


The relationships among self-efficacy, social support, and self-care behavior in the elderly patients with chronic pain (a STROBE-compliant article)

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Abstract

The relationships among the self-efficacy, social support and self-care behavior in the elderly patients with chronic pain has not been reported. Therefore, we explored the relationships among self-efficacy, social support and self-care behavior in the elderly patients with chronic pain.

General data questionnaire, self-efficacy scale, social support scale and self-care behavior scale were performed in 1032 elderly patients with chronic pain from Shenyang city between February and December 2017. The relationships among self-efficacy, social support and self-care behavior, and self-efficacy as a mediator between the social support and self-care behavior were analyzed by Pearson correlation analysis and Bootstrap method.

In these elderly patients with chronic pain, the total scores of the self-efficacy, social support and self-care behavior were 35.59 ± 12.38 , 65.64 ± 19.68 and 50.52 ± 15.26 , respectively. The self-efficacy was positively correlated with the self-care behavior ($r = 0.414$, $P < .001$), the self-efficacy was positively correlated with the social support ($r = 0.293$, $P < .001$) and the social support was positively correlated with the self-care behavior ($r = 0.322$, $P < .001$). The mediating effect of self-efficacy was 0.121 which accounted for 27.31% of the total effects.

The self-efficacy plays a mediating effect between social support and self-care behavior in the elderly patients with chronic pain.

Abbreviation: None.

Keywords: elderly patients with chronic pain, mediating effect, self-care behavior, self-efficacy, social support

1. Introduction

With the aging of the population, the incidences of chronic diseases, neurological disease and mental diseases are increasing.^[1] Self-care behavior can effectively alleviate the influence of chronic pain on patients' health.^[2] Social support can increase self-care behavior and reduce chronic pain complications in elderly patients with chronic pain.^[3,4] Social support are closely related to self-efficacy in the elderly patients with chronic pain,

and self-efficacy are also closely correlated to self-care behavior.^[5,6] The relationships among the self-efficacy, social support and self-care behavior in the elderly patients with chronic pain has not been reported. Therefore, we explored the relationships among the self-efficacy, social support and self-care behavior. The main hypothesis of this study was that the self-efficacy plays an intermediary role between the social support and self-care behavior in the elderly patients with chronic pain and verified it.

1.1. Subjects and methods

All study methods were approved by ethics committee of Liaoning Special Education Teachers College. The elderly patients with chronic pain participating in this study gave written informed consent to participate.

1.2. Subjects

Between February and December 2017, the elderly patients with chronic pain from Shenyang were selected by convenient sampling method. The inclusion criteria were that

- (1) the patients experienced pain every day and the pain lasted more than half a year;
- (2) the patients were more than 60 years old;
- (3) the patients had the ability of normal communication.

The exclusion criteria were that

- (1) the patients currently suffered from more serious organic diseases;

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All data generated or analyzed during this study are included in this published article [and its supplementary information files].

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(2) the patients could not communicate normally due to mental illness or other reasons.

A total of 1200 empty-nest old individuals received investigation and 1032 (86.00%) questionnaires were valid.

1.3. Questionnaires

- (1) The general data questionnaire was designed by us. In this questionnaire, the demographic data included age, sex, educational background, average income per person in family, number of children, smoking or not, drinking or not, living style and so on.
- (2) The self-efficacy scale made by Yu et al^[7] is composed of four aspects including symptom control (2 items), role function (2 items), emotion control (1 item), doctor-patient communication (1 item). The self-efficacy scale contains 6 items and the score range of each item was one to ten. The total score is positively reflects the self-efficacy level of the elderly patients with chronic pain. The Cronbach's α coefficient of the self-efficacy scale used in this study was 0.934.
- (3) The social support scale made by Zhu^[8] is composed of four aspects including practical support (5 items), emotional support (5 items), positive social activities (5 items), positive emotional support (4 items). The social support scale contains 19 items and the score range of each item was one to five. The total score is positively reflects the social support for the elderly patients with chronic pain. The Cronbach α coefficient of the social support scale used in this study was 0.923.
- (4) The self-care behavior scale is composed of 3 aspects including self-care maintenance, self-care management and self-care confidence.^[9]

The self-care behavior scale included 22 items and the score range of each item was zero to four. The total score is positively reflects the self-care behavior of the elderly patients with chronic pain. The Cronbach's α coefficient of the self-care behavior scale used in this study was 0.932.

1.4. Statistical analysis

Statistical analysis was performed using SPSS21.0 software. Measurement data were expressed as mean \pm standard deviation. A Pearson Correlation Analysis was used in the correlation analysis between the self-efficacy, social support and self-care behavior in the elderly patients with chronic pain. The self-efficacy as a mediator between the social support and self-care behavior were analyzed using AMOS19.0 software and Bootstrap method.^[10] The statistical significance was established at $P < .05$.

2. Results

2.1. Demographic data

There were 1032 valid questionnaires. Of the 1032 elderly patients with chronic pain, 509 (49.32%) were male and 523 (50.68%) female; 561 (54.4%) had primary school's degree, 331 (32.12%) junior high school's degree, 91 (8.81%) high school's degree and 49 (4.67%) college degree or above. The mean age was 68.78 ± 10.56 years old in these elderly patients with chronic pain.

2.2. Scores

In the 1032 elderly patients with chronic pain, the total scores of the self-efficacy, social support and self-care behavior were 35.59 ± 12.38 , 65.64 ± 19.68 and 50.52 ± 15.26 , respectively.

2.3. Correlation analysis between the self-efficacy, social support and self-care behavior in these elderly patients with chronic pain

Pearson Correlation Analyses indicated that the self-efficacy was positively correlated with the social support ($r=0.293$, $P < .001$), the social support was positively correlated with the self-care behavior ($r=0.322$, $P < .001$) and the self-efficacy was positively correlated with the self-care behavior ($r=0.414$, $P < .001$).

2.4. Mediating effect of the self-efficacy

After standardizing variables in every group, we established Eq. (1) with the self-care behavior as a dependent variable and with the social support as an independent variables; and then we established Eq. (2) with the self-efficacy as a dependent variable and with the social support as an independent variable, and established Eq. (3) with the self-care behavior as a dependent variable and with the social support and self-efficacy as independent variables. Results indicated that the social support could positively predict the self-care behavior ($\beta=0.324$, $P < .001$), the social support could positively predict the self-efficacy ($\beta=0.294$, $P=.002$), and the self-efficacy and social support could simultaneously predict the self-care behavior ($\beta=0.258$, $P < .001$; $\beta=0.413$, $P < .001$), suggesting that the social support has a direct and indirect effect on the self-care behavior and the self-efficacy plays a partial intermediary role between the social support and self-care behavior (Table 1).

2.5. Verification of the self-efficacy as an intermediary variable between the the social support and self-care behavior

The structural equation model between the self-efficacy, social support and self-care behavior was constructed. The intermedi-

Table 1
Regression analysis of the self-efficacy as an intermediary variable between the social support and self-care behavior.

| Equations | Dependent variables | Independent variables | Regression coefficient | SE | t | P |
|------------|---------------------|-----------------------|------------------------|-------|-------|-------|
| Equation 1 | Self-care behavior | Social support | 0.324 | 0.034 | 3.535 | <.001 |
| Equation 2 | Self-efficacy | Social support | 0.294 | 0.019 | 5.359 | .002 |
| Equation 3 | Self-care behavior | Social support | 0.258 | 0.029 | 4.364 | .001 |
| | | Self-efficacy | 0.413 | 0.030 | 1.268 | <.001 |

Table 2
Analysis of the mediating effect of self-efficacy.

| Social support→ self-care behavior | Non-standardized regression coefficient | Standardized path coefficients | Standard error | 95% CI confidence intervals | |
|---------------------------------------|--|-----------------------------------|-------------------|-----------------------------|-----------------|
| | | | | Lower limits | Upper limits |
| Total effect | 0.681 | 0.443 | 0.031 | 0.335 | 0.693 |
| Direct effect | 0.425 | 0.322 | 0.035 | 0.206 | 0.525 |
| Indirect effect | 0.256 | 0.121 | 0.042 | 0.092 | 0.378 |

CI = confidence interval.

ary role of self-efficacy was verified using AMOS19.0 software. Results indicated $\chi^2/df=1.012$, $NFI=0.935$, $RFI=0.912$, $IFI=0.924$, $TLI=0.921$, $CFI=0.935$, $GFI=0.943$ and $RMSEA=0.026$. The intermediary role of self-efficacy between the social support and self-care behavior was tested using Bootstrap method. Results indicated that 95% CI confidence intervals of indirect effect, direct effect and total effect of the social support on the self-care behavior did not include zero. Therefore, the structural equation model for the self-efficacy as a partial intermediary role was established, and the mediating effect of self-efficacy was 0.121 which accounted for 27.31% (0.121/0.443) of the total effects. The analysis of the mediating effect of self-efficacy is shown in Table 2 and its structural equation is shown in Figure 1.

3. Discussion

With the development of society, psychological problems become increasingly prominent. Hyposensitivity or hypersensitivity may be “trait” markers of individuals with suicidal behavior and interventions should refer to the individual unique sensory profiles and their behavioral and functional impact in the context of real life.^[10] The exposure to abuse and neglect as a child may increase the risk to develop suicidality.^[11] With the aging of the population, the incidences of chronic pain in the elderly patients.

In this study, the self-care behavior was 50.52 ± 15.26 scores which were lower than 65.58 ± 15.64 of national norm,^[12] but higher than 21.42 ± 6.53 reported by Qing et al.^[13] Chronic pain

affected the health of these elderly patients and organ functions of these elderly patients gradually decline, so their self-care behavior of these elderly patients lower than national norm. In this study, the self-efficacy was 35.59 ± 12.38 scores and social support 65.64 ± 19.68 scores, which were lower than these results reported by Wu et al^[14] and Zhao et al,^[15] respectively. This may be that the increased empty-nest elderly patients did not live with their children together, so their social support decreased; and decline of learning ability of elderly patients led to lower self-efficacy.

This study indicated that the self-efficacy was an intermediary variable between the social support and self-care behavior, that is, the social support not only directly influenced the self-care behavior, but also indirectly influence the self-care behavior through the self-efficacy. The score of the self-care behavior was lower in the elderly patients with chronic pain than in normal old people because these elderly patients were plagued by chronic pain. The social support can allow the elderly patients with chronic pain to master chronic pain-related knowledge, relieving pain symptoms. The social support can improve patients' compliance with treatment.^[16] The social support also can let elderly patients with chronic pain feel warm, eliminating patients' negative emotions caused by chronic pain. Relieving pain symptoms, improving patients' compliance with treatment and eliminating patients' negative emotions were conducive to self-care behavior, so the elderly patients with chronic pain would actively participate in the treatment of chronic pain, cooperate with medical staff, and learn chronic pain-related knowledge.^[17] This means that the social support not only directly influenced the

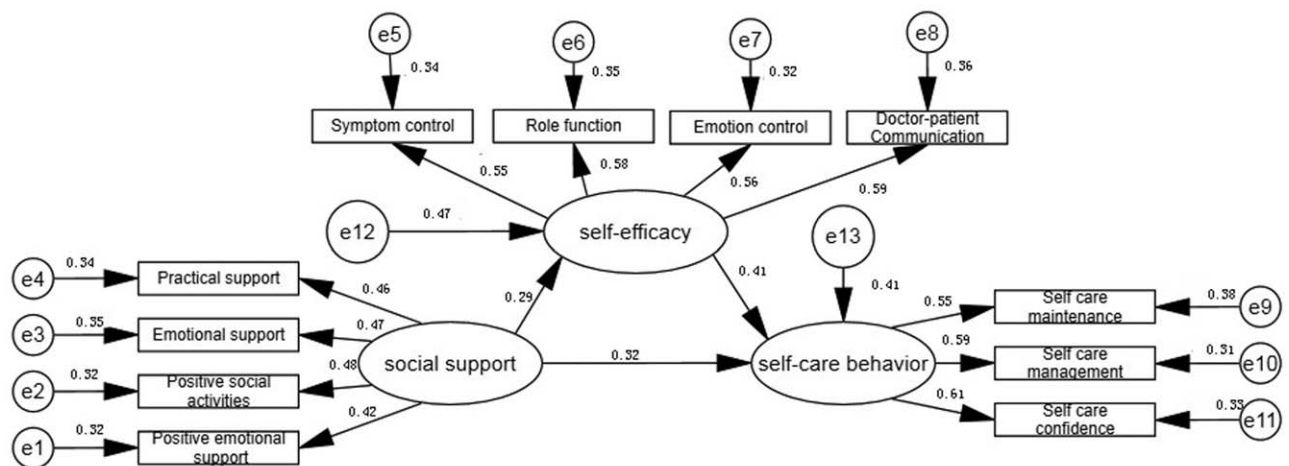


Figure 1. The model of the intermediary role of the self-efficacy between the social support and self-care behavior. Notes: The arabic numbers on the arrows indicate the standardized regression coefficients.

self-care behavior, but also indirectly influence the self-care behavior through the self-efficacy.

The results of this study show that the social support not only directly but also indirectly influenced the self-care behavior by the self-efficacy. The following suggestions are given for improving the self-efficacy of the elderly patients with chronic pain:

- (1) building a WeChat circle in which there were examples overcoming diseases and plans to overcome chronic pain for the elderly patients;^[18]
- (2) regularly inviting medical and psychological experts to give lectures about some common sense of pain treatment and how promoting the recovery of the disease to the elderly patients with chronic pain; and
- (3) building a learning platform for the elderly patients with chronic pain, encouraging the elderly patients to learn, and inspiring their initiative.

The self-efficacy scale is composed of 4 aspects including symptom control, role function, emotion control, doctor-patient communication, and the total score is positively reflects the self-efficacy level of the elderly patients with chronic pain. Therefore, to improve the self-efficacy of the elderly patients with chronic pain, we should control elderly patients' chronic pain and communicate with the elderly patients with chronic pain as much as possible in the clinical practice.

4. Limitations

However, the limitation of this study was that there was no comparison with the young and middle-aged people with chronic pain. In future studies, we will increase the sample size to explore more effective measures to improve self-efficacy of the elderly patients with chronic pain.

5. Conclusion

In summary, the self-efficacy plays an intermediary role between the social support and self-care behavior in the elderly patients with chronic pain. We should improve the self-efficacy of elderly patients with chronic pain to enhance the effect of social support on self-care behavior.

Author contributions

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