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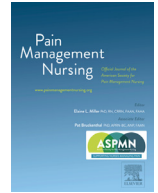
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Pain Management Nursing

journal homepage: www.painmanagementnursing.org

Original Research

The Effect of Pain Experienced During the COVID-19 Infection on the Fear of Pain and Quality of Life

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ARTICLE INFO

Article history:

Received 5 May 2021

Received in revised form 11 August 2021

Accepted 13 August 2021

Keywords:

COVID-19 pain

fear of pain

quality of life

nursing

pain management

ABSTRACT

Aims: This study was conducted to determine the effect of pain experienced during the COVID-19 infection on the fear of pain and quality of life of individuals.

Background: Pain is a complex, multidimensional, neurophysiological and psychosocial experience known only to the person experiencing pain. Although there are studies showing that individuals with COVID-19 experience pain, there are no studies that evaluate the relationship between fear of pain and quality of life of people after COVID-19 infection.

Design: The study was carried out as descriptive, comparative and correlational design.

Methods: Snowball sampling method was used in the research and the data were collected online. A total of 404 individuals participated in the study. The data were collected using the Descriptive Characteristics Questionnaire, Numeric Rating Scale, Fear of Pain Questionnaire-III and The 36-Item Short Form Health Survey Questionnaire.

Results: It was determined that 87.1% of the individuals experienced pain during COVID-19 and the mean intensity of this pain was 6.16 ± 2.75 . In addition, 37.1% of the individuals experienced pain for a while after COVID-19 and the mean intensity of this pain was 3.81 ± 3.00 . The individuals who experienced pain during COVID-19 had higher fear of pain and lower quality of life than those who did not experience pain. There was a significant correlation between the severity of pain experienced during COVID-19 with the fear of pain and the quality of life.

Conclusions: According to the results of the study, it can be said that individuals who experienced intense pain during COVID-19 infection have higher fear of pain and lower quality of life. In addition, as the fear of pain increases, the quality of life of individuals decreases.

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Pain is one of the important symptoms experienced in viral diseases (Widyadharma et al., 2020). As with many infections, pain has been a common symptom in COVID-19 infection. The virus not only invades the respiratory system, but also causes individuals to experience many pain symptoms such as headache, dizziness, abdominal pain, chest pain, muscle-joint pain by invading different tissues of the body (Weng et al., 2021).

Pain can develop for many reasons in viral diseases, and many mechanisms are mentioned about this condition. It has been reported that pain develops due to reasons such as skeletal muscle injury in viral diseases or penetration of the virus into the central nervous system. This clinical feature is also believed to be caused by tissue inflammation which will cause the release of inflammatory mediators which will stimulate nociceptors (Widyadharma et al., 2020). Unfortunately, in some cases, pain is

not only seen during the infection process, it may cause the individual to complain of pain after the infection. As a matter of fact, it is reported that the pain symptoms of individuals continue after some infectious diseases (Clauw et al., 2020; Moldofsky & Patcai, 2011; Hickie et al., 2006).

The experience of pain is affected by many factors (Lautenbacher et al., 2017; Potter et al., 2017). According to the theory in the neurophysiology of pain, the individual's psychological state, anxiety, stress, and fears can activate pain stimuli and lead to the perception of pain (Cimpean & David, 2019). In other words, negative pain experiences in the past can also open the gate and pain impulses pass through when the gate is open and cause intense pain (Markfelder & Pauli, 2020). Fear of pain is related to the past painful experiences of the individual, and especially recurrent and unmanageable pain experiences may lead to the development of pain fear (Cimpean & David, 2019). Accordingly, it can be said that pain and fear are inseparable and pain may lead to fear, and fear may lead to pain by increasing sensitivity to pain. Increase in the level of fear and

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anxiety may lead to further increase in the level of pain (Olango & Finn, 2014; Kristiansen, 2013). Moreover, fear of pain is assumed to significantly contribute to the development of chronic pain. A meta-analysis has revealed a small but strong association that fear of pain contributes to increased pain perception and this may encourage pain to become chronic (Markfelder & Pauli, 2020).

Individuals have high levels of fear and stress due to the COVID-19 outbreak (Pakpour & Griffiths, 2020; Polizzi et al., 2020; Taylor et al., 2020). Although there are studies showing that individuals with COVID-19 experience pain (Chen et al., 2020; Chow et al., 2020; Guan et al., 2020; Huang et al., 2020; Pan et al., 2020; Zhu et al., 2020; Xu et al., 2020), there are no studies that evaluate the relationship between fear of pain and quality of life of people after COVID-19 infection. Pain, which is a subjective experience, may negatively affect individuals' quality of life and cause fear of pain (Potter et al., 2017). Therefore, this study was conducted to determine the effect of pain experienced during the COVID-19 infection on the fear of pain and quality of life of individuals. The study sought answers to the following questions:

- Is there a difference between those who experienced pain during COVID-19 infection and those who did not in their fear of pain and quality of life?
- For persons who experienced pain during COVID-19 infection, is there a correlation between intensity of pain and fear of pain and quality of life?

Methods

Design

The study was performed as descriptive, comparative, and correlative design.

Settings and Participants

The research was conducted using an online survey, in April 2021, in Turkey. The research sample was reached by using the snowball sampling method. The country in which the study was conducted consists of seven regions. Therefore, seven participants who had experienced COVID-19 infection were selected initially. The first selected participants were known to the researchers. Each of these participants represented different regions of the country. Each one of them was asked to send the web link of the survey to other people who have had the COVID-19 infection.

Sampling was calculated with post hoc power analysis. It was applied through G*Power 3.1.9.2 program (Franz, Universität Kiel, Germany) with 5% type I error with reference to fear of pain scores. Because the power = 0.99 was determined in this analysis, it was decided that the sample size was sufficient and the study was completed with 404 people. Individuals over the age of 18, who had experienced COVID-19 infection and volunteered to participate in the study were included in the scope of the study. Participants with chronic pain before COVID-19 infection were excluded from the study.

Data Collection

The data from the research were collected through Google Forms, a cloud-based data management tool used for designing and developing web-based questionnaires. In this method, an automatic Web URL is generated for the survey (Raju & Hariharayana, 2016). Data were collected by sending this web link to participants. The request for participating in the web survey was

sent via online forums, social networking sites, or e-mail. Google Forms records the respondent data in its spreadsheet. The answers given by the participants to the questionnaires were recorded online to the researchers' account through the site where the form was created.

Data Collection Tools

The data were collected using the Descriptive Characteristics Questionnaire, Numeric Rating Scale, Fear of Pain Questionnaire-III, and the 36-Item Short Form Health Survey Questionnaire.

Descriptive Characteristics Questionnaire

The form created by the researchers contained questions about some socio-demographic characteristics of the participants such as age, gender, education level, chronic disease status, and the state of experiencing pain during COVID-19 infection.

Numeric Rating Scale

The validity and reliability of this scale was supported by Duncan et al. (1989), Paice and Cohen (1997), and Seymour (1982) (Duncan, Bushnell, & Lavigne, 1989; Paice & Cohen, 1997; Seymour, 1982). It has been used in studies to assess the intensity of pain perceived subjectively and has been found to be reliable and valid. It is a 10-centimeter scale in which 0 represents no pain and 10 severe pain.

Fear of Pain Questionnaire-III

The scale was developed by McNeil and Rainwater to measure the fear and/or anxiety experienced because of pain (McNeil & Rainwater, 1998). The Turkish validity and reliability study of the scale was conducted by Ünver and Turan in 2018. In the validity and reliability study, the Cronbach's alpha reliability coefficient of the scale was 0.93. In this study, the Cronbach's alpha of the scale was found to be 0.95. The scale consists of severe pain, minor pain, and medical pain subscales. There are 10 items in each sub-dimension. The scale is a five-point Likert type. The lowest score of the scale is 30 and the highest score is 150. The higher the score obtained from the scale indicates that the fear of pain is also high (Ünver & Turan, 2018).

The 36-Item Short Form Health Survey Questionnaire (SF-36)

The SF-36 questionnaire has been developed to be used in examining the health conditions and quality of life of individuals. It consists of 36 items, which are used to calculate 8 subscales: (1) physical functioning; (2) role limitations due to physical problems; (3) the role limitations due to emotional problems; (4) energy/vitality; (5) mental health; (6) social functioning; (7) physical pain; (8) general health. Scores for the SF-36 scales range between 0 and 100, with higher scores indicating a better quality of life (Ware & Gandek, 1998; Ware et al., 1994). The Turkish validity and reliability study of SF-36 was conducted in different samples (Kaya & İçağasıoğlu, 2018; Koçyiğit et al., 1999; Pinar, 1996). In the current study, the Cronbach's alpha of subscales of SF-36 ranged from 0.70 to 0.92.

Statistical Analysis

Statistical analysis was performed using IBM SPSS Statistics 21.0 (IBM Corp, Armonk, NY, USA). Descriptive statistics were used to introduce the participants' baseline characteristics. The data were presented as number (n), percentages (%), and mean \pm standard deviation (M \pm SD) values. The Shapiro Wilk's test and Q-Q graphs were used for normality testing. The Mann Whitney U test was employed to examine the distribution of the scores obtained from

Table 1
Characteristics of COVID-19 and Pain Experience

Characteristics	n (%)
Hospitalization due to COVID-19	
Yes	66 (16.3)
No	338 (83.7)
Which clinic	
Intensive care	22 (33.3)
Other clinics	44 (66.7)
Days of hospitalization (Mean ± SD)	12.21 ± 4.83
Experiencing pain during experience with COVID-19	
Yes	352 (87.1)
No	52 (12.9)
Pain experienced regions ^a	
Muscle pain	267 (19.9)
Joint pain	280 (20.9)
Headache	230 (17.1)
Throat ache	112 (8.3)
Back pain	229 (17.1)
Abdominal pain	45 (3.35)
Neck pain	75 (5.6)
Eye pain	65 (4.9)
Others (backache, genital, chest, leg, ear, upper arm, kidney, bone pain)	39 (2.9)
Severity of pain during COVID-19 (Mean ± SD)	6.16 ± 2.75
Methods used to relieve pain during COVID-19 infection ^a	
I used analgesic medications myself	243 (46.8)
Analgesic medication was administered in the hospital	66 (12.7)
I used herbal teas	113 (21.8)
I applied hot-cold	35 (6.7)
I didn't use anything	58 (11.2)
Other (massage tool, rest)	4 (0.8)
Pain experience after COVID-19 infection	
Yes	150 (37.1)
No	254 (62.9)
Duration of pain after COVID-19	
<1 week	59 (39.3)
1 week to 1 month	46 (30.7)
1-3 months	16 (10.7)
≥3 months and over	29 (19.3)
Severity of pain after COVID-19 infection (Mean ± SD)	3.81 ± 3.00
Fear of getting COVID-19 infection again	
Yes	309 (76.5)
No	95 (23.5)
Fear of recurring the pain experienced during COVID-19 infection	
Yes	301 (74.5)
No	103 (25.5)

SD = standard deviation.

^a More than one answer is given

the scales according to the pain experienced by the participants during COVID-19 infection. Spearman's correlation was performed to test the correlation among continuous variables and scales. $p < .05$ was accepted as significant.

Ethical Consideration

First of all, the study was approved by the Ministry of Health Scientific Research Platform (2021-03-10T21_16_21) and the Ethics Committee of the University (2021/172). In the research link sent to the participants, the purpose of the research was explained firstly and the participants were informed about the research. Participants who wanted to participate in the study were asked to continue the study by selecting the option "I agree to participate in the study".

Results

Of the 404 participants, the majority were not hospitalized (83.7%) and reported pain (87.1%) during COVID-19 infection. The vast majority have experienced multiple sources of pain, including joint, muscle, headache, and back during COVID-19 infection. The severity of this pain was on average 6.16 ± 2.75 . In addition,

the majority of the participants reported no pain after COVID-19 infection (62.9%) (Table 1). Most of the participants were female, with a mean age of 40.49 ± 15.5 . Overall, 42.3% of them had normal BMI, 71.5% were married, 45.2% were university graduates, 36.4% were civil servants, and 67.6% had a middle-income level (Table 2). Moreover, 79.9% of them did not have any chronic disease, 66.1% had never smoked, and 88.4% had never consumed alcohol (Table 3).

A total of 37.1% of the individuals reported pain for a while after the COVID-19 infection and the average intensity of this pain was 3.81 ± 3.00 . Finally, 76.5% of individuals said they were afraid of getting COVID-19 infection again, and 74.5% were afraid of reliving the pain during COVID-19 (Table 1).

Individuals' fears of pain and quality of life were compared according to their pain and hospitalization experience during COVID-19 infection. It was determined that individuals who experienced pain during COVID-19 infection had higher fear of pain and lower quality of life than those who did not experience pain. Individuals hospitalized during COVID-19 infection had a lower quality of life (Table 4). In addition, the Spearman test showed significant correlation between the intensity of pain experienced during COVID-19 infection with the fear of pain and the quality of life (Table 5).

Table 2
Introductory Characteristics of Individuals

Characteristics	n (%)
Sex	
Female	232 (57.4)
Male	172 (42.6)
Age (Mean ± SD)	40.49 ± 15.5
BMI	
Underweight (BMI <18.5)	6 (1.5)
Normal weight (BMI 18.5-24.9)	171 (42.3)
Overweight (BMI 25.0-29.9)	153 (37.6)
Obese (BMI ≥30)	74 (18.3)
Marital status	
Married	289 (71.5)
Single	115 (28.5)
Education	
Literate	29 (7.2)
Primary school	83 (20.5)
High school	68 (16.8)
Graduate	183 (45.2)
Postgraduate	41 (10.1)
Employment	
Unemployed	49 (12.1)
Worker	60 (14.9)
Civil servant	147 (36.4)
Self-employment	25 (6.2)
Housewife	86 (21.3)
Other (retired, students)	37 (9.2)
Income status	
High	87 (21.5)
Middle	273 (67.6)
Low	44 (10.9)

SD = standard deviation; BMI = body mass index.

Table 3
Characteristics of Individuals Related to Disease and Lifestyle

Characteristics	n (%)
Chronic diseases	
Yes	81 (20.1)
No	323 (79.9)
Chronic disease types ^a	
Diabetes mellitus	30 (34.1)
Cardiovascular disease	28 (31.8)
Asthma	9 (10.2)
Thyroid diseases	12 (13.7)
Others ^b	9 (10.2)
Smoking status	
Current smoker	87 (21.5)
Never smoker	267 (66.1)
Former smoker	42 (10.4)
Quit smoking after COVID-19	8 (2.0)
Alcohol consumption status	
Current drinker	32 (7.9)
Never drinker	357 (88.4)
Former drinker	14 (3.5)
Quit drinking after COVID-19	1 (0.2)

^a More than one answer is given.

^b Renal failure, ulcerative colitis, cirrhosis, prostate, autoimmune disease.

Discussion

Pain is one of the most common symptoms experienced by a large number of people for a variety of reasons (Meulders & Bennett, 2018; Chou et al., 2016). As with many infectious diseases, pain has been one of the common symptoms in individuals with COVID-19 infection (Carfi et al., 2020; Weng et al., 2021). Patients with COVID-19 infection may experience various symptoms, such as fever, dyspnea, cough, headache, muscle pain, sore throat, abdominal pain, and chest pain (Chen et al., 2020; Chow et al., 2020; Guan et al., 2020; Huang et al., 2020; Pan et al., 2020; Zhu et al., 2020; Xu et al., 2020). The virus not only invades the respiratory

system but also effects other systems in individuals and results in corresponding symptoms, including nervous system (eg, headache), digestive system (eg, abdominal pain), and cardiovascular system (eg, chest pain) (Chen et al., 2020; Huang et al., 2020). An observational study in Wuhan noted that 36.4% of COVID-19 patients with neurologic symptoms experienced dizziness and headache (Mao, 2020). Guan et al. (2020) found that common pain symptoms include myalgia or arthralgia (14.9%), sore throat (13.9%), and headache (13.6%). In a systematic analysis, it is noted that the incidence rate is 1.5%-61.0% for myalgia/arthralgia, 0.7%-47.1% for sore throat, 1.7%-33.9% for headache, 1.6%-17.7% for chest pain, and 1.9%-14.5% for abdominal pain. Different pain reflects the damage of different body systems (Weng et al., 2021). In the present study, it was determined that 87.1% of individuals experienced pain during the COVID-19 experience, the average intensity of this pain was 6.16 ± 2.75, and they mostly experienced joint, muscle, headache, and back pain (Table 1). Studies have shown that individuals experience pain in different anatomical regions. This shows that the virus affects many parts of the body. In addition, the pain is a subjective symptom, the individuals have different perceptions of stress, and the pain is affected by individuals' past pain experiences.

Acute viral illnesses often present with organ-specific symptoms in addition to myalgia and fatigue, as noted in outbreaks such as H1N1 and SARS. Results with these infections almost always focus on the immediate response to acute illness and little attention is paid to long-term effects (Clauw et al., 2020). In a study conducted with 22 individuals infected during the SARS epidemic, it was stated that chronic post-SARS syndrome consisting of fatigue, widespread myalgia, depression, and non-restorative sleep persists for almost 2 years (Clauw et al., 2020; Moldofsky & Patcai, 2011). In addition, 12% of patients infected with 3 different pathogens such as Ross River virus, Coxiella burnetii, and Epstein-Barr virus experienced a postviral pain syndrome up to 12 months after infection (Clauw et al., 2020; Hickie et al., 2006). The presence and severity of somatic symptoms during acute infection is closely related to the subsequent development of chronic fatigue and pain (Clauw et al., 2020). As a matter of fact, this study reported that 37.1% of the individuals continued to have pain for a while after COVID-19 infection (Table 1). Similar to the results of our study, in the study by Carfi et al. (2020), patients were followed for approximately 60.3 (SD, 13.6) days after onset of the first COVID-19 symptom. At the time of the evaluation, 32% of participants had 1 or 2 COVID-19-related symptoms and 55% had 3 or more. Most of the participants reported dyspnea (43.4%), fatigue (53.1%), joint pain, (27.3%), and chest pain (21.7%) (Carfi et al., 2020).

Subjective experiences such as pain are heavily influenced by previous individual experiences (Michaelides & Zis, 2019). Unfortunately, actions and situations related to pain may create fear of pain over time (Meulders & Bennett, 2018; Racine et al., 2012). Fear of pain may result from an extremely negative interpretation of pain and moreover cause more damage than pain itself (Wang et al., 2018). In our study, the fear of pain in individuals who experienced pain during COVID-19 infection was found to be significantly higher than in those who did not experience pain. In addition, the fear of pain in hospitalized and non-hospitalized individuals was similar (Table 4). The intense anxiety and uncertainty experienced during COVID-19 may have caused individuals to feel high levels of pain. These severe pains may have caused individuals to be afraid of this experience and develop fear of pain. Multiple and persistent stressors can aggravate pain even in the absence of viral illnesses.

Fear of pain may affect most activities of daily living with pain avoidance behaviors and cause a misperception of pain intensity (Wang et al., 2018). Fear of pain has the risk of caus-

Table 4
Pain Fear and Quality of Life Scores According to the Individual's Pain Experience

	Experiencing pain during COVID-19 infection	No pain during COVID-19 infection	Z ^a	p	Hospitalization during COVID-19 infection	Non-hospitalization during COVID-19 infection	Z ^a	p
	Mean ± SD Median (25%-75%)	Mean± SD Median (25%-75%)			Mean ± SD Median (25%-75%)	Mean ± SD Median (25%-75%)		
Fear of Pain Questionnaire-III	78.75 ± 19.34	65.42 ± 21.09	-4.549	<.001	77.24 ± 16.73	77.0 ± 20.66	-.181	.856
Total	78.0 (64.0-91.0)	61.5 (51.0-77.0)			77.0 (65.2-89.0)	77.0 (60.0-91.0)		
Fear of severe pain	30.53 ± 7.99	24.69 ± 8.19	-4.720	<.001	29.22 ± 6.66	29.89 ± 8.52	-4.32	.666
	30.0 (25.0-36.0)	24.5 (21.0-28.0)			29.5 (25.0-34.2)	29.0 (24.0-36.2)		
Fear of minor pain	22.77 ± 6.72	19.28 ± 7.15	-3.590	<.001	22.63 ± 6.35	22.26 ± 6.97	-.568	.570
	23.0 (18.0-27.0)	18.0 (13.0-26.5)			23.0 (19.0-27.0)	22.0 (17.0-27.0)		
Fear of medical pain	25.44 ± 7.27	21.44 ± 7.59	-3.888	<.001	25.37 ± 5.82	24.84 ± 7.71	-1.059	.290
	25.0 (20.0-30.0)	21.0 (16.0-25.7)			25.0 (21.0-30.0)	24.0 (19.0-30.0)		
Quality of life (SF-36)								
Total								
Physical functioning	72.44 ± 24.91	73.07 ± 40.17	-3.229	.001	60.45 ± 27.86	76.28 ± 23.35	-4.487	<.001
	80.0 (55.0-90.0)	92.5 (41.6-100.0)			65.0 (43.7-80.0)	80.0 (65.0-95.0)		
Role-physical	58.59 ± 43.84	76.92 ± 35.64	-2.731	.006	33.71 ± 39.58	66.27 ± 41.99	-5.432	<.001
	75.0 (0.0-100.0)	100.0 (75.0-100.0)			25.0 (0.0-75.0)	100.0 (25.0-100.0)		
Role-emotional	57.95 ± 43.94	73.07 ± 40.17	-2.342	.019	42.9 ± 44.43	63.21 ± 42.86	-3.543	<.001
	66.6 (0.0-100.0)	100.0 (41.6-100.0)			33.3 (0.0-100.0)	100.0 (0.0-100.0)		
Vitality/energy	49.85 ± 16.51	61.63 ± 17.22	-4.611	<.001	47.65 ± 15.57	52.10 ± 17.25	-1.632	.103
	50.0 (40.0-55.0)	60.0 (50.0-75.0)			50.0 (38.7-55.0)	50.0 (40.0-61.2)		
Mental health	59.43 ± 14.85	62.07 ± 17.86	-1.282	.200	59.27 ± 13.58	59.86 ± 15.59	-.400	.689
	56.0 (48.0±68.0)	60.0 (52.0-72.0)			56.0 (48.0-72.0)	60.0 (48.0-68.0)		
Social functioning	54.65 ± 26.74	71.87 ± 23.72	-4.174	<.001	50.75 ± 28.57	58.06 ± 26.52	-1.918	.055
	50.0 (37.5-75.0)	75.0 (50.0-100.0)			50.0 (34.3-75.0)	62.5 (37.5-75.0)		
Bodily pain	66.89 ± 21.64	84.90 ± 16.40	-5.624	<.001	62.46 ± 21.84	70.53 ± 21.67	-2.658	.008
	67.5 (55.0-80.0)	90.0 (77.5-100.0)			65.0 (45.0-77.5)	68.7 (55.0-90.0)		
General health	54.61± 14.83	63.75 ± 17.20	-3.880	<.001	46.66 ± 17.76	57.57 ± 14.31	-4.847	<.001
	50.0 (45.0-65.0)	65.0 (50.0-75.0)			50.0 (35.0-55.0)	55.0 (50.0-70.0)		

SD = standard deviation; SF-36 = 36-item Short Form Survey Questionnaire.

^a Mann-Whitney *U* test.

Table 5
Correlation of Pain Intensity Experienced During COVID-19 Infection with Fear of Pain and Quality of Life

	Pain severity during COVID-19		Fear of pain	
	<i>p</i>	<i>r*</i>	<i>p</i>	<i>r*</i>
Pain severity during COVID-19	-	-	-	-
Fear of pain	<.001	.236	-	-
Physical functioning	<.001	-.362	<.001	-.257
Role-physical	<.001	-.382	.009	-.129
Role-emotional	<.001	-.339	<.001	-.228
Vitality/energy	<.001	-.328	<.001	-.278
Mental health	.037	-.104	<.001	-.287
Social functioning	<.001	-.354	<.001	-.358
Bodily pain	<.001	-.392	<.001	-.298
General health	<.001	-.327	<.001	-.254

* *r* calculated by Spearman test.

ing many problems such as chronic pain, depression, and injury (Maeda et al., 2018). Increased anxiety, fear, and stress leads to an increase in perceived pain intensity and a decrease in pain tolerance (Michaelides & Zis, 2019). In this study, 76.5% of individuals said they were afraid of getting COVID-19 infection again, and 74.5% were afraid of feeling pain during COVID-19 (Table 1). Associative learning about pain can be adapted initially in an attempt to help individuals prevent pain and potential harm. However, avoiding permanent routines and experiences can negatively affect physical performance, mood, and sense of self-perception (Meulders & Bennett, 2018). Since fear of pain has a wide scope, it should be taken into account that there are also various biopsychosocial (e.g. genetic, psychologic, anthropologic, social) components that can lead to pain-related fear (Randall et al., 2017). In addition, pain has a negative impact on patients' quality of life because it may significantly affect daily living activities and lead to mood disorders (Michaelides & Zis, 2019). Studies have shown that the quality of life of individuals experiencing pain is negatively affected (Fagerström et al., 2020; Luque-Suarez et al., 2019). In the current study, the individuals who experienced pain during their COVID-19 experience had lower quality of life than those who did not experience pain (Table 4). Moreover, a negative correlation was found between the fear of pain and the quality of life of the individuals (Table 5). In this case, it is estimated that as the fear of pain increases, the quality of life of the individuals decreases and the quality of life in all areas decreases due to the emotional effects of the individuals. In addition, it was determined that the quality of life of individuals who were treated in hospital during COVID-19 infection was generally low. However, it is difficult to give a definitive explanation for this situation as both quality of life and hospitalization are affected by many factors (Soares et al., 2020; Fayers & Machin, 2016).

Pain can have negative affects on both physical activity and psychological state of patients. While this may seem like a simple process, it is actually very complex. Therefore, relief of pain is the basic requirement of individuals (Meulders & Bennett, 2018; Chou et al., 2016). The nurse, who has an important role in caring for patients with pain, should be able to describe the pain behaviors of the patients in order to provide an effective approach to the control and relief of pain (Potter et al., 2017).

Limitations

Although individuals from all regions of the country participated in the study, the fact that it was conducted in a single country may limit generalizability. Conducting the study with an online survey is other limitation of our study.

Conclusion

This study showed that patients who experienced intense pain during COVID-19 infection have higher fear of pain and lower quality of life. In addition, as the fear of pain increases, the quality of life of patients decreases.

Implications for nursing education, practice, and research

In stressful diseases such as epidemics, the severity of pain experienced by individuals may increase. Negative pain experiences may lead to fear of pain, and this fear of pain may negatively affect the quality of life. While explaining pain and management of pain in nursing education, pain due to viral infections and its short- and long-term effects on the individual should be explained. Nurses who understand that pain affects a patient's fear of pain and quality of life, can play a role in preventing chronic pain in patients with appropriate interventions and by carefully evaluating patients while providing excellent care. Nurses should be aware that pain itself may affect quality of life and increase fears of pain and suffering in the future. In future nursing research, it should be investigated by long follow-up studies how long pain due to viral diseases continues and in which anatomic parts of the body, how it affects individuals, and whether it causes chronic pain. In addition, there is a need for future studies on quality of life and its impact on the individual experiencing chronic pain.

Ethical Statement

The study was approved by the Ministry of Health Scientific Research Platform (2021-03-10T21_16_21) and the Ethics Committee of the University (2021/172).

Funding Source

None.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors thank all individuals who participated in this study.

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