

RESEARCH ARTICLE

Effect of social support on illness perception in patients with atrial fibrillation during “Blanking Period”: Mediating role of sense of mastery

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Funding information

For the research, authoring and publishing of this paper, the author revealed the following financial support. The research was funded by Qingdao University's Affiliated Hospital and the Shiann District's Public Science and Technology Support Program (2020-2-020-YY). The writers are solely responsible for the content, which does not necessarily reflect the official views of Qingdao University's Affiliated Hospital

Abstract

Aim: To explore whether sense of mastery can mediate the relationship between social support and illness perception in patients with atrial fibrillation (AF) who were at the “Blanking Period.”

Design: A cross-sectional design.

Methods: 405 patients with AF who were at the “Blanking Period” in the Affiliated Hospital of Qingdao University were recruited; they completed a set of questionnaires, including the Perceived Social Support Scale, the Personal Mastery Scale and the Brief Illness Perception Questionnaire.

Results: Social support and sense of mastery were both adversely connected to illness perception. The indirect effect of social support on illness perception through sense of mastery was negative, accounting for 86.04% of the total effect.

Conclusion: During the “Blanking Period,” better social support and sense of mastery contribute to a positive illness perception of AF patients. Social support also can influence patients' illness perception indirectly via the mediator of sense of mastery.

KEYWORDS

“Blanking Period”, atrial fibrillation, illness perception, mediation, sense of mastery, social support

1 | INTRODUCTION

The most frequent tachyarrhythmia in the world is atrial fibrillation (AF). The global prevalence of AF is currently 37,574 million (0.51% of the global population), by 2050, the morbidity of AF is expected to rise by more than 60% (Chugh et al., 2014; Lippi et al., 2021). It has a high mortality, morbidity, hospitalization rates and economic spending, all of which put a strain on the global health system and make it a global health threat (Hindricks et al., 2021). The number

of AF patients in China is estimated to be around 4,870,000 (Wang et al., 2018). The most effective treatment for AF, radiofrequency catheter ablation (RFCA), is strongly recommended in the 2020 ESC guidelines, greatly lowering the burden of symptoms (Kalla et al., 2017). Patients' symptoms (palpitation, fatigue, recurrence, etc.) cannot be eased immediately after RFCA, putting their psychological well-being at risk. The psychological problem is more evident in the postoperative “Blanking Period” (Sang et al., 2013). The first 3 months after surgery is known as the “Blanking Period,”

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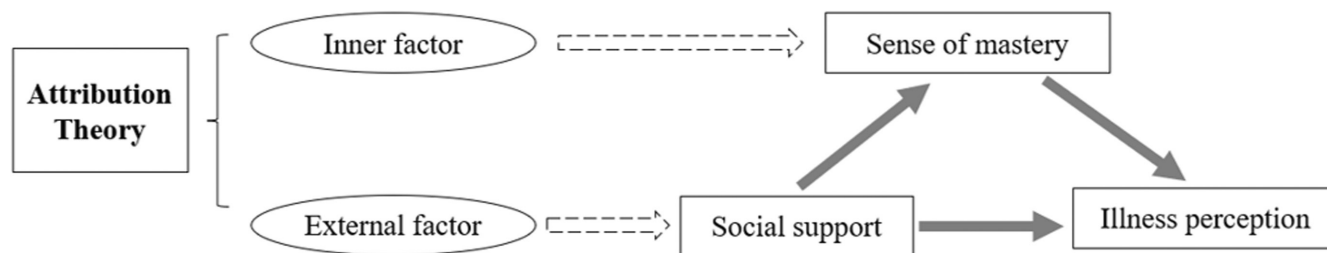


FIGURE 1 Hypothesis model of this study is based on the Attribution Theory

and it can help predict the long-term prognosis of AF (John & Mitra, 2020). During the “Blanking Period,” there is a high rate of early recurrence of AF (approximately 15.9%–65%), which can cause physical discomfort (palpitations, dyspnoea, exhaustion, etc.) and psychological load (fear, anxiety, distress, etc.) (Andrade et al., 2012; Risom et al., 2019). Illness perception, defined as a dimensional construct that explores individuals' beliefs and presentations of their illness (Leventhal et al., 1980), can aid AF patients in properly managing and adapting to their disease, particularly during the “Blanking Period,” which can reduce AF recurrence and improve the quality of life (Rivera et al., 2020). Positive illness perception can improve patients' functional status, emotional well-being and symptoms, as well as their illness self-management confidence and long-term health outcomes (Taylor et al., 2018). However, after RFCA, the status of illness perception in patients with AF is not good (Peters & Keeley, 2017). Understanding the factors that influence the illness perception in the postoperative “Blanking Period” in patients with AF is important for clinical interventions. According to the Attribution Theory (Martinko & Mackey, 2019), we discovered that social support (an external element) and sense of mastery (an internal factor) can alter patients' illness perception (Birudu & Reddy, 2020; Bruno et al., 2020). Therefore, guided by the Attribution Theory, this study aimed to explore the factors influencing the perception of illness during the “Blanking Period” in patients with AF and further identify the pathways of influence process so that to facilitate effective postoperative interventions for healthcare professionals and improve patient prognosis.

2 | BACKGROUND

“Social resources that people identify as accessible or that are supplied to them” (Gottlieb & Bergen, 2010) is a wide definition of social support, which has been widely proven as one of the important elements that improve cardiovascular patients' health outcomes (Freeborne et al., 2019). Social support was found to have a negative relationship with illness perception (Birudu & Reddy, 2020), and it can protect patients with AF from stress and emotional issues (Aydın Sayılan & Demir Doğan, 2020). In patients' view, adequate social support helped them to better manage and adapt to their illness (Uchino et al., 2011).

Sense of mastery, defined as a person's confidence in their ability to impact the course and consequences of life events (Infurna & Infurna, 2017), was proven to be a crucial internal protective psychological resource after patients perceived threats (Shinan-Altman & Levkovich, 2021). According to the Attribution Theory (Martinko & Mackey, 2019), the premise for effectively solving an issue is to identify the influencing elements, which are frequently split into internal and external causes. In addition to social support as an external element, patients' illness perception may be influenced by their sense of mastery as an internal factor (Bruno et al., 2020).

Furthermore, social support can affect sense of mastery (Ang & Malhotra, 2016) in addition to illness perception. As a result, there could be a link between social support, sense of mastery and illness perception. In addition, as a mediator in some studies (King et al., 2018; Mereish & Goldstein, 2020; Yang et al., 2020), sense of mastery has been shown to improve one's health outcome and quality of life by decreasing health problems (anxiety, depression, stress, etc.). However, the main effects of social support and sense of mastery on illness perception in patients with AF during the “Blanking Period” have yet to be studied.

2.1 | Research question

The research question of this study was whether the factors influencing the illness perception in patients with AF during the “Blanking Period” can be analysed under the guidance of the Attribution Theory, and on this basis, whether there is a mediating role of sense of mastery between social support and illness perception.

2.2 | Hypothesis

As previously stated, this study proposed the following hypotheses based on the Attribution Theory and depicted a hypothesized model in Figure 1.

Hypothesis 1 *The external factor, social support, should negatively influence the illness perception.*

Hypothesis 2 *Social support should positively relate to the sense of mastery.*

Hypothesis 3 *The internal factor, sense of mastery, should be negatively related to the illness perception of AF patients.*

Hypothesis 4 *The external variable, social support, should indirectly negatively influence the illness perception through the internal mediator variable, sense of mastery.*

3 | THE STUDY

3.1 | Design

The study was a cross-sectional survey in the Affiliated Hospital of Qingdao University, which was conducted to explore how social support influenced the illness perception via the sense of mastery in patients with AF at “Blanking Period.”

3.2 | Methods

3.2.1 | Sample size calculation

The random sample size was calculated using G*Power 3.1.9.2 software (Faul et al., 2007); we set the Power ($1-\beta$ err prob) = 0.95. The final calculated sample size was 400. This study included 405 patients.

3.2.2 | Participants

From November 2020 to October 2021, 405 patients with AF in the Affiliated Hospital of Qingdao University were selected as subjects, and questionnaires were distributed to them after gaining their consent. Inclusion criteria: (a) age ≥ 18 years; (b) met the diagnostic criteria of AF (Kirchhof et al., 2016) and underwent RFCA successfully for the first time; (c) underwent first 3 months after RFCA according to the definition of “Blanking Period” (Mariani et al., 2015); (d) had clear consciousness and can cooperate with the investigator; and (e) voluntary to participate. Exclusion criteria: (a) had serious complications after RFCA; (b) had a history of mental illness, severe hearing and expression disorders; and (c) had other seriously complicated organic diseases.

3.2.3 | Measurements

Social support was tested by the Perceived Social Support Scale (PSSS), which was developed by Zimet et al. (1988). The scale has 12 self-reported items covering three domains of support: family (four items), friends (four items) and some others important (four items). Each item used a 7-point Likert scale (1 = “strongly disagreed” to 7 = “very agree”). The total score was 12~84 points; the score of no more than 75 is classified as poor social support, while scores more than 75 are classified as a superior level of social support. The scale has a good internal consistency with a Cronbach's α of 0.88. In this study, Cronbach's α was 0.90.

Sense of mastery was measured by the Personal Mastery Scale (PMS), which was developed by Pearlin and Schooler (1978). The single-dimension scale contains seven items. According to the Likert 5-level scoring system, 1 was “completely inconsistent,” and 5 was “very consistent,” with a total score of 7 to 35 points. The PMS with the Cronbach's α was 0.81, and the Cronbach's α for the scale was 0.92 in our study, suggesting a good internal consistency.

The Brief Illness Perception Questionnaire (BIPQ) was used to assess the level of patients' illness perception. The nine-item questionnaire was developed by Broadbent et al. (2006), including one open item, and the rest items were scored from 0 to 10 points with a total score was 0–80. The higher scores mean a negative illness perception, indicating that patients often spontaneously feel more severe symptoms. The BIPQ has good internal consistency with a Cronbach's α of 0.77; it also shows good reliability of the scale with a Cronbach's α of 0.88 in this study.

3.2.4 | Data collection

Patients were first informed about the study's goal and process, and their consent was acquired. Second, researchers provided patients with instructions to assist them in completing the questionnaire. Those who were competent in filling out the questionnaire on their own were requested to do so, while researchers assisted inconvenient patients (who could not write correctly or could not read the words well) in completing it. Finally, all questionnaires were collected on the spot. Four unqualified questionnaires (the deficit volume) were removed from the total of 405 questionnaires distributed, leaving 401 questionnaires. The recovery rate was 99.01 per cent.

3.3 | Data analysis

Data were analysed by IBM SPSS Version 26. Mean (SD), frequency and percentage were used to describe the data; Pearson correlation analysis was applied to analyse the relationship between social support, sense of mastery and illness perception; multi-layer linear regression analysis was performed to explore whether social support can affect patients' illness perception through the mediator of sense of mastery (Freund & Wilson, 2003). PROCESS macro of SPSS (Muñoz & González, 2017) was utilized to check the mediator model between the social support, sense of mastery and illness perception of patients. Bootstrapping procedure (Kim et al., 2017) was used to test the total, direct and indirect effects of the model. This work considered $p < .05$ as the standard limit of statistical significance.

4 | RESULTS

4.1 | Patient characteristics and clinical information

We analysed total of 401 AF patients (61.88 ± 13.04 years old) who were during the “Blanking Period”; 184 cases were female (45.89%),

217 cases were male (54.11%). More information on this part is shown in Table 1.

4.2 | Variables information

The score for social support was (63.84 ± 10.01) points, which was at a lower level; the score for sense of mastery was (21.10 ± 6.08) points, which was at a lower level; the score for illness perception was (53.13 ± 15.86) points, which was not as good as the research outcome of Miyazaki et al. (2018).

4.3 | Correlation analysis

Table 2 exhibits the Pearson coefficients among the study variables in AF patients. In addition, as needed to determine the strength of the data relationship, correlation analysis was performed by using Pearson's correlation. Social support was negatively associated with illness perception ($r = -0.222, p < .001$). Sense of mastery was also negatively associated with illness perception ($r = -0.591, p < .001$). Social support was positively associated with a sense of mastery ($r = 0.328, p < .001$).

4.4 | The mediating effect analysis

Table 3 shows the direct route coefficients for all of the models we investigated into. The main variable was illness perception, while the independent factors were social support and sense of mastery. The detailed relationship between patients' social support, illness perception and sense of mastery was investigated in a direct and indirect way. As indicated in Table 3, the total effect of social support on illness perception was substantial ($c = -0.222, p < .001$), regardless of the sense of mastery, according to the findings.

Mediation analysis, which was performed using the PROCESS macro for SPSS 26, was used to evaluate the link between social support and illness perception through sense of mastery. Model 3 was shown to be statistically significant ($F = 107.275, p < .001$). The indirect effect of social support on illness perception via the sense of mastery was significant ($a*b = -0.191, p < .001$), accounting for about 86.04 per cent of the total effect (c), implying that the effect of social support via the sense of mastery revealed 86.04 per cent of the variance in illness perception. AF patients who received more social support during the "Blanking Period" had higher levels of sense of mastery ($a = 0.328$), while patients with higher levels of sense of mastery had less negative illness perception ($b = -0.581$).

By using the bootstrapping procedure to check for mediation, the estimates of indirect effect became more powerful. The extent to which sense of mastery altered the association between social support and illness perception in AF patients was robust,

TABLE 1 Patient characteristics and clinical information ($n = 401$, China)

Items	Classification	Cases	Constituent ratio (%)
Ages	<65 years	226	56.36
	65~79 years	141	35.16
	≥ 80 years	34	8.48
Gender	Male	217	54.11
	Female	184	45.89
Marital status	Married	391	97.51
	Unmarried/ divorced/ widowed	10	2.49
Resident manner	Alone	19	4.74
	With a spouse	339	84.54
	With children or other families	43	10.72
Level of education	Junior or below	175	43.64
	High school	113	28.18
	College	78	19.45
Professional types	Bachelor's degree or above	35	8.73
	Farmer	130	32.42
	Worker	183	45.64
Working state	Cadre	66	16.46
	Others	22	5.49
	On-the-job	148	36.91
Monthly home-income	Retired	253	63.09
	<3,000 yuan	108	26.93
	3,000~6,000 yuan	183	45.64
Payment of medical expenses	>6,000 yuan	110	27.43
	Urban Health care	270	67.33
	Rural health care	113	28.18
AF type	Self-paying	18	4.49
	Paroxysmal AF	330	82.29
	Persistent AF	63	15.71
Course of disease	Permanent AF	8	2.00
	<3 months	87	21.70
	3 months~1 year	177	44.14
Number of complications	>1 year	137	34.16
	0	108	26.93
	1	156	38.90
	2	122	30.42
	≥ 3	15	3.74

Abbreviation: AF, atrial fibrillation.

TABLE 2 Depiction, interrelation matrix and measurement reliability for study ($n = 401$, China)

Variables	M (SD)	SS	SOM	IP
SS	63.84 (10.01)	1		
SOM	21.10 (6.08)	0.328**	1	
IP	53.13 (15.86)	-0.222**	-0.591**	1
Cronbach's α		0.897	0.924	0.884

Abbreviations: IP, illness perception; SOM, sense of mastery; SS, social support.

** $p < .01$.

TABLE 3 Mediation effect analysis: influence of social support and sense of mastery on illness perception ($n = 401$, China)

Model	Path		Informant			95% CI	R^2
			β	SE	p		
Model 1	c (total effect)	SS \rightarrow IP	-0.222	0.049	.000	-0.318 ~ -0.126	0.049
Model 2	a	SS \rightarrow SOM	0.328	0.047	.000	0.235 ~ 0.421	0.108
Model 3	b	SOM \rightarrow IP	-0.581	0.043	.000	-0.665 ~ -0.497	0.350
	c' (direct effect)	SS \rightarrow IP	-0.031	0.043	.463	-0.116 ~ 0.053	
Bootstrap Estimate	Indirect effect	SS \rightarrow SOM \rightarrow IP	-0.191	0.029	.000	-0.250 ~ -0.135	

Abbreviations: IP, illness perception; SOM, sense of mastery; SS, social support.

according to measurements of the indirect effect established using bootstrapping. This discovery demonstrated that patients' social support was linked to a better sense of mastery and a lower perception of the unpleasant illness. The bias-corrected bootstrap confidence interval of the indirect effect ($\beta = -0.191$), based on 5,000 bootstrap samples that never crossed zero (-0.250 ~ -0.135), revealed a notable mediation effect. According to the findings within the mediating model, social support had no direct influence on illness perception ($c' = -0.031$, $p = .463$), but it did affect patients' illness perception indirectly through sense of mastery. As a result, during the "Blanking Period," sense of mastery acted as a full mediator in the association between social support and AF patients' illness perception.

5 | DISCUSSIONS

The purpose of this study was to investigate the impact of social support (external factor) and sense of mastery (internal element) on illness perception in AF patients, as well as the mediator role of sense of mastery in the relationship between social support and illness perception.

5.1 | Theoretical implications

The correlation and regression testing results revealed that social support was negatively related to illness perception while positively related to sense of mastery ($p < .001$), confirming our hypotheses 1 and 2. This means that the more social support patients perceived, the better sense of mastery and the more positive illness perception in AF patients. Social support has been proven

to be an essential external component that can improve patients' attitudes regarding the disease and motivate people to handle their circumstances and control their lives actively and influence the health outcomes of patients (Contractor & DeChurch, 2014; Janowski et al., 2020). As a result, medical personnel should pay close attention to social support.

The current study's findings revealed that the internal factor of sense of mastery was negatively connected to AF patients' illness perception during the "Blanking Period," validating hypothesis 3 in our study. Table 3 shows that sense of mastery mediated the relationship between social support and illness perception, which supports hypothesis 4 in our study. Even though social support has an impact on illness perception, the sense of mastery plays an important function as a mediator, indicating that adopting strategies to improve the sense of mastery could help AF patients have a more positive illness perception. As a result, sense of mastery has been explained as an essential ability of patients in the process of disease management (Panjwani & Revenson, 2020). The findings of this study demonstrated that social support affected illness perception in AF patients via sense of mastery.

5.2 | Practical implications and future research

The number of people suffering from AF is rapidly increasing around the world. Although RFCA is an effective treatment for AF, early recurrence is common during the "Blanking Period" (the first 3 months after RFCA) (Mujović et al., 2017). Moreover, during the "Blanking Period," patients experience negative perception of illness, affecting their mental health and quality of life. The degree of individuals' sense of mastery and the social support they perceived influence their attitude towards illness. As a result, medical

professionals should take steps to improve AF patients' perception of their illness and be aware that increasing social support is one way to improve patients' illness perception and improving their sense of mastery is another. Che et al. (2018) discovered a positive relationship between social support and sense of mastery, with higher levels of social support resulting in a higher sense of mastery. This implies that medical personnel should assist patients in increasing their sense of mastery by encouraging their families to provide adequate support to AF patients. Our findings revealed that sense of mastery, as a necessary mediator, was lower in AF patients during the "Blanking Period," indicating that there is still much room for improvement. Based on our research, we made the following recommendations for improving patients' sense of mastery: (a) sense of mastery was found to be positively related to social support (Shinan-Altman et al., 2020). Nurses should take steps to increase patients' social support, such as holding professional guidance lectures and encouraging family members to accompany them; increasing friends' support by suggesting that friends stay in touch with patients and increasing support from important others by strengthening contact with each other. (b) sense of mastery was unstable and decreased around the age of 60 (Specht et al., 2013). This suggested that clinical workers should assess patients' sense of mastery based on their ages, with a special focus on elderly people over the age of 60. (c) sense of mastery was negatively related to the level of psychological problems (anxiety, depression) (Hammash et al., 2019), implying that nurses should pay more attention to the mental status of AF patients during the "Blanking Period," by strengthening psychology education to effectively adjust their mental events.

Face-to-face sessions for AF patients are tough to come by during the COVID-19 pandemic's "Blanking Period." Patients with AF are unable to control their health and fear recurrence of AF, leading to a diminished sense of mastery (Stridsman et al., 2019). However, a poor sense of mastery can cause a negative illness perception, which leads to patients experiencing more severe symptoms than their actual symptoms (Streuer, 2019). Patients who have a better ability to regulate their disease, on the contrary, are more likely to have a positive attitude towards their illness. As a result, psychoeducation interventions to promote the sense of mastery in AF patients should be developed to diminish the negative illness perception in AF patients during the "Blanking Period": (a) increasing patients' awareness of early detection, identification and treatment of AF without delay; (b) providing patients with enough information about AF symptoms and coping strategies; (c) evaluating patients' emotional difficulties and providing support. Future studies should concentrate on increasing social support and sense of mastery in AF patients during the "Blanking Period" following RFCA. We need to know, for example, which aspects of social support have the most influence on patients and create a better sense of mastery in them. More extensive measures will be required in the future to improve patients' sense of mastery. Additional ideas should be included in future studies to examine other elements that influence AF patients' perception of their illness.

To conclude, we believe that our findings have a significant impact on the disease management of the postoperative "Blanking Period" in patients with AF in clinical practice. The findings can draw healthcare professionals' attention to the management of patients' illness perception during this time, thereby improving the quality of healthcare services and patients' quality of life. Furthermore, the study establishes a foundation of postoperative "Blanking Period" nursing interventions for patients with AF. According to the study, nurses should intervene early in the "Blanking Period" to help patients create correct illness perception, better self-management behaviour and higher satisfaction.

5.3 | Limitations

To begin with, the study used a cross-sectional design, which made it difficult to determine a causal association between social support, sense of mastery and illness perception in patients with AF. Second, the study was done at a single university hospital and used convenience sampling, which could lead to bias and affect the generalizability of our findings, implying that future research should include more multi-centre and large sample studies.

6 | CONCLUSIONS

The findings showed that the sense of mastery fully mediated the link between social support and illness perception in AF patients during the "Blanking Period." Sense of mastery improvement patterns suitable for patients with AF during the "Blanking Period" should be designed based on these findings. Patients with AF should make use of relevant programmes and approaches, such as encouragement and health education, to enhance their view of illness perception by increasing their sense of mastery.

ACKNOWLEDGEMENTS

Thanks to all the participants and research assistants involved with this study. Thanks for the cooperation of medical staff in the Department of Cardiology of Qingdao University Affiliated Hospital. Thanks for the help of my clinical teachers named Li-Hua CAO, Xiao-Hong LU, Li-Yan WANG, etc. Thanks for the guidance in the process of submitting the article of my friend named Ji-Zhe WANG.

CONFLICT OF INTEREST

All the authors indicated that there are no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are accessible from the corresponding author upon reasonable request. Due to privacy and ethical concerns, the data is not publicly available. The information was gathered from our own research.

ETHICAL APPROVAL

This research accorded with Helsinki Declaration and was authorized by the Medical Ethics Committee of the selected hospital (Ethics Number: QYFY WZLL 26492).

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How to cite this article: Ding, Y.-M., Liu, C.-P., Xu, H.-X., Wang, M.-J., Zhang, J.-Y., Gu, J.-Y., Cui, Y., Wei, L., & Zhang, Y. (2023). Effect of social support on illness perception in patients with atrial fibrillation during "Blanking Period": Mediating role of sense of mastery. *Nursing Open, 10*, 115–122. <https://doi.org/10.1002/nop2.1284>