

## Factors Associated with Quality of Life of Psychiatric Outpatients with Chronic Pain in South Korea

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**Abstract:** Chronic pain has a high prevalence rate and is difficult to treat because it is associated with personality, socio-psychological problems as well as physical pain, and thereby degrades one's quality of life. This study aimed to determine whether psychosocial factors are associated with quality of life among outpatients with chronic pain. The subjects were selected from patients with chronic pain who were receiving outpatient treatment at the mental health department of a university hospital in Seoul, Korea. The participants were 100 patients and the data were collected using structured questionnaires. Patients' quality of life was significantly positively correlated with pain acceptance and spirituality, and negatively associated with catastrophizing and neuroticism. Multiple regression showed that catastrophizing, spirituality, pain acceptance, neuroticism, and number of pain sites were significant predictors of quality of life. These variables explained 59.0% of quality of life. Therefore, to improve quality of life in patients with chronic pain, it may be necessary to develop their spirituality and pain acceptance, and to reduce their catastrophizing and neuroticism.

**Keywords:** Chronic pain; quality of life; spirituality; catastrophizing; personality

### 1 Introduction

The prevalence of chronic pain in Canada, the United States and the UK is 18.9%, 20.5%, and 35% respectively, a percentage higher than that for major chronic diseases such as heart disease, cancer, and diabetes [1–3]. The cost of treating chronic pain is estimated to be on the order of \$600 billion each year. This huge economic loss is incurred from excessive medical spending undertaken to alleviate this pain [4–6]. The International Association for the Study of Pain (IASP) defines pain as an unpleasant sensation caused by actual and potential damage, and explains that each person's subjective experience of pain is different [7]. Pain is divided into acute and chronic pain. Acute pain is caused by trauma, illness, and inflammation. It is relatively easy to diagnose and treat, but if it is not effectively treated at this stage, it will eventually lead to chronic pain.

Chronic pain means pain that lasts for more than three months [8,9]. Chronic pain is often known to include complex site pain syndrome, back pain, fibromyalgia, migraine, chronic pelvic pain, multiple sclerosis, shingles, phantom pain, rheumatoid arthritis, tertiary neuralgia, and peripheral neuropathy [10]. If the pain persists, it causes biological changes in the body. The neural circuit involved in the pain is deformed and the ability to control pain is reduced. As a result, the patient complains of severe pain in response to a weak stimulus, and when reminded of a painful scene, the pain sensation is activated and pain is felt. The area of the brain responsible for pain, emotion, and cognition is also anatomically transformed, and the patient experiences pain and negative emotions such as anxiety and depression [11].

That being said, persistent pain or chronic pain leads to physical and emotional changes and consequently has a negative impact on the individual's life. Patients have difficulty performing simple



activities such as walking, housework, etc., their self-esteem is reduced, and they feel helpless when they need help with their daily activities [12]. Pain is also accompanied by mental problems such as depression, anger, anxiety, and sleep disturbance [13]. These problems are secondary to interpersonal unemployment and social functions, as well as disabilities [14], and patients have a two to three times higher suicide rate [15]. Hence, chronic pain patients need to take an active interest in and make efforts to increase their quality of life. In particular, it has been reported that 75% of patients with chronic pain are vulnerable to mental health such as depression, anxiety disorder, and drug addiction and are more affected by social and psychological factors [16,17]. However, relatively little attention was paid to study psychiatric outpatients suffering from chronic pain.

Traditionally, pain management has focused on biomedical aspects such as neuroprotection and medication, although recently it has been emphasized that a human is defined as a whole being in which body and mind are connected, and therefore the cognitive aspects of pain are important [18]. People with chronic pain often have dysfunctional thoughts, especially those that are associated with catastrophizing [19]. In psychological terms, catastrophizing is a cognitive distortion in which the person predicts extreme negative consequences and accepts them as facts [20]. It is important to understand the concept of catastrophizing in patients with pain because it negatively affects their quality of life by making the sense of pain excessively negative. Catastrophic thinking in patients with pain causes depression and anxiety, causing psychological stress [21]. When pain is considered a disaster, it is found that the pain-induced activities are avoided and the pain-free safe activities are only performed, which eventually leads to the disability of individual ability and function, thereby lowering the quality of life [22,23].

In addition, as the pain becomes more chronic, the patient's personality becomes more likely to change into a negative personality trait [24]. Personality traits affect the psychological aspects of pain patients; most notably, the personality trait that is most prominent in pain patients is known as neuroticism. Neuroticism has been reported to increase anxiety about discomfort and pain sensations, which causes an over-reaction to the pain. In contrast, extroversion among personality traits has been found to be a protective factor to reduce catastrophic thinking, and openness was identified as a personality trait to control anxiety about pain in chronic pain patients [25].

Patients with chronic pain do not have only negative responses to pain. They may also have positive attitudes and adaptive responses to pain, that enable them to overcome fear and help them to accept their condition [26]. Accepting pain refers to an active willingness to experience pain without effort to reduce or control it [27]. Willingness to experience pain without avoiding it leads to engagement in valued, realistic activities or focusing on one's goals, which eventually leads one toward one's desired life [28]. The effects of acceptance in patients with chronic pain were found to have positive psychosocial effects, such as reduced psychological distress and disability, increased self-efficacy and participation in activities, and reduced catastrophizing [29–31]. In relation to other positive reactions, recent pain management approaches find value in spirituality. Spirituality relies on a transcendent power to help one to cope effectively with one's problems [32]. In addition, healthy spirituality increases patience with pain and increases satisfaction with life even in the presence of pain, so a comprehensive view including spirituality as well as physical well-being is needed to improve quality of life in chronic pain patients [33].

If patients are to recover from chronic pain attention, there is a need to focus more on addressing the patient's decreased quality of life over an extended period and less on simply lowering pain intensity [34]. In addition, since the quality of life of chronic pain patients has been reported to have more influence on psychosocial factors than even the pain itself [35], it may be important to identify the various aspects and related factors in play so as to improve their quality of life.

In previous studies, the factors affecting the quality of life of chronic pain patients were reported as being pain intensity [36,37], depression and anxiety [38–40], neurotic personality characteristics [41], pain-related fear-avoidance [42], pain-related complaints [40], and pain catastrophizing [43]. However, a limitation of previous studies is that they have examined the emotional, cognitive, and personality aspects in isolation. It is therefore necessary to undertake a comprehensive study of multidimensional factors, such as personal characteristics, psychological characteristics, and spiritual characteristics, if the quality of life

of chronic pain sufferers is to be significantly understood. Therefore, this study aims to investigate diverse factors affecting the quality of life of chronic pain among psychiatric outpatients.

## 2 Method

### 2.1 Participants and Procedure

For this study, participants were recruited from among psychiatric outpatients suffering from chronic pain in South Korea. The inclusion criteria were 1) Psychiatric outpatients suffering with chronic pain, 2) pain lasting more than 3 months, and 3) an adult between 19 and 65 years of age. In total 100 participants completed the whole questionnaire. This study was approved by the Seoul National University Hospital Institutional Review Board (IRB) (No. 1504-088-665). The patients were given information on the purpose and method of the study. It was explained to them that they could withdraw from the study at any time and that their confidentiality would be maintained. Written informed consent was obtained from each of the participants. After obtaining their formal permission, the data collection process and application began. Data were collected in the outpatient interview room of the mental health department, using structured questionnaires. A total of 102 patients were interviewed, of which 100 were included in the analysis. Two participants were excluded owing to untruthful responses.

### 2.2 Measures

**Quality of Life (QoL).** The Quality of Life (QoL) was assessed by using the World Health Organization Quality of Life Scale (WHOQOLBREF), which measures physical health, psychological health, social relations and the environment [44]. In this study, QoL was measured by using the revised Korean version of the WHOQOL-BREF [45]. This version consists of 26 items, and is a 5-point Likert scale ranging from 1 (not at all) to 5 (very much). The scale is calculated as the average score, and the possible score is from 4 to 20 points. Higher scores indicate higher level of quality of life. In the current study, the scale had good internal consistency reliability, with a Cronbach's  $\alpha$  of 0.93.

**Catastrophizing.** Catastrophizing was assessed using the Pain Catastrophizing Scale (PCS), which was originally developed by Sullivan et al. [46]. The scale has 13 items, and the Korean version was revised by Cho et al. [47]. The items are rated on a 5-point Likert scale ranging from 0 (not at all) to 4 (always). The higher the total score, the greater the degree to which the pain is perceived as excessively negative. In the current study, the scale has good internal consistency reliability, with a Cronbach's  $\alpha$  of 0.94.

**Spirituality.** This was measured using the Spiritual Perspective Scale (SPS) by Reed [48]. This scale was translated into Korean and validated by Kim et al. [49]. This tool consists of a total of 10 questions, including spiritual perspectives and spiritual practice. Each item is measured on a 6-point Likert scale ranging from 1 ('Not at all' or 'I do not agree at all') to 6 ('Once a day' or 'I strongly agree'), with higher scores indicating higher spirituality. The reliability (Cronbach's  $\alpha$ ) of the scale was 0.95 in the present study.

**Pain Acceptance.** Pain acceptance was assessed using a Korean version of the 22-item Chronic Pain Acceptance Questionnaire (CPAQ), which was originally developed by McCracken et al. [50], and modified by Cho et al. [51]. This version consists of 20 items, and it is a 7-point Likert scale ranging from 0 (not at all) to 6 (always). The higher the score, the higher the participation in daily activities and the higher the willingness to refrain from trying to control or avoid pain sensation. The reliability (Cronbach's  $\alpha$ ) of the scale was 0.78 in the present study.

**Big Five Personality Traits.** The Big Five Personality traits were assessed using an instrument based on the Big Five Inventory developed by Pervin et al. [52], which was shortened from 44 to 10 items by Rammstedt et al. [53]. This study used the Korean version of the tool, which was verified by Kim et al. [54]. This instrument assesses five characteristics—extroversion, conscientiousness, agreeableness, neuroticism, and openness—and consists of a total of 10 questions with 2 items for each personality trait. This is a useful tool when applied to patients with physical disabilities who have difficulty in interviewing, because of the small number of questions [54].

### 2.3 Data Analysis

The data was analyzed using SPSS 21.0. Descriptive statistics were used to present the sample's demographic and pain-related characteristics. *T*-tests and ANOVA were used to check for relationships among catastrophizing, spirituality, pain acceptance, personality traits, and quality of life according to the general and pain-related characteristics. A Scheffé test was used for post hoc testing. Correlations between the research variables and the quality of life were analyzed by Pearson's correlation coefficient. The influence of these variables on quality of life was analyzed using multiple regression analysis.

## 3 Results

### 3.1 General and Pain-Related Characteristics

The general characteristics of the subjects are shown in Tab. 1. There were 100 subjects, comprised of 48 men (48%) and 52 women (52%). The average age was 45 years, and the largest age-group was in their forties, represented by 36 people (36%). Sixty-two people (62%) had a religion, and 38 (38%) did not. In more than half of cases, the cause of pain was a traffic accident (56%). Pain sites, the location of pain experienced by the subjects, were feet and leg (64%), head and neck (61%), shoulder (53%), arms and finger (52%), abdomen and back (51%), pelvis (31%), and other (25%).

**Table 1:** General and pain-related characteristics of the subjects (N = 100)

Characteristic	Categories	n (%)	M ± SD
Gender	Male	48 (48.0)	
	Female	52 (52.0)	
Age (Year)	20–29	12 (12.0)	44.9 ± 10.91
	30–39	12 (12.0)	
	40–49	36 (36.0)	
	50–59	33 (33.0)	
	60–65	7 (7.0)	
Religion	Yes	62 (62.0)	
	No	38 (38.0)	
Job	Yes	23 (23.0)	
	No	77 (77.0)	
Cause of pain	Traffic Accident	56 (56.0)	
	Industrial accident	8 (8.0)	
	Operation	7 (7.0)	
	Physical illness	10 (10.0)	
	Other	19 (19.0)	
Pain sites <sup>a</sup>	Feet and legs	64 (64.0)	
	Head and neck	61 (61.0)	
	Shoulder	53 (53.0)	
	Arms and fingers	52 (52.0)	
	Abdomen and back	51 (51.0)	
	Pelvis	31 (31.0)	
	Other	25 (25.0)	
Number of pain sites	0–1	31 (31.0)	
	2–3	28 (28.0)	
	4–7	41 (41.0)	

Note: M = Mean; SD = standard deviation; a = multiple responses.

### 3.2 Differences in Each Variable According to Subjects' General and Pain-Related Characteristics

Tab. 2 shows quality of life, catastrophizing, spirituality, pain acceptance of pain, and personality according to the subjects' general characteristics. There were significant differences in quality of life ( $t = 3.77$ ,  $p < 0.001$ ), spirituality ( $t = 4.49$ ,  $p < 0.001$ ), pain acceptance ( $t = 2.75$ ,  $p < 0.01$ ), and neuroticism ( $t = -2.28$ ,  $p < 0.05$ ) according to religion. There were significant differences in quality of life ( $F = 3.83$ ,  $p < 0.01$ ), catastrophizing ( $F = 4.07$ ,  $p < 0.05$ ), and pain acceptance ( $F = 3.23$ ,  $p < 0.05$ ).

The results of post hoc tests provided three findings. First, that quality of life was lower in the industrial accident group than in the physical disease and "other" groups. Second, that catastrophizing was higher in the industrial accident group than in the "other" group. Third, that pain acceptance was lower in the industrial accident group than in the traffic accidents and "other" groups. In other words, quality of life and acceptance of pain were lower in the industrial accident group, as compared to other groups, and catastrophizing was higher. Quality of life ( $F = 6.87$ ,  $p < 0.001$ ), catastrophizing ( $F = 6.32$ ,  $p < 0.01$ ), and pain acceptance of pain ( $F = 4.12$ ,  $p < 0.05$ ) were significantly different according to the number of pain sites.

The results of a post hoc test showed that quality of life was higher and the level of catastrophizing was lower in subjects who had one pain site compared to those who had 4–7 pain sites. In addition, subjects with 4–7 pain areas were less accepting of pain than those with 2–3 pain areas. In other words, the higher the pain level, the lower the quality of life and acceptance of pain, and the higher the degree of catastrophizing.

**Table 2:** Differences in variables according to subjects' general and pain-related characteristics

Categories	Quality of Life		Catastrophizing		Spirituality		Pain Acceptance		Neuroticism	
	M ± SD	t/F	M ± SD	t/F	M ± SD	t/F	M ± SD	t/F	M ± SD	t/F
Religion	Yes	2.4 ± 0.65	34.3 ± 12.47	3.6 ± 1.40	36.4 ± 15.56	3.4 ± 0.90				
	No	1.9 ± 0.63	38.8 ± 11.78	2.3 ± 1.26	28.0 ± 13.87	3.8 ± 0.94				
Cause of pain	Traffic accident <sup>a</sup>	2.2 ± 0.65	36.3 ± 11.63	3.3 ± 1.47	33.8 ± 15.47	3.5 ± 0.90				
	Industrial accident <sup>b</sup>	1.5 ± 0.44	46.0 ± 4.63	2.4 ± 0.98	15.7 ± 11.85	3.8 ± 1.28				
	Operation <sup>c</sup>	1.8 ± 0.62	44.7 ± 4.61	2.2 ± 1.41	35.5 ± 11.96	3.7 ± 1.35	0.28			
	Physical illness <sup>d</sup>	2.5 ± 0.58	30.4 ± 14.49	3.5 ± 1.28	34.8 ± 14.09	3.6 ± 0.66				
	Other <sup>e</sup>	2.4 ± 0.72	30.5 ± 13.53	2.9 ± 1.61	37.2 ± 14.86	3.4 ± 0.89				
Number of pain sites	0–1 <sup>a</sup>	2.5 ± 0.64	31.5 ± 12.97	3.2 ± 1.47	36.1 ± 18.28	3.2 ± 0.94				
	2–3 <sup>b</sup>	2.1 ± 0.69	33.8 ± 12.92	2.9 ± 1.43	37.5 ± 13.92	3.6 ± 0.84	3.09			
	4–7 <sup>c</sup>	1.9 ± 0.62	40.9 ± 9.75	3.1 ± 1.53	28.1 ± 12.74	3.7 ± 0.94				

Note: M = Mean; SD = standard deviation; <sup>1</sup> Post Hoc: Scheffé test, \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

### 3.3 Correlations between Each Variable

Tab. 3 shows the correlations among the subjects' quality of life, catastrophizing, spirituality, pain acceptance, and personality. Quality of life had positive correlations with pain acceptance ( $r = 0.544$ ,  $p < 0.01$ ) and spirituality ( $r = 0.417$ ,  $p < 0.01$ ), but negative correlations with catastrophizing ( $r = -0.584$ ,  $p < 0.01$ ) and neuroticism ( $r = -0.420$ ,  $p < 0.01$ ).

**Table 3:** Correlations among QoL, catastrophizing, spirituality, pain acceptance, neuroticism

	QoL	Catastrophizing	Spirituality	Pain acceptance	Neuroticism
QoL	1				
Catastrophizing	-0.584 **	1			
Spirituality	0.417 **	-0.162	1		
Pain acceptance	0.544 **	-0.582 **	0.229 *	1	
Neuroticism	-0.420 **	0.226 *	-0.217 *	-0.177	1

Note: QoL = Quality of Life; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

### 3.4 Factors Associated with Quality of Life of Psychiatric Outpatients with Chronic Pain

In this study, multiple regression analysis was performed to examine the effects of catastrophizing, spirituality, pain acceptance, and personality on quality of life in 100 chronic pain patients who visited a mental health department. The results are shown in Tab. 4. Specifically, religion, cause of pain, and number of pain sites, which showed statistically significant differences in the general characteristics of the study subjects, were changed to dummy variables and used as independent variables. In addition, catastrophizing, spirituality, pain acceptance, and neuroticism, which showed a significant relationship with quality of life in correlation analysis, were used as independent variables, and quality of life was used as a dependent variable, and then multiple regression analysis was conducted. Among the personality traits, only neuroticism showed a significant correlation with quality of life; therefore, only neuroticism was introduced as an independent variable. In order to examine the appropriateness of the regression analysis, we examined the correlations, tolerance, and variance inflation factor (VIF) between the independent variables to see if there were problems with multicollinearity among predictors. As a result of the correlation analysis between each independent variable, the correlation coefficient was less than 0.8, the tolerance was 0.5~0.9, and more than 0.1, and the variance inflation factor value was 1.0~2.0, which was smaller than 10, so all variables had no problem of multicollinearity. Durbin-Watson value was also 2.466, indicating that the regression model was suitable.

In this study, factors that had a significant effect on the quality of life of psychiatric outpatients with chronic pain were catastrophizing ( $\beta = -0.262$ ,  $p < 0.01$ ), pain acceptance ( $\beta = 0.229$ ,  $p < 0.05$ ), spirituality ( $\beta = 0.206$ ,  $p < 0.05$ ), neuroticism ( $\beta = -0.203$ ,  $p < 0.01$ ), number of pain sites (4-7) ( $\beta = -0.190$ ,  $p < 0.05$ ), and number of pain sites (2-3) ( $\beta = -0.180$ ,  $p < 0.05$ ) in order, and the explanation power of these variables was 59.0%. Religion and causes of pain were found to have no significant effect on quality of life.

**Table 4:** Factors associated with quality of life of psychiatric outpatients with chronic pain

	B	SE	$\beta$	t	p
Catastrophizing	-0.014	0.005	-0.262	-2.830	0.006**
Pain acceptance	0.010	0.004	0.229	2.474	0.015*
Spirituality	0.095	0.037	0.206	2.593	0.011*
Neuroticism	-0.148	0.054	-0.203	-2.746	0.007**
Number of pain sites (4-7)	-0.262	0.126	-0.190	-2.076	0.041*
Number of pain sites (2-3)	-0.272	0.126	-0.180	-2.161	0.033*
Religion (yes)	0.113	0.111	0.081	1.016	0.312

Cause of pain (industrial accident)	-0.290	0.215	-0.116	-1.351	0.180
Cause of pain (operation)	-0.189	0.218	-0.071	-0.868	0.388
Cause of pain (physical illness)	0.125	0.185	0.056	0.677	0.500
Cause of pain (traffic accident)	-0.069	0.129	-0.050	-0.535	0.594

Note:  $F = 11.495$ ;  $R^2 = 0.590$ ;  $Adj. R^2 = 0.538$ ; \*  $p < 0.05$ , \*\*  $p < 0.01$ .

#### 4 Discussion

The purpose of this study was to investigate the psychosocial factors affecting the quality of life of patients with chronic pain who visited a department of mental health medicine. The results of this study showed that the quality of life of psychiatric outpatients with chronic pain was affected by catastrophizing, spirituality, pain acceptance, the personality trait of neuroticism, and number of pain sites.

First, catastrophizing was the most influential factor in the quality of life of psychiatric outpatients with chronic pain. Catastrophizing is one of the cognitive distortions, which has meant excessively negative recognition of pain, and catastrophizing is a factor that decreases the functional level of patients by increasing pain and deepening depression [55]. Indeed, studies of patients with chronic pain reported that catastrophizing had the most negative impact on the quality of life of mental health [40,56]. Catastrophizing was associated with negative emotions and was known to be a major factor affecting the progression of acute pain into chronic pain [57]. Therefore, catastrophizing could lead to negative effects on the quality of life by making patients more focused in the sense of pain, increasing pain, anxiety, and depression, and lowering the level of function needed for an individual to live [55,58]. Thus, cognitive interventions are needed to assess and reduce catastrophic thinking about pain at the early stage of treatment of patients with pain. In other words, this result means that the nature of catastrophizing experienced by patients with chronic pain requires more attention, and active care for the cognitive aspects of the patients is needed. In clinical settings, it is anticipated that catastrophizing may appear in patients with chronic pain, and an assessment of catastrophizing should be included in the initial assessment phase. In doing so, it can be suggested to approach the patient in advance considering the catastrophizing to improve the quality of life of the patients with chronic pain.

Pain acceptance was a factor that positively affects the quality of life of patients with chronic pain. Accepting pain indicated the willingness to experience pain without trying to reduce or control it [50]. In previous studies, pain acceptance was reported as a factor affecting daily activities and improving the quality of life, which was consistent with the results of this study [27,59,60], pain acceptance was confirmed as an index for predicting quality of life [59]. The role of acceptance of chronic pain reduced feelings of pain and physical discomfort, and protected against mental problems such as depression even with physical limitations, and helped mental health so that they could live a valuable life while struggling with one's current disease [61]. Acceptance of pain was also a psychological factor that has an important impact on maintaining activities to achieve important goals in life [62]. Such willingness to accept pain is a necessary factor in maintaining well-being for patients with chronic pain [60]. Despite the many advantages of pain acceptance, it can be a difficult problem for patients with chronic pain to take and apply it. Based on these results, it is believed that patients with chronic pain will be helped to develop and apply related educational program so that they can know and use pain acceptance as one of coping methods for controlling the pain. Thus, they should be encouraged to practice pain acceptance in everyday life.

Spirituality was identified as a positive influence on quality of life. Spirituality was a factor not only in life satisfaction but also in quality of life [63], and spirituality in chronic pain was known to help patients find meaning in their disease, interpret pain positively, and use internal adaptive coping strategies [60].

Patients with chronic pain showed stronger spiritual beliefs than the general population, and spirituality served as a mechanism to cope with weakened physical functions and to protect against lowered mental health. Spirituality is of great value as a cost-effective resource for chronic pain patients [64]. In particular, one's evaluation of subjective perceptions of one's life was closely related to one's internal experience [63], so spirituality has been an essential element for living a better life in patients with chronic pain. This study is meaningful in that it has confirmed the importance of by expanding not only psychological but also spiritual aspects as factors affecting the quality of life of patients with chronic pain. In other words, it suggests an approach that takes into consideration the spiritual aspect of the patient with chronic pain. In addition, spirituality showed a significant positive correlation with pain acceptance, but not with catastrophizing. Therefore, it can be assumed that spirituality can reinforce or help positive coping in the process of cognitively treating pain. Therefore, it is necessary to recognize the importance of the spiritual aspect of the patient and to prepare and apply a plan to help the spiritual aspect be strengthened. Since the role of spirituality between chronic pain and pain acceptance is still unknown, on the basis of this study, it is meaningful to develop a program that can apply spirituality after examining the mediating or moderating effect of spirituality for effective pain management of the patients.

The results of this study confirmed that, among personality traits, neuroticism negatively affected quality of life. Emotional features such as high depression, anxiety, hostility, and impulsivity in neuroticism are known to harm an individual's subjective well-being. Emotional features such as high depression, anxiety, hostility, and impulsivity, which were characteristic of neuroticism, were known to undermine subjective well-being [25]. This is consistent with previous studies that reported patients with high neurotic responses had poor treatment response, increased depression, and low quality of life [41,65]. In addition, this study showed a positive correlation between neurosis and catastrophizing, and a negative correlation between neurosis and spirituality, which is an interesting result in confirming the relationship between personality traits and spirituality. It suggests that patients with a high tendency to neurosis perceive pains negatively, are more likely to select and use ineffective cognitive coping strategies and inhibit spiritual development. Therefore, it is suggested that cognitive therapy that promotes an optimistic attitude toward pain in persons with high neuroticism may be effective. Although it is difficult to say that personality traits change in a short period of time, Fishbain's study shows that personality traits change as the pain condition improved [66]. Therefore, in the group of patients with a high tendency of neurosis, it is necessary to help to alleviate the negative personality by more aggressively treating pain and simultaneously applying an optimistic attitude and a positive coping strategy.

It was confirmed that the number of pain sites was a factor influencing the quality of life. In this study, the more pain sites, the lower the quality of life was measured. Studies that have confirmed the quality of life according to the nature of pain are the location of pain, such as a headache [67] and pain period [37]. It is similar to the fact that Sullivan et al. have an increased experience of pain or the severity of pain is related to catastrophizing [68]. In the difference between each variable according to the general characteristics, the quality of life was lower than in the case of 1 in 4–7 pain sites, and the catastrophizing was higher in contrast. It can be interpreted that this is related to the psychosocial factors according to the range of pain. Since there are few studies that have confirmed the quality of life by dividing the pain by the number of pain, it is likely that a study on the psychosocial factors will be needed for each subject with extensive pain and local pain in the future.

In this study, although spirituality was an influencing factor for quality of life, religion was not an influencing factor for quality of life. This means that having religion and being spiritual are not the same and there is a difference. Nevertheless, many patients with chronic pain were said to use religion as a way to deal with their suffering [69], and they had the effect of increasing patience by participating in prayer, forgiveness, and church communities [60]. In addition, when the degree of pain is high, they become more engaged in religious activities, and these religious activities have the effect of reducing depression and anxiety [70]. In chronic pain patients, religion can be a necessary resource to deal effectively with pain, and how to use it is considered important. Therefore, it is thought that having healthy religious beliefs and doing healthy religious activities can serve as a factor to improve the quality of life of patients with chronic pain.

It was also found that the cause of the pain did not affect the quality of life of the patient with chronic pain. Chronic pain can be caused by a variety of factors, and the meaning of pain perceived by a patient may be different depending on the factors causing pain. Therefore, the cause of pain in this study is not an influencing factor in quality of life, but since it showed significant differences in the quality of life, catastrophizing, and pain acceptance according to the cause of pain, it is considered that the related research needs to be continuously conducted.

In this study, factors affecting the quality of life of psychiatric outpatients with chronic pain were catastrophizing, spirituality, pain acceptance, neuroticism, and the number of pain sites. This study is significant in that it has been confirmed that pain acceptance and spirituality are positive factors for the quality of life of patients with chronic pain, and that catastrophizing and neurosis are negative factors. In order to improve the quality of life of patients with chronic pain, pain acceptance and spirituality should be increased, and catastrophizing and neurosis should be tried to lower. Mental health practitioners need to recognize the importance of psychosocial factors in patients with chronic pain and need to develop a variety of strategies to improve the quality of life for them.

## 5 Conclusions

This was a descriptive study that identified psychosocial factors that affect the quality of life of psychiatric outpatients suffering chronic pain. Based on these results, this study aimed to provide basic data for developing various interventions that would improve the quality of life of chronic pain patients.

In conclusion, in order to improve the quality of life of patients with chronic pain, various strategies to help sufferers accept pain, and accept it positively, are needed rather than accepting pain negatively. Specifically, there is a need for a variety of interventions, such as optimism-enhancing programs to increase pain acceptance and to alleviate the negative characteristics of neuroticism. In addition, a spiritually-oriented approach is required if spirituality, one of the essential elements of humanity, is to be manifested in a healthy way in one's life. It is necessary to apply several interventions such as meditation, image therapy, etc., to reduce the level of catastrophizing and to express spirituality in a healthy one's way in the clinical settings. Lastly, personality has characteristics that change according to the environment and the situation, so individual care should take a patient's personality into consideration so that patients can change their negative personality traits into positive traits. For this, it is suggested to apply cognitive education programs.

The limitations of this study are that a convenience sample was used, consisting of chronic pain patients who visited the mental health department of a university hospital in Seoul. Therefore, care should be taken before applying the results of this study to general patients with chronic pain. In addition, since the sample size is small and cross sectional research, it is difficult to confirm the causal relationship, so it is necessary to expand the number of subjects and check the moderating effect and mediating effect of the factors affecting the quality of life of the subjects with chronic pain. Finally, in order to obtain more clinically meaningful results, it is necessary to further subdivide according to the duration of pain, duration of treatment, and intensity of pain to check the impact of their quality of life.

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