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Research Paper

Mediating Roles of Coping Strategies and the Acceptance of Pain in the relationship between Thought-action Fusion and Fear of Pain in People with Chronic Pain

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Key words:
Chronic pain,
Coping strategies,
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ABSTRACT

Aims The present study aimed to assess the mediating roles of some variables, such as coping strategies and pain acceptance, in the association between thought-action fusion and fear of pain in people with chronic pain.

Materials & Methods This study was conducted based on a descriptive, causal-correlational design. The statistical population consisted of 220 patients with chronic pain, selected via the available sampling method, from patients referred to physiotherapy centers and clinics in Yazd province. Data were collected using the McCracken Acceptance of Chronic Pain Questionnaire, Rosenstiel & Keefe Pain Coping Strategies Questionnaire, McCracken the Pain Anxiety Symptoms Scale, and Shafran Thought-action Fusion Questionnaire. The data were analyzed in SPSS (version 22) and LISREL (version 8.80) software packages using structural equation modeling.

Findings Based on the findings, thought-action fusion was able to explain the fear of pain in the form of causal-structural relationships with the mediating role of coping strategies and pain acceptance in a meaningful and desirable way since the number of fit indicators is in the desired range.

Conclusion As evidenced by the results of the study, it can be concluded that thought-action fusion had a negative effect on coping strategies and pain acceptance and a positive and significant impact on fear of pain. Furthermore, coping strategies and pain acceptance also played a mediating and facilitating role in the relationship between thought-action and fear of pain in people with chronic pain. The findings of this research can be of great help to medical caregivers who treat patients with chronic pain.

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مقاله پژوهشی

نقش میانجی راهبردهای مقابله و پذیرش درد در رابطه بین آمیختگی فکر–عمل و ترس از درد در افراد مبتلا به درد مزمن

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چکیده

هدف: این مطالعه با هدف توصیف نقش میانجی برخی از متغیرها مانند راهبردهای مقابله و پذیرش درد در ارتباط بین دو متغیر آمیختگی فکر - عمل و ترس از درد در افراد مبتلا به درد مزمن انجام شد.

مواد و روش‌ها: روش آن توصیفی از نوع علی - همبستگی است و نمونه آماری شامل ۲۲۰ بیمار مبتلا به درد مزمن است و از بین بیماران مراجعه‌کننده به مراکز و کلینیک‌های فیزیوتراپی استان یزد به روش نمونه‌گیری در دسترس انتخاب شده‌اند. داده‌ها با استفاده از پرسش‌نامه پذیرش درد مزمن مک کراکن، پرسش‌نامه راهبردهای مقابله با درد روزنستیل و کیف، مقیاس علائم اضطراب درد مک کراکن و پرسش‌نامه آمیختگی فکر - عمل شافران جمع‌آوری شد. برای تجزیه و تحلیل داده‌ها از SPSS-22 و روش مدل‌سازی معادلات ساختاری در LISREL-8.80 استفاده شد.

یافته‌ها: یافته‌ها نشان داد که متغیر آمیختگی فکر - عمل قادر است ترس از درد را در قالب روابط علی - ساختاری با نقش میانجی راهبردهای مقابله‌ای و پذیرش درد به صورت معنادار و مطلوب تبیین کند؛ زیرا میزان شاخص‌های برازش در محدوده مد نظر قرار دارند.

نتیجه‌گیری: بنابراین با توجه به یافته‌ها می‌توان نتیجه گرفت که آمیختگی فکر - عمل بر راهبردهای مقابله‌ای و پذیرش درد تاثیر منفی و بر ترس از درد تاثیر مثبت و معناداری دارد. از سوی دیگر، راهبردهای مقابله و پذیرش درد نیز نقش میانجی و تسهیل‌کننده در رابطه بین فکر - عمل و ترس از درد در افراد مبتلا به درد مزمن داشته‌اند. یافته‌های این پژوهش به ویژه برای مراقبان طبی که بیماران مبتلا به درد مزمن را درمان می‌کنند، اهمیت دارد.

کلیدواژه‌ها:
درد،
درد مزمن،
راهبردهای مقابله‌ای،
ترس

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Introduction

Pain is a phenomenon experienced by every person throughout life. Pain is defined as "an unpleasant sensory experience associated with actual or mental tissue damage. Biologists state that stimuli that sense pain can damage tissue. Accordingly, pain is an experience that people associate with actual or potential tissue damage. Pain affects a part or parts of the body, is always unpleasant, and is, therefore, an emotional experience. Sometimes, people report pain in the absence of tissue damage or a possible pathophysiological cause, which usually occurs for psychological reasons [1]. Chronic pain is a type of pain that lasts longer than necessary to heal or damage. Chronic pain can significantly impair emotional and social functioning and is often associated with general anxiety and depression [2]. People with chronic pain usually report significant disability, such as decreased age-appropriate physical activity and disruption of daily activities, such as walking and exercise [3]. At the core of adult chronic pain-related models are a group of overlapping fear-related structures consisting of fear of pain, worry, rumination, pain-related anxiety, and anxiety sensitivity, as well as the concept of catastrophic thinking pain and its possible consequences [4].

Fear of pain is often related to people's beliefs about how harmful pain is [5]. Fear is a distressing emotional response in response to an immediate threat [6]. Pain stimulates our fear response and warns us to escape or the war system to act. Pain elicits fear and anxiety and promotes escape, avoidance, and adaptive behaviors that are essential for survival. When pain persists, motivational priority and attention shift to pain-related information. Such a shift often results in impaired functionality, leading to maladaptive pain-related fear and anxiety, as well as avoidance behaviors. Neuroimaging studies in chronic pain patients have established that brain activity differs from activity observed during acute pain in control subjects, especially in cortical and mesolimbic regions. [7]. Learning to fear pain can only be rapidly generalized after a few repetitions and can be reinforced and maintained as a practical process by predicting pain. Previous studies have pointed to fear of pain as a major factor in the development and persistence of pain disability in patients with pain, such as low back pain, neuropathic, upper extremity, abdomen, and headache [8, 9], regardless of the severity of pain known.

On the other hand, thought-action fusion (TAF) refers to beliefs in which thoughts and actions are inextricably linked [10]. Cognitive distortions, described as a fusion of thought and action, first appeared when working on pure obsessions. Fusion is a psychological phenomenon in which the patient equates obsessive activity and prohibited action with moral equivalent [11]. This concept is derived from this theoretical proposition as well as the clinical observations that patients with obsessive-compulsive disorder tend to assume that thought is the same as action. They can force a person to do unwanted and improper actions [12]. Accordingly, thought-action fusion can be expressed in such a way that thinking about a traumatic or unacceptable event increases the likelihood of that event occurring; therefore, constant avoidance of activities and fear of pain are associated with fusion. These thoughts can engender unnecessary contingencies of experiential avoidance in the form of compulsive behaviors or avoidance, aiming to avoid unwanted internal experiences. More specifically, cognitive fusion is an overlapping yet broader concept than thought-action fusion (TAF) [13]. Conversely, individuals who experience pain and gradually resume physical activity—thereby testing and recalibrating their pain expectations—often go on to experience improvements in their pain symptoms [14].

Coping skills are methods of managing situations and coping with life events, as well as conscious and rational ways of dealing with existing stresses. Coping with pain is manifested by identifying behavioral indicators of pain [15]. Pain management skills are assigned to two categories: compatible and incompatible. For instance, a coping strategy involves action, acceptance, and problem-solving. Incompatible coping responses are the tendency to be inactive [16]. Patients use a variety of skills to deal with their problems, and patients' variations in the use of coping skills explain the differences between them in adaptation [17]. Coping skills directly affect the ability to control or tolerate pain and continue daily activities by altering pain perception and functional ability. Ineffective coping and poor emotion regulation, however, are linked to lower mental health and quality of life [18]. In this regard, this inefficiency can bring about other consequences, such as susceptibility to some chronic diseases [19]. In maladaptive coping skills, a person's thoughts play a more important role, resulting in the severity of chronic pain. On the other hand, adaptive coping skills teach patients cognitive strategies and behavioral skills to reduce the effects of chronic pain on performance and quality of life. Research on psychological therapies for chronic pain has documented the effectiveness of coping skills [20].

The results of some studies also indicated that acceptance, like pain coping skills, is a strong predictor of reduced anxiety and disability [21]. Acceptance is a therapeutic intervention concept usually used as a core component. Cognitive-behavioral therapy is known as "underlying" or "third wave," such as dialectical behavioral therapy and acceptance and commitment therapy (ACT) [22]. Acceptance involves the desire to approve and experience unpleasant stimuli in an open and non-judgmental manner [23]. Researchers have suggested that acceptance-based protocols may be a promising option for pain management. Instead of controlling the form or frequency of private events, acceptance approaches undermine the relationship between private events and overt behaviors [24]. Acceptance-based interventions seek to teach individuals to feel bodily emotions more fully and without avoidance and perceive the presence of thoughts without complete obedience, resistance, belief,

or disbelief. When practicing acceptance, even when experiencing pain or complex thoughts or feelings, people shift their focus from relieving anxiety to tolerating and engaging in behaviors that are consistent with their values [25]. People are thought to experience greater well-being and improved performance when they feel able to choose how to behave in any situation. In addition, there is preliminary evidence on the effectiveness of acceptance-based interventions in improving performance [26]. Research demonstrates that greater pain acceptance correlates significantly with better social, physical, and psychological function [27]. In addition, it is essential to compare the effects of pain acceptance with those of coping skills that people typically use spontaneously.

Although some studies have been conducted in the field of pain-related variables in Iran [28], no independent research has examined the mediating role of coping skills and pain acceptance in the relationship between fear of pain and fusion of thought-action within the framework of a structural model. This study can provide researchers with a new understanding of the complexities of pain and its associated variables and ultimately lead to the formation of innovative theoretical models. In practice, the present study can introduce a creative approach to the treatment of mental problems and cognition of chronic pain. Therefore, the present study, by introducing the following model, examines how such factors as thought-action fusion, coping skills, and pain acceptance predict fear of pain in people with chronic pain. The conceptual model is presented in Figure 1.

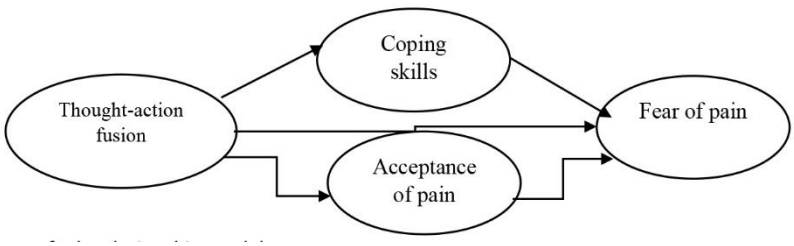

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Figure 1. Default relationship model

Materials and Methods

This study was conducted based on a descriptive correlational design. The statistical population of this study included all people with chronic pain referring to clinics and physiotherapy centers in Yazd province in the fall of 2021. Due to the unavailability of a list of all patients with chronic pain referred to medical centers and physiotherapy, the available sampling method was used in this study. According to the opinion of Tabachnik and Fidel [29], to estimate the sample size, it is necessary to consider the following formula: n = 50 + 8x. Based on the above formula, where x refers to the number of variables, five variables are carefully examined in this research, and the sample size is equal to (5)+50=90. Moreover, Kline [30] recommends that for each parameter (nine variables) in the model, at least 10 items were added to the sample size, where there were a total of 94 parameters and, in other words, 94 questions, resulting in 94+10=104. Nonetheless, taking into account the possibility of sample attrition, 220 sample size was considered 220 cases. Therefore, for three consecutive months, clinics and physiotherapy centers in Yazd province were referred daily, and 220 questionnaires were distributed among eligible individuals after their consent and willingness to participate in the study. The inclusion criteria were the age range of 18- 60 years and a history of at least six months of chronic pain. On the other hand, the exclusion criteria entailed severe pain that prevented the person from concentrating and completing questionnaires or having a physical disability, such as vision problems. All those who volunteered to complete the questionnaires were outpatients, and none of them were hospitalized at the time of completing the questionnaires. Finally, by removing incomplete and distorted questionnaires, 200 questionnaires were analyzed to review and test the research questionnaires. The data were analyzed in SPSS (version 22) and LISREL (version 8.80) software packages using structural equation modeling.

Research tools

In the present study, the following tools were used to collect data related to research variables:

Chronic Pain Acceptance Questionnaire

The pain acceptance questionnaire has two components and 20 items, 9 of which are related to the component of voluntary pain acceptance, and 11 items pertain to the component of involvement in activity. Participants responded to the item on a 7-point scale from (0-6). To calculate the total score, the terms of the Activity Commitment Scale are rated based on a 7-point Likert scale from 0 (not at all) to 6 (always), and the expressions of the Pain Satisfaction Scale are inversely scored from 6 (not at all) to zero (always). Thereafter, the scores from the two subscales are added together. On this scale, the total score varies between zero and 120, with higher scores indicating higher levels of pain acceptance. This questionnaire displayed good internal consistency with an alpha of 0.82 (involvement in activity) and 0.78 (acceptance of pain). Numerous studies have reported appropriate psychometric properties for this questionnaire in different languages. For example, in a study on 224 Chinese patients with

chronic pain, its internal reliability was evaluated in terms of Cronbach's alpha of 0.80, and its construct validity was convergent and divergent with quality of life, anxiety, depression, and catastrophic pain. In the psychometric properties of the Persian version, Cronbach's alpha coefficient of 0.89 and retest coefficient of 0.71 have been reported. In a relatively recent study of patients with chronic pain, its internal reliability in terms of Cronbach's alpha coefficient was reported to be 0.87 [31].

Pain Coping Skills Questionnaire

The Coping Skills Questionnaire (1983), which was developed by Rosenstein and Kiev, consists of 42 items that assess pain coping skills. Coping skills include six cognitive skills (turning attention, reinterpreting pain, talking to oneself, ignoring pain, disaster, prayer, and hope) and one behavioral skill (increasing behavioral activity). Each coping skill consists of six phrases. The subject is asked to use a 7-point scale (zero to 6) to determine how well he/she has used each of the skills when faced with pain. The scores of the six expressions add up to a combined score for each skill, which can range from 0-36. The overall score is coping skills (0-253) [23]. The coping skills questionnaire was standardized for the first time among a group of patients with chronic low back pain, and its internal consistency coefficient of seven subscales was reported to be between 0.71 and 0.85. This questionnaire has been used in numerous studies related to patients with chronic and acute pain, and its reliability and validity have been confirmed. The researchers reported a Cronbach's alpha coefficient of 0.70, indicating acceptable internal reliability. The coping skills questionnaire was translated and standardized for the first time in Iran by Asghari Moghadam and Golk (2005), and the Cronbach's alpha coefficient was reported between 0.74 and 0.83, which can also be considered desirable [32].

Fear of pain questionnaire

The Pain Anxiety Symptoms Scale is a self-report tool developed by McCracken in 1992 to assess pain-related anxiety and fear-related reactions in people with chronic pain. Pain Anxiety assesses pain-related symptoms and includes three subscales of pain-related escape and avoidance symptoms, fear assessment of pain, and pain-related physiological anxiety symptoms. The short form of this scale contains 20 items and was created by McCracken and Dingra in 2002 based on the original 40-item Pain Anxiety Symptoms Scale. The range of short form scores is between 0 and 100, and subjects answer the items in a range of 0 (never) to 5 (always). An overall score of three is obtained for the subscale. The overall score is generally related to many aspects of patients 'performance, and the three subscales are also useful in predicting different aspects of patients' performance. The range of scores of the Pain Anxiety Scale subscale includes avoidance score (0-35), frightening assessment score (0-40), and physiological response score (0-25); moreover, the overall score of this scale is between 0 and 100 [23]. In a study by McCracken and Dingra (2002), internal consistency using Cronbach's alpha for the whole scale was 0.91 and in the subscale of avoidance was 0.75, fear assessment was 0.82, physical anxiety was 0.81, and in anxiety cognitive was calculated to be 0.86 and the reliability of this scale was calculated using Cronbach's alpha coefficient on a sample group of 50 patients with chronic rheumatic pain and the demonstrated that Cronbach's alpha coefficient for the total score of pain anxiety scale was 88. 0 and for subscales between 0.64 and 0.87 [33], indicating the acceptable reliability of this scale.

Thought-action fusion questionnaire

The Thought-Action Blend Questionnaire is a self-report tool developed by Shaffran et al. (1996), consisting of 12 items related to the ethical thought-action blend (items 1-12) and 7 items related to the thought-action blend of probability (items 13-19) are rated on a Likert scale from 0 (strongly disagree) to 4 (strongly disagree). The thought-action fusion scale has the suitable psychometric properties. The internal stability of each of the subscales was confirmed, rendering a Cronbach's alpha of 0.85. The thought-action fusion scale can reliably distinguish between clinical and non-clinical specimens [34]. In a simultaneous validity study, the correlation of all subscales with the obsessive-compulsive questionnaire illustrated that except for the subscales of moral thought-action fusion, other subscales have a significant correlation [35]. The results of the psychometric properties of this scale in Iran are as follows: In the study by Bakhshipour et al. (2011), the internal consistency of the obtained alpha coefficients for the whole scale was 0.81 and for the subscales from 0.79-0.95 [36]. In addition, reliability coefficients for the whole scale and subscales were 0.61 and 0.59-0.63, respectively [37].

Results

Regarding gender, the majority of participants in this study were female (66.5%) and married (73%). In terms of education, 11.5%, 17.5%, 16.5%, 42.5%, and 12.0% of respondents had a high school education, a diploma, an associate's degree, a bachelor's degree, and a master's degree, respectively. Leg pain and back pain had the highest (58%), and hand pain (4%) had the lowest frequency among respondents. Duration of pain was highest in respondents who had been in pain for more than three years (41%) and lowest in respondents who had been in pain for one to two years (7%).

As presented in Table 1, fear of pain has a positive and significant relationship with thought-action fusion ($P<0.001$) and an inverse relationship with acceptance of chronic pain ($P<0.001$) and pain coping skills ($P<0.01$). The thought-action fusion had an inverse and significant relationship with chronic pain acceptance ($P<0.001$); nonetheless, there was no significant relationship between thought-action fusion and coping skills ($P<0.05$). Finally, there was a positive and significant relationship between

chronic pain acceptance and pain coping skills (P<0.001).

Table 1. Zero-order correlation matrix between different research variables

Standard deviation	Average	4	3	2	1	Variables	
11.229	38.44				1	Fear of pain	1
16.734	36.81			1	**0.273	Thought-action fusion	2
12.212	65.67		1	*0.252-	**0.505-	Acceptance of chronic pain	3
27.817	107.58	1	**0.253	0.124-	*0.226-	Pain coping skills	4

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* Significant at a level less than 0.01 ** Significant at a level less than 0.001

In order to analyze the data related to the hypothesis, the structural equation modeling method was used.

As depicted in Figure 2, apart from the direct effect of thought-action fusion on fear of pain, both the coefficient of effect and the factor loads are significant (t values are greater than 1.96).

Figure 3, which is the final model obtained in the study, also shows the mediating role of coping skills and pain acceptance in the relationship between thought-action fusion and fear of pain in people with chronic pain.

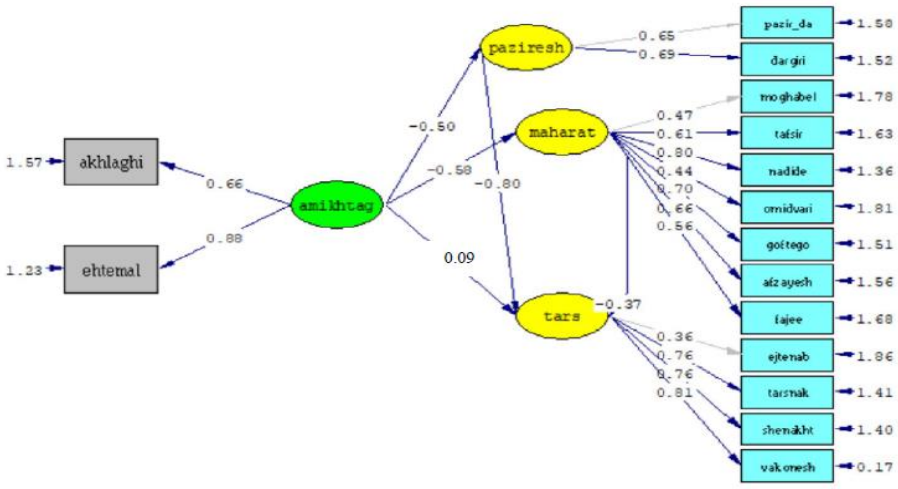

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Figure 2. Structural model of the mediating role of coping skills and pain acceptance in the relationship between thought-action fusions with fear of pain in people with chronic pain in a non-standard state.

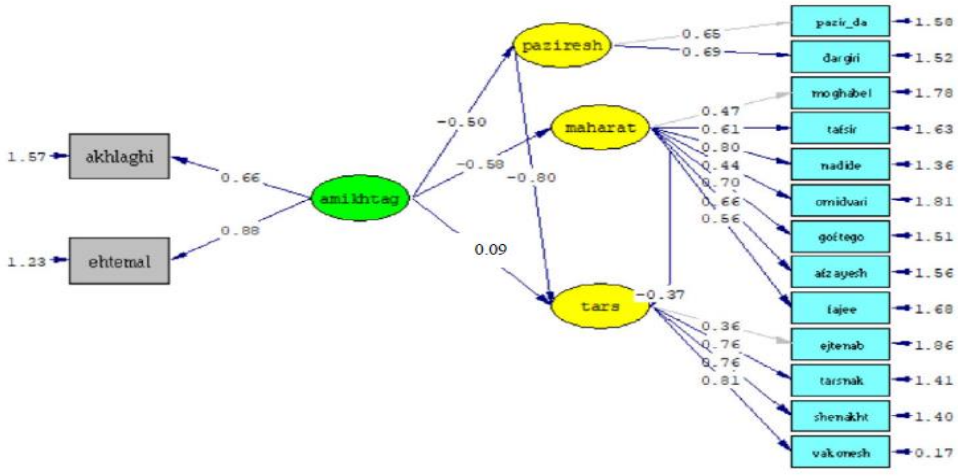

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Figure 3. Final structural model to investigate the mediating role of coping skills and pain acceptance in the relationship between thought-action fusion and fear of pain in people with chronic pain in the standard state.

The evaluation indicators of the model as a whole (Table 2), considering the optimal range of these indicators, generally indicated that the hypothetical model developed by the research data is supported; in other words, the fit of the data to the model was established, and the fit indicators highlights the desirability of the structural equation model.

Table 2. Estimation of evaluation criteria of the whole structural equation model

Indicator	Value
RMSEA	0.035
χ2/DF	1.25
DF	85
NFI	0.86
CFI	0.96
NNFI	0.95
AGFI	0.91
GFI	0.93

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Discussion

This study sought to assess the mediating role of coping skills and pain acceptance in the relationship between thought-action fusion and fear of pain in people with chronic pain. According to the obtained model, fear of pain is predicted through thought-action fusion in people with chronic pain. Thought-action fusion is the desire of individuals to establish causal relationships between their thoughts and external reality [38]. Thought-action fusion can lead to maladaptive behaviors commonly seen in obsessive thoughts. When a person with chronic pain has a high level of thought-action fusion, they may be concerned that thinking about pain or performing a traumatic activity may cause pain or injury, and this worry may cause fear and anxiety. Studies suggest that the simple belief and image that the fear of pain creates in the mind may appear in the form of injury, guilt, and anxiety [39]. Previous research has demonstrated that usually a small part of people's perceptions is related to pain itself [40]. Nevertheless, most of them are related to past and future events. The distressing feelings of thought-action fusion combined with painful experiences are repetitive and distressing. They increase the likelihood of fear of pain by significantly increasing emotional anxiety. The majority of people with chronic pain view images of pain several times a week or more with the notion of thought-action fusion. These repetitive index images have become predictive events about pain and unpleasant feelings [41]. Therefore, it can be stated that by combining thought-action, any predetermined negative feeling leads to a specific action. For example, the fear of getting into pain stimulates the body and mind to quickly deal with a potentially threatening situation and leads to abuse [42].

Fear of pain is predicted through coping skills in people with chronic pain. As mentioned, pain-coping skills fall into two categories: compatible and incompatible [16,17]. Like returning to activity, which also happens to be encouraged and socially supported, coping skills in people with chronic pain, are helpful when the injury has healed. Otherwise, this coping skill is incompatible and increases the risk of re-injury and recurrent fractures, leading to fear of pain. Excessive rest and prolonged avoidance also lead to muscle abuse, which in turn reduces the necessary motor, social, and occupational skills [41]. In other words, fear of pain is somehow affected by the use of adaptive or maladaptive coping skills.

Fear of pain is predicted by accepting pain in people with chronic pain. Pain acceptance has an inverse and significant relationship with fear of pain. In previous studies, the patient's pain management habits and beliefs about the acceptance of pain and disability have been critical [21]. The opposite of struggling to control pain is the acceptance of chronic pain, which includes the ability to engage in meaningful life activities despite the pain. Such acceptance may help patients adjust to daily life despite chronic pain. As suggested by studies, patients with pain acceptance attitudes have reported more successful adaptation to chronic pain [44]. On the other hand, some patients, when faced with pain and its consequences in daily life, may sometimes have difficulty with unproductive efforts to relieve pain. fear of pain may prevail by not accepting pain and subsequently trying to control chronic pain and achieve an unattainable goal of pain relief by these patients. The clinical management of long-term non-malignant chronic pain can be challenging. The limited number of pharmacological treatments available only helps a proportion of patients, often resulting in tolerance and side effects with long-term use. Patients can be left with substantial functional disability and poor quality of life, and with their condition causing substantial health-related economic burden [45].

Coping skills are predicted through thought-action fusion in people with chronic pain. As the research findings show, thought-action fusion has a significant and inverse effect on coping skills. The fusion of thought-action is a belief that, by misinterpreting the concept and meaning, one considers thoughts and actions as inextricably linked, in which case one has irrational interpretations of one's situation and problem. It primarily uses uncompromising and avoidant coping skills. Fear of pain, on the other hand, is predicted by thought-action fusion through coping skills in people with chronic pain. As demonstrated by research [46], the belief that a person's thoughts can affect external events (thought-action fusion) can cause anxiety and

fear in people. On the other hand, thought-action fusion describes the belief that thoughts can directly affect the relevant external event, and the results of research [47] indicated that fusion thought-action influences a variety of coping skills (repression, acceptance, or just supervision). Furthermore, among people with obsessive-compulsive disorder and thought-action fusion, thought suppression was associated with more significant influence, higher levels of anxiety, and negative evaluation and was common in these individuals (anxiety, guilt, fear) [47]. Therefore, the combination of thought and action results in nothing but fear of pain with a failure to use coping skills or employ maladaptive coping skills.

Furthermore, based on the findings of the present study, pain acceptance through thought-action fusion is predicted in people with chronic pain, and thought-action fusion has an adverse effect on pain acceptance. Previous studies have pointed out that the paradoxical effect of thought suppression and thought-action fusion was a critical factor in the exacerbation and persistence of several adverse psychological conditions. Moreover, it was involved in depression, general anxiety, and obsessive-compulsive disorder. Gradually, this practice becomes a consistent learned pattern of behavior due to its usefulness in the reduction of a painful secondary stimulus (anxiety) [48]. Instead of accepting the pain, the person tries to suppress the thoughts in order to avoid the harm imagined in the state of thought-action fusion. As Rachman (1997) stated, the suppression of thought is caused by the idea that having thought is like doing action ("thought-action fusion") [49]. Purdon and Clark (1999) also stated that evaluation of thought processes, along with thought-action fusion, is a motivation to try to control rather than accept pain. They added that thought-action fusion is a barrier to accepting pain in people with chronic pain. In addition, based on the findings of the present study, fear of pain is predicted through thought-action fusion by accepting pain in people with chronic pain. Past studies have pinpointed that disturbing index perceptions increase pain, anxiety, fear, and depression by decreasing acceptance in patients [1, 41, 50]. Therefore, as stated, thought-action fusion reduces the likelihood of acceptance and instead affects the fear of pain by creating repetitive bias associated with experiencing pain.

Conclusion

Finally, according to the results, thought-action fusion is able to change the coping skills and acceptance of pain and explain the fear of pain; moreover, the fusion of thought-action changes explains the fear of pain. Therefore, thought-action fusion had a positive and significant effect on pain fear and anxiety, and coping skills and pain acceptance had a mediating and facilitating role in this regard. Given that psychological disorders occur at the same time as chronic pain and medical treatments or psychological therapies alone do not meet the treatment needs of these patients, it is better to treat these patients than medical treatments and use psychology together. One of the limitations of the study was the long questionnaire which could lead to fatigue and reduce accuracy in answering.

Ethical Considerations

Compliance with ethical guidelines

Following the principles of research ethics: All ethical principles were observed in this article.

This research was extracted from a thesis submitted by the first author. The participants willingly completed the questionnaires, and ethical approval for this research was issued by Yazd University Research Ethics Committee (IR.YAZD.REC.1400.013).

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Authors' contributions

Data Availability Statement: The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research, supporting data is not available.

Conflicts of interest

The authors declare that they have no conflict of interest.

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