litigation fees.”<sup>41</sup> A greater understanding of the process and perception of pain is essential to this effort.

Scientists have proposed many theories in an attempt to explain the phenomenon of pain.<sup>42</sup> Much of the current literature refers to the gate control theory of Melzack and Wall<sup>43</sup> introduced in 1965. Melzack and Wall discussed the major theories of pain which preceded and led to the development of their theory. They referred to Descartes' theory which stood for hundreds of years only to be refuted and replaced this century. His theory described pain as a direct transmission system. In this system, a noxious stimulus in contact with the skin triggers a response in “pain receptors” and a “pain” message is sent directly to a “pain center” in the brain.<sup>43</sup>

Melzack and Wall<sup>43</sup> reviewed new theories which emerged at the turn of the century. Two theories stood out in the scientific community: specificity theory, which held that “pain is a specific modality like hearing or vision with its own central and peripheral apparatus,” and pattern theory “which maintains that the nerve impulse pattern for pain is produced by intense stimulation of nonspecific receptors.”<sup>43</sup> Responding to the controversy of these opposing theories, Melzack and Wall proposed the gate control theory which has had an enormous impact on pain research and treatment in its 30-year history.<sup>42</sup> According to Lima,<sup>44</sup> Melzack and Wall's theory retained data from both



specificity and pattern theories, “unifying and popularizing a number of emerging concepts of pain processing in a single, well-defined, well-named theory.”

In their theory, Melzack and Wall submitted that a gate-like mechanism in the dorsal horns of the spinal cord works to either facilitate or inhibit the transmission of pain from the body’s peripheral fibers to the brain.<sup>43</sup> From the original publication of their theory, they stated:

Stimulation of the skin evokes nerve impulses that are transmitted to three spinal cord systems: the cells of the substantia gelatinosa in the dorsal horn, the dorsal column fibers that project toward the brain, and the first central transmission (T) cells in the dorsal horn. We propose that (i) the substantia gelatinosa functions as a gate control system that modulates the afferent patterns before they influence T cells; (ii) the afferent patterns in the dorsal column system act, in part at least, as a central control trigger which activates selective brain processes that influence the modulating properties of the gate control system; and (iii) the T cells activate neural mechanisms which comprise the action system responsible for response and perception. Our theory proposes that pain phenomena are determined by interactions among these three systems.<sup>43</sup>

As a result of the concepts put forth by this theory, most recent research has centered on central nervous system (CNS) input.<sup>45-49</sup>

Referring to the above theory, a better understanding of pain perception can be achieved. Pain perception begins peripherally at the nociceptors, and is then conducted by myelinated A delta and unmyelinated C fibers to the dorsal root ganglion.<sup>36</sup> Pain is sent in the CNS via the spinothalamic tract in the spinal cord to the thalamus and somatosensory cortex in the brain. Modulations of sensory input, such as pain, occur at many levels along this pathway. The hypothalamus, which has opioid-sensitive receptors, can be stimulated by arousal and emotional stress to modulate ascending nociceptive transmissions. Similarly, modulations occur at higher centers (frontal cortex, midbrain, and



medulla). It is apparent that pain is influenced not merely by the local musculoskeletal or nervous tissue damage. In the case of chronic pain, when tissues have healed (although, not necessarily to the pre-morbid condition) but pain endures, it should follow that treatment interventions should be designed to target the higher levels of influence of the pain perception.<sup>36</sup>

Studies have been designed to describe the impact of pain on behavior as well as the influence that behavior and psychological states have on pain perception. In looking at which factors invoke the most influence on a patient with chronic pain, Michel<sup>50</sup> reports that social relationships are more important than organic causes of pain. In the same study, she discusses evidence that pain has a negative effect on muscle function and activities of daily living; pain induces a negative nervous system response leading to both learned pain behaviors and a dynamic reorganization of neurons establishing a “pain memory.”<sup>50</sup>

McGrath<sup>51</sup> reported that pain is a complex, multidimensional perception that varies in quality, strength, duration, location, and unpleasantness. He identified factors which influenced the perception of, expression of, and reaction to pain as genetic, developmental, psychological, social, and cultural variables. Scalzitti<sup>52</sup> reported that, with chronic pain, there was a high incidence of nonorganic signs, indicative of psychological influences. Barkin et al<sup>36</sup> and Ruoff et al<sup>53</sup> identified depression as a common co-morbidity associated with chronic pain; it may develop secondarily or independently, or it may be the primary cause of chronic pain. Barkin et al<sup>36</sup> stated that:



Chronic pain can produce life stress and distress through employment disability and financial strain, disruption of daily activity patterns and relationships, sleep difficulties, lack of adequate social support, and overuse of narcotic or tranquilizing medications. Chronic pain may reduce a patient's ability to manage life stress, and the arousal associated with that stress may lead to increased pain, which further inhibits effective treatment. This stress may also induce a depressive state.

The depth to which chronic pain impacts a person explains the common occurrence of psychiatric disorders observed in patients with chronic pain adding to the complexity of the condition. It is understood then how easily misunderstood the patient with chronic pain may be by significant others and even by health care workers who have little knowledge of the impact of chronic pain.

Discrepancies in the evaluation of chronic pain have been identified in literature. Sprangers and Aaronson<sup>54</sup> found that, in general, health care providers and significant others underestimate the quality of life and underrate the pain intensity of patients with chronic disease. In a study which surveyed orthopedic physical therapists, Wolff et al<sup>55</sup> discovered that there were deficiencies in therapists' knowledge of clinical pain mechanisms and management. The same study also reported that these therapists held potentially undesirable attitudes toward treatment of individuals with chronic pain.<sup>55</sup> For proper care to be delivered to patients with chronic pain, physical therapists should maintain a current and working knowledge of the true impact of chronic pain. Improved knowledge and awareness of the real problem of chronic pain has the potential of bringing to light the specific needs of each patient and what types of treatment intervention may be merited.



Because chronic pain is influenced by so many factors and because some measures are not conclusive, it creates quite a challenge to discern which modalities will be most effective. Research has refined some of the crude approaches of early treatment. Results of a 1981 study by Fordyce et al,<sup>56</sup> indicated that with increased exercise there was a decrease in pain behaviors. This finding was contrary to the common opinion and subsequent prescription of physicians that exercise should be limited with chronic pain. Regarding treatment of back pain, "medical treatments and analgesics are generally successful in treating acute pain, and some patients recover spontaneously, (however) conventional approaches are less successful in dealing with chronic pain and may be contraindicated." <sup>1</sup>

Arnoff endorsed the abandonment of narcotic analgesics, radiotherapy, surgical intervention, and chemotherapy to be replaced with non-narcotic drugs, psychotherapy, and alternative physical modalities including biofeedback, physical therapy, transcutaneous electrical stimulation, whirlpool, massage, ice and heat.<sup>57</sup> This approach was a landmark move away from the prescription of addictive drugs and towards a more holistic treatment approach.

More effective, non-pharmacologic, treatment techniques have surfaced in the wake of these and other findings. Some of the most common included regional and sympathetic nerve blocks, trigger point injections for myofascial pain, psychological intervention, and physical therapy.<sup>36</sup> In the interest of effectiveness and efficiency, pain management clinics were designed to bring all or most of these modalities together.



### ***Pain management***

Pain management programs were designed to provide for the multidimensional needs of patients with chronic pain within one facility. Treatment in pain management programs has been described as joint efforts of the physical rehabilitation team along with multidisciplinary disciplines focusing on rehabilitation and resocialization.<sup>58</sup> An advantage of this design is that combining the treatment efforts in one local will reduce costs associated with medical consumption. Another view of the role of a pain center is that the primary focus is a multidisciplinary, comprehensive approach providing the patient with the most effective opportunity to manage his or her chronic disease syndrome.<sup>36</sup>

Barkin et al<sup>36</sup> reviewed the various types of pain management programs presenting three general categories: (i) the most basic pain management center which uses a single modality to treat a limited number of diseases, (ii) more complex is the pain center that has a behavioral specialist working in conjunction with one or more medical specialists, and (iii) the most sophisticated pain management program is multidisciplinary and comprehensive, managing a vast array of pain problems.

There is ample documentation that the role of psychological factors in the causation, maintenance, and management of chronic pain must be emphasized.<sup>32,36</sup> "The most common psychiatric disorder encountered in patients with chronic pain is depression."<sup>36</sup> Patients whose pain experience has influenced or been influenced by psychological factors are best treated by a



multidisciplinary pain clinic with cognitive-behavioral, operant learning, and biofeedback. Wilz et al<sup>32</sup> suggest that psychological pain management in the elderly is effective but not yet realized in clinical practice.

Many studies document the effectiveness of physical treatment approaches on patients with chronic pain. Ferrell et al<sup>59</sup> conducted a study among elderly patients with chronic musculo-skeletal pain and found that patient education and fitness walking improved overall pain management and related functional limitations. Hansen et al<sup>60</sup> studied the effects of three different treatment regimens on a group of men and women between the ages of 21 and 64 with chronic low back pain. They found that men were more responsive to physiotherapy (isometric exercises for the trunk and leg muscles) whereas females were more responsive to intensive back exercises (dynamic back-muscle exercises). Clearly, treatment of the physical component of chronic pain is an essential component of the management of chronic pain and physical therapy is an important adjunct to the comprehensive treatment of chronic pain.

### **Physical Therapy in Pain Management**

Physical therapy is committed to the restoration of function and prevention of disability. Treatment by physical therapists is designed to reduce the incidence and severity of disability and pain and to enable individuals to achieve the greatest level of independence with daily activities.<sup>61</sup> Limitations of physical function include musculoskeletal damage, neurological damage and, in many cases, these conditions include pain. The goals then to increase physical



function would be to decrease the pain, allow enough time for tissues to heal, then work to regain function and, potentially, return to or even improve upon the pre-morbid state. Physical therapists have made great advances in developing assessment tools and efficient and cost-effective treatment interventions which maximize physical function.<sup>12</sup>

The ultimate goal of the physical therapist treating people with chronic pain is to improve functional status and overall quality of life.<sup>13</sup> The physical therapist receives extensive education and training and is highly qualified to evaluate and treat the physical aspect. Physical function is an observable and, in some cases, tangible phenomenon and its management can be regarded as a science. But, what of quality of life? For the physical therapist, evaluating quality of life is not as simple, nor as common.<sup>13</sup> The exclusion of quality of life assessments in physical therapy evaluations is most likely due to the greater interest in physical function, only one aspect of quality of life.

The physical therapist in pain management has a role that is somewhat different from that of therapists in acute or orthopedic rehabilitation. The reason for this is that patients with chronic pain are generally beyond the tissue healing phase. For these patients, pain is the major limitation. Rucker et al<sup>62</sup> stated, "When pain becomes chronic it intertwines with the many dimensions of a patient's life, increasing the complexity of the patient's perception of the pain and, subsequently, the prescribed treatment."

In a study published in 1984, 263 sites across the United States were surveyed to investigate the role of the physical therapist at inpatient and



outpatient pain management treatment centers.<sup>63</sup> It was found that most therapists provided treatments which consisted of individualized exercise programs, relaxation training, transcutaneous electrical nerve stimulation, and instruction in body biomechanics. Of those physical therapists surveyed, 90% indicated that behavior modification was a part of treatment, and at least 66% considered family education as a part of their role. In addition to physical therapy, other disciplines reported to be represented at the facilities were occupational therapy, biofeedback, social work, nursing, psychology, and medicine. This study described how the physical therapist fits into a multimodal pain treatment program.<sup>63</sup>

Not only does the physical therapist fit into pain management, but multidisciplinary management of chronic pain fits into most physical therapy treatment settings as well. Integrating pain management assessment and treatment skills with patients presenting with chronic pain is practicing responsible health care. In acute care settings, the physical therapist may be seeing a patient for orthopedic purposes, but the patient may have other chronic conditions which, at least indirectly, may influence treatment.

In 1989, Stewart et al<sup>19</sup> studied the impact that several chronic conditions had on the function and well-being of individuals. They surveyed 9385 patients looking at the patients' physical and social functioning; mental health; health perceptions; and bodily pain, and compared results of patients with eight of the most common chronic diseases with patients with no chronic conditions. It was



determined that of the eight conditions, hypertension had the least overall impact. Heart disease and gastro-intestinal disorders had the greatest impact.<sup>19</sup>

Pathological conditions which become chronic, and in which the patient experiences chronic pain, are likely to inhibit, or at least slow, the rehabilitation of even acute injuries. In cases where the chronic condition is the dominant health problem, improvement of the patient's function may require special attention to the specific needs generated by the effects of chronic pain; this may be beyond the abilities or responsibilities of the therapist in acute, or other conventional care settings.<sup>19</sup> Referral of such a patient to a facility which can better provide for the complex needs of the patient would be the most appropriate response.

Differential diagnosis by a physical therapist in a traditional clinical setting can result in referrals of patients with chronic pain to pain management programs. In a 1995 study, Delitto et al<sup>29</sup> distinguish between those patients who can be managed by conservative physical therapy treatment and those who require referral to or consultation with providers of other services, e.g. psychology. After obtaining a thorough history of signs and symptoms and completing a detailed objective evaluation, decisions for referral were made based on detected inconsistencies which led the clinician to believe that the pathology was not purely musculoskeletal. Subjective assessments serve as supplemental tools and can also assist the physical therapist in making referrals to the appropriate service.



### ***Physical Therapist Assessment of Pain***

Physical therapists rely on evaluative skills and assessment tools to assess the problems associated with chronic pain and to direct treatment. Boissonnault and Fabio<sup>64</sup> used detailed pain descriptions to supplement evaluation findings of patients with low back pain referred to physical therapy. It was concluded that the detailed pain profile was consistent with symptoms associated with activity related spinal disorders.<sup>64</sup> In the pain management setting, where multimodal therapies are offered, an essential part of the treatment process for physical therapists and other providers on the team is the assessment. Although traditional assessments still apply, further insight into the patient's pain experience offers more information regarding the patient's needs and guides appropriate treatment interventions.

The Visual Analog Scale is a quantitative assessment of pain used by the physical therapist and other health professionals. The VAS requires the patient to mark on a 10 cm long horizontal line in which the extreme ends of the line represent the limits of the pain experience: "no pain" at one end , and "unbearable pain" at the opposite end. The distance to the mark is measured and taken to represent the patient's pain (0-10).<sup>58</sup> A verbal version of the scale can also be used, in which the patient is asked to rank his or her pain on a 0 – 10 scale with 0 being "no pain" and 10 being "unbearable pain." It quantifies the pain experience and serves as a quick and easy way to monitor the level of pain a patient is experiencing. Measures of pain that encompass a broader description of the individual's experience of pain are also warranted.



Assessments examining the effect of chronic pain on the multiple dimensions of a person offer greater understanding of the needs of the patient. Examples of the more common assessments which provide detailed pain profiles include the Minnesota Multiphasic Personality Inventory (MMPI), Multiperspective Multidimensional Pain Assessment Protocol (MMPAP), the Multidimensional Pain Inventory (MPI), Sickness Impact Profile (SIP), and McGill Pain Questionnaire.<sup>3,8-9,11,36,65-66</sup>

Assessments which profile pain are useful in qualifying the pain experience and its effect on individual function. An alternative to assessing the individual's perception of pain is the individual's perception of wellness. Research in physical therapy has used measures to assess quality of life or wellness for specific target populations. Mossberg and McFarland<sup>8</sup> used a quality of life assessment, Medical Outcomes Study short form - 36 (MOS SF-36), to characterize the health status of individuals at initial treatment in outpatient physical therapy. The results indicated that these patients had lower health concept scores than did the general population. Jette and Downing<sup>9</sup> also used the MOS SF-36 to look at the health status of individuals entering a cardiac rehabilitation program, finding that patients experienced an improvement in nearly all health scales and that inclusion of endurance exercise was most consistently associated with better outcomes.

Otterbach<sup>67</sup> used the Perceived Wellness Survey (PWS) in several outpatient clinics to determine if a predictive relationship existed between pretreatment wellness and traditional outcomes, such as age, gender,



rehabilitation compliance, and length of stay. No predictive findings were substantiated. The PWS<sup>6</sup> encompasses six dimensions of wellness: physical, spiritual, psychological, social, emotional, and intellectual. An advantage of the tool is that questions are marked so that subscale scores of each dimension can be assessed and used independently to provide treatment interventions which best serve an individual's needs.<sup>6</sup> The utilization of the PWS in a pain management clinic is appropriate in that the facility is equipped to provide services to address the needs revealed by the PWS.

Physical therapists in chronic pain settings will most likely be a part of a team of health care providers. The depth of understanding attained from a quality of life measure can guide the physical therapist and other team members in their choice of necessary treatment interventions as well as guide each of the members in their treatment development.<sup>5</sup> The use of such a survey should help the team gain a broader perspective of the health of the patient. It should also help the team to communicate and function more effectively regarding the care of each patient.

### **Summary**

Health status assessments have become a more integral part of the health care process. Subjective quality of life measures are gaining increased utilization; however, many obstacles prevent their widespread clinical use, especially among physical therapists. The clinical applications of quality of life assessments deserve more integration in health care delivery systems.



Chronic pain is a tremendous national health issue, demanding the development of more effective and efficient care. Pain is a highly subjective phenomenon warranting the use of subjective assessments to determine the impact of the pain experience on the patient. The complexity of the individual with chronic pain demands a more thorough, multidimensional assessment to determine the specific needs of the patient.

Pain clinics are becoming more popular and multimodal treatment approaches are improving treatment outcomes.<sup>5,23</sup> In managed care, it is becoming necessary to demonstrate positive treatment outcomes for reimbursement purposes.<sup>13</sup> In order to make the most effective and efficient use of the services provided by this treatment method, the specific needs of the patient must be identified in the initial evaluation. Assigning the patient to the appropriate disciplines early in care should maximize quality of care and efficiency. Without the specific data needed to refine treatment, much time is spent providing interventions that may not be needed, as well as omitting treatments that are warranted. When the therapist and the team know the specific needs of the individual, false assumptions may be avoided.

Therefore, the purpose of this study was to demonstrate the use of the PWS in a chronic pain population. The initial perceived wellness of a chronic pain population was measured and the effect of multimodal treatment on perceived wellness was assessed.



## **CHAPTER III**

### **METHODS**

#### **Subjects**

A convenience sample of 24 adult patients with chronic pain was obtained from three different facilities. Subjects were recruited and agreed to participate in the study between August 1997 and February 1998. The three facilities from which subjects were recruited included two multidisciplinary pain management programs, one based in Austin, Texas with a satellite location in San Marcos, and the other in San Antonio; and one outpatient clinic in Austin. An assigned clinical research coordinator (CRC) at each facility was asked to recruit as many new patients as possible to participate in the study. Subjects at the outpatient clinic were recruited only if the condition for which they were seeking treatment was chronic, i.e., greater than 3 months. Written consent was obtained by the CRC prior to study participation and surveys were administered prior to other clinical paperwork at the first visit. On a few occasions, subjects were allowed to take the survey home to complete and bring back the next session. Finally, subjects completed the same survey at discharge from the program. In the event that patients were discharged or ceased treatment for various reasons without completing the post-treatment survey, it was mailed to their homes. Average



length of time for obtaining follow-up surveys was six to eight weeks following initial treatment.

### **Instrumentation**

The Perceived Wellness Survey (Appendix A) is composed of 36 items. The content of the items relates to six dimensions of wellness: physical, spiritual, intellectual, psychological, social, and emotional, such that each dimension is equally represented (six items per dimension), but not identified. The individual ranks each item on a 1 to 6 scale with 1 being “very strongly agree” to 6 which is “very strongly disagree.” Scores range from 3–29, with higher scores indicating greater perceived wellness. Validity and reliability of the measure were established for this survey in research published in 1997.<sup>6</sup> Other variables taken for data analysis included i) age, ii) diagnosis, iii) number of visits, iv) pain level, and v) discharge status.

### **Procedure**

Verbal and written instructions were given to each CRC regarding the administration and collection of surveys. All patients agreeing to participate signed a consent form (Appendix B) in the presence of the CRC. A copy of the consent form was provided to subjects on request. A blank survey and an empty envelope were then given to each subject. Subjects returned completed surveys sealed in the envelopes to the CRC to be kept until the researcher collected them. Surveys were collected from each facility periodically within the last month



of data collection. In most cases, only pre-treatment surveys had been collected. In an attempt to retrieve post-treatment data, subject addresses were acquired from each facility, with permission from the CRC. Surveys were mailed to all subjects from whom only pre-treatment surveys were collected. A cover letter was included explaining the importance of the final survey and a stamped addressed envelope was provided for the return of the completed surveys. Demographic and clinical information was obtained from patient charts either by the researcher or the CRC.

### **Data Analysis**

Raw data is presented in Appendix C. A word for Windows SPSS program was used to calculate composite PWS scores for all surveys acquired pre- and post-treatment. Pre-treatment surveys were matched with their respective post-treatment surveys, and paired t-tests were performed to compare pre-treatment and post-treatment composite PWS scores. Independent t-tests were performed to assess the difference between initial pain levels and perceived wellness of subjects who completed treatment versus subjects who did not complete treatment. A regression analysis was used to determine if number of visits was predicted by the initial perceived wellness and initial pain level. A Pearson Product Moment correlation was used to correlate the variables of pre-treatment perceived wellness and number of visits. The level of significance selected for all data analyses was  $p < .05$ . Finally, PWS subscale means from both initial and follow-up surveys were visually analyzed and compared.



## **CHAPTER IV**

### **RESULTS**

Of the 24 subjects for whom pre-treatment surveys were obtained, 15 post-treatment surveys were also obtained. Post-treatment surveys were requested of all subjects regardless of their status of program completion.

#### **Subject Variables**

Baseline characteristics of the 24 subjects are presented in Table 1. The mean age of the subjects was 46.5 years (SD=10.75) and most subjects were female (87.5%, n=21). The majority (62.5%, n=15) of subjects were obtained from the pain management clinic in Austin or its satellite location in San Marcos. Diagnoses included multiple body regions for some subjects accounting for percentages adding up to greater than 100%. The most common source of subjects' chronic pain was the lumbar region (33.33%, n=8), followed by cervical (20.83%, n=5). At the time of initial evaluation the average typical pain level using the 0 - 10 verbal analog scale was 7.08 (SD=1.08). Of the 24 subjects who participated by filling out the pre-treatment survey, 58.33% (n=14) completed the treatment program. Also, 15 follow-up surveys (62.5%) were obtained from subjects regardless of completion status.



**Table 1**  
Subject Characteristics (n=24)

**AGE**

Mean	46.5
SD	10.75
Range	19-66

**GENDER**

Female	87.5%
Male	12.5%

**TREATMENT FACILITY**

PMP* (Austin/San Marcos)	62.5%
PMP* (San Antonio)	16.67%
OPT** (Austin)	20.83%

**DIAGNOSIS/SOURCE OF CHRONIC PAIN**

Lumbar	33.33%
Cervical	20.83%
Thoracic	12.5%
Shoulder/arm	12.5%
Failed Back Surgery	8.33%
Scoliosis	8.33%
General Chronic Pain	8.33%
Fibromyalgia	8.33%
Osteoarthritis	8.33%
Groin	8.33%
Knee	4.17%
Connective Tissue Disorder	4.17%
Lupus	4.17%

**PROGRAM COMPLETION STATUS**

Completed	58.33%
Not Completed	41.66%

**INITIAL REPORTED PAIN LEVEL (0-10)**

Mean	7.08
SD	1.80
Range	4-10

\* PMP = Pain Management Program \*\* OPT = Outpatient Physical Therapy



### **Baseline and follow-up PWS mean scores**

For this sample, the internal consistency estimate for the PWS was  $\alpha = .89$ . The means, standard deviations, and ranges of perceived wellness obtained from the PWS are shown in Table 2. Perceived wellness of subjects prior to initial treatment as measured by the PWS was 13.1433 (SD= 3.155, Range=8.06-19.53). Mean perceived wellness composite scores for all subjects submitting a final survey (n=15), whether or not they completed treatment, was 13.6947 (SD=3.155, Range=6.74-18.98). Of the 15 subjects who submitted follow-up surveys, only seven experienced an increase in overall perceived wellness, while PWS scores decreased for the other eight subjects. A paired t-test between the initial and final PWS scores revealed no significant change in wellness perceptions; however, the mean PWS score for the 15 subjects decreased from pre- to post-treatment (Table 3).

**Table 2**

Mean, Standard Deviation, and Range of PWS (n=24 pre, n=15 final)

	Pre-PWS	Final-PWS
Mean	13.1433	13.6947
SD	3.155	3.518
Range	8.06-19.53	6.74-18.98



**Table 3**  
**Mean, Standard Deviation (SD), Range of PWS**  
**for Subjects Completing Both Pre-treatment**  
**and Post-treatment Surveys (n=15)**

	Pre-PWS	Final PWS
Mean	14.1007	13.6947
SD	3.140	3.518
Range	9.57-19.53	6.74-18.98

**Initial pain level, PWS and treatment completion status**

Independent t-tests were performed on initial pain levels and perceived wellness scores of subjects who completed the treatment program versus subjects who did not complete the program. No significant results were found; however, it was observed that higher pain levels and lower perceived wellness scores were recorded for those who did not complete treatment programs.

**Prediction of number of visits by PWS and initial pain level**

A regression analysis was performed with the number of visits as the dependent variable and with initial pain level and PWS scores as the independent variables to determine whether or not a predictive relationship existed. No significant relationship was found; however, an increased number of visits was observed with subjects who reported higher initial pain levels.



### **Relationship between initial pain level and PWS**

A Pearson product moment correlation coefficient was calculated to determine the relationship between perceived wellness and initial pain level. The correlation was not significant, but results were in the expected direction, i.e., lower perceived wellness scores were associated with higher initial pain levels.

### **Subscale means and treatment completion status, pre- and post-treatment**

PWS subscale means from both initial and follow-up surveys were calculated to compare those who completed the full treatment program with those who did not complete treatment. Pre-treatment subscale means were lower in all dimensions *except* the physical dimension, for those who did not complete treatment. The largest differences were observed for the emotional, spiritual and intellectual dimensions; the difference in the physical dimension was also notable but the difference increased rather than decreased from pre- to post-treatment. (Table 4) Follow-up subscale means exhibited the same trend for difference in subscale means, with only the physical dimension having a higher score for those who did not complete the program. The largest differences were observed in the psychological, spiritual, and emotional dimensions (Table 5).



**Table 4**  
**Pre-treatment PWS Subscale Means and Program Completion Status**

	PWS subscale mean for those who completed the program	PWS subscale mean for those who did not complete the program	Net Difference in subscale means for those who completed v. those who did not complete the program
Psychological	4.32	4.30	-0.02
Emotional	4.37	3.77	-0.60
Social	4.82	4.50	-0.32
Physical	3.20	3.75	+0.55
Spiritual	4.93	4.50	-0.43
Intellectual	4.68	4.00	-0.68

**Table 5**  
**Post-treatment PWS Subscale Means and Program Completion Status**

	PWS subscale mean for those who completed the program	PWS subscale mean for those who did not complete the program	Net Difference in subscale means for those who completed v. those who did not complete the program
Psychological	4.50	4.07	-0.43
Emotional	4.63	3.97	-0.66
Social	4.58	4.50	-0.08
Physical	3.32	3.43	+0.11
Spiritual	4.85	3.83	-1.02
Intellectual	4.52	4.07	-0.45



## **CHAPTER V**

### **DISCUSSION**

Results of this study revealed that the perceived wellness of a chronic pain population is lower than that of a normal population. No significant change in wellness was experienced by subjects who were referred for treatment of chronic conditions regardless of program completion status; however, final perceived wellness scores of the subjects who did not complete the program were higher than their initial scores and higher than those who did complete the program. Perceived wellness and initial reported pain level were not predictive of number of visits and there was no significant relationship found between perceived wellness and initial pain level, although lower perceived wellness scores were observed with higher initial pain levels. Finally, analysis of subscale means, pre- and post-treatment, of subjects who completed treatment versus subjects who did not complete treatment revealed lower mean scores in every dimension except the physical dimension.

Chronic pain continues to be one of the greatest health problems for industrialized nations. Resultant high costs and poor outcomes are the primary reasons for continued research in pain management to identify the needs of this population as well as the best treatment interventions. Research has



accumulated in support of multimodal pain clinics which offer the services of many disciplines to meet the varied needs of these clients.<sup>68-69</sup> Flor et al<sup>70</sup> found that multimodal treatment of chronic pain had more successful outcomes in comparison to nonmedical or unimodal treatment. In the same study, better outcomes were observed of patients receiving physical therapy than of those receiving medical treatment or no treatment at all.

The measure of quality of life of patients with chronic pain is important to assess as it represents both the multidimensional and functional effect of illness as perceived by the patient.<sup>12</sup> Wellness measures as indicators of patient outcome have gained acceptance for being useful in describing initial health status, documenting changes in disability, demonstrating effectiveness and quality of intervention, and in predicting mortality.<sup>3-4,9,13,18</sup>

The difficulty inherent in the treatment and management of chronic pain is often attributed to the ambivalence of the pain. Positive outcomes are challenging given the nature and impact of chronic pain. As introduced by Melzack's Gate Control Model of pain, the experience of chronic pain is composed of sensory, emotional, and cognitive components.<sup>45</sup> These aspects, along with psychological factors, may have a critical role in the onset of chronic pain, but as the experience of chronic pain continues unrelenting, changes in these human dimensions are certain and, subsequently, can negatively influence the person's pain and disability. Barkin et al<sup>36</sup> referred to chronic pain as a vicious circle:

Chronic pain can produce life stress and distress through employment disability and financial strain, disruption of daily activity patterns and relationships, sleep



difficulties, lack of adequate social support, and overuse of narcotic or tranquilizing medications. Psychological stress and distress are associated with signs of physiological arousal (e.g. increased sympathetic tone), and increased arousal appears to be related to heightened pain.

Regardless of the source of chronic pain, interventions which tap into and influence these dimensions are required in order to break the cycle.

Identification of wellness perceptions through the use of the PWS can shed light on which dimensions exhibit deficiencies which can lead to treatment designed specifically to meet the needs of the person. Still, the awareness and utilization of subjective health-related measures by clinicians, including physical therapists, are lacking.<sup>13</sup> The purpose of this study was to expand on what is known about the usefulness of subjective health assessment tools in a chronic pain population. It was specifically designed with the intent of identifying which dimensions of a person were most significantly affected and what effect, if any, a multimodal approach has on a person's perception of wellness.

In the present study, it was shown that the wellness perceptions for this population are lower, on average, than the "normal" general population, which was found to be 15.9 in the study by Adams et al.<sup>6</sup> Another interesting comparison was made looking at initial perceived wellness of patients entering out-patient physical therapy for treatment of acute conditions, which Otterbach<sup>67</sup> showed to be 11.8 (Table 6). It was not expected that the initial perceived wellness of a chronic pain population would be higher than that of an acute orthopedic population. It is, perhaps, the sudden interruption in the life of the person with the acute condition that has an impact on perceived wellness, and, in



the present study, chronicity of pain may allow for adaptation and coping, and, therefore, perceived wellness is not influenced as greatly. Further research is needed to identify the effects of various diseased states on perceived wellness.

**Table 6**

**Mean Initial Perceived Wellness of Normal, Chronic Pain, and Acute Outpatient Orthopedic Populations**

Normal	Acute Outpatient Orthopedic	Chronic Pain
15.9	11.8	13.1

Given that the internal consistency was adequate ( $\alpha=.89$ ) and similar to previous samples,<sup>6</sup> this finding illustrates that those who enter pain management programs for the treatment of chronic pain present with lower wellness perceptions. Also, the wellness scores of those who remained in treatment were lower than the scores of those who failed to complete the program. This finding may indicate that pain programs may allow individuals a regular forum to focus on the pain experience, and, if constructive intervening measures are not aggressively taken, this situation may adversely affect perceived wellness. The inconclusive nature of these results attests to the need for more research in this area.

For those subjects who did not complete the program, lower subscale means were observed in every dimension of the PWS except physical, compared to those who did complete the program. This finding may indicate that those who



did not complete the program did not see themselves as physically unwell and, thus, decided that they did not need a pain management intervention.

PWS dimensions that were notably lower for those remaining in treatment were the psychological, spiritual, intellectual, and emotional. It has been postulated that these aspects are somewhat indicative of diminished self-sufficiency and poor coping mechanisms.<sup>36</sup> From a wellness perspective, psychological wellness has been defined as “a general perception that one will experience positive outcomes to the events and circumstances of life.”<sup>6</sup> Regarding the psychological dimension, it has been shown that depression is linked to chronic pain with 22-30% of patients with chronic pain diagnosed with depression compared to 3-5% of the general population.<sup>36</sup> Depression has also been shown to be associated with higher pain intensity and greater pain-related life interference.<sup>68</sup> Stenger,<sup>71</sup> examining the effect of a multimodal program on the psychological and emotional aspects of patients, showed significant improvements in both areas up to one year later. There is wide support for the inclusion of psychological intervention with pain management because of the prevalence of depression and other psychological conditions not uncommon to the condition of chronic pain.

Spiritual wellness is defined as a positive perception of meaning and purpose in life.<sup>6</sup> From a spiritual perspective, two studies found that praying and hoping for relief were related to poorer adjustment to chronic pain and lower self-efficacy.<sup>65,68</sup> On the other hand, Lynch et al<sup>72</sup> found that persons who hold to higher purposes and who were optimistic of the future, common with greater



spiritual regard, have been found to be able to reduce the interference of pain in their lives. In 1997, Low<sup>73</sup> found that religion and pain were related to the extent that both are described as life-changing experiences. Although research in this area is conflicting, results of the present research support the idea that lower spiritual wellness is associated with failure to complete the program and that deficits in this area might be construed as a negative influence on the health care experience.

Intellectual wellness is the perception of being internally energized by an optimal amount of intellectually stimulating activity, and that both an excess or a deficiency of intellectual stimulation can have a negative influence on health.<sup>6</sup> Hildebrandt et al<sup>23</sup> report that one of the key factors correlating with successful management of chronic back pain is educational background. It was reported that those with lower levels of education or lower professional status were less likely to return to work. Although this does not speak directly to their actual treatment recovery, it does indicate that there is some resistance to returning to work for those who do not possess higher professional qualifications. Intellectual or educational background and return to work status were not reviewed in this study; however, this would be an interesting focus in future studies of the chronic pain population.

Self-esteem, or positive self-regard, is the strongest component of emotional wellness.<sup>6</sup> Possibly related to the emotional dimension is the concept of locus of control, a person's sense of self-efficacy or ability to cope. Coping abilities are linked to cognitive factors and basic operational learning principles



and can affect adaptation to chronic pain.<sup>68</sup> Within the operant learning model, behavior followed by positive consequences is likely to increase the frequency of the behavior; likewise, negative consequences will reduce the frequency of the behavior. When neither positive nor negative consequences were given, the extinction of the behavior was observed.<sup>36</sup> Lipchik et al<sup>74</sup> examined the effects of a pain management program which took a cognitive approach placing emphasis on personal control over pain and reducing the belief that pain is a mysterious phenomenon. The treatment group was significantly improved compared to a group treated without this intervention. A treatment which focuses on the individual's abilities, whether these are functional achievements or coping strategies, rather than their disabilities, is a viable approach to influencing the person's self-esteem in the context of pain management.

This explanation may also apply to another finding of the present study which revealed that no significant change in perceived wellness was observed for patients after treatment, regardless of whether or not they completed the program. In fact, although not significant, those who did complete the program had lower wellness scores than those who did not complete (completed = 13.7, not completed = 14.1). One problem, which may have confounded the results, is that follow-up surveys were not consistently administered at the same time for all subjects. For example, some subjects were just completing treatment when they were surveyed while others had already returned to their normal routine. The impact of these differences in timing can not be determined. Follow-up of subjects at specific and consistent times is suggested for future research efforts.



As previously mentioned, an over-emphasis on the person's pain experience or behavior during treatment, in effect positively reinforcing their current status, may offer another explanation for the lower final PWS scores for those who did complete treatment. Research cites that people generally adapt to physical disability to the degree that their subjective quality of life does not differ from that of the general population.<sup>75-76</sup> Reitsma and Meijler<sup>58</sup> compared two groups of patients with chronic pain, one group referred to pain management and the other which had not consulted a physician. The latter group had a better quality of life, reported taking fewer analgesics, was less functionally impaired and less depressed, and expected less help from outside sources, as compared to the group which was referred for treatment of chronic pain. This finding is indicative of the potential detriment of seeking medical intervention for the treatment of chronic pain versus the value of coping skills and learning to live with chronic pain. Thus, there is a movement to include measures to assess the readiness of patients to adopt a self-management approach to chronic pain.<sup>77</sup>

Clinicians in pain management should take heed to avoid positive reinforcement of patient's pain behaviors; the clinician's efforts should focus more on the inclusion of coping skills rather than reducing pain. Physical therapy is an important tool which utilizes techniques to bring patients to a higher level of functioning and decreased disability by teaching patients to control their pain through proper body mechanics, increased flexibility, and improved range of motion, strength and endurance. Active modalities are emphasized to combat the deconditioning effects brought on by the person's response to chronic pain.<sup>36</sup>



Jette and Jette<sup>66</sup> examined types of physical therapy intervention which were most predictive of positive outcomes in patients with chronic spinal impairments. Results indicated that an emphasis on endurance exercise predicted a better outcome more often than other types of exercise, manual therapy or modalities in scales measuring the physical and emotional aspects of health. Therefore, it is evident that physical therapists can positively affect coping strategies of patients with chronic pain.

### **Limitations**

The main limitations of the present study were the small sample size, the fact that specific interventions were not analyzed for their effect, the lack of a control group, and follow-up which occurred at varied times in the treatment process. Other inherent limitations attributed to self-report are subjectivity, misinterpretation of the questions, lack of interest, pressure to complete, and false information.

### **Recommendations**

A number of recommendations can be made for future study. These include attaining a larger sample of the chronic pain population, including a control group, surveying at regular intervals both during and following treatment, acquiring more specific information pertaining to each of the six wellness dimensions, and gathering more specific information on the interventions to make determinations as to which areas of wellness are being targeted for change.



More time, i.e., greater than 7 months, would be required to complete future studies following these recommendations.

### **Conclusions**

There is criticism that quality of life measures are too general and that measures of function are more sensitive to the effects of intervention.<sup>37</sup> It is not argued that physical function influences quality of life; however, it is the perception of disability which has been shown to be more predictive of outcomes.<sup>23</sup> The PWS can provide qualitative information about the various aspects of one's wellness perceptions. The use of this tool in a chronic pain population deserves more definitive research. Acquiring more effective treatment outcomes is dependent on the implementation of appropriate interventions, which in turn is dependent on accurate assessment. Utilization of the PWS along with other subjective assessment tools could refine this process and make the treatment of chronic pain more effective and less costly for nations in which this condition is prevalent.



## **APPENDICES**



## APPENDIX A

Name \_\_\_\_\_

Date \_\_\_\_\_

### Perceived Wellness Survey

The following statements are designed to provide information about your wellness perceptions. Please carefully and thoughtfully consider each statement, then select the one response option with which you most agree.

	Very Strongly Disagree				Very Strongly Agree	
1. I am always optimistic about my future.	1	2	3	4	5	6
2. There have been times when I felt inferior to most of the people I knew.	1	2	3	4	5	6
3. Members of my family come to me for support.	1	2	3	4	5	6
4. My physical health has restricted me in the past.	1	2	3	4	5	6
5. I believe there is a real purpose for my life.	1	2	3	4	5	6
6. I will always seek out activities that challenge me to think and reason.	1	2	3	4	5	6
7. I rarely count on good things happening to me.	1	2	3	4	5	6
8. In general, I feel confident about my abilities.	1	2	3	4	5	6
9. Sometimes I wonder if my family will really be there for me when I am in need.	1	2	3	4	5	6
10. My body seems to resist physical illness very well.	1	2	3	4	5	6
11. Life does not hold much future promise for me.	1	2	3	4	5	6



	Very Strongly Disagree				Very Strongly Agree	
12. I avoid activities which require me to concentrate.	1	2	3	4	5	6
13. I always look on the bright side of things.	1	2	3	4	5	6
14. I sometimes think I am a worthless individual.	1	2	3	4	5	6
15. My friends know they can always confide in me and ask me for advise.	1	2	3	4	5	6
16. My physical health is excellent.	1	2	3	4	5	6
17. Sometimes I don't understand what life is all about.	1	2	3	4	5	6
18. Generally, I feel pleased with the amount of intellectual stimulation I receive in my daily life.	1	2	3	4	5	6
19. In the past, I have expected the best.	1	2	3	4	5	6
20. I am uncertain about my ability to do things well in the future.	1	2	3	4	5	6
21. My family has been available to support me in the past.	1	2	3	4	5	6
22. Compared to people I know, my past physical health has been excellent.	1	2	3	4	5	6
23. I feel a sense of mission about my future.	1	2	3	4	5	6
24. The amount of information that I process in a typical day is just about right for me (i.e., not too much and not too little).	1	2	3	4	5	6
25. In the past, I hardly ever expected things to go my way.	1	2	3	4	5	6
26. I will always be secure with who I am.	1	2	3	4	5	6



	Very Strongly Disagree				Very Strongly Agree	
27. In the past, I have not always had friends with whom I could share my joys and sorrows.	1	2	3	4	5	6
28. I expect to always be physically healthy.	1	2	3	4	5	6
29. I have felt in the past that my life was meaningless.	1	2	3	4	5	6
30. In the past, I have generally found intellectual challenges to be vital to my overall well-being.	1	2	3	4	5	6
31. Things will not work out the way I want them to in the future.	1	2	3	4	5	6
32. In the past, I have felt sure of myself among strangers.	1	2	3	4	5	6
33. My friends will be there for me when I need help.	1	2	3	4	5	6
34. I expect my physical health to get worse.	1	2	3	4	5	6
35. It seems that my life has always had purpose.	1	2	3	4	5	6
36. My life has often seemed devoid of positive mental stimulation.	1	2	3	4	5	6



## **APPENDIX B**

### **Consent Form**

#### **The Effect of Multimodal Treatment on Perceived Wellness of Patients with Chronic Pain**

You are invited to participate in a study which will be used to describe the effect of a multimodal pain management program on perceived wellness of patients with chronic pain. I am a graduate student at Southwest Texas State University in the Department of Physical Therapy at San Marcos, Texas. This study is being done to further the research in physical therapy and to fulfill the requirements for completion of my degree. Through the use of a survey and collection of data, which will include number of visits, I am hoping to document wellness perceptions prior to treatment and observe changes following completion of the program.

Your voluntary participation will involve the completion of a questionnaire which should take approximately 10 minutes of your time. At the time of your final visit you will be asked to complete the questionnaire again. There are no physical risks involved in this study.

Any information obtained in connection with this study is confidential. All data will be recorded by myself and in a manner which prevents the direct identification of all subjects.

Your decision to participate in this study will not in any way affect your treatment in this program. If you decide to participate, you are free to discontinue participation at any time without consequence.

Please feel free to ask any questions you have regarding instructions on how to complete the survey while you are filling it out. If you have any additional questions you may contact Jennifer Brown, SPT at (512) 444-4688 or my research supervisor, Janet Bezner, Ph.D., P.T. at (512) 245-8351. If you would like a copy of this consent form, please ask and one will be given to you.

You are making the decision whether or not to participate. Your signature indicates that you have read the information provided and have elected to participate. You may withdraw at any time without consequence even after signing this form.

Thank you for your time.

Signature of Participant \_\_\_\_\_ Date \_\_\_\_\_

Signature of Witness \_\_\_\_\_ Date \_\_\_\_\_

Signature of Investigator \_\_\_\_\_ Date \_\_\_\_\_



## APPENDIX C

### Raw Data

Subject	Gender	Age	Diagnosis	Initial PWS	Final PWS	Initial Pain Level	Completed Treatment (y/n)	# of visits
1	F	61	cervical/ thoracic/arm	8.06	n/a	7	Y	25
2	F	42	lumbar	15.05	15.15	6	Y	25
3	F	46	lumbar/ scoliosis	10.12	n/a	7	N	7
4	F	50	lumbar	10.41	14.01	8	N	28
5	M	66	lumbar	18.09	15.02	5	Y	21
6	F	48	CTD	9.67	n/a	5	N	15
7	F	42	cervical/ shoulder	13.61	n/a	4	Y	34
8	F	19	groin	9.83	6.74	10	N	27
9	F	56	cervical	11.43	8.95	8	Y	36
10	M	45	lumbar	16.72	15.34	6	Y	25
11	F	49	scoliosis/ lupus/OA	11.89	11.09	5	Y	30
12	F	47	lumbar	12.37	12.73	5	N	6
13	F	33	groin	10.26	n/a	7.5	Y	9
14	F	42	lumbar	13.29	n/a	8	N	15
15	F	44	GCP	9.95	n/a	9.5	Y	20
16	F	53	OA	12.52	n/a	10	N	13
17	F	66	fibromyalgia	16.81	17.05	5.5	Y	20
18	M	47	GCP	9.57	9.42	6.5	Y	20
19	F	55	lumbar	15.48	16.65	8.5	Y	6
20	F	50	cervical	16.50	17.92	8.5	N	4
21	F	36	knee	19.53	18.98	8.5	N	4
22	F	48	shoulder/arm	12.82	11.87	4.5	Y	25
23	F	42	thoracic	15.01	14.50	8	Y	27
24	F	29	cervical/ thoracic	16.45	n/a	9	N	3



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## **VITA**

Jennifer Lynn Brown was born in Houston, Texas, March 9, 1969. She is the daughter of Bitsy Brown and Joe Harold Brown. She attended the High School for the Performing and Visual Arts in Houston with a concentration in classical piano while earning the honor of graduating at the top of her class. She earned a Bachelor of Arts in Psychology from the University of Texas at Austin. Her studies in the masters degree program in physical therapy at Southwest Texas State University began in June 1996. She plans to work as a physical therapist in a rehabilitation setting in Austin upon graduation.

Permanent address:                      3213 Cupid Drive  
    Austin, Texas 78735

This thesis was typed by Jennifer Lynn Brown.