

# Explaining the Components of Resilience in Patients with Chronic Pain: A Qualitative Content Analysis

## Abstract

**Background:** Resilience is a psychological trait and a protective factor that plays a vital role in coping with Chronic Pain (CP). Despite its importance, research has yet to fully clarify the concept and components of resilience in patients with CP. Accordingly, the present study aims to explain the components of resilience in patients with CP. **Materials and Methods:** The current qualitative study used a conventional content analysis methodology. The research population included all patients with CP who were referred to clinics affiliated with Shiraz University of Medical Sciences (south of Iran) from August 2021 to August 2022. Participants were selected using the purposive sampling method. In-depth semi-structured interviews were conducted with 20 participants to collect information. Data analysis was conducted using MAXQDA 2020 software in conjunction with data collection efforts. **Results:** Generally, in the current study, 30 sub-sub-categories, 11 sub-categories, and five main categories were extracted as components of resilience in patients with CP. The main categories of resilience against CP included the following: 1. emotional self-regulation, 2. psychological flexibility, 3. self-care, 4. appeal to religion–spirituality, and 5. internal resources and individual competencies. **Conclusions:** The present study highlights the different physical, mental, and religious-spiritual strategies that may contribute to resilience against pain. The resilience components identified in this study provide a foundation for healthcare professionals, particularly nurses, to design and implement diverse pain management strategies that enhance adjustment to CP conditions.

**Keywords:** Chronic pain, qualitative research, resilience, strategies

## Introduction

Chronic Pain (CP) is one of the most critical medical problems worldwide.<sup>[1]</sup> The prevalence of CP in different countries has been reported between 13.0% and 51.3%.<sup>[2,3]</sup> CP generally disrupts all aspects of the person's quality of life.<sup>[4-7]</sup>

Resilience is one of the psychological factors playing a significant role in the acceptance of pain,<sup>[8]</sup> the intensity of the pain,<sup>[9]</sup> the level of disability, depression, and, generally, the mental health of people with CP.<sup>[10-12]</sup> This psychological trait is significant in predicting pain acceptance, thinking about pain,<sup>[8,13]</sup> and related health outcomes.<sup>[11]</sup> Individuals grappling with CP may experience heightened sensitivity to pain as their resilience diminishes over time.<sup>[12]</sup> Consequently, building resilience is crucial for adapting to CP.<sup>[14]</sup> This psychological trait helps us understand why people react differently to pain; some may feel overwhelmed by it, while others leverage

their discomfort to enhance their quality of life and psychological development.<sup>[15]</sup>

Although resilience has an influential role in outcomes related to CP,<sup>[12]</sup> many researchers believe the precise components of resilience—as a multi-dimensional concept—still need to be clarified.<sup>[12,16-19]</sup> Johnson states that defining resilience is challenging because its nature is heavily influenced by context.<sup>[20]</sup> In addition, the applicability of these resilience components to patients from various cultural and social backgrounds remains unclear. For instance, in Iran, religious beliefs significantly influence how pain is perceived and accepted.<sup>[21]</sup> Moreover, cultural norms often lead some parents to conceal their pain.<sup>[22]</sup>

Although several qualitative studies regarding CP have been increasing in recent years, Sheedy *et al.*<sup>[23]</sup> have merely explored the components of resilience in CP—most of the participants in their study were fibromyalgia patients. However, resilience

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is a profound concept that includes broader components and dimensions. Consequently, the results from a handful of qualitative studies carried out in different cultural settings may not be generalized to individuals with CP in Iran. Resilience components may differ depending on the type of personality, type of challenge, available resources, environmental context, and social context and from one person to another.<sup>[10,18,20]</sup> Therefore, based on existing evidence, both CP and resilience are context-dependent, and more comprehensive studies are still needed to identify their precise concepts and dimensions.<sup>[12,16,18,20,24,25]</sup> Given the limited resilience observed in patients with CP,<sup>[12,26]</sup> it is essential to take interventions to increase resilience mechanisms in these patients or reduce its negative consequences.<sup>[10]</sup> To effectively enhance resilience in individuals with CP, it is crucial to identify the components that contribute to resilience within the specific socio-cultural context of Iran. This still needs to be explored, and understanding these components is essential for designing and implementing successful interventions. Therefore, this qualitative study aims to explain “the components of resilience in patients with CP” in Iran.

## Materials and Methods

The present study used a qualitative research method with a conventional content analysis methodology. The current study was conducted from August 2021 to August 2022 in clinics affiliated with the Shiraz University of Medical Sciences. Patients were informed about the study's goals, benefits, and potential applications to encourage their participation. However, one individual declined to participate due to an unwillingness to spend time answering the survey questions. Twenty participants were selected, including 16 patients with CP and four physicians with various specialties related to pain, pain specialist fellowship, psychosomatic diseases fellowship, rehabilitation specialist, and neurosurgeon, to serve as key informants using a purposive sampling method. The study's main objective was to explain the resilience-enhancing strategies drawing on the experiences of patients with CP. This study initially selected individuals from this patient group as participants. To deepen our understanding of resilience components in the context of CP, we incorporated insights and experiences from physicians who had treated patients with CP. In addition, participants were selected using maximum variance sampling according to essential demographic information and clinical characteristics such as age, gender, education level, marital status, occupation, and type of CP. Participant selection and interview conduct continued until data saturation occurred.

The inclusion criteria of the participating patients include age over 18 years, diagnosis of CP based on the specialist physician's diagnosis [under the criteria of the 11<sup>th</sup> revision of the International Classification of Diseases (ICD-11)] and patient self-report, willingness to participate in the

study, having physical health (e.g., lack of hearing and speech loss) and mental health (according to the patient's report) to participate in the interviews, the ability to share rich information around the study's subject, and the ability to speak Persian. Besides, the criteria for the withdrawal of participating patients from the study include suffering from other chronic physical diseases such as cancer and MS due to the different nature and prognosis of these diseases, which might affect the study's results (according to the patient self-report), suffering from known chronic mental disorders (according to the patient self-report), and unwillingness to continue participating during the study. The inclusion criteria of the participating doctors included clinical work experience with CP patients for at least 5 years, the ability to share rich information about the study's subjects, the ability to speak Persian, and the willingness to participate.

In addition to the specialist physician's diagnosis, a questionnaire was used to measure the pain in the patient. This questionnaire was designed by Shaygan *et al.* (2020).<sup>[27]</sup> The tool's psychometric properties have been evaluated and validated, with an impact score of at least 1.5, a content validity index ranging between 0.89 and 1, a content validity ratio exceeding 0.84, and a correlation coefficient  $\geq 0.72$ .

Data collection was done through semi-structured individual interviews with the participants. All the interviews were conducted face-to-face. A follow-up interview was conducted over the phone for the sixth participant to clarify the ambiguities and issues raised in the first interview. Every interview commenced with general questions: “based on your experience, how would you define the concept of endurance or tolerance to pain? What techniques do you employ to manage pain and make it more bearable?” These were followed by probing questions aimed at directing the conversation, providing clarification, and drawing out more detailed responses.

The time and place of the interview were determined with the coordination of the participants. In addition, the interview was conducted whenever they were in the best condition. The participants' addresses and phone numbers were obtained, and the researcher's phone number was also provided to them to conduct subsequent interview sessions (if needed) and confirm their statements. In the end, the interview was finished by summarizing the contents, announcing the termination or continuing the interview in future sessions, and thanking the participant. The duration of the interviews was between 30 and 60 minutes. The conversations of each interview session were audio-recorded in mp3 format, and then the authors listened to the conversations recorded in each interview. Conversations were transcribed verbatim into Persian immediately after each interview and before the following interview. The recorded contents were then checked regarding correspondence with the manuscripts.

Data collection and analysis occurred concurrently utilizing the Graneheim and Lundman (2004) methodology. This involved thoroughly reading interview transcripts for an overarching comprehension, pinpointing semantic units and preliminary codes, grouping similar codes into broader categories, and synthesizing these categories to extract principal themes.<sup>[28]</sup> MAXQDA 2020 served as the data analysis software.

Four criteria are used to evaluate trustworthiness or rigor in qualitative studies: credibility, confirmability, transferability, and dependability.<sup>[29]</sup> The credibility and confirmability dimensions were fulfilled through prolonged engagement (12 months) with the study's subject to ensure an in-depth understanding of the concept, immersion in the data, and peer checking by four experts in qualitative studies and CP. Additionally, to improve the credibility criterion, the initial coding of data (by the third author) was independently reviewed by each member of the research team, followed by a review by all research members. In addition, two qualitative researchers (Ph.D. nursing faculty members) assessed coded data blinded to the study process. Moreover, maximum sampling variation enhanced the data's confirmability and credibility. Eventually, the results were cross-checked by the participants for accuracy, completeness, and conformity of the interpretations with their experiences, as well as ensuring correct coding. Accordingly, the feedback from the participants was used to modify some items. This study implemented precise interview methods, meticulous record-keeping, and a thorough peer-review process to guarantee the data's confirmability and dependability. The researchers described demographic information, research environment, interview technique, data collection, and analysis process to fulfill the transferability dimension.

### Ethical considerations

The current study was approved by the Ethics Committee of Shiraz University of Medical Sciences, Shiraz, Iran (Approval code: IR.SUMS.NUMIMG.REC.1400.011). After describing the study's purpose and methodology, written and constantly informed consent was obtained from all participants. In all research steps, confidentiality was observed, and codes were used to refer to the participants for reporting the findings (Participant 1: P1, P2, P3, and the like). Furthermore, the participants were ensured they could withdraw from the study at any time. Participants were informed that their conversations would be recorded during the interview for accurate information collection and documentation.

### Results

Semi-structured in-depth interviews were conducted with 20 participants (16 patients and four doctors) to collect data, and the data obtained were analyzed using conventional qualitative content analysis. The mean age of the participants was  $49.50 \pm 11.36$  years, from 30 to 75 years old. The majority of patients had musculoskeletal

pain for more than 1 year. Eleven had pain in other parts of the body besides their main pain. The demographic characteristics of the participants are presented in Table 1.

In total, 1618 primary codes were extracted from 20 interviews during the data analysis process. After numerous revisions and removing unnecessary and unrelated codes, 30 sub-sub-categories, 11 sub-categories, and five main categories were extracted. The main categories created included 1. emotional self-regulation, 2. psychological flexibility, 3. self-care, 4. appeal to religion–spirituality, and 5. internal resources and individual competencies. Figure 1 displays the main and sub-categories (components) of resilience. For a detailed view of the sub-sub-categories, sub-categories, and main categories of resilience in patients with CP.

### Emotional self-regulation

Based on the present study's findings, emotional self-regulation in the context of resilience against CP means patients should be aware of the impact of internal emotions on pain tolerance and gaining the ability to control their emotions. Most participants agreed that recognizing and understanding how thoughts, feelings, and emotions influence pain, as well as effectively managing these emotions, are key factors that enhance resilience to chronic pain. This main category included two sub-categories: "Cognition and awareness of the impact of internal emotional on pain tolerance" and "Emotional control."

#### *Cognition and awareness of the impact of internal emotions on pain tolerance*

Most participants acknowledged that people's inner feelings could affect their pain tolerance. They stated that the way of thinking, fear, despair, stress, and anxiety are effective in pain resilience: "I know that stress and nervousness have a great effect. When my work interferes with each other; for example, when I have school work, and I have to do homework, my stress levels increase, drastically worsening my experience of pain." (P11)

#### *Emotional control*

Most participants stated that controlling their inner emotions and self-restraint when experiencing pain are essential factors influencing pain tolerance, so positive feelings and emotions increase resilience against pain and vice versa: "For example, the times when I expressed my pain and kept saying to others, "Oh, I'm in pain," then (my pain) doesn't get better; it even gets worse. That's why I try not to express my pain in front of others and not to sigh and moan. Because when I don't express it too much, I think less about pain, and therefore, I feel that it has gotten better." (P12)

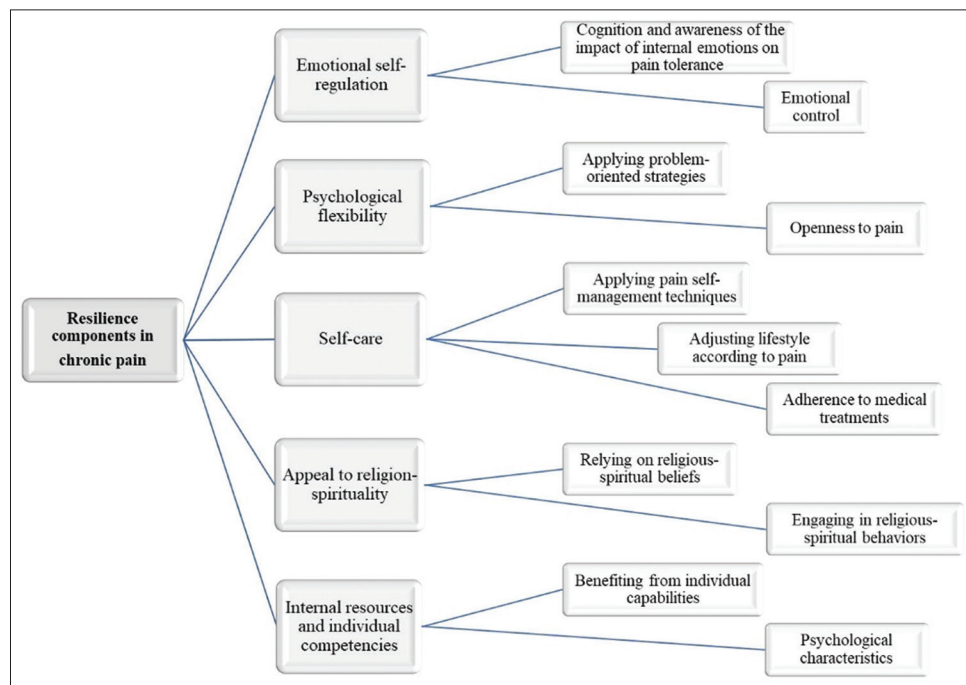
### Psychological flexibility

This study suggests that psychological flexibility, as it relates to resilience against CP, involves openness to pain—this includes accepting the pain, finding the

**Table 1: Demographic characteristics of the participants**

n	Role	Age (years)	Gender	Marital status	Educational level	Job
P1	Patient	60	Female	Married	Diploma	Housewife
P2	Patient	35	Male	Married	Elementary school	Worker
P3	Patient	61	Female	Married	Associate degree	Retired teacher
P4	Patient	47	Female	Single	Diploma	Employee
P5	Patient	57	Male	Married	Diploma	Taxi driver
P6	Patient	39	Female	Married	Junior school	Shopkeeper
P7	Patient	73	Female	Married	Associate degree	Retired teacher
P8	Patient	40	Male	Single	Master's degree	Employee
P9	Patient	51	Female	Dead husband	Junior school	Housewife
P10	Patient	57	Female	Married	Diploma	Tailor and worker
P11	Patient	55	Female	Married	Bachelor's degree	Teacher
P12	Patient	70	Female	Married	Elementary school	Tailor
P13	Physician	45	Male	Married	Fellowship	Doctor
P14	Physician	39	Female	Married	Specialist	Doctor
P15	Patient	46	Female	Married	Diploma	Housewife
P16	Patient	40	Female	Married	Bachelor's degree	Housewife
P17	Physician	51	Male	Married	Specialist	Doctor
P18	Physician	42	Female	Married	Fellowship	Doctor
P19	Patient	30	Male	Married	Associate degree	Worker
P20	Patient	52	Female	Married	Diploma	Photographer and videographer

n: Number, P: Participant



**Figure 1: Main categories and sub-categories (components) of resilience in patients with CP**

meaning of pain, and remaining committed to goal-oriented activities despite pain. Moreover, it involves developing the capacity to employ problem-solving strategies to manage pain more effectively. According to most participants, accepting the pain and using skills and strategies to lead a good life despite the pain can help improve their resilience against CP. Psychological flexibility includes “Applying problem-oriented strategies” and “Openness to pain.”

*Applying problem-oriented strategies*

Creative and intelligent strategies such as using hobbies and positive attachments; seeking support from family, friends, neighbors, and the treatment team; planning and setting goals; managing relationships with others; and managing family economic affairs were among the things that the participants used or suggested to promote tolerance to pain: “When your

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*mind is busy, you feel the pain but ignore it. I watch excellent and informative movies on TV... But I study more. When I study, I sink into another world and forget myself and my pain, so you don't have to think about the pain.” (P7)*

As mentioned, managing social relationships and having a rich social support network played an essential role in coping with chronic pain. For example, one of the participants said the following regarding the impact of social relationships: *“Having strong social relationships and communication skills can help a person’s resilience. Usually, people with a social and communication network around them can withstand problems and pain better.” (P18)*

### **Openness to pain**

According to the participants, purposeful acceptance of pain, tolerating pain to achieve pain treatment goals, unifying with pain, committing to activities in line with goals, and finding the meaning of pain can help increase resilience to pain: *“...the way is to know this (pain) as a part of my life, to know it as a part of my being, to live with it, ... I live with it.” (P8)*

Another participant said the following regarding committing to activities in line with goals: *“I try my best to do my tasks at home and in life; prepare food for my children, go to work... I say it’s not my customers’ fault that my foot hurts. These things make me do my job properly despite the pain and fatigue and endure it.” (P20)*

Regarding finding the meaning of pain, one of the participants said: *“...you can say that sometimes pain is a blessing from God, because when a person is in pain, he/she remembers God, calls out to God a lot and gets closer to God... such a person can accept in his/her life that pain is a blessing from God, then he/she can deal with it better.” (P6)*

### **Self-care**

Self-care in this study refers to individuals with CP adopting a variety of strategies—physical, psychological, medical, and complementary therapies—on their own. Additionally, they tailor their lifestyles to better manage pain and enhance their ability to cope with it. By taking care of oneself (i.e., doing activities according to one’s skill and ability to maintain and improve one’s physical and mental health), the patient can help improve his/her resilience against pain. The self-care component consisted of the sub-categories of “Applying pain self-management techniques,” “Adjusting lifestyle according to pain,” and “Adherence to medical treatments.”

#### **Applying pain self-management techniques**

The use of physical strategies, such as applying pressure in the pain area and performing various sports, and mental strategies of pain control, such as mental imagery and meditation, were among the practical techniques of the

participants to increase resilience to pain: *“Sometimes I would sit quietly in a corner and press my head to calm down..., sometimes I would wrap my head with a cloth to calm down.” (P6)*

Another participant said the following concerning the positive effect of exercise as a physical strategy for better pain tolerance: *“Once a week on Fridays, we go mountain climbing. It helps me a lot (to tolerate the pain). I regularly ride a bike, walk..., the most important (solution to better pain tolerance) is exercise...” (P5)*

Furthermore, meditation as a mental strategy can be effective in order to improve pain control: *“Many patients welcome spiritual and religious views in any form... Yoga and meditation by patients can increase their resilience (against pain).” (P17)*

#### **Adjusting lifestyle according to pain**

According to the participants, if patients try to modify their lifestyle and habits and try to maintain a suitable lifestyle before the existence of pain, this means tolerating pain and increasing their ability to endure pain. For instance, they suggested that strategies like modifying one’s diet and managing weight, being in a suitable environment, and finding equilibrium between physical activity and rest can facilitate lifestyle adjustments, even amid pain. In the following, examples of the statements of several participants regarding these strategies are presented respectively: *“During this time when I was in pain, the diet I followed and my weight dropped by ten kilograms had a great effect on me (to bear pain easier)...” (P5)*

*“Where there is more noise, it makes it harder to bear the pain. The best condition that makes me bear the pain better is where I have more peace... A quiet and dark place is perfect.” (P8)*

*“...or, for example, after working for a while, I sit for 5-10 minutes, rest, get up again and continue my work.” (P4)*

#### **Adherence to medical treatments**

According to the experience of the participants, timely consumption of drugs prescribed by the therapist, taking advantage of non-pharmacological solutions and medical treatments for pain, and following the treatment of other underlying diseases can be effective in reducing pain and increasing their resilience to pain. In the following, examples of the statements of several participants regarding these strategies are presented:

*“I take the medicine that the doctor gave me... A person in pain should follow the doctor’s orders and take his/her medicine on time.” (P9)*

*“...Physiotherapy was great. If I had gone to physiotherapy at the beginning when I got the disease, I wouldn’t have been in so much pain ... I have had a few acupuncture sessions, which was good.” (P20) “Illnesses such as*

*digestive problems can make the headache worse, or if a person already has a mental illness, these can make the pain worse... The pain will be easier if other diseases are treated.” (P19)*

### Appeal to religion–spirituality

An appeal to religion–spirituality in the context of resilience and CP means patients relying on religious–spiritual beliefs and engaging in religious–spiritual practices in order to promote tolerance to pain. Taking advantage of God’s mercy and feeling of belonging to the eternal divine source can help to increase patience and tolerance in dealing with pain. This category included two sub-categories: “Relying on religious-spiritual beliefs” and “Engaging in religious-spiritual practices.”

#### Relying on religious–spiritual beliefs

According to the participants, a person’s belief in religious–spiritual matters affects the endurance of pain, so faith and trust in God and hope in the Lord lead to an increase in tolerance against pain: *“Some people have a higher level of faith; these people have a much higher level of tolerance to pain. I trust in God, and that’s why I can withstand pain better.” (P2)*

*“...I say only hope in God; having hope is very important to cope with pain.” (P15)*

#### Engaging in religious–spiritual practices (behaviors)

Patients report that engaging in religious–spiritual practices, such as prayer and expressions of gratitude to God, can enhance their ability to cope with pain. The sense of peace, mood elevation, comfort, and mental liberation experienced through reciting dhikr and praying appears to positively impact their pain tolerance: *“... I go to prayer sessions more often; it’s excellent, and one’s mood improves. When your mood improves, it also affects the pain, and I think my pain gets better because I don’t think about it anymore...” (P9)*

*“Sometimes when I’m working, I say thank you to God; I’m grateful that I could do this work or walk this far... I always say thank you to God, and this (gratitude) increases my pain tolerance... (P1)*

### Internal resources and individual competencies

In the current study, internal resources and individual competencies in the field of resilience against CP refer to the strengthening of positive psychological characteristics and learning to use one’s capabilities for better pain tolerance. According to the participants, the abilities and experiences of patients, their psychological characteristics and personality type, and even their personality before the onset of pain were vital factors affecting the ability of patients to endure CP. This category includes “Benefiting from individual capabilities” and “Psychological characteristics.”

### Benefiting from individual capabilities

Patients with CP can foster resilience by actively seeking to improve their pain tolerance, drawing on their personal strengths, educational background, and past experiences: *“The person who helped me the most was, in fact, me; I wanted to deal with it (pain) and not disturb my work. If a person wants to survive, he/she must want to overcome his/her pain.” (P8)*

Some participants regarding the role of learning and using one’s previous experiences said:

*“Some things can be learned, like tolerating pain. Some families teach their children patience from the very beginning ...” (P10)* *“Learning the resilience skill is effective. As soon as people learn, children learn how to be resilient in school, which can help increase resilience. People’s previous experiences can also be effective (in resilience against pain).” (P18)*

### Psychological characteristics

Most participants stated that having a series of positive psychological characteristics, such as independence, high decision-making power, self-confidence, trust in the doctor, trust in the people around you, and the like, can increase the resilience of patients to pain. The quotes of two of the participants in this regard are as follows: *“People with a high pain tolerance have independence, and their decision-making power is higher...” (P5)*

*“I trust in the doctor... Trusting helps a person in life and to better tolerate pain. Trusting helps to reduce stress, and as a result, the pain becomes easier. (P4)*

## Discussion

According to the obtained findings, emotional self-regulation, including awareness of the impact of internal emotions on pain tolerance and emotional control, is considered one of the main components of resilience against pain. Most participants were aware of the influence of their feelings, thinking, and behavior on pain tolerance. They acknowledged that negative emotions such as stress and thoughts reduce pain tolerance and vice versa. Consistent with many previous studies,<sup>[30-33]</sup> the present findings showed that awareness of the impact of emotions and emotional control plays a vital role in pain resilience. In line with the current study’s findings, West *et al.*<sup>[30]</sup> state that having positive thoughts and behaviors can help increase the resilience and overall well-being of patients with CP. Regarding the role of emotion regulation in modulating resilience to pain, various studies indicate that positive emotions, such as hope and expectation for the situation to improve, positively affect the resilience of patients with CP.<sup>[30,31,34]</sup> Correspondingly, emotional intelligence could be a vital factor in the development or maintenance of CP.<sup>[35]</sup>

Participants indicated that avoiding reactions to pain can enhance an individual’s ability to withstand and tolerate

higher levels of pain. In Iranian culture, self-control is highly valued, particularly among patients and mothers experiencing pain. These individuals often choose to remain silent and refrain from exhibiting pain-related behaviors to prevent causing distress or inconvenience to their loved ones, particularly family members. Moreover, aligning with recent research, Mustafa *et al.*<sup>[36]</sup> observed that Indian women typically prioritize their families and refrain from voicing their suffering. Based on these findings, designing educational programs according to the patients' culture to increase the awareness of patients with CP regarding the effects of factors affecting pain makes it possible to help empower patients to overcome pain and be more resilient.

Similarly, this research found that psychological flexibility was one of the main components of resilience in patients with CP. The participants stated that taking advantage of problem-oriented strategies such as hobbies and positive attachments, seeking support from others, goal setting and planning, managing relationships with others, and managing family economic affairs lead to increased flexibility and resilience against pain. Problem-solving skills help improve the resilience and health of people with pain.<sup>[37]</sup> In line with these results, the study participants in Rolbiecki *et al.*'s<sup>[31]</sup> research reported that they were distracted from pain during work and consequently did not perceive it. Being supported by health professionals and having positive social experiences play a role in the resilience process of patients with CP.<sup>[23]</sup> Additionally, Daffin *et al.*<sup>[38]</sup> stated that social support and receiving approval from family members and friends were essential factors affecting resilience against fibromyalgia disease. The findings from a meta-analysis indicate that individuals with low to medium socio-economic statuses face a greater risk of developing CP than those with a high socio-economic status.<sup>[39]</sup> According to participants, openness to pain and coping with pain led to a more comfortable and less stressful life experience. Besides, the effort and commitment of the patients to carry out their tasks and responsibilities in their personal and social lives, despite the presence of pain, have helped them to reach their goals in life. Consistent with these findings, participants in a qualitative study noted that resilience to pain means fighting to be robust against pain, accepting pain as part of who we are, and learning to live with the pain.<sup>[30]</sup> Admittedly, several studies have shown that pain acceptance is necessary to improve patients' performance.<sup>[40]</sup> Likewise, meaning in life enhances individual resilient responses<sup>[41]</sup> and is associated with improved health outcomes for patients with CP.<sup>[42,43]</sup> Therefore, designing programs to train and strengthen the creativity of patients to use problem-oriented strategies and meaning therapy to improve their resilience may be effective.

In the present study, self-care, as another main component of resilience, included using physical and mental self-management techniques to control pain, adjusting the lifestyle according to pain, and following medical treatments. The results of systematic review studies show the effect

of self-management programs on improving pain and the resulting disability in patients with CP.<sup>[44,45]</sup> Regular physical activity, including walking, has been recognized for its significant role in managing pain effectively.<sup>[31,23,46]</sup> Consistent with recent research, physical pain management techniques, including engaging in various sports, have been significant in enhancing pain tolerance among study participants. Similarly, when it comes to mental pain management strategies, the effectiveness of cognitive approaches has been corroborated. Techniques such as positive thinking and comparing oneself to those in more severe conditions have been shown to bolster patients' ability to cope with CP.<sup>[23,31]</sup>

In addition, in this study, adjusting the lifestyle according to pain, adherence to medical approaches, and follow-up treatment of other underlying diseases were other self-care strategies to tolerate pain as much as possible. In a qualitative study, active participation in treatment programs, proper diet, supplements, and acupuncture were among the factors that increased patients' resilience against pain.<sup>[31]</sup> Sheedy *et al.*'s<sup>[23]</sup> study highlighted the significant impact of a consistent management plan on patient resilience, emphasizing the importance of timely medical treatment access, medication adherence, and sleep for individuals with CP. Study participants highlighted the management of coexisting conditions and other underlying diseases as a key factor in enhancing tolerance to CP, a point not touched upon in other qualitative research on resilience. This suggests the importance of including this aspect in educational programs for patients with CP.

Appeal to religion–spirituality was another component of resilience against pain, which almost all participants acknowledged. The present research's findings demonstrated the positive effect of religious–spiritual beliefs and behaviors on the participants' pain tolerance. In this regard, the findings of Corbett *et al.*'s<sup>[47]</sup> phenomenological study show that spirituality (belief in God, meaning, and purpose) can help patients adapt to CP. In another study, participants stated that faith, prayer, and hope in God were a source of support and relief for their CP.<sup>[31]</sup> Given the crucial impact of spirituality on the resilience of individuals with CP and acknowledging that patients with CP often experience lower levels of spiritual well-being compared to healthy individuals,<sup>[48]</sup> it is recommended that culturally and religiously sensitive spiritual interventions be developed and executed to enhance their resilience. The component of internal resources and individual competencies was the last component of resilience in CP. The participants of the present study indicated that the ability to better tolerate pain depends on individual capabilities and the application of past experiences. People's willingness to learn is closely linked to a person's resilience.<sup>[49]</sup> In a qualitative study, West *et al.*<sup>[30]</sup> concluded that learning from past experiences leads to better pain tolerance. According to the participants' statements, psychological characteristics were another component

of internal resources and individual competencies. The participants of the present study stated that psychological characteristics such as independence, decision-making power, trust, forgiveness, determination, and strength play an essential role in resilience against pain. Consistent with these findings, Sheedy *et al.*<sup>[23]</sup> showed that stoicism, confidence, and motivation to control pain were factors that enhanced resilience in patients with CP. Personality strengths such as creativity, hope, open-mindedness, forgiveness, gratitude, leadership power, and humor predict resilience.<sup>[49]</sup> Accordingly, healthcare workers' attention to the positive psychological characteristics of patients and strengthening these characteristics can be a valuable and effective strategy to improve their resilience to pain and its effective management.

The present study is one of the few qualitative studies showing the components of resilience in patients with CP. Some of the current study's strengths are the selection of participants from different clinics and the high variance of the sample of participants. Incorporating open-ended questions introduced a diverse range of themes, which was a significant strength. Additionally, the resilience components identified in this study can be utilized in experimental designs aimed at enhancing the patients' resilience with CP. Although the ability to generalize the results of this qualitative study is limited, replicating the research in various locations with diverse socio-cultural conditions is essential. Nevertheless, given that the purpose of qualitative research is to delve into the social reality of a specific group at a particular time, the broad applicability or transferability of the findings is not its primary objective.

## Conclusion

The present study revealed that patients with CP use different physical, mental, and religious-spiritual strategies to improve their resilience against pain. The details of the strategies and how to implement them in patients with varying living conditions and socio-cultural backgrounds can be different. The components obtained from this study can be used to design a suitable program to improve patients' resilience with CP. Additionally, the resilience-enhancing components obtained from the current study can be a starting point for healthcare providers, primarily nurses, to plan and develop different pain management strategies. Healthcare professionals should implement and advocate for protective measures to help individuals with CP in hospitals, clinics, and community settings, thereby enhancing their ability to adapt to living with CP. It is suggested that interventional research be used to investigate the effects of these strategies on the physical and psychological outcomes of patients with CP.

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## Conflicts of interest

Nothing to declare.

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