



Research Article

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The Relationship between Biopsychosocial Spiritual Factors and Pain in Iranian Adult with Chronic Low Back Pain: Measurement of Subjective Responses

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Abstract

Objective: Due to the complexity concept of chronic low back pain and perceive patient from pain, a multidimensional approach focusing on four biological, psychological, sociological and spiritual dimensions is needed in the evaluation and treatment of these patients. The aim of our study was to investigate the relationship between biopsychosocial spiritual factors and pain intensity in Iranian adult with chronic low back pain.

Methods: This cross-sectional descriptive study was conducted in 100 patients with chronic low back pain referred to the multispecialty pain clinic of Imam Hossein Hospital during 2023. The patients completed the demographic questionnaire, biological questionnaire, Numerical Rating Scale (NRS), General Health questionnaire- 28 (GHQ-28), Multidimensional Scale of Perceived Social Support (MSPSS) questionnaire and Spiritual Well-Being Scale (SWBS) questionnaire.

Results: The mean age of the patients was 50.1 ± 17.0 old years. The mean total score for GHQ indicates the good general health (22.7 ± 10.4), MSPSS indicates that patients have perceived social support at a moderate level (45.3 ± 13.4), and SWBS indicates the moderate level of Spiritual Well-Being in these patients (45.2 ± 18.1). The pain intensity showed a significant positive relationship with MSPSS ($r = 0.325$, $P = 0.003$), and a significant negative relationship with SWBS ($r = -0.397$, $P = 0.0001$) but showed no significant relationship with GHQ ($r = 0.047$, $P = 0.643$).

Conclusion: We conclude that by using the biopsychosocial spiritual approach in assessing the intensity of pain in Iranian adults with chronic low back pain, the pain intensity was lower in patients who had higher spiritual health, so religiosity is a useful source for better acceptance of pain and coping with pain in patients with chronic low back pain.

Keywords: Biopsychosocial spiritual factor; chronic pain; low back pain; Iranian adult

Abbreviations: IASP: International Association for the Study of Pain; NRS: Numerical Rating Scale; GHQ-28: General Health Questionnaire- 28; MSPSS: Multidimensional Scale of Perceived Social Support; SWBS: Spiritual Well-Being Scale

Introduction

In modern pain science, pain is a more complex phenomenon, and probably other factors are involved in how patients perceive pain. During the last 41 years, for the first time, the International Association for the Study of Pain (IASP) revised the concept of pain, emphasizing the need for better assessment and therefore its management. In this review, the concept of pain was expressed as an unpleasant sensory and emotional experience related/similar to actual/potential tissue damage [1,2]. In addition, the IASP emphasized that pain is usually a personal experience that is influenced by biological, psychological, and social factors that reinforce its multifactorial nature and can have adverse effects on a person's social and psychological health and functioning [1]. In this review, IASP has emphasized the significant role of physical, psychological, social, emotional and spiritual dimensions in how patients perceive pain [1]. Saunders, for the first time in 1964, proposed that pain has physical, psychological, social, emotional and spiritual dimensions [3], and defined the concept of total pain in four dimensions of physical, psychological, social and existential pain [4].

Among the benefits of the four-dimensional model of the concept of total pain, one can manage total pain by an expert team, focusing on the whole person, mind and body, relieving pain at all levels, improving the quality of care, increasing the support system, the opportunity to solve unresolved issues, addressing psycho-social, spiritual issues and understanding that if care is not possible, healing is possible, which may lead to peace and harmony within oneself and others and patient satisfaction at a high level [5]. Saunders' study in 1967 showed that drug treatment for chronic pain relief is often insufficient, pain treatment should be based on a set of individual dimensions [6,7]. Therefore, sensory, emotional and cultural dimensions are inseparable and should be examined equally in each person. Total pain consists of physical and non-physical suffering, which is very complicated to recognize and understand, so the evaluation and treatment of chronic pain depends on multispecialty interventions [8]. Unlike acute pain, chronic pain is much more than a symptom and describes itself as an illness with a clinical course [2].

Chronic pain that limits the patient's life may have a physical, psychological, emotional, social, spiritual and/or existential nature at the same time [8]. Total pain remains a very relevant and needed concept in palliative care and beyond. Today, in the palliative care of patients who suffer from chronic pain caused by life-threatening diseases, the concepts of total pain are used to organize total care and determine appropriate treatment [9]. We strongly believe that total pain management and palliative care require a multidisciplinary team approach using the psychosocial model of medicine. In this approach, palliative care is patient-centered and family-centered. The medical and therapeutic team needs to implement a plan to improve high-quality care in a dynamic and complex healthcare and pain relief system. Through the multispecialty team, the medical team initiates a relationship with palliative care patients and their families and coordinates assessment and intervention for each

patient.

A multispecialty team facilitates the conditions for team members to interact directly with patients and their families and share patient information among members to achieve high quality treatment and pain relief. An effective multidisciplinary team requires cooperation, coordination and leadership and above all maturity in decision making [5]. Experiences have shown that in patients with chronic pain, a multidisciplinary team approach using the medical-psychiatric-social-spiritual model is very effective [5]. Therefore, the recommendations provided reflect the need to evaluate and manage physical, psychological, and social factors that contribute to the pain and disability of people with chronic low back pain. This information allows for a comprehensive assessment of chronic low back pain and helps in its proper management and treatment. So far, there has been very limited research on total pain in medical practice and clinical policy, and total pain, despite its central place in the history of palliative care, has been significantly under-researched conceptually and empirically.

Due to the complexity concept of chronic low back pain and perceive patient from pain, a multidimensional approach focusing on four biological, psychological, sociological and spiritual dimensions is needed in the evaluation and treatment of these patients. So far, no study has been conducted using the four-dimensional biological, psychological, sociological and spiritual approach in the evaluation of chronic low back pain sufferers. Our study is the first study that investigated the four-dimensional biological, psychological, social, and spiritual model in evaluating chronic low back pain of the adults in the Iranian population. The aim of our study was to investigate the relationship between biopsychosocial spiritual factors and pain intensity in Iranian adult with chronic low back pain.

Materials and Methods

This cross-sectional descriptive study was conducted in 100 patients with chronic low back pain referred to the multispecialty pain clinic of Imam Hossein Hospital during 2023. The present study was conducted after the approval of the Ethics Committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.RETECH.REC.1402.322). The patients with the consent to participate in the study, patients aged 18 years and above and at least 12 weeks after the onset of low back pain were included. The patients with no consent to participate in the study, inability to understand the questionnaire and lack of patient cooperation were excluded.

Measures

Demographic questionnaire, biological questionnaire, Numerical Rating Scale (NRS), General Health Questionnaire- 28 (GHQ-28), Multidimensional Scale of Perceived Social Support (MSPSS), Spiritual Well-Being Scale (SWBS) were used to evaluate the patient.

Numerical Rating Scale

Patients were asked to rate their pain using the Numerical Rating Scale (NRS). It is an 11-point scale anchored by 0 (no pain) and 10 (worst imaginable pain). The NRS correlates significantly

with other measures of pain intensity and is sensitive to treatments aimed at reducing pain intensity [10].

General Health Questionnaire- 28

The General Health Questionnaire-28 (GHQ-28), [11] is a self-report measure of general health status and physical symptoms that a person has experienced during the past month, which assesses the presence of physical symptoms, anxiety and sleep disorders, social functioning, and depression. The Likert method (with scores of 0, 1, 2, 3) is used to score the questionnaire answers. A low score on this scale indicates health and a high score indicates poor health. A total score of 23 and above indicates lack of general health and a score below 23 indicates mental health. The GHQ is well validated and widely used in pain research.

Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional Scale of Perceived Social Support (MSPSS) [12] is a self-report measure of social support from the three dimensions of family, friends and community in a seven-point scale with anchors at 1 (strongly disagree) and 7 (strong agree). The minimum and maximum score in the whole scale is 12 and 84, and in each of the family, social and friends support subscales, 4 and 28 are calculated respectively. A higher score indicates more perceived social support.

Spiritual Well-Being Scale (SWBS)

The Spiritual Well-Being Scale (SWBS) [13] is a self-report measure of Spiritual Well-Being from the two dimensions of Religious and Existential. It uses a 6-point Likert-type scale with anchors at 0 (strongly disagree) and 5 (strongly agree). In negative questions, scoring has been done in the Likert- method. The total score of Spiritual Well-Being was divided into three levels: low 20-40, medium 41-99, and high 100-120.

Statistical Analysis

Information required in this study was entered into the statistical SPSS software V. 19. 0. The mean of quantitative variables and the frequency of qualitative variables were calculated. Using, spearman correlation analysis was calculated of the relationship between GHQ, MSPSS, SWBS with pain intensity, (strong: $r > 0.05$, moderate: $r = 0.35$ to 0.50 , weak: $r = 0.20$ to 0.34 , negligible: < 0.20) was used to interpret the strength of relationship between two scales [14].

Results

One hundred patients with chronic low back pain participated in this study, whose demographic information is shown in Table 1. Among these patients, 37 (37%) male, 63 (63%) were females. The mean age of the patients was 50.1 ± 17.0 (age range 18- 78) aged, and 20 (20%) were in the age group 51-60. Of these, 77 (77%) are married, 11 (11 %) single and 12 (12%) divorced or widowed. The level of education was college/university 51 (51%), and high school 14 (14%), also 24 (24%) unemployed and 24 were retired. Household income was medium in 76 (76%), 20 (20%) low and 4 (4%) high, also 58 (58%) considered themselves religious. The biological pain factors include 47 (47%) foot pain, 44 (44%) leg pain, 5 (5 %) neck pain, 3 (3%) knee pain and 1 (1%) only back pain. Of these, 34 (34%) Cramping, 19 (19%) Numb, 20 (20%) Tingling, 14 (14%) Burning described their pain. In 77 (77%) pain was radiated to somewhere, 18 (18 %) experienced other accompanying symptoms during pain, 45 (45%) of the patients who mentioned "their pain is constantly present yet there are", described their pain better; in 29 (29%) their pain was alleviated with meditation, 23 (23%) with rest and 23 (23%) with heat, and in 48 (48%) their pain was exacerbated with movement, 31 (31%) cold, 13 (13 %) with stress. Pain intensity in 52 (52 %) were moderate, 46 (46 %) severe and 2 (2 %) mild (Table 2).

Table 1: Demographic information.

Age (yr.)	50.1±17.0
Age group (yr.)	
18-30	19 (19%)
31-40	14 (14%)
41-50	16 (16 %)
51-60	20 (20%)
61-70	15 (15%)
71-80	16 (16%)
Sex	
Male	37 (37%)
Female	63 (63%)
Marital status	
Single	11 (11 %)
Married	77 (77%)
Divorced or widowed	12 (12%)

Education	
Not educated	16 (16%)
Primary	19 (19%)
Secondary	14 (14%)
College or University	51 (51%)
Occupation	
Employed, working behind a desk	15 (15%)
Employed, working behind a desk and active physical work	6 (6%)
Employed, active physical work	10 (10%)
Retired	24 (24%)
Not employed	43 (43%)
Disabled	2 (2%)
Household Income	
Low	20 (20%)
Medium	76 (76%)
High	4 (4%)
Do You Consider Yourself Religious?	
Yes	58 (58%)
No	42 (42%)

Table 2: Biological pain factors.

Location of Pain	
Only lower back	1 (1%)
Neck	5 (5%)
Legs	44 (44%)
Knee	3 (3%)
Feet	47 (47%)
Describe Your Pain	
Numb	19 (19%)
Tingling	20 (20%)
Burning	14 (14%)
Dull	8 (8%)
Stretching	1 (1%)
Cramping	34 (34%)
Weakness	4 (4%)
Pain Radiate to Somewhere	
Yes	77 (77%)
No	23 (23%)
Do You Experience Any Accompanying Symptoms When You are Having Pain?	
Yes	18 (18%)
No	82 (82%)
Which One Would Describe Your Pain Better?	
There are periods that I am in pain and periods that I am painless	31 (31%)
My pain is constantly present	24 (24%)
My pain is constantly present yet there are	45 (45%)
What does Alleviate Your Pain?	
Heat	23 (23%)
Cold	1 (1%)

Movement	3 (3%)
Massage	13 (13%)
Medication	29 (29 %)
Resting	23 (23 %)
Meditation	1 (1%)
Nothing	7 (7 %)
What does Exacerbate Your Pain?	
Heat	1 (1%)
Cold	31 (31%)
Movement	48 (48%)
Resting	1 (1%)
Stress	13 (13 %)
Nothing	6 (6 %)
Intensity of Pain	
Mild	2 (2 %)
Moderate	52 (52 %)
Severe	46 (46 %)

In these patients, the mean total score for GHQ indicates the general health. The mean scores for Physical symptoms subscale indicates the physical health of patients in the field of psychosomatic diseases, Anxiety symptoms and sleep disorders subscale indicates that the patients are in a favorable condition in terms of keeping calm and controlling anxiety, Social function subscale indicates the complete health of patients in interpersonal relationships and their communication in the work environment, and Depressive symptoms subscale indicates the vitality and cheerfulness of patients in their daily life (Table 3). The mean total score for MSPSS

indicates that patients have perceived social support at a moderate level. The mean score for other subscales, consisting of social support family, social support friends and social support indicates the moderate level of support in each of the subscales (Table 4). The mean total score for SWBS indicates the moderate level of Spiritual Well-Being in these patients, and the mean score for Religious and Existential factors indicates the low-level Well-Being (Table 5). Pain intensity had a significant negative relationship with education level and weakly correlated with education level of patients ($r = -0.309$, $p = 0.002$).

Table 3: Descriptive statistics for GHQ.

Physical symptoms	6.4±3.3
Anxiety symptoms and sleep disorders	6.7±4.4
Social function	6.6±4.8
Depressive symptoms	3.0±3.8
Total score	22.7±16.3

Table 4: Descriptive statistics for MSPSS.

Social support family	15.5±4.6
Social support friends	14.2±4.4
Social support other	15.6±4.4
Total MSPSS	45.3±13.4

Table 5: Descriptive statistics for SWBS.

Religious factor	22.3±8.8
Existential factor	22.9±9.3
Total SWBS	45.2±18.1

Pain intensity was not correlated with GHQ and subscales (Total score GHQ; $r = 0.047$, Physical symptoms; $r = 0.171$, Anxiety symptoms and sleep disorders; $r = 0.096$, Social function; $r = -0.157$, Depressive symptom; $r = -0.074$, $p > 0.05$). The pain intensity had a significant positive relationship with MSPSS ($r = 0.325$, $p = 0.003$), and Social support family; ($r = 0.215$, $p = 0.040$), Social support friends; ($r = 0.331$, $p = 0.002$), and Social support other; ($r = 0.268$, $p = 0.013$), showed weakly correlated between pain intensity with MSPSS and subscales. The pain intensity showed a significant negative relationship with SWBS ($r = -0.397$, $p = 0.0001$), Religious factor ($r = -0.449$, $p = 0.0001$), and Existential factor ($r = -0.333$, $p = 0.002$), we showed moderate correlation between pain intensity with SWBS and Religious factor, also weakly correlated between pain intensity with Existential factor.

Discussion

This study is the first study that evaluated patients with chronic low back pain using the four-dimensional biological, psychological, social, and spiritual model in the Iranian population. This model is subjective and evaluates the patient based on the patient's report using self-report questionnaires. According to the IASP definition of chronic pain [15,16], chronic low back pain is one of the most common types of chronic pain that sometimes continues even after the healing of the affected area. Therefore, due to the complexity of the interactions between different factors, the assessment of chronic low back pain requires different and multidisciplinary approaches. However, near 60 to 70% of patients complain of severe back pain, but they did not show any sign of disc disease, arthritis or any other symptom that can be considered as the cause of back pain in examinations [17]. In our study, out of 100 patients with chronic low back pain, 63% were women and 37% were men with mean of age 17.0 ± 50.1 (age range 18-78) and the largest number were in the age group of 51-60, 77% of them were married, most of them, 51% had university education and 43% of patients were unemployed. The household income in 76% of the patients was at median level, the majority of patients (58%) considered themselves religious.

The demographic findings obtained in our study were similar to some studies [18,19]. In our study, a significant inverse relationship was found between the intensity of pain and the level of education, which was consistent with some other studies [18,20-22]. Maybe, in patients with a higher level of education, patients' perceive of the concept of pain is different, that they reported less pain intensity. In previous studies reported that lower education level increases the incidence of chronic low back pain, researchers reasoned that populations with lower education levels are often involved in harder work and more demanding jobs, which reduces their access to health care facilities [18]. On the other hand, some studies mentioned contradictory results and associated the increase in the level of education with an increase in the risk of chronic back pain [23,24]. Because regular physical exercise plays an important role in the management of low back pain, it may be because patients with a higher education level reported less pain intensity because they have a higher quality of life [23,24].

In our study, there were more women than men, but in another study in Brazil, there were more men [18], which is due to the distribution of gender in the patients participating in the study, which does not affect the results of our study. In the biological pain factors, most of the patients mentioned the location of the pain in the leg and foot, 34% of the patients described the pain as crampy pains, and 77% of the patients mentioned that the pain radiates to other parts. Eighteen percent, experienced other accompanying symptoms during pain, 45% of patients who mentioned "their pain is constantly present yet there are" described their pain better, 29% of their pain was alleviated with meditation, 23% with rest and 23% with heat, 48%, the intensity of pain was exacerbated with movement. The intensity of pain was mentioned in 52% moderate, 46% severe and 2% mild. In general, the obtained findings are similar to the findings obtained in a study in the emergency department of a hospital in Brazil, which was conducted in patients with acute back pain [25]. In our study, the general and mental health status of the patients was reported to be good. This finding was consistent with some studies [25].

In our study, none of the patients had sleep disorders, but some studies reported that patients with chronic low back pain had sleep disorders [26-29]. General health can help people adapt better to their environment, and this is especially important for patients with chronic pain, who want to improve their daily functioning [30]. In the MSPSS assessment, patients self-reported social support perceived by family, friends, and other people at a moderate level, and in the SWBS evaluation, spiritual health, religious factor, and existential factors were reported at a moderate level. In our study, no significant relationship was found between pain intensity and general health status in the last month, including physical dimensions, symptoms of anxiety and depression, sleep disorder and social functioning. This finding was consistent with some studies [31]. On the contrary, it was in contradiction with the results obtained in some studies [32,33]. Probably, in patients with chronic low back pain, due to frequent and soon visits to the doctor, less affected their general health by chronic low back pain. But pain intensity showed a significant positive relationship with MSPSS. It also showed a significant positive relationship with the dimensions of social support family, Social support friends and Social support other.

Patients reported more perceived social support from family, friends, and others as pain intensity increased. This finding was consistent with some studies [34]. The relationship between increased perceived social support and increased pain intensity may be because increased perceived social support from family, friends, and others may be harmful for these patients due to excessive limitations in mobility [35]. In other studies, the perceived social support the biological, psychological, social, and spiritual model, in patients with chronic low back pain, it has attracted the least attention, which is associated with unfavorable consequences for low-income and socially deprived patients [36]. In our study, the majority of patients, 58% considered themselves religious, evidence suggests that the percentage of people who consider themselves religious may vary greatly from country to country

[37]. In the results of a survey by the Pew Research Center, which analyzes religious commitment in 34 different European countries, showed that 34% of Portuguese adults considered themselves very religious, while only 12% of French adults and 10% of Swedish adults considered themselves religious [38].

Sweden is a country where the dominant culture and way of thinking ignores the role of religion in people's lives [39], which is unlike Iran, where most of its population comes from a religious family environment, which is characterized by belief in God [40]. In our study, pain intensity showed a significant negative relationship with SWBS. It also showed a significant negative relationship with religious and existential factors. This finding shows that patients who have more spiritual health expressed pain intensity to a lesser extent. This finding was consistent with some studies. A study found that a higher level of religiosity was associated with greater pain relief [41]. In some studies, they reported contradictory results and showed a significant positive relationship between religiosity and pain intensity, a higher level of religiosity was associated with an increase in pain intensity [42,43]. Others did not show a significant relationship between religiosity and pain intensity [44,45]. Other studies, no other significant results were shown between other domains of religiosity, such as private religious practice, religious support, or daily spiritual experience, with pain intensity [46].

In some studies, spiritual and religious wellness have been reported to reduce pain and improve well-being and have shown that prayer was the first or second most commonly used coping strategy for dealing with physical pain [47,48]. In a review study, showed that prayer to communicate with God in religious patients undergoing painful surgery is a beneficial intervention in reducing pain [48]. On the other hand, studies have repeatedly shown that a significant percentage of patients with chronic pain have unmet spiritual needs [50]. Therefore, it can be argued that the reason why some people turn to religion in times of crisis is that religion is more accessible than other resources in their socio-cultural context, and thus possibly explains the contradictory results in our study. The biopsychosocial spiritual approach considers chronic pain as an illness, not a disease, the main goal of this approach is to enable patients to actively participate in the management of chronic pain. This model describes the experience of chronic pain, which originates from the physiological stimulus (pain and neuropathic) and is modulated by the psychological, socioeconomic and spiritual dimensions of the patient. In patients with chronic pain, biopsychosocial spiritual care is considered necessary but challenging.

Chronic pain, especially chronic low back pain, is a unique challenge to the faith of religious people who are obliged to deal with their suffering within a religious framework of spiritual beliefs and concepts. Multispecialty team in the evaluation and treatment of chronic low back pain should be aware of the influence of religious and spiritual beliefs on the physical and mental health of these patients. According to the bio-psycho-social concept, we should strive to engage with our patients on religious/spiritual issues as an integral part of a patient-centered

approach and actively encourage constructive views of religious/spiritual. At the same time, protect it from its possible negative effects. The desirable result of the biological-psychological-social-spiritual assessment is the complete understanding of the complex interactions that take place between the biological, psychological, social and spiritual dimensions of the patient's life. A complete and accurate evaluation of the biological-psychological-social-spiritual dimensions determines the best treatment path and identifies specific treatment goals and interventions that are more appropriate for the patient.

However, a true paradigm shift will only occur when the spiritual dimension of the human being is fully understood and incorporated into health care. Then, the person can eliminate the stereotypes and the multi-specialty team can correctly use the four-dimensional model "biological-psychological-social-spiritual model" in the evaluation and treatment of chronic low back pain sufferers. The honest and deep application of this new approach creates significant changes in the concepts of health, disease, treatment and care of patients with chronic pain, especially chronic low back pain.

Conclusion

By using the biopsychosocial spiritual approach in assessing the intensity of pain in Iranian adults with chronic low back pain, the pain intensity was lower in patients who had higher spiritual health, so religiosity is a useful source for better acceptance of pain and coping with pain in patients with chronic low back pain. It seems that being religious is a useful resource for better acceptance of pain and coping in people with chronic low back pain, and improving the level of spiritual well-being of society is an important step in reducing the intensity of pain in patients with chronic back pain. However, based on the available evidence, no definitive clinical conclusions can be drawn regarding the relationship between social support and religiosity with pain severity. Considering the limited number of included studies and the fact that our study is the first study that used a biopsychosocial spiritual approach in Iranian adult patients with chronic low back pain, there is a high risk of bias in some studies and high heterogeneity in the population and evaluation tools between them, conclusions should be made with caution.

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Conflict of Interest

The authors claim no conflict of interest.

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