Social Medicine and Health Management (2024)
Clausius Scientific Press, Canada

DOI: 10.23977/socmhm.2024.050209
ISSN 2616-2210 Vol. 5 Num. 2

Qualitative Interviews on Factors Influencing the Development of Exercise Prescriptions for Patients with Cardiovascular Diseases Attending Emergency Clinics

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Keywords: Cardiovascular Diseases, Exercise Prescription, Qualitative interview

Abstract: Cardiovascular diseases (CVDs) are the leading cause of death and disability worldwide. Exercise prescription, an important measure for secondary prevention in CVD patients, has been widely implemented in clinical practice. However, patients visiting the emergency department for CVDs often face various challenges and influencing factors when adhering to exercise prescriptions. This study conducted in-depth qualitative interviews with CVD patients visiting the emergency department. The results indicate that the physical activity of CVD patients is significantly influenced by personal traits and experiences, as well as behavior-specific cognitive and emotional factors. These factors include physical health status, psychological-emotional state, previous physical activity experience, self-efficacy, disease cognition, perception of the value of physical activity, peer support, family support, and medical and community support. This paper discusses the impact of these factors on the implementation of exercise prescriptions and proposes corresponding intervention measures to optimize adherence to exercise prescriptions in CVD patients.

1. Introduction

Cardiovascular Diseases (CVDs) are the leading cause of death and disability worldwide [1]. Exercise prescription has been widely used in clinical practice as an important tool for secondary prevention in patients with CVDs [2]. However, CVD patients attending emergency departments often face various challenges and influencing factors when implementing exercise prescriptions. To better understand these influencing factors so as to optimize the implementation of exercise prescription, this study conducted an in-depth investigation of patients with cardiovascular disease attending emergency departments using qualitative interviews.

2. Research Methods

2.1. Research Subjects

In this study, patients with cardiovascular diseases in the emergency department of a tertiary hospital in Chengdu City were selected for interviews using the purposive sampling method with patients of different genders, ages, marital statuses, occupations, and severity of illnesses.

2.2. Selection Criteria

Inclusion criteria: patients with cardiovascular diseases who had been seen in the emergency department in the previous period; clear thinking, good comprehension, and language expression ability; patients' informed consent and voluntary participation in this study.

Exclusion criteria: those with serious mental or physical symptoms during the interview; those who failed to complete the interview for various reasons.

2.3. Type of Study: Interpretive Phenomenological Qualitative Research Method was Used

Determination of sample size: the sample size is based on the criterion that the information provided by the interviewees has a recurrence and there are no new themes, and the information reaches saturation until it is saturated.

2.4. Interview Outline

The interview outline was developed based on the literature analysis, the discussion of the group, and the theoretical basis of the health promotion model, and was modified according to the mock interviews and pre-interviews. The interview outline is as follows:

(1) Have you ever learned about cardiovascular diseases? Through which channels?

(2) Can you describe your usual physical activity?

(3) What do you think about exercise prescription? Can you talk about it in detail?

(4) Do you think your current level of physical activity is sufficient? What are the reasons for not enough?

(5) What factors influence the amount of physical activity you do? Can you expand on this?

(6) What kind of help would you like to get?

3. Data Collection

3.1. Data Collection Process

3.1.1. Pre-interview Preparation

In the questionnaire survey stage of the quantitative study, the willingness of cardiovascular disease patients to participate in semi-structured interviews was understood. The interviewer shall inform the purpose, content and time of the interview in detail through wechat or telephone before the interview, and agree on the interview place and time after obtaining informed consent. The interviewer signs an informed consent prior to the interview and checks the recording equipment to make sure it is functioning properly.

3.1.2. Interview Process

The interviews were conducted by two graduate nursing students. One person was responsible for the interview, centering on the outline, guiding the interviewee back to the topic when deviating from it, and responding appropriately but not guiding or evaluating. The other was responsible for recording and transcribing the interviews and taking detailed notes on the nonverbal signals of the interviewees. The interviews were conducted in a manner that avoided the presence of unrelated people, and each interview lasted 30 to 60 minutes, with the interviewee expressing himself/herself fully.

3.1.3. End of Interview

After the interview was completed, the interviewee was thanked and told that the content would be confirmed after transcription into text.

3.2. Data Analysis

Within 24 hours after the end of the interview, the audio recording was transcribed into text sentence by sentence and imported into Nvivo 12.0 software, and uncertain information was confirmed to the interviewee. Respondents were coded according to the time of the interview. Two researchers independently analyzed the data according to the Colaizzi 7-step analysis cross-checked coding and summarized duplicates.

4. Results of the Study

4.1. General Information of the Interviewees

A total of 15 patients with cardiovascular disease attending the emergency department were interviewed, with an age range of 35-75 years old, and 5 patients each at different levels of physical activity, with respondents coded A to O.

Table 1: General Information of the Interviewees

No	Gender	Age (years)	Cultural level	Marital status	Occupational status	Physical activity level
A	Female	45	Bachelor's degree	Married	In-service	Medium
B	Male	60	College	Married	In-service	Low
C	Female	53	Junior high school	Divorced	In-service	High
D	Male	39	Bachelor's degree	Not Married	In-service	Medium
E	Female	65	High school	Married	Not in Service	Medium
F	Male	70	Elementary school	Married	Not in Service	High
G	Female	48	College	Married	In-service	Low
H	Male	55	Bachelor's degree	Married	In-service	High
I	Female	41	Master's Degree	Not Married	In-service	Medium
J	Male	75	Junior high school	Married	Not in Service	Low
K	Female	38	Bachelor's degree	Married	In-service	High
L	Male	66	High school	Divorced	Not in Service	Medium
M	Female	59	College	Married	In-service	Medium
N	Male	52	Bachelor's degree	Married	In-service	Low
O	Female	44	Bachelor's degree	Married	In-service	High

4.2. Interview Themes

Two themes and nine sub-themes were obtained by coding and categorizing the interview data of 15 patients with cardiovascular disease who attended the emergency department.

Table 2: Interview Themes

Theme	Sub-theme
Personal traits and experiential factors	Physical health status
	Mental-emotional state
	Prior physical activity experience
Behavior-specific cognitive and affective factors Self-efficacy	Perceived illness
	Perceived illness
	Perceived value of physical activity
	Peer support
	Family support
	Medical and community support

5. Discussion

5.1. Influence of Personal Traits and Experiential Factors

(1) There were 15 patients including in this study which the results were shown in Table 1.Poor somatic health impedes patients' physical activity The results of this interview found that some of the interview subjects' physical activity status is affected when they have uncomfortable symptoms such as panic, chest tightness, pain, etc., but it was also found that patients' feeling of being in good physical condition has a positive impact on their physical activity behaviors, which is in line with the results of the previous studies. The results of interviews conducted by Liu Yun et al [3] showed that patients' burden of somatic symptoms such as pain, fatigue, and numbness in hands and feet were important reasons for affecting their physical activity. The results of interviews conducted by Andersen et al [4] showed that symptoms such as pain and nausea were the main reasons for patients' abandonment of their activities. In addition, respondents had poor physical activity when they had combined coronary heart disease and lumbar disc herniation, validating the cross-sectional findings that the higher the number of patients' combined chronic diseases, the higher their risk of physical inactivity. Although dyslipidemia does not easily lead to physical discomfort in patients, a variety of uncomfortable symptoms often occur when patients combine with other diseases, suggesting that patients should actively cooperate with the treatment of comorbidities, alleviate physical discomfort, fully assess their ability to participate in physical activities and promote physical health with appropriate activities to form a good cycle. It is suggested that future research can explore the current situation and influencing factors of physical activity in patients with cardiovascular diseases combined with a specific disease, to improve the depth of research.

(2) Negative psychological emotions impede patients' physical activity Psychological emotions are affected by a variety of factors, including the state of life, environmental factors, and physical health status. Some studies have shown [5] that people will reduce healthful behaviors such as physical activity and healthy eating when facing negative psychological emotions, and increase such behaviors when facing positive psychological emotions. The results of this interview, which showed that negative psychological emotions present in patients with cardiovascular diseases affect physical activity status, were also partially confirmed in the quantitative phase of the study and are

consistent with the results of previous studies [6]. Behaviors such as physical inactivity and sedentary behavior can lead to very serious psychological problems such as decreased body satisfaction and self-esteem, anxiety, and depression, in contrast to even moderate physical activity, which can prevent and improve general psychological problems [7, 8]. In the results of this interview, a few patients indicated that negative psychological emotions were alleviated after physical activity. This suggests that the psychological emotions of patients with cardiovascular disease should be paid attention to and that they should take the initiative to seek the help of a psychiatrist for psychological counseling if negative psychological emotions affect their daily lives. Medical staff can also organize physical activities with patients with cardiovascular diseases to adjust the negative emotions during the activities. This study only investigated the effect of depression on patients' physical activities, and it is suggested that future studies can further investigate patients' psychological emotions such as anxiety, fear, and pleasure based on the results of the qualitative study.

(3) Positive Experiences Promote Patients' Adherence to Physical Activity The results of this interview showed that patients' previous activity experiences had an impact on their current physical activity status. Positive experiences can promote adherence to physical activity in patients with cardiovascular disease, and previous uncomfortable activity experiences, such as fatigue and sweating, can affect the physical activity status of patients, which is consistent with the results of the interview conducted by Guo Chengcheng et al [9]. Negative experiences in physical activity can gradually reduce the intensity and duration of future physical activity in patients with cardiovascular disease, weakening their activity level. In contrast, positive experiences in activity can promote more active participation in physical activity among patients with cardiovascular disease, which is conducive to the formation of habits. Therefore, it is recommended that medical personnel understand the type of activities that patients prefer and their previous experiences before developing physical activity programs for patients with cardiovascular disease, and pay attention to the gradual adjustment of activity intensity and duration, to ensure that the patients have pleasant and happy positive experiences during the activities, to promote the patients' adherence to physical activities.

5.2. Influence of Behavior-specific Cognitive and Emotional Factors

(1) Improving self-efficacy promotes patients' physical activity Interview results showed that CVD patients with better self-efficacy had better organizational and executive abilities and tended to take the initiative to make and follow activity plans, while patients with poorer self-efficacy lacked confidence in overcoming difficulties, which affected physical activity participation. The results were shown in Table 2. The results of quantitative studies have also shown that the physical activity status of patients with cardiovascular disease is influenced by exercise self-efficacy. The results of this interview are consistent with the results of Zhang Min et al [10] that a high level of self-efficacy can help patients to adhere to their activities to a certain extent, and that patients with low levels of self-efficacy have a lot of concerns even if there are no impediments, which can affect their activities. Self-efficacy is an individual's subjective judgment of whether he or she can use the skills he or she possesses to perform a certain behavior. When patients with cardiovascular disease believe that they are capable of performing physical activities, they will have high self-efficacy and begin to be active, but when patients have poor self-efficacy for performing physical activities, they will not perform physical activities even if they can do so under their conditions. This suggests that medical personnel can, on the one hand, guide patients to start from daily activities, such as cooking, mopping the floor, walking to and from work, etc., and gradually transition to organized, planned, and regular physical activities, in the process of gradually increasing the confidence of the patients;

on the other hand, they can guide patients to perform physical activities at a slightly higher level than the original level so that the patients can personally experience the success of the experience, and perceive the benefits of the level of physical activity, to increase the patient's Self-efficacy level.

(2) This study found that inadequate disease knowledge hindered patients' physical activity status, and most respondents did not have a comprehensive understanding of cardiovascular disease and paid low attention to it. In the cross-sectional study, more than half of the patients did not know about their cardiovascular diseases, which also verified this point. Some interviewees said that CVD is just a health indicator that is too high and does not cause any discomfort, so they did not take active measures to deal with it. It is recommended that a questionnaire on CVD knowledge be developed in the future to quantify patients' knowledge of the disease. Some studies have shown [11] that disease outcomes are related to disease awareness, and having a high level of disease awareness can enable patients to better self-adjustment, which will promote patients to produce positive health behaviors to cope. Improving the disease cognition of patients with cardiovascular disease can help to promote them to change their health behaviors and prevent and control the occurrence of cardiovascular disease. It is suggested that medical personnel should carry out comprehensive health education when finding patients with cardiovascular diseases so that patients can master the knowledge related to the occurrence, development, prevention, and control of the disease, and regularly formulate corresponding methods according to the degree of patients' knowledge mastery to continuously enhance their cognition of the disease, so that the patients can pay attention to the importance of their diseases, and then regulate their lifestyles and adopt better health behaviors.

(3) Studies have shown that physical activity can promote lipid metabolism by raising HDL-C and lowering LDL-C, TC and TG, thereby reducing the risk of cardiovascular disease. Affirmation of the value of physical activity is the basis for physical activity. In this interview, most of the patients had a correct perception of the value of physical activity and were aware of the many benefits of physical activity, and in the quantitative study, it was also found that most of the patients believed that physical activity was valuable, with a high mean score for the benefits of exercise. However, there are still a few patients who believe that physical activity is optional and plays little role in improving cardiovascular disease benefits. The results of the interview by Scott et al [12] also indicated that patients with chronic diseases who are aware of the benefits of physical activity will adhere to physical activity. It is suggested that medical staff should take various ways to educate patients with cardiovascular disease about physical activity, which can be done through the public number of the hospital's health management center to push information about the benefits, types, and precautions of physical activity to the patients, and also distribute a small brochure about physical activity to the patients, to improve the value of physical activity for patients with cardiovascular disease.

(4) Some respondents in this study said that peers can play the role of role model and supervision, and through their communication and interaction in activities together, patients can give invisible encouragement and psychological support, so that they can stick to physical activities. The affinity of a peer group encourages people with similar physical characteristics, cultural backgrounds, attitudes, and interests to come together, and the interaction during joint activities (including physical activities) creates harmonious interpersonal relationships between individuals and enhances patients' self-efficacy. Serrano-Fuentes et al. [13] stated that friends are usually the second most influential relationship type for individuals, and their influence is usually positive. type, their influence is usually positive, and in interactions with close friends, comparing with and imitating close friends who already have healthy lifestyles is a driving factor in increasing physical activity levels. It is suggested that healthcare professionals should create favorable conditions and opportunities for CVD patients and fully mobilize resources that can be utilized, such as carrying

out interventions in the form of mutual support groups and group education to expand the range of friendships for CVD patients, and at the same time set up role modeling power by sharing the activity knowledge and experience of other patients to enhance their confidence in adhering to physical activity.

(5) Family support promotes physical activity, and the family is the patient's primary place of life and a direct source of patient support. Sanz-Mart ń et al. [14] found that the family can have a direct impact on the physical, mental, and health behaviors of family members, or it can have an indirect impact as well. In the results of this study, positive guidance from family members was found to promote proactive participation in physical activity in patients with cardiovascular disease, consistent with the findings of Zhang Min et al [10]. Therefore, it is recommended that medical personnel should provide synchronized guidance to family members of patients with cardiovascular disease, including knowledge of cardiovascular disease, correct perception of the value of physical activity, and health education on the types of physical activity and precautions. At the same time, family members are encouraged to act as companions, supervisors, and supporters of the patients' physical activities in their daily lives, communicate fully with the patients with cardiovascular diseases, clarify their psychological conditions and needs, and give them care, consideration, and assistance to improve the patient's chances of participating in physical activities.

(6) In this interview, we found that professional guidance provided by medical institutions or communities would motivate respondents to participate in and adhere to physical activities, and most patients mentioned that they hope to get professional guidance from doctors, which is consistent with previous research results [15]. In the cross-sectional survey phase of this study, it was found that 51.82% of patients with cardiovascular disease were most interested in learning about physical activity through medical personnel, which is consistent with the results of the interviews. Advice from medical personnel is often regarded as authoritative by patients with cardiovascular disease and will be implemented seriously, suggesting that medical personnel should pay attention to the assessment of physical activity for patients with cardiovascular disease, identify and reduce obstacles to the participation of patients in physical activity, carry out multidisciplinary assistance in providing patients with professional guidance and targeted development of exercise prescription, and regularly return to visit patients to check on their implementation status. The community is the basic unit of residents' lives and has great potential for promoting healthy behaviors. It is suggested that community institutions should improve physical activity promotion services for patients with cardiovascular disease, strengthen the publicity of knowledge related to cardiovascular disease and physical activity (e.g., offline science lectures, online information push, etc.), and regularly organize fitness activities for community residents to create a good atmosphere for physical activity in the community.

6. Conclusions

Qualitative research has found that physical health status, psycho-emotional status, prior physical activity experience, self-efficacy, disease perception, physical activity perception, peer support, family support, and medical and community support are bidirectional influences on physical activity in patients with cardiovascular disease. Reducing hindering factors, enhancing facilitating factors, and utilizing the positive effects of bidirectional influencing factors are particularly important for improving the physical activity status of patients with cardiovascular disease.

Acknowledgement

This work was supported by Key Research and Development Program of Sichuan Provincial Department of Science and Technology, Project No. 2023YFS0068.

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