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ORIGINAL RESEARCH

The Relationship Between Pain Intensity and Pain-Related Activity Patterns in Older Adults with Chronic Musculoskeletal Pain: Mediating Roles of Pain Resilience and Pain Catastrophizing

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Purpose: To explore the relationship between pain intensity, pain resilience, pain catastrophizing, and pain-related activity patterns in older adults with chronic musculoskeletal pain (CMP).

Patients and Methods: A total of 220 elderly Chinese with chronic musculoskeletal pain were recruited from a tertiary general hospital. Participants completed several measures including a demographic questionnaire, Brief Pain Inventory (BPI), Pain Resilience Scale (PRS), Pain Catastrophizing Scale (PCS), and Patterns of Activity Measure-Pain (POAM-P). Moreover, Process version 3.5 plug-in SPSS26 was used to test the mediation effect between variables.

Results: The scores of POAM-P in older adults with CMP from high to low were: avoidance (27.39 ± 8.10), pacing (24.25 ± 9.48), and overdoing (16.65 ± 10.95). Mediation analysis revealed that pain resilience and pain catastrophizing mediated the relationship between pain intensity and pain-related activity patterns (avoidance and pacing) in older adults with CMP.

Conclusion: These results provide evidence for the role of pain resilience and pain catastrophizing in the relationship between pain intensity and pain-related activity patterns. Interventions targeting these factors should be included in activity management programs for elderly CMP patients. It may be possible to reduce the negative impact of pain intensity on activity patterns by improving pain resilience and reducing pain catastrophizing.

Keywords: older adults, chronic musculoskeletal pain, avoidance, pacing, overdoing

Introduction

Chronic musculoskeletal pain (CMP) refers to pain that occurs in muscles, bones, joints, tendons, or soft tissue and lasts more than 3 months.[1] It is commonly associated with chronic primary neck pain, low back pain, osteoporosis, lumbar disc herniation, etc.[2,3] The prevalence of CMP increases with age and is more prevalent in older women.[4,5] CMP is persistent and easy to relapse. It is not only a simple bad feeling of pain, but also affects physical function, leading to a decreased level of physical activity, dyskinesia, weakness, falls, and decreased sleep quality, which is the most important cause of disability in the elderly.[1,6,7] Chronic pain also hurts mental health. In the elderly population, chronic pain increases the risk for depression between 2.5 and 4.1 times.[8] The World Health Organization (WHO) reported that musculoskeletal health posed a threat to healthy aging and might pose a significant socio-economic burden.[9] With the aggravation of aging in China.[10] CMP has become an urgent medical problem in China.

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Patients with chronic pain usually change their activity patterns to minimize the intensity of pain and maximize physical function.[11] The activity pattern refers to the way how individuals organize their daily activities,[12] which plays an important role in the development and maintenance of chronic pain.[13] Three activity patterns have been distinguished among individuals with chronic pain: Avoidance is characterized by the patient's intentional avoidance of pain-related activities and results in reduced activity levels.[14] Overdoing means that patients ignore their conditions and persist in longer or more intensive activities, which is characterized by high or fluctuating activity levels.[14] Pacing includes task decomposition, combining work and rest, maintaining a steady pace, moderating activity levels, and alternating activity or rest on time rather than according to pain intensity. Its purpose is to save energy for valuable activities and improve activity endurance, and reduce pain intensity and disability level.[15,16] Studies have reported higher levels of avoidance were associated with poorer psychological and physical function, and more severe pain interference,[11,14] and older adults with CMP have less physical activity.[17] Research examining the relationship between overdoing and function has also yielded inconsistent results, pacing was associated with better physical and psychological function.[11,14,18]

Pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.[19] Several studies found reduced activity in elderly patients with musculoskeletal pain.[20,21] In addition, the study of Larsson et al[22] suggested that pain intensity was associated with kinesiophobia. Kindermans et al[15] pointed out that pain intensity of CMP patients was positively correlated with the pacing. Pan et al[16] found that pain intensity of patients with chronic pain was positively correlated with overdoing.

As a part of positive psychology, resilience is the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and adjustment to external and internal demands.[23] Patients with higher resilience would more actively take advantage of environmental or their strengths to cope with stressors and mitigate the adverse effects of stress, resulting in higher levels of physical and mental health.[24,25] Thompson et al[26] detected a negative correlation between pain intensity and pain resilience in adults with or at risk for knee osteoarthritis. Resilience affects an individual's perception of negative events, which indirectly affects a patient's behavior.[27] The work of Resnick et al[28] noted resilience was significantly correlated with physical activity.

Pain catastrophizing is conceptualized as a set of exaggerated and negative cognitive-affective responses to actual or anticipated pain.[29] It is considered to be the most significant psychological factor related to pain and can participate in regulating pain behavioral responses.[30,31] The study suggested that pain intensity was positively correlated with pain catastrophizing in patients with frozen shoulder.[32] In a survey of older adults with osteoarthritis, pain catastrophizing was found to predict reduced physical activity and increased sedentary behavior.[33] The study of Peñacoba et al[34] suggested the moderating role of helplessness (as a dimension of pain catastrophizing) between some activity patterns (avoidance and overdoing) and function in women with fibromyalgia. Moreover, pain catastrophizing was positively correlated with pacing in women with fibromyalgia when pain acceptance was low.[35]

A study suggested that pain resilience was negatively related to pain catastrophizing in patients with coronary heart disease.[24] The survey of patients with back pain showed that the predictive power of the fear-avoidance model of pain increased when individual differences in pain catastrophizing and pain resilience were considered.[36] In conclusion, pain intensity was strongly correlated with pain resilience, which in turn was significantly related to pain catastrophizing, and pain catastrophizing was related to pain-related activity patterns.

Based on previous studies, the study tried to explore the following:

Hypothesis 1: Pain intensity will significantly predict pain-related activity patterns.

Hypothesis 2: Pain resilience will mediate the association between pain intensity and pain-related activity patterns relationships.

Hypothesis 3: Pain catastrophizing will mediate the association between pain intensity and pain-related activity patterns relationships.

Hypothesis 4: Pain resilience and pain catastrophizing will act as a chain mediator between pain intensity and pain-related activity patterns.

Materials and Methods

Participants and Procedure

The minimum sample size of this study was determined by G*Power 3.1.9.7.[37] This study required at least 119 participants to achieve a medium size effect (f^2 = 0.15) with a power of 0.95 and 0.05 significance level. The cross-sectional study was conducted from December 2021 to August 2022. We recruited 220 older adults with CMP from a tertiary hospital in Chengdu, China. They all received treatment (such as medication, physical therapy, and Chinese medicine). The inclusion criteria were: (1) aged 60 and older; (2) CMP that lasted more than 3 months; (3) met the diagnostic criteria of CMP in ICD-11 for Mortality and Morbidity Statistics (coded as MG30.02 and MG30.3)[38] and Chinese Expert Consensus on the Management of Chronic Musculoskeletal Pain in Elderly Patients (2019);[4] (4) normal cognitive and communication skills, able to complete the questionnaire independently or with the help of researchers; (5) informed consent to participate in this study. The exclusion criteria were: (1) patients with other types of chronic pain (such as chronic neuropathic pain, chronic visceral pain, chronic headache, or orofacial pain); (2) patients with tumors; (4) patients with severe mental illness. This study was approved by the Ethics Committee of The General Hospital of Western Theater Command (2021EC5-123), and it was conducted based on the principles in the Declaration of Helsinki.

The researcher explained the purpose and significance of the survey to the patients and obtained their informed consent before distributing questionnaires for completion. In the process of investigation, unified instruction was used to explain the filling methods and precautions of the questionnaire. The researcher would read the questionnaire items and record the selected answers for those who had difficulty filling in due to limited education or poor vision.

Measures

A self-made demographic questionnaire based on a review of relevant literature and expert consultation was utilized to collect the characteristics of participants, including age, gender, place of residence, living with family, duration of pain, number of comorbidity, and types of pain area.

Pain Intensity

The Brief Pain Inventory (BPI) was developed by Cleeland et al[39] and the Chinese version was applied and verified by Wang et al.[40] The BPI was used to assess the patient's pain intensity, including four items (most, least, average, and current pain), each of which was scored on a scale of 0 to 10, with higher scores indicating more severe pain. The average score of the four items was taken as the pain intensity score of the patients. The Cronbach's α of the scale was 0.894.

Pain Resilience

The Pain Resilience Scale (PRS) was developed by Slepian et al[41] and the Chinese version was translated by Dong.[24] The scale has 14 items over three metrics: behavioral perseverance, cognitive, and affective positivity. This instrument was scored on a 5-point Likert scale; the total score for PRS ranges from 0 to 56. Higher scores indicate higher levels of pain resilience. The Cronbach's α for the PRS was 0.821.

Pain Catastrophizing

The Pain Catastrophizing Scale (PCS) was originally designed by Sullivan et al[31] and the Chinese version was applied and verified by Yap et al.[42] The scale has 13 items over three metrics: rumination, magnification, and helplessness. This instrument was scored on a 5-point Likert scale; the total score for PCS ranges from 0 to 52. Higher scores indicate higher levels of pain catastrophizing. The Cronbach's α for the PCS was 0.927.

Pain-Related Activity Patterns

The Patterns of Activity Measure-Pain (POAM-P) was developed by Cane et al[14] and was translated by Pan.[16] The scale consists of 30 items grouped into three subscales: avoidance, overdoing, and pacing. This instrument was scored on a 5-point Likert scale; the total score for each subscale ranges from 0 to 40. The Cronbach's α of the three subscales was 0.95, 0.79, and 0.86, respectively.

Statistical Analysis

All statistical analyses were performed using SPSS 26.0 (IBM, Armonk, NY, USA). Continuous variables that were normally distributed were expressed as means and standard deviations, while categorical variables were expressed as numbers or percentages. Pearson correlation analysis was used to identify relationships among variables. In the mediation analysis, the total effect (c) is the effect of pain intensity on pain-related activity patterns (avoidance and pacing) after controlling the covariates and excluding the mediating variables (pain resilience and pain catastrophizing). The total effect includes direct effects (a_1b_1, $a_1a_3b_2$, a_2b_2) and indirect effect (c'). The Process V3.5 in SPSS was used to analyze single and serial multiple mediating effects. The bootstrap method was used to estimate the 95% confidence interval with 5000 repeated sampling, and Two-sided inspection level α= 0.05.

Results

Participants' Characteristics

The demographic characteristics of older adults with CMP (n=220) were shown in Table 1. The average age of the patients was 67.63 years (SD =6.92, ranging from 60 to 92 years). A large proportion of patients were female (68.6%), lived in towns (57.3%), and lived with family (85.5%). The most prevalent pain area was lower limb (40.40%), followed by upper limb (33.80%), and lower back (15.50%).

Correlation Analysis

We performed Pearson's correlation analysis to explore relationships among pain intensity, pain resilience, pain catastrophizing, and pain-related activity patterns. Means, standard deviations, and correlation coefficient for each variable were shown in Table 2.

Table 1 Baseline Characteristics of CMP in Older Adults (N=220)

Characteristics	N (%)
Age (mean ± SD, range)	67.63±6.92, 60–92
Gender	
Male	69(31.4%)
Female	151(68.6%)
Place of residence	
Town	126(57.3%)
Country	94(42.7%)
Living with family	
No	32(14.5%)
Yes	188(85.5%)
Duration of pain (years)	
<1	74(33.6%)
1–5	63(28.6%)
5–10	46(20.9%)
>10	37(16.8%)
Number of comorbidity	
0	51(23.2%)
1	81(36.8%)
2	56(25.5%)
≥3	32(14.5%)

(*Continued*)

Table 1 (Continued).

Characteristics	N (%)
Types of comorbidity (multiple responses)	
Systemic lupus erythematosus	2(1.2%)
Diabetes mellitus	48(28.4%)
Hypothyroidism	2(1.2%)
Hyperthyroidism	2(1.2%)
Hyperlipoproteinaemia	14(8.3%)
Hypertensive diseases	85(50.3%)
Coronary atherosclerosis	11(6.5%)
Bronchitis	9(5.3%)
Chronic obstructive pulmonary disease	5(3.0%)
Gastritis	20(11.8%)
Hepatitis B	9(5.3%)
Fatty liver	7(4.1%)
Arthropathies	24(14.2%)
Osteoporosis	55(32.5%)
Intervertebral disc degeneration of lumbar spine with prolapsed disc	7(4.1%)
Types of pain area (multiple responses)	
Neck	6(2.7%)
Upper limbs	122(55.5%)
Chest	3(1.4%)
Back	16(7.3%)
Lower back	56(25.5%)
Hip	12(5.5%)
Lower limbs	146(66.4%)

Table 2 Correlation Analysis of Study Variables

	M(SD)	1	2	3	4	5
1. Pain intensity	4.27(1.14)	1				
2. Pain resilience	33.08(10.42)	−0.380**	1			
3. Pain catastrophizing	24.07(10.19)	0.429**	−0.686**	1		
4. Avoidance	27.39(8.10)	0.495**	−0.699**	0.615**	1	
5. Overdoing	16.41(11.09)	−0.144*	0.130	0.174**	−0.377**	1
6. Pacing	24.25(9.48)	−0.154*	0.207**	−0.372**	0.153*	−0.524**

Notes: *p<0.05; **p<0.01.

Multiple Mediation Analysis

The results of the multiple mediation analysis were presented in Figure 1A. First, the standardized regression coefficient (β) was significant in each path (ps < 0.01), controlling for the covariates (gender, living place, and number of comorbidity). The total effect of pain intensity on avoidance was significant (β= 0.462, p < 0.001). When controlling for the mediating variables, the direct effect remained significant (β = 0.233, p < 0.001).

Next, as shown in Table 3, the results analyzing pain intensity → pain resilience → avoidance, and pain intensity → pain catastrophizing → avoidance indicated the bootstrap 95% CIs did not contain 0; therefore, the independent mediating effects of pain resilience and pain catastrophizing were significant, accounting for 33.57% and 8.10% of the total effect respectively. Furthermore, pain intensity → pain resilience → pain catastrophizing → avoidance remained

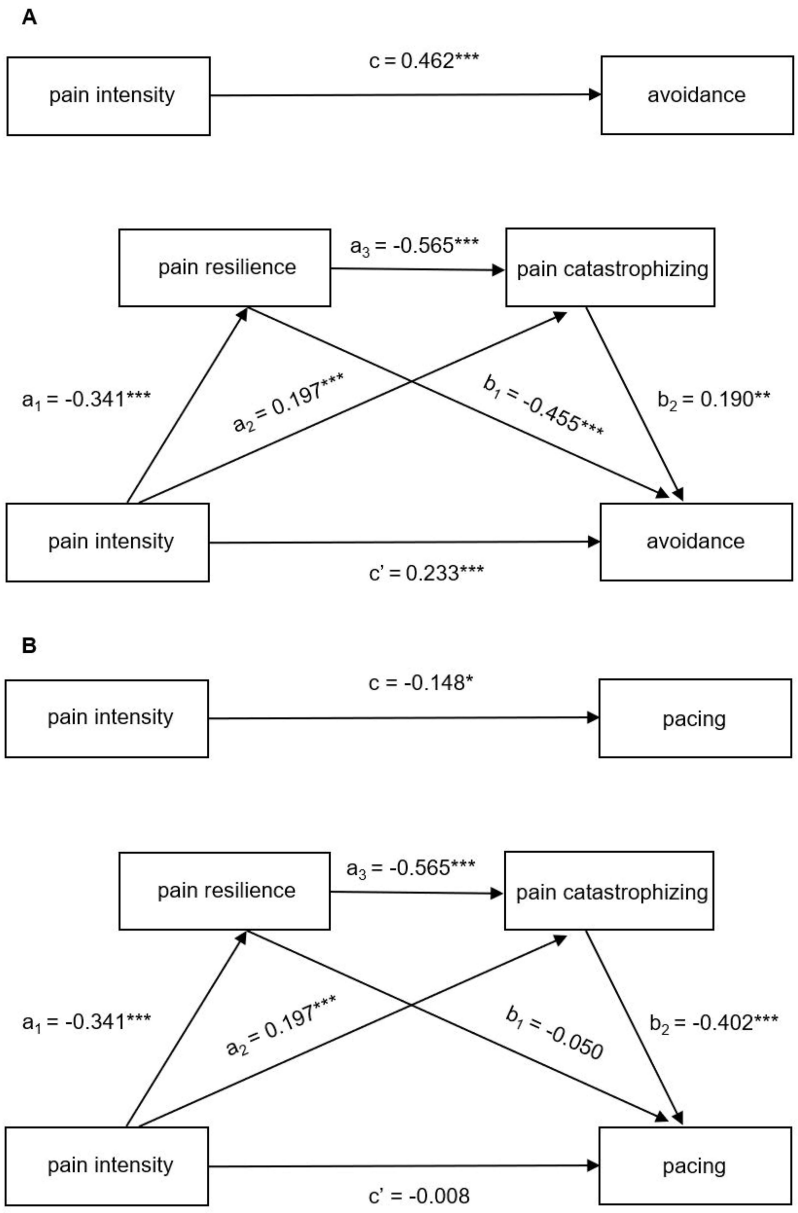

Figure 1 Chain mediating model. (**A**) Multiple mediation model of pain resilience and pain catastrophizing in the association between pain intensity and avoidance. (**B**) Multiple mediation model of pain resilience and pain catastrophizing in the association between pain intensity and pacing. *p<0.05, **p<0.01, ***p<0.001.

significant, indicating that pain resilience and pain catastrophizing had a chain mediating effect between pain intensity and avoidance, accounting for 7.90% of the total effect.

The results of the multiple mediation analysis were presented in Figure 1B. The results showed the total effect of pain intensity on pacing was significant (β = −0.148, p < 0.05). However, the direct effect was not significant (β = −0.008, p >0.05) after the inclusion of mediating variables.

As shown in Table 3, the results analyzing pain intensity → pain resilience → pacing indicated the bootstrap 95% CIs contained 0; therefore, the indirect effect of pain intensity on pacing through pain resilience was not significant. However, the results analyzing pain intensity → pain catastrophizing → pacing and pain intensity → pain resilience → pain catastrophizing → pacing indicated the bootstrap 95% confidence intervals did not include 0; therefore, the indirect effect of pain intensity on pacing through pain catastrophizing was significant, and the chain mediating effect of pain resilience and pain catastrophizing was also significant.

Table 3 Mediation Analysis of Relationship Between Pain Intensity and Pain-Related Activity Patterns (Avoidance and Pacing)

		Effect	Boot SE	LLCI	ULCI
Avoidance	Total effect	0.462	0.402	2.484	4.068
	Direct effect	0.233	0.351	0.961	2.343
	Total Indirect effect	0.229	0.038	0.156	0.304
	Pain intensity→ PRS→ avoidance	0.155	0.031	0.096	0.217
	Pain intensity→ PCS→ avoidance	0.037	0.015	0.013	0.070
	Pain intensity→ PRS→ PCS→ avoidance	0.037	0.014	0.013	0.068
Pacing	Total effect	−0.148	0.546	−2.304	−0.152
	Direct effect	−0.008	0.574	−1.199	1.064
	Total Indirect effect	−0.140	0.037	−0.217	−0.073
	Pain intensity→ PRS→ pacing	0.017	0.029	−0.044	0.072
	Pain intensity→ PCS→ pacing	−0.079	0.025	−0.134	−0.036
	Pain intensity→ PRS→ PCS→ pacing	−0.077	0.023	−0.127	−0.037

Abbreviations: Boot, bootstrap; SE, standard error; LLCI, lower limit of the confidence interval; ULCI, upper limit of the confidence interval. PRS, Pain Resilience Scale; PCS, Pain Catastrophizing Scale.

Discussion

The present study examined the mediating role of pain resilience and pain catastrophizing between pain intensity and pain-related activity patterns (avoidance and pacing) in older adults with CMP. According to our results: (1) Avoidance had the highest score, followed by overdoing, and pacing had the lowest score; (2) Pain resilience and pain catastrophizing partially mediated between pain intensity and avoidance; (3) The relationship between pain intensity and the pacing pattern was mediated by pain catastrophizing or the chain mediating effect of pain resilience and pain catastrophizing. The current findings add to the literature by providing evidence for the role of pain resilience and pain catastrophizing in the relationship between pain intensity and pain-related activity patterns (avoidance and pacing).

In this study, the score of avoidance was 27.39 ± 8.10, overdoing was 16.41 ± 11.09, and pacing was 24.25 ± 9.48. This result was consistent with another study[43] reporting that the score of overdoing was lower than those of the other two activity patterns. However, in patients with fibromyalgia, avoidance had the highest score, followed by overdoing, and pacing had the lowest score.[11] To sum up, the score of avoidance was the highest among patients in different countries and types of pain. It was possible that for patients with pain, reducing the amount of activity can reduce pain intensity to a certain extent. However, several studies[11,14] have shown that avoidance was positively correlated with poor physical and mental function. Therefore, older adults should engage in physical activity to the extent that their functional capacity allows, and adjust their physical activity effort to their fitness level.[44]

In the present study, pain intensity could predict avoidance in older adults with CMP, and hypothesis 1 was supported, which strengthens the relationship between pain intensity and decreased physical activity of patients.[45] A study of older adults with chronic pain showed that patients with more severe pain have higher levels of kinesiophobia.[22] And kinesiophobia caused patients to have an excessive and irrational fear of activities or movements, thus avoiding activities and leading to reduced activity.[46,47] This suggested that activity avoidance in elderly patients with CMP can be reduced by relieving pain intensity.

Furthermore, pain resilience had a mediating effect on the association between pain intensity and avoidance, and hypothesis 2 was supported. Tanner et al[48] showed that pain intensity was negatively correlated with pain resilience in patients with CMP. Similar results were found in this study. In the case of long-term pain, patients with a high level of pain resilience could maintain behavioral participation and the ability to regulate emotion and cognition,[49] which had a positive effect on patients' reasonable arrangement of activities, thus reducing the avoidance of activities. At the same time, the exercise of the elderly would increase with the improvement of pain resilience.[50] Therefore, it is suggested that nurses should pay attention to the positive psychological status of patients and improve the level of pain resilience by reducing pain intensity, to reduce the avoidance of activities.

We found that pain catastrophizing mediates the relationship between pain intensity and avoidance, and hypothesis 3 was supported. The more severe the pain intensity, the more likely the patient is to over-focus and exaggerate the impact of pain, resulting in catastrophic thinking. Hirata et al[32] showed that pain intensity improved the level of pain catastrophizing by reducing the self-efficacy of patients with frozen shoulder, indicating that pain intensity is closely related to pain catastrophizing. The study[33] suggested that on mornings when older adults with osteoarthritis catastrophized more than usual about their pain in the day ahead, they spent more time in sedentary behavior and less time in physical activity that day. Meanwhile, higher levels of pain catastrophizing were positively correlated with reduced physical activity in people with knee osteoarthritis.[51] The results of this study were supported by the fear-avoidance model,[52] that is, pain experience leads to catastrophic thinking and pain-related fear, which in turn leads to avoidance behavior. Therefore, activity avoidance can be avoided by reducing the level of pain catastrophizing in older patients with CMP.

Another important finding was the chain mediating effect of pain resilience and pain catastrophizing in the relationship between pain intensity and avoidance of older adults with CMP, and hypothesis 4 was supported. Pain intensity indirectly affects pain resilience through cognitive, emotional, and other factors, so the individuals with more severe pain intensity were susceptible to negative emotional distress and were more inclined to adopt negative coping styles, thus reducing their pain resilience.[53] The lower the level of resilience, the less effective it was to regulate negative emotions and alleviate catastrophic thinking. Compared with chronic pain patients with higher resilience, patients with lower resilience reported a higher level of pain catastrophizing.[54] Also, the more severe the degree of pain catastrophizing, the more severe the fear-avoidance beliefs,[55] leading to patients being more prone to avoid activities. It can be concluded that pain resilience and pain catastrophizing are important intermediate links between pain intensity and avoidance, indicating that the overall concept needs to be established in clinical work to comprehensively evaluate the physical and mental state of older CMP patients.

Our study findings showed that pain catastrophizing was positively correlated with overdoing (r=0.191, p<0.01), which was consistent with the results of a previous study,[34] indicating that pain catastrophizing might have a potential impact on overdoing patterns. Overdoing was related to poor physical and mental function.[56] Therefore, it is recommended that nurses should pay attention to the level of pain catastrophizing in patients. In the future, we should actively explore the variables related to overdoing to help understand the formation mechanism of the pattern.

We found that pain intensity negatively predicted the pacing pattern in elderly patients with CMP, and hypothesis 1 was supported. However, after adding two mediating variables, pain resilience and pain catastrophizing, the direct effect of pain intensity on the pacing pattern was not significant, indicating that the effect of pain intensity on the pacing pattern could only be achieved through pain resilience and pain catastrophizing. In the present study, pain resilience could not mediate the relationship between pain intensity and the pacing pattern, and hypothesis 2 was not supported by the findings. This may be because the effect of resilience on health behaviors is its joint effect with family care and social support.[57] Therefore, resilience has not yet played a separate mediating role between pain intensity and pacing. We also found that pain catastrophizing mediates the relationship between pain intensity and pacing, and hypothesis 3 was supported. A study[16] showed that pain catastrophizing is negatively correlated with activity pacing in chronic pain patients, which means that the lower the level of pain catastrophizing, the more patients tend to choose activity pacing. Activity pacing was considered to be adaptive.[58] Therefore, multidisciplinary rehabilitation, exercise training, progressive relaxation therapy, and cognitive behavioral therapy can be adopted to reduce the level of pain catastrophizing,[59] to promote older adults with CMP to choose activity pacing.

We also found that the chain mediating effect of pain resilience and pain catastrophizing in the relationship between pain intensity and activity pacing in older adults with CMP, and hypothesis 4 was supported. Among women experiencing chronic pain, the lower the pain intensity of patients, the higher the level of pain resilience, thus showing higher pain acceptance and self-regulatory efficacy beliefs,[60] which has a certain buffer effect on reducing pain catastrophizing. In addition, the higher the pain resilience, the better the self-efficacy, and the more cognitive strategies of attention transfer and neglect could be adopted to get rid of the attention of pain-related information.[61] Pan et al[62] showed that lower levels of pain catastrophizing were associated with better physical and mental functioning, which enabled patients to better cope with chronic pain, and to choose adaptive activity patterns to ensure a balance between activity participation and pain relief.

The current study has the following important contributions: theoretically, the results of this study better clarify the role of the relationship between the four study variables and provide an important theoretical basis for how to help manage pain-related activity patterns in older adults with CMP. Practically, the study inspired nurses to consider not only reducing pain intensity but also improving cognitive-emotional responses to pain when managing activity patterns in elderly CMP patients, focusing on those with low levels of pain resilience and high levels of pain catastrophizing.

This study has some limitations. First, this study used self-report questionnaires, and the responses given by participants may not be consistent with the actual situation. Second, the cross-sectional design of this study could not explain the causal relationship between pain-related activity patterns and other variables in older patients with CMP. Longitudinal studies should be carried out to explore this issue in the future. Third, this study was conducted in a tertiary hospital in China, the sample size was not large enough and the participants consisted only of older adults with CMP, so the results may not be generalizable to other populations. Finally, the results of this study are limited because there is no data on the pre-existing pain-related activity patterns in the Chinese elderly population and the psychological attributes of the participants are not known.

Conclusion

To sum up, older adults with CMP often chose the avoidance activity mode. This study demonstrated the relationship between pain intensity and pain-related activity patterns, and the chain mediating effect of pain resilience and pain catastrophizing on pain intensity and pain-related activity patterns. Specifically, pain intensity was positively correlated with activity avoidance and negatively correlated with activity pacing. Pain resilience and pain catastrophizing played an important role in the relationship between pain intensity and activity patterns. Interventions targeting these factors should be included in activity management programs for elderly CMP patients. It may be possible to reduce the negative impact of pain intensity on activity patterns by improving pain resilience and reducing pain catastrophizing.

Disclosure

The authors declare no conflicts of interest in this work.

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