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ORIGINAL ARTICLE

Mediating Role of Coping Strategies Between Self-Perceived Burden and Disability Acceptance in Parkinson's Disease

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Abstract

OBJECTIVE: This study examined the associations among self-perceived burden (SPB), medical coping strategies, and acceptance of disability (AOD) and evaluated whether avoidance coping mediated the relationship between SPB and AOD in patients with Parkinson's disease (PD).
METHODS: A cross-sectional survey of 180 patients with PD admitted to the Department of Neurology, Lishui Hospital of Traditional Chinese Medicine between September 2024 and July 2025 was conducted to collect data on SPB, coping strategies, and AOD using validated questionnaires. Data were collected using a general information questionnaire, the SPB scale, the Medical Coping Modes Questionnaire, and the Acceptance of Disability Scale-Revised.
RESULTS: Correlation analysis demonstrated significant associations between SPB, coping strategies, and AOD (all $p < 0.01$). Mediation analysis indicated that avoidance coping partially mediated the relationship between SPB and AOD, accounting for 33.84% of the total effect of SPB on AOD in the structural equation model.
CONCLUSION: SPB and avoidance coping demonstrated predictive value for AOD in patients with PD-related disability, and avoidance coping partially mediated the association between SPB and AOD. These findings suggest that psychosocial and rehabilitation interventions should aim to reduce reliance on avoidance coping and strengthen active coping to improve disability acceptance.

INTRODUCTION

Parkinson's disease (PD), also known as paralysis agitans, is a progressive neurodegenerative disorder of the central nervous system that predominantly affects middle-aged and older adults. Disability refers to a state in which an individual experiences limitations in physical or psychological functioning due to disease, trauma, or other health conditions, leading to impaired performance of activities of daily living (ADLs) and

reduced participation in social life. PD is currently the fastest-growing neurological disorder worldwide in terms of prevalence, disability rates, and mortality and is a leading cause of neurological disability that accounts for substantial loss of healthy life expectancy (Karikari *et al.* 2018).

PD is characterized by progressive and disabling complications. Clinical manifestations include motor symptoms such as resting tremor, muscle rigidity, bradykinesia, postural abnormalities, and gait disturbance as well as frequent non-motor symptoms such as hyposmia and cognitive dysfunction. These manifestations reduce social participation, substantially impair quality of life, and can lead to difficulty adapting, feelings of inferiority, hypersensitivity, frustration, and, in severe cases, depression or suicidal ideation (Kim *et al.* 2025). The protracted course of treatment and associated high costs further impose substantial economic strain on individuals, families, and healthcare systems.

In this context, Cousineau *et al.* defined the diverse psychological experiences associated with chronic illness as self-perceived burden (SPB) (Cousineau *et al.* 2003). The approaches by which patients with PD regulate and balance psychological stress in response to illness are referred to as medical coping strategies (Zhang *et al.* 2023). Acceptance of disability (AOD) denotes the process by which patients gradually adapt to physical changes, acknowledge their retained capacities and sense of personal existence, and mitigate the negative effects of lost personal and social roles associated with disability (Keany & Glueckauf 1993). Previous studies have demonstrated significant associations between coping strategies and SPB in patients with PD (Zhang *et al.* 2022). However, few studies have examined whether specific coping strategies mediate the relationship between SPB and AOD in patients with PD, particularly using validated Chinese instruments and structural equation modeling. This study addresses this gap by quantifying the mediating effect of avoidance coping between SPB and AOD and by exploring how these relationships can inform targeted psychosocial and health management strategies for PD-related disability.

STUDY PARTICIPANTS AND METHODS

Study participants

Patients with PD admitted to the Department of Neurology, Lishui Hospital of Traditional Chinese Medicine between September 2024 and July 2025 were enrolled.

Inclusion criteria were: (1) age ≥ 18 years; (2) a diagnosis of PD confirmed by neurologists according to the International Parkinson and Movement Disorder Society 2015 Clinical Diagnostic Criteria for Parkinson's Disease, supported by brain CT or MRI; (3) a score of ≤ 95 on the ADL Scale; (4) being in a stable recovery phase with clear consciousness and no severe complications; and (5) provision of informed consent.

Exclusion criteria were: (1) severe cognitive impairment or psychiatric disorders; (2) severe pulmonary, cardiac, hepatic, or renal comorbidities, or malignant tumors; and (3) disability attributable to congenital conditions or accidental injury.

Methods

Research tools

General demographic data

A self-developed questionnaire was used to collect general demographic information, including sex, age, marital status, educational level, employment status, monthly per capita household income, family history, and disease awareness.

ADL scale assessment

Functional ability was assessed using the ADL scale, which is scored from 0 to 100 across ten domains: facial and oral care, bathing, feeding, dressing, bowel control, bladder control, toileting, stair climbing, walking, and transferring. Based on the total score, ADL function was classified as severe impairment (0–40 points), moderate impairment (41–60 points), or mild impairment (61–95 points). Individuals with a score of 100, indicating no functional impairment, were excluded.

Tab. 1. Pearson correlation coefficients (r) among confrontation coping, avoidance coping, resignation coping, self-perceived burden (SPB), and acceptance of disability (AOD) in patients with Parkinson's disease (n = 180); $^{**}p < 0.01$.

Variable	Confrontation	Avoidance	Resignation	SPB	AOD
Confrontation coping	1				
Avoidance coping	-0.446**	1			
Resignation coping	-0.089	0.011	1		
SPB	-0.356**	0.432**	0.019	1	
AOD	0.545**	-0.697**	0.011	-0.653**	1

$^{**}p < 0.01$
self-perceived burden (SPB)
acceptance of disability (AOD)

Tab. 2. Unstandardized and standardized path coefficients from the final structural equation model (SEM) examining relationships between self-perceived burden (SPB), avoidance coping, and acceptance of disability (AOD) in patients with Parkinson's disease (n = 180)

Path	Unstandardized coefficient	Standardized coefficient	S.E	C.R	*p*
Avoidance coping ≤ SPB	0.285	0.432	0.045	6.407	<0.001
AOD ≤ Avoidance coping	-1.593	-0.510	0.156	-10.229	<0.001
AOD ≤ SPB	-0.892	0.103	0.103	-8.673	<0.001

self-perceived burden (SPB)
acceptance of disability (AOD)

SPB scale
The SPB scale was initially developed by Cousineau *et al.* in 2003 and later revised into a 10-item instrument comprising three dimensions: physical burden, emotional burden, and financial burden (Cousineau *et al.* 2003). This self-rated tool uses a 5-point Likert scale, with higher scores reflecting greater burden. Grading criteria are as follows: an SPB score < 20 indicates no significant burden; 20–29, mild burden; 30–39, moderate burden; and ≥ 40, severe burden. Wu *et al.* translated and adapted the scale into Chinese, reporting an internal consistency coefficient of 0.91 in a sample of cancer patients (Wu & Jiang 2010).

Coping modes questionnaire
The Medical Coping Modes Questionnaire (MCMQ) originally developed by Feifel *et al.* and translated into Chinese by Shen *et al.* was employed to assess coping strategies (Shen & Jiang 2000). The questionnaire contains 20 items divided into three subscales: confrontation coping (8 items), avoidance coping (7 items), and resignation coping (5 items). Responses are rated on a 4-point Likert scale, with 8 items requiring reverse scoring. Reported Cronbach's alpha coefficients for the three subscales were 0.69, 0.60, and 0.76, respectively, with corresponding test-retest reliabilities of 0.64, 0.85, and 0.97.

Acceptance of disability scale-revised (ADS-R)
The Chinese version of ADS-R developed by Ni in 2009 was used (Chen 2009). The instrument comprises 32 items across four dimensions: enlargement, subordination, containment, and transformation. Responses are rated on a 4-point Likert scale, yielding a total score ranging from 32 to 128, with higher scores indicating greater acceptance of disability. Total scores of 97–128, 65–96, and 32–64 represent high, medium, and low levels of AOD, respectively. The scale demonstrated good psychometric properties, with a content validity index of 0.919 and a Cronbach's α coefficient of 0.830 for internal consistency.

Survey methodology
Ethical approval was obtained from the institutional ethics committee before data collection, and written informed consent was secured from patients and their relatives. Questionnaires were distributed in person by trained investigators in the Department of Neurology to eligible patients with PD. Standardized instructions were provided to ensure accurate completion. Upon submission, questionnaires were reviewed on-site and any missing or unclear responses were clarified with participants. Incomplete or inconsistent questionnaires that could not be corrected were excluded, resulting in 180 valid responses out of 185 distributed questionnaires.

Statistical methods
Data were analyzed using SPSS version 24.0. Descriptive statistics summarized demographic characteristics, Pearson correlation analysis examined associations between study variables, and the mediating effect of avoidance coping between SPB and AOD was assessed using AMOS version 23.0 with maximum likelihood estimation. Statistical significance was set at $p < 0.05$, *with* $p < 0.01$ *considered highly significant*.

RESULTS

A total of 185 questionnaires were distributed, and 180 valid questionnaires were returned, yielding a response rate of 97.3%.

General demographic data
Among the 180 patients, 127 (70.56%) were male and 53 (29.44%) were female. The mean age was (58.65 ± 14.21) years, with 44.10% of participants aged > 60 years. Patients who were married accounted for 78.10% of the sample. Educational attainment was generally low with 76.6% (n = 138) having completed junior high school or below. A slightly higher proportion reported a monthly per capita household income above RMB 3,000, largely attributable to employment or retirement status. Most patients had no family history of PD (71.9%) and partial awareness of the disease (68.89%, n = 124).

SPB levels
The mean SPB score was 32.09 ± 5.06, reflecting a moderate level of burden. Distribution across categories was as follows: five patients reported no burden, 47 mild burden, 103 moderate burden, and 25 severe

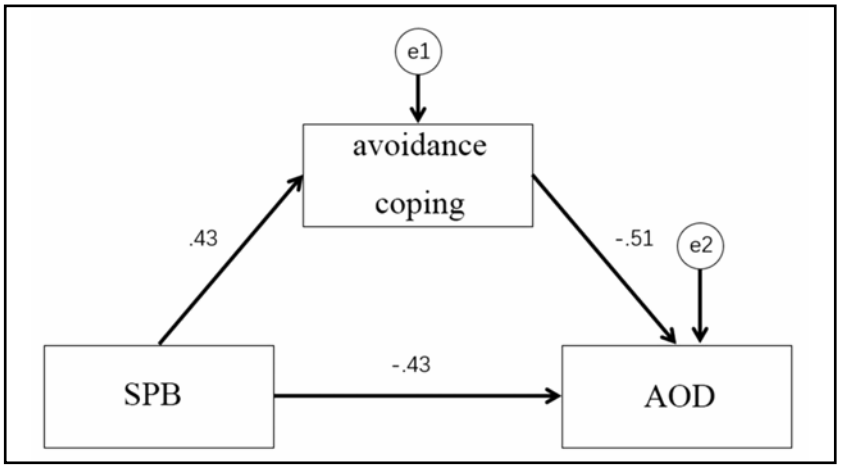

Fig. 1. Structural equation model (SEM) depicting the relationships between self-perceived burden (SPB), avoidance coping, and acceptance of disability (AOD) in patients with Parkinson's disease (n = 180); standardized path coefficients are shown and all paths are statistically significant ($p < 0.001$)

burden. SPB levels differed significantly by **sex, age, and marital status** (all $p < 0.05$), as determined by independent-samples t-tests and one-way ANOVA as appropriate.

Coping mode profiles

Scores for the Medical Coping Modes Questionnaire were as follows: confrontation coping, 18.67 ± 1.33; avoidance coping, 16.68 ± 3.35; and resignation coping, 13.78 ± 1.31. Compared with national normative data, confrontation coping scores were significantly lower, whereas avoidance and resignation coping scores were significantly higher (all $p < 0.001$).

AOD levels

The mean ADS-R score was 87.09 ± 10.44, indicating a moderate overall level of disability acceptance. Standardized scores across dimensions ranked from highest to lowest were as follows: containment, enlargement, transformation, and subordination. Based on classification thresholds, 31 patients (17.22%) demonstrated high acceptance, 146 patients (81.11%) moderate acceptance, and 3 patients (1.67%) low acceptance. Analysis using independent-samples t-tests and one-way ANOVA showed that AOD differed significantly by **sex, age, monthly per capita household income, and family history** (all $p < 0.05$).

Correlation analysis of coping modes, SPB, and AOD

Among the 180 patients in this cohort, confrontation coping was positively correlated with AOD and negatively correlated with SPB. Avoidance coping was negatively correlated with AOD and positively correlated with SPB; SPB was negatively correlated with AOD. Resignation coping was not significantly correlated with either SPB or AOD. These correlations ranged from moderate to strong in magnitude, and detailed correlation coefficients and significance values are presented in Table 1.

Mediating role of medical coping modes between SPB and AOD

The data met the assumptions of multivariate normality. To examine whether medical coping strategies mediated the relationship between SPB and AOD, an initial structural equation model (SEM) was constructed with SPB as the independent variable (X), the three MCMQ coping dimensions as mediating variables (M), and AOD as the dependent variable (Y). The three hypothesized paths—(1) SPB → confrontation coping → AOD; (2) SPB → resignation coping → AOD; and (3) SPB → avoidance coping → AOD—revealed that only the avoidance coping pathway demonstrated significant mediation, whereas the confrontation and resignation coping pathways were non-significant. This pathway was retained in the final model, which showed excellent fit indices (e.g., χ^2/df, CFI, TLI, RMSEA within acceptable ranges). All path coefficients were statistically significant ($p < 0.001$). The standardized direct effect of SPB on AOD was **-0.43**, and the standardized effect of **avoidance coping** on AOD was **-0.51**. The standardized indirect effect of SPB on AOD via avoidance coping was **-0.22 (−0.51 × 0.43)**, and the standardized total effect was **-0.65 [−0.51 × 0.43 + (−0.43)]**, with the indirect effect accounting for **33.84%** of the total effect. Detailed results are presented in Table 2 and Figure 1.

DISCUSSION

This study investigated the interrelationships among SPB, AOD, and medical coping modes in patients with PD-related disability, focusing on the mediating role of avoidance coping. Results demonstrated that AOD was negatively correlated with avoidance coping and SPB. Avoidance coping partially mediated the association

between SPB and AOD, indicating that higher perceived burden was linked to lower disability acceptance through greater reliance on avoidance strategies.

SPB and AOD correlation

Correlation analysis revealed a significant and strong negative association between SPB **and** AOD ($r = -0.653$, $p < 0.001$). Zhao *et al.* demonstrated that rehabilitation exercises and psychological interventions for patients with hemiplegia following cerebral hemorrhage enhanced recovery potential, improved limb function and ADL performance, and reduced negative emotions such as anxiety and depression (Zhao & Lin 2020). These improvements were associated with decreased SPB and increased AOD, with similar findings reported by Chen *et al.* (Chen *et al.* 2019). Consequently, targeting reductions in SPB is an important therapeutic goal to improve AOD and overall QOL in patients with disability.

Medical coping modes and AOD correlation

The total AOD score demonstrated a positive correlation with confrontation coping ($r = 0.545$), a negative correlation with avoidance coping ($r = -0.697$), and no significant correlation with resignation coping ($r = 0.011$), as shown in Table 1. Previous research indicates that following major traumatic events, intrusive trauma-related memories that are difficult to suppress can adversely affect mental health. Consequently, individuals often employ short-term avoidance coping strategies to manage acute stress responses (Edjolo *et al.* 2022). Although avoidance coping is typically categorized as a passive strategy, evidence suggests that it may temporarily mitigate mild negative emotions such as anxiety and depression (Edjolo *et al.* 2022). Thus, avoidance coping can hold adaptive value as a temporary strategy for alleviating psychological distress. Conversely, Pakenhan *et al.* reported that active coping facilitated a more accurate understanding of disability status and reframed the disease process as a meaningful experience of overcoming challenges (Rinaldis *et al.* 2012). Proactive coping strategies may improve disease prognosis and enhance patients' QOL.

SPB and medical coping modes correlation

The results indicated that SPB in patients with PD-related disability was negatively correlated with confrontation coping, positively correlated with avoidance coping, and had no correlation with resignation coping. This suggests that patients who **depend more on** avoidance coping report higher levels of SPB, a finding consistent with the conclusions of Yang (Yang 2019). Multiple linear regression analysis further identified confrontation coping, avoidance coping, and SPB as primary factors influencing AOD. A potential explanation is that physical pain and disability impair patients' ADL performance. As dependence on long-term caregiving increases, patients may relinquish self-management responsibilities and increasingly resort to avoidance coping. These findings support guiding patients to recognize the detrimental impact of passive coping modes on disease progression and psychological well-being. Strengthening self-management abilities, promoting active coping, and facilitating effective communication between patients and their relatives may improve QOL. Upholding principles of humanistic care, fostering a positive treatment mindset, and supporting proactive disease management strategies are therefore key components of comprehensive PD care.

Analysis of mediating role of medical coping modes between SPB and AOD

This study established a SEM to examine the relationships among SPB, medical coping strategies, and AOD. The results indicated that avoidance coping exerted a negative predictive effect on AOD in patients with PD-related disability, suggesting that higher reliance on avoidance coping was associated with lower levels of AOD, whereas more active coping strategies may enhance acceptance. SPB also demonstrated a negative predictive effect on AOD. The protracted nature of treatment and rehabilitation often imposes substantial financial strain on families, potentially fostering feelings of guilt, functional impairment, and perceptions of being a burden, all of which may contribute to psychological distress. These findings highlight the importance of strengthening communication, encouraging patients to express their inner feelings, and implementing measures to reduce perceived burden as strategies to improve AOD. The mediation analysis revealed that avoidance coping accounted for 33.84% of the total effect of SPB on AOD, with a standardized indirect effect of −0.22 and a total effect of −0.65. These results imply that interventions aimed at reducing reliance on avoidance coping and promoting more active, confrontational strategies could partially mitigate the adverse impact of SPB on AOD. Implementing tailored psychological interventions to reduce avoidance coping and support active coping appears to be a promising approach to improve disease management and psychosocial outcomes.

CONCLUSION

This study confirms the partial mediating role of avoidance coping in the relationship between SPB and AOD in patients with PD-related disability, with avoidance coping explaining approximately one-third (33.84%) of the total effect of SPB on AOD. The results suggest that clinical interventions should focus on reducing SPB and limiting maladaptive avoidance coping to enhance disability acceptance. Fostering effective communication, facilitating the expression of psychological distress, and implementing targeted psychosocial interventions that address self-perceived burden

and avoidance coping may support improved psychological adjustment and overall quality of life in this patient population.

DECLARATIONS

Ethics approval and consent to participate

This study was conducted with approval from the Ethics Committee of Lishui Hospital of Traditional Chinese Medicine (2025037). This study was conducted in accordance with the declaration of Helsinki. Written informed consent was obtained from all participants and their relatives.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Availability of data and materials

All data generated or analysed during this study are included in this article. Further enquiries can be directed to the corresponding author.

Authors' contributions

Conception and design of the research: Qin Si, Huawei Huang
Acquisition of data: Huawei Huang
Analysis and interpretation of the data: Qin Si, Huawei Huang
Statistical analysis: Qin Si, Huawei Huang
Obtaining financing: Huawei Huang
Writing of the manuscript: Qin Si
Critical revision of the manuscript for intellectual content: Huawei Huang
All authors read and approved the final draft.

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