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ORIGINAL RESEARCH

Self-Efficacy's Mediating Role in the Relationship Between Self-Perceived Burden and Health-Related Quality of Life Among Older-Adult Inpatients in China: A Cross-Sectional Study

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Purpose: This study investigated the current state of self-efficacy and the association between self-perceived burden (SPB) and health-related quality of life (HRQoL) among Chinese older-adult inpatients.

Methods: A cross-sectional study was conducted using convenience sampling to survey Chinese older-adult inpatients. Data regarding demographic characteristics, self-efficacy, SPB, and HRQoL were collected. Pearson's correlation analysis was used to examine the correlations among the research variables. SPSS® Statistics V26.0, and SPSS® PROCESS Macro Model 4 were used to analyze the available data. The bootstrap method was used to analyze the mediating role of self-efficacy.

Results: Survey participants included 514 older-adult inpatients, with a mean age of 72.28±5.58 years. Self-efficacy ($r=0.471$, $p<0.01$) was positively correlated with HRQoL, whereas self-efficacy ($r=-0.891$, $p<0.01$) and HRQoL ($r=-0.516$, $p<0.01$) were negatively correlated with SPB. The mediating effect analysis revealed that self-efficacy either completely or partially mediated the effect of SPB on HRQoL, with the indirect effect accounting for 30.2% of the total.

Conclusion: This study provides a mediating model suggesting that SPB exerts both direct and indirect effects on the HRQoL of older-adult inpatients through self-efficacy.

Keywords: aging, Chinese, negative emotions, self-efficacy, health-related quality of life, mediating effects

Introduction

The World Health Organization (WHO) has estimated that more than 20% of the population will be over 60 years old by 2050, accounting for two billion people worldwide. The social, economic, and medical treatment implications of the aging population are becoming increasingly evident.[1] In China, by 2050, the population aged 80 years and above will exceed 100 million, accounting for 30% of older adults. The characteristics of this aging population include a large base, rapid growth, and poor overall health.[2] Aging deteriorates cell functions, tissues, and organs, which is an irreversible and gradual pathophysiological process—the most important risk factor for aging-related diseases, including cardiovascular, chronic kidney, metabolic, degenerative, neurodegenerative, musculoskeletal, and immune system diseases. Thus, the world population's increasing age is accompanied by an increase in the occurrence of various aging-related diseases.[3]

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Owing to the rapid aging and large older-adult population in China, the number of chronic diseases and disabilities among older adults is astonishingly high.[4] The level of physical activity with aging and the barriers to participation in physical activity by the elderly are factors that can affect these processes.[5] The Chinese government implements "active aging" and "healthy aging" policies among older adults, aiming to decrease their psychological burden and improve their health-related quality of life (HRQoL).[6]

Self-perceived burden (SPB) is a common psychological characteristic among older-adult inpatients. SPB refers to patients' sense of frustration, dependence, and guilt regarding caregivers' care, and their worry about the adverse psychological, economic, physical, and emotional impacts on caregivers.[7] This feeling can cause patients to experience negative emotions such as depression, anxiety, frustration, and loss of dignity, and it ultimately affects the patient's treatment effect, treatment decision-making, and quality of life, and may even lead to thoughts of suicide.[8] A study reported that older patients in China experienced high levels of SPB, suggesting that medical staff should focus on patients' psychological status, help reduce their psychological burden, and guide them in developing a healthy lifestyle.[9] Factors associated with the self-perceived burden among older-adult inpatients have been reported in previous studies, including sociodemographic factors such as age, gender, marital status, residence, education, occupational status, income,[10] caregiver,[11] and payment methods; and other related factors such as QoL,[12] social support, and life events.[13] HRQoL is a multidimensional concept that measures a person's health-related functioning that impacts daily life, covering the social dimensions of personal, psychological, and physical domains.[14] The level of HRQoL is important in clinical decision-making and has been considered an important predictor of mortality and mobility.[15] With increasing age, various physiological functions of the human body gradually decline, thereby reducing the mobility and self-care abilities of older-adult inpatients. They also experience physical and mental damage caused by chronic diseases, which can lead to a decline in HRQoL. Helping older-adult inpatients reduce their SPB and improve their HRQoL has become a popular research topic in recent years. Thus, it is necessary to have a deeper understanding of HRQoL among older-adult inpatients.

However, little attention has been paid to the relationship between HRQoL and SPB among older adult inpatients in China. China has adopted active and healthy aging strategies; notably, reducing the burden and improving the HRQoL of hospitalized older adults remain worthy of attention. Self-efficacy refers to a person's confidence in their ability to perform and adhere to a certain behavior; this term was introduced by the American psychologist Bandura in 1986.[16] One study conducted among patients with hypertensive nephropathy revealed that the better their self-efficacy, the better their HRQoL, thereby highlighting that self-efficacy is among the most important predictors of HRQoL.[17] Higher self-efficacy among older patients includes self-management, such as goal-setting, problem-solving, coping skills, and decision-making. Therefore, this study aimed to analyze the mediating role of self-efficacy on SPB and HRQoL among older-adult Chinese inpatients.

Because of the distinctive characteristics of Chinese society, economy, and culture, the levels of self-efficacy, SPB, and HRQoL in older Chinese adult inpatients might exhibit unique features compared to other populations. Exploring the interactions among these three variables can provide a reference for strategies to reduce SPB and further improve HRQoL in older-adult inpatients, hypothesizing that self-perceived burden is related to self-efficacy and HRQoL and that self-efficacy may be a potential mediator between self-perceived burden and HRQoL. This study aimed to examine the levels of and relationships between self-efficacy, self-perceived burden, and HRQoL in older Chinese adult inpatients. These results would provide a theoretical basis for developing interventions to improve the HRQoL of older Chinese adult inpatients.

Materials and Methods

Design, Setting, and Participants

This cross-sectional study investigated older adult inpatients at Changde Hospital (Hunan Province). This study was conducted from June 20 to August 10, 2023. The self-administered questionnaire was created using Wenjuanxing (www.wjx.cn), an online crowdsourcing platform founded in mainland China. The questionnaire was administered by the researcher with the patient's consent during the period after the patient's condition had stabilized and after completion of care and treatment. The investigator will visit wards and send an online link to the questionnaire to the participants, before the potential participants are presented with the questionnaire, the informed consent page presented two options (yes or no). Only those who selected "yes" could proceed to the questionnaire page. Then the investigator explained the

purpose of the study and the method of filling in the questionnaire to the participants. For items with questions, the investigator explained them in non-guiding language; The investigator provided one-on-one guidance to help the participants complete the questionnaire. For the older adults who could not fill out the questionnaire by themselves, the investigator read the questionnaire entries to them with a neutral attitude and recorded the choice of the survey object. Participants were allowed to quit the survey at any time. G-Power analyses with an effect size of 0.25, significance level of 0.05, and power of 0.80 were performed, indicating that a minimum of 386 participants were needed. Ultimately, 514 participants were included in this study. The inclusion criteria were as follows: (a) inpatients aged 65 years and above, (b) those admitted to different wards of the hospital during the data collection period (recruited within 48 hours of admission), and (c) those who demonstrated normal language skills, exhibited clear consciousness, and were familiar with smartphone use. The exclusion criteria were as follows: patients with serious vision, hearing, or reading difficulties; those with psychiatric conditions; those in the intensive care unit; and those whose length of stay was less than 48 hours.

Research Instruments

The questionnaire comprised the following three sections: the basic questionnaire on

Sociodemographic characteristics, SPBS questionnaires, General Self-Efficacy Scale (GSES), and SF-36.

Basic Questionnaire Data

The basic questionnaire covered demographics, including gender, age, education, marital status, occupation, income, and medical payment.

Self-Perceived Burden Scale (SPBS) Questionnaire

The SPBS was first designed and developed by Cousineau et al in 2003.[7] The Cronbach's α for the Chinese version of the SPBS is 0.91. This scale comprises 10 closed-ended items, and each item is rated on a 5-point Likert-type scale from 1 to 5, representing none of the time, occasionally, sometimes, often, and all of the time, respectively; it includes three dimensions (ie, physical, emotional, and economic burden) with the total scores ranging from 10 to 50.[9] Accordingly, the scores of the SPBS were divided into three levels—namely, scores in the ranges of 20–30, 30–40, and ≥40, indicating mild, moderate, and severe degrees, respectively.[18] In this study, the Cronbach's α coefficient for this scale was 0.85.

General Self-Efficacy Scale (GSES)

The GSES is a one-dimensional self-report scale comprising 10 questions. Numerous studies in 33 languages have supported the validity and reliability of the GSES. Cronbach's α for the GSES ranged from 0.76 to 0.90, with the majority being above 0.80.[19] We used the Chinese version of the GSES translated in 2001 by Wang,[20] which comprises 10 closed-ended items; each item's score ranges from 0 (not correct at all) to 4 (completely correct), with total scores ranging from 10 to 40 points. Higher self-efficacy scores indicate elevated self-efficacy levels. Participants scoring below 20 points are classified as having low self-efficacy, while those scoring from 20 to 30 points have moderate self-efficacy. Scores exceeding 30 are associated with high self-efficacy levels.[21] In this study, Cronbach's α of the GSES was 0.83, and the confirmatory factor analysis of the comparative fit index was 0.79.

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

Since SF-36 was developed in 1992, it has been used widely in clinical trials, population studies, hospitals, and home-care settings to assess HRQoL.[22] The Chinese version of the SF-36 comprises 36 closed-ended items summarized into the following eight dimensions: physical functioning (PF), role-physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional (RE), and mental health (MH).[23] The SF-36 scores were converted to norm-based scoring; the mean score of the norms was 50, and the standard deviation was 10; higher scores indicate better HRQOL. Norm-based scores enable the comparison of scores between different populations or health conditions.[24] The overall Cronbach's α of the Chinese version of the SF-36 is 0.87 (eight dimensions ranging from 0.85 to 0.87), indicating good internal consistency reliability; convergent and discriminative validity for this scale is adequate.[25] In this study, the total Cronbach's α for this scale was 0.84.

Statistical Analysis

SPSS® Statistics V26.0, and SPSS® PROCESS Macro Model 4 were used to analyze the available data. This included simple counting, percentages, mean values, standard deviations of demographics and symptoms, and descriptive statistics for the SPBS, GSES, and SF-36. Data were expressed as mean ± standard deviation, frequency, and percentage. Pearson's correlation analysis was used to evaluate the relationship between GSES and SF-36 scores. The Process macro program and bootstrap method were applied using SPSS 26.0 to test the mediating effect of self-efficacy on the relationship between SPB and HRQoL. The number of samples was set to 5000, and the confidence interval was set to 95%. All analyses were performed using two-sided tests (P<0.05).

Results

Participant Characteristics

Participants' ages ranged from 65 to 92 years, with a mean ± standard deviation age of 72.28±5.58 years. Furthermore, 55.3% and 44.7% of the participants were male and female, respectively; most had an education of up to junior middle school (70.2%),low-income (48.1%), and were married (89.7%). More than half the participants had basic medical insurance for employees (69.3%). Table 1 shows the demographic characteristics of the participants.

Correlations Among Self-Efficacy, HRQoL, and SPB

Table 2 presents the correlations among self-efficacy, SPB, and HRQoL. Self-efficacy (r=0.471, p<0.01) was positively correlated with HRQoL, whereas self-efficacy (r=−0.891, p<0.01) and HRQoL (r=−0.516, p<0.01) were negatively correlated with SPB.

Table 3 presents the results of mediation analyses. The total effect (path c) of SPB on HRQoL was significant (B=−9.549, p<0.001). The significant coefficient of path a (B=−2.828, p<0.001) indicated a negative association between SPB and self-efficacy. The significant coefficient of path b (B=1.071, p<0.001), indicated a positive association between self-efficacy and HRQoL. The indirect effect (Path a×b) between SPB and HRQoL through self-efficacy was significant (B= −0.048, p < 0.05), and the 95% bias-corrected bootstrap confidence interval was −0.188 to 0.100. Path c' was significant (B= −6.662, p < 0.001), suggesting that self-efficacy partially mediated the relationship between SPB and HRQoL, with the indirect effect accounting for 30.2% of the total effect. Figure 1 presents the significant coefficients.

Table 1 Participants' Demographic Characteristics (n = 514)

Characteristics	Variable	Frequency	Percent (%)
Gender	Male	284	55.3
	Female	230	44.7
Age	60–69	215	41.8
	70–79	236	45.9
	>80	63	12.3
Education	Junior middle school and below	361	70.2
	Senior middle school	124	24.2
	College degree	17	3.3
	Master's degree and above	12	2.3
Income	Low-income	247	48.1
	Middle-income	256	49.8
	High-income	11	2.1
Marital status	Unmarried	2	0.3
	Married	461	89.7
	Divorced	7	1.4
	Bereft	44	8.6
Modes of health insurance payment	Self-pay	24	4.7
	Basic medical insurance for urban and rural residents	134	26.1
	Basic medical insurance for employees	356	69.2

Table 2 Correlations Among Self-Efficacy, SPB and HRQoL

Outcome Variables	1	2	3	Mean	SD
Self-Efficacy	1.00			21.8	8.1
SPB	−0.891**	1.00		23.5	8.7
HRQoL	0.471**	−0.516**	1.00	53.8	20.2

Notes: **$p < 0.01$.
Abbreviations: SPB, self-perceived burden; HRQoL, health-related quality of life;SD standard deviation.

Table 3 Mediation Effect of Self-Efficacy Between SPB and HRQoL

Dependent Variable	Independent Variable	β	SE	95% CI		R^2	F
				LLCI	ULCI		
HRQoL	SPB	−9.549***	0.700	−10.9242	−8.1731	0.267	93.092
Self-efficacy	SPB	−2.828***	0.019	−0.8649	−0.7915	0.794	1969.379
HRQoL	Self-efficacy	1.071***	1.659	−2.1882	4.3304	0.267	185.98
	SPB	−6.662***	1.542				

Note: ***$p < 0.001$.
Abbreviations: SPB, self-perceived burden; HRQoL, health-related quality of life; LLCI, lower-level confidence interval; ULCI, upper-level confidence interval; SE, standard error.

Discussion

This study explored the relationships among HRQoL, self-efficacy, and SPB to establish a foundation for the effective management of HRQoL in older-adult inpatients. The sample included older-adult inpatients from China, and a mediating effect analysis was applied to demonstrate the correlational relationships between the aforementioned variables. Subsequently, we discuss the findings in detail.

The mean HRQoL score in this study was 53.8 points, which was lower than that of other Asian populations (M = 61.24).[24] This finding suggests that older adult inpatients in mainland China may experience lower HRQoL than patients of other countries; however, a meaningful explanation for this difference is currently lacking. Possible influencing factors include religion, income, insurance, and level of medical care.[6,24] Additionally, factors affecting patients' psychological attitudes and reactions to inpatient stimuli are worth considering. This study found that HRQoL negatively correlated with SPB in older-adult inpatients; specifically, the higher the HRQoL score, the lower the SPB score. Yeung et al[13] also demonstrated a strong association between self-perceived burden and quality of life among cancer survivors. As individuals age, their mobility and self-management capabilities tend to decline, accompanied by decreased immunity and resistance to diverse ailments.[26] Moreover, the natural aging process diminishes their ability to care for themselves. When these individuals grapple with psychological stress and concurrent symptoms, both their physical and mental well-being deteriorate, and their understanding of their health conditions becomes inadequate, potentially heightening uncertainty and increasing their SPB.[27]

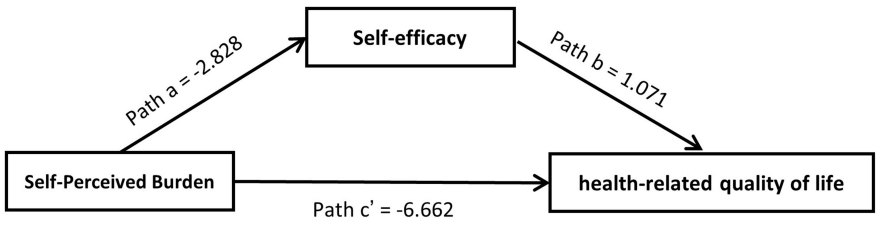

Figure 1 Schematic model of self-efficacy as the mediator between SPB and HRQoL.
Notes: Path a is the effect of SPB on the Self-Efficacy. Path b is the effect of Self-Efficacy acting on The HRQoL. Path c' means after controlling for the mediation effect, the effect of SPB on the Self-Efficacy.

The results of this study provide a novel approach for evaluating the mechanism driving self-efficacy that either completely or partially mediates the effect of SPB on HRQoL and suggest a more positive and promising strategy for its management. Older-adult inpatients with elevated self-efficacy tend to employ proactive coping strategies to manage their illnesses.[28] This proactive approach is characterized by heightened enthusiasm and adherence to treatment regimens, indicating an enhanced ability to confront and recover from adversities.[29] Individuals with robust self-efficacy believe in their capacity to regulate the effects of fatigue, physical discomfort, emotional distress, and other symptoms on their well-being. The effective management of self-efficacy among patients plays a pivotal role in mitigating disease progression and delaying and managing the onset of disease-related complications, thereby significantly improving disease control and patient prognosis. Patients can proactively obtain information and support to manage SPB and improve their QoL.[30] Therefore, effective psychological interventions targeting older-adult inpatients should be regularly implemented. Administrators should pay greater attention to SPB and self-efficacy and further improve the HRQoL of older-adult inpatients.

Although this study has important implications for research and practice, it also has certain limitations. First, it used a cross-sectional design that could not determine the dynamic changes between the study variables at different disease stages. Future studies should use longitudinal methods to further assess the proposed mediation model. Second, the study data were collected using self-reported methods, which are insufficient to reveal the physiological mechanisms of SPB. Finally, the study participants included 514 older-adult inpatients recruited from a tertiary hospital in Changde, Hunan, China; hence, the sample's limited representativeness may inhibit the generalizability of the findings to other regions of China. Multicenter studies with further validation in different populations and settings are required to explore the associations between the studied variables.

Conclusion

This study explored the possible mechanisms underlying the association between SPB and HRQoL, using a mediating model. These findings suggest that (1) Chinese older-adult inpatients may experience lower HRQoL levels, (2) self-efficacy is correlated with SPB and HRQoL, and (3) self-efficacy mediates the link between SPB and HRQoL in Chinese older-adult inpatients. This study, in conjunction with previous research, offers novel insights into the association between SPB and HRQoL, particularly regarding self-efficacy as a psychological mechanism. Furthermore, both SPB and self-efficacy are modifiable psychological variables. Hence, this study provides a novel perspective for improving HRQoL and subsequent outcomes in older-adult inpatients. Helping older-adult inpatients reduce their SPB may enable them to enhance their self-efficacy and HRQoL.

Ethics Approval

This study was approved by the Institutional Review Board of The First People's Hospital of Changde City (No. YX-2023-119-01). We affirm that this study complies with the ethical principles outlined in the Declaration of Helsinki.

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Disclosure

The authors report no conflicts of interest in this work.

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