RESEARCH ARTICLE

Qualitative Study on the Return-to-Work Experience of Middle-aged and Young Patients with Acute Myocardial Infarction after PCI Surgery

Shuangshuang Wang[1], Lizhen Zhou[1], Pengcheng Duan[1], Zehang Hong[1]& Hongjing Yu[1,*]

[1] The Second Affiliated Hospital of Guangzhou Medical University, China

Abstract: Objective To understand the return-to-work experience of patients with acute myocardial infarction after percutaneous coronary intervention (PCI) surgery, and to Analysis of influencing factors. Methods Descriptive phenomenological research method was used,a semi-structured interview was conducted in 16 young and middle-aged AMI patients after PCI, Colaizzi 7-step analysis method was used to analyze the data. Results   Four main themes were identified, including:inadequate self-efficacy, participation in cardiac rehabilitation, and negative psychological impact,comprehensive support system. Subthemes included: inadequate understanding of PCI surgery, decreased social interaction ability , lifestyle improvement, control of risk factors,fear of disease progression, and anxiety, positive family guidance, professional support, employer support, social recognition. Conclusion Individualized cardiac rehabilitation, continuity of care, strengthened psychological interventions, and other measures should be implemented based on the personalized characteristics of patients to promote their return to work and good maintenance.

Keywords: middle-aged and young; AMI; post-PCI; return to work; qualitative study

Introduction

The trend of acute myocardial infarction (AMI) becoming more prevalent among younger populations is significant (Zhang et al., 2019; Writing Group of the Report on Cardiovascular Health and Diseases in China, 2023), with the incidence of AMI in middle-aged and young individuals continuously increasing in China. Currently, the primary treatment for AMI is percutaneous coronary intervention (PCI); however, PCI cannot reverse the progression of coronary atherosclerosis, nor can it eliminate the risk factors that cause the disease. According to statistics, there are currently about 11.39 million coronary heart disease patients in China (Hu & Wang, 2023), with middle-aged and young AMI patients accounting for 5% to 30% (Tang et al., 2023). Research indicates that among 1566 AMI patients with an average age of 52, only 55.9% returned to work within one year after the onset of AMI (Kai et al., 2022). Returning to work refers to the stage process where patients, after leaving due to injury or illness, return to their original work position or switch to a new work position (Wang et al., 2024), maintaining their work status (Zhang et al., 2020). Research indicates (Gulati et al., 2020; Arora et al., 2019) that middle-aged and young AMI patients, especially those experiencing it for the first time, often face significant social maladjustment. Through clinical research, it was found that some middle-aged and young AMI patients experience anxiety, fear, inferiority, etc., about returning to work after PCI surgery due to the comprehensive impact of complications, negative emotions, and limited physical activity. After returning to work, they face reduced work efficiency and difficulty in maintaining their work status. Currently, domestic and international research primarily investigates the current status of AMI patients returning to work, with less focus on deeply exploring the subjective feelings and experiences of middle-aged and young AMI patients after PCI surgery in returning to work. This study uses the 'Meleis Transition Theory' (Wen et al., 2021) as the theoretical framework, based on its four key elements: the nature of transition (awareness, change, personal perception), conditions of transition (facilitating and hindering factors), phase assessment (individual and social levels), and response patterns (identity

Corresponding Author: Hongjing Yu
The Second Affiliated Hospital of Guangzhou Medical University, China
Email: yuhongjing@163.com

reconstruction). It comprehensively assesses the preparation status of patients who have not returned to work and the maintenance status of those who have, from the perspective of middle-aged and young AMI patients post-PCI surgery. This provides insights into their process and experience of returning to work.

1. Subjects and Methods
1.1. Study Subjects

AMI patients who have been discharged and underwent PCI surgery are recommended that patients rest for 1 month after discharge and avoid heavy physical labor for 3 months (Cardiovascular Disease Professional Committee of the Chinese Association of Rehabilitation Medicine, 2018; Guidelines for the Diagnosis and Treatment of Acute ST-Segment Elevation Myocardial Infarction, 2019). This study uses purposive sampling to select middle-aged and young AMI patients who underwent PCI surgery and were discharged from the cardiology department of a tertiary hospital in Guangzhou. These patients returned for outpatient follow-up 3 months after discharge, between November 2023 and February 2024, as study subjects. Inclusion criteria: (1) Outpatient follow-up patients who meet the diagnostic criteria for acute myocardial infarction and have undergone PCI treatment; (2) First episode, with stable current condition; (3) According to the 2020 World Health Organization's age classification standards, combined with the legal working age in China: females 18-54y, males 18-59y; (4) Clear consciousness and good communication skills; (5) Voluntary participation in this study and signing of the informed consent form. According to the principle of data saturation, the study ultimately interviewed 16 middle-aged and young AMI patients, they were coded as N1 to N16 to replace their names. General information of the study subjects is shown in Table 1. This study was approved by the Ethics Committee of the Second Affiliated Hospital of Guangzhou Medical University (2023-YJS-ks-15).

Table 1 General Information of Study Subjects (n =16)

Return-to-work Status	Number	Gender	Age	Marital Status	Education Level	Number of Stents	Occupation type	Monthly income
Returned	N1	Male	36	Married	university	1	mental	＞8000
	N2	Male	57	Married	Junior high school	3	mental	＜3000
	N3	Male	34	Unmarried	junior college	2	mental	3000-5000
	N4	Female	51	Married	Vocational high school	2	mental	＞8000
	N5	Male	41	Married	High school	1	physical	＞8000
	N6	Male	29	Unmarried	university	3	mental	3000-5000
	N7	Female	47	Married	Primary school	2	physical	3000-5000
	N8	Male	49	Married	junior college	6	mental	5000-8000
	N9	Male	44	Divorced	High school	1	physical	5000-8000
Not returned	N10	Male	42	Married	Junior high school	2	physical	3000-5000
	N11	Female	53	Married	Primary school	2	physical	＞8000
	N12	Male	45	Divorced	junior college	1	mental	5000-8000
	N13	Male	55	Married	High school	2	mental	＞8000
	N14	Male	58	Married	Junior high school	7	physical	5000-8000
	N15	Female	48	Married	Vocational high school	2	mental	＞8000
	N16	Female	50	Married	Junior high school	1	physical	5000-8000

1.2. Determine the interview outline

According to the research purpose, the research group conducted brainstorming based on literature research (Kallio et al., 2016). An initial interview outline was designed based on the research purpose, two patients who meet the inclusion criteria, one who has returned to work and one who has not, were selected for a pre-interview to finalize the interview outline: (1) For patients who have not returned to work: ① Can you talk about whether you currently have plans to return to your work position and your related feelings? ② What are your concerns about returning to your work position in the future? ③ How are you currently addressing these concerns? ④ What support do you think would help facilitate your return to work? (2) For patients who have returned to work: ① Do you feel there have been any changes since you returned to your work position? ② What are the reasons that encourage you to continue staying in this work position? ③ Do you think the

PCI surgery has affected your current work? How do you cope with these effects?

1.3. Data Collection Methods

Before the interview, the purpose, content, and duration of the study were verbally explained to the respondents, and an informed consent form was signed. The interview location was chosen in a cardiology outpatient consultation room and the entire interview was recorded with the patient's consent.Each patient interview lasted approximately 20 to 40 minutes. After the 16th interview, no new content emerged, indicating data collection was completed.

1.4. Data Analysis Method

Within 24 hours after the interview, the audio recordings were transcribed verbatim into text data, supplemented with non-verbal information, and interview notes were recorded. To protect participants' privacy, names and other personal identifiers were removed. The data were analyzed using Colaizzi's 7-step method (Park et al., 2018; Liu, 2019).

1.5. Quality Control Methods

(1)The researchers thoroughly studied qualitative research courses and invited experts in qualitative research to provide guidance on interview outlines and techniques; (2) Select respondents with different characteristics to obtain the maximum amount of information; (3) During interviews, researchers strive to maintain language neutrality, promptly probe and clarify ambiguous content; (4) Data were independently analyzed by two researchers.

2.   Results

The meaningful statements extracted from the interviews of patients who have not returned to work and those who have share commonalities, therefore, we clustered themes and summarized them as follows table 2.

Table 2   Themes and sub-themes

Theme	Sub-theme
Lack of Self-efficacy	1. Insufficient Understanding of PCI Surgery; 2. Decline in Social Interaction Ability
Participation in Cardiac Rehabilitation	1. Lifestyle Improvement ; 2. Risk Factor Control
Negative Psychology	1. Fear of Disease Progression ; 2. Anxiety
Comprehensive Support System	1. Positive Family Guidance; 2. Professional Support; 3. Employer Support ; 4. Social Recognition

2.1. Lack of Self-efficacy

2.1.1. Lack of understanding of PCI surgery

Some patients still experience symptoms such as chest tightness, chest pain, and angina after surgery, leading to doubts about whether they can return to their work positions. N11 stated: "I still feel that I haven't recovered well. Sometimes there's still a slight pain in my chest, and for now, I think I can't go back to work."

2.1.2. Decline in Social Interaction Ability

Due to objective disease factors, after falling ill, the patient's physical function and strength are affected to a certain extent. In the short term, it is not advisable to go out for physical activities Resulting in a decrease in social frequency, which is not conducive to the recovery of interpersonal relationships after the patient returns to society. It causes the patient to subjectively develop negative psychological feelings, fearing marginalization. N6 stated: "Now they don't invite me to drink milk tea, order takeout, or join some gatherings. At first, I thought it was out of concern, but gradually I felt that they see me as a patient. After all, I have several stents in my heart, and I feel a bit disappointed."

2.2. Participation in Cardiac Rehabilitation Guidance

2.2.1. Lifestyle Improvement

Patients participating in cardiac rehabilitation guidance are significantly more proactive in correcting unhealthy lifestyles and enhancing health-promoting behaviors. N1 stated: "After being discharged, I also went to the outpatient department for cardiac rehabilitation. I underwent a professional evaluation, and my recovery was quite good. They have professional equipment and one-on-one guidance there, which is very effective. I must persist and develop healthy living habits."

2.2.2. Risk Factor Control

Patients can scientifically manage their disease and monitor their condition, helping to reduce the uncertainty of the disease, strengthen awareness of disease management, and help patients in returning to work and maintaining their jobs. N8 stated: "My condition is also due to the three highs. Now I measure my blood pressure and blood sugar every morning and evening, my diet is much lighter, and I

take my medication very regularly. I have also been consistent with cardiac rehabilitation."

2.3. Negative Psychology

2.3.1. Fear of Disease Progression

Middle-aged and young patients have diverse sources of disease-related knowledge, making it difficult to discern their professionalism. Although patients are somewhat aware of disease recurrence and adverse prognosis, they tend to exacerbate their fear of disease progression. Long-term fear , which is not conducive to disease rehabilitation and return to work. N14 stated: "I often worry about whether my illness will recur or if it will worsen in the future. I saw some videos about this disease online, and some people suddenly died from overworking, which is very frightening."

2.3.2. Anxiety

The onset of AMI is rapid and has a high mortality rate (Zhang et al., 2020). Most patients experience sudden chest pain outside the hospital, are triaged through the chest pain center, and sent to the intervention room for PCI surgery, they lack psychological preparation. N15 stated: "Thinking about the stents in my heart, I sometimes feel restless and anxious. Maybe focusing on work might help, but it could still affect my work efficiency."

2.4. Comprehensive Support System

2.4.1. Positive Family Guidance

The support and encouragement from family members for patients returning to work can help patients face their illness,and cope positively. N1 stated: "My wife is quite supportive and encouraging. She believes that we should face difficulties together and not let life come to a halt because of this. Gradually, I also came to realize that birth, aging, sickness, and death are normal. Moreover, I am relatively fortunate that the blood vessels were cleared in time."

2.4.2. Professional Support

Patients learning about disease-related professional knowledge and receiving professional health guidance positively impacts their confidence in returning to their work positions. N9 stated: "When I was hospitalized, I also consulted with doctors and nurses. When I was discharged, they provided me with a lot of education and guidance on things to pay attention to in daily life. I feel that returning to work is not a problem. I just need to take my medication properly, attend follow-up visits on time, and see a doctor whenever I feel unwell."

2.4.3. Employer Support

The support and understanding from leaders and colleagues, along with a good working atmosphere, help patients return to their work positions and build confidence. N6 stated: "The atmosphere in our company is also good, and I am quite happy when working, although it is tiring." The workplace reasonably adjusts the patient's work intensity according to their physical condition, which helps the patient maintain a good working state. N6 also stated: "I feel that the leader takes more care of me now. In the past, I traveled everywhere, but now if the environment is harsh, they don't assign me there anymore."

2.4.4. Social Recognition

Receiving affirmation and trust from leaders and colleagues,this assists patients in returning to their work positions and maintaining a high level of enthusiasm. N1 stated: "At work, my leader appreciates me quite a bit, and my colleagues generally recognize my efforts. I feel that returning to work is the only way I can realize my social value."

3. Discussion

3.1. Balancing Return to Work and Disease Control

It was found that most patients eventually expressed a willingness to return to work. Compared to older patients, middle-aged and young patients, who are at the peak of their careers, have a stronger desire to return to work (Yao et al., 2023). Returning to the workplace after the end of disease treatment is one of the important indicators of a patient's adaptation and reintegration into society (Cao et al., 2019). Therefore, balancing work and disease management is particularly important for patients' social reintegration and disease rehabilitation. The focus of chronic disease prevention and control is to change patients' unhealthy living habits, provide them with scientific and continuous health management, and promote the formation of a healthy lifestyle (Aldenaini et al., 2022). Healthcare professionals need to provide comprehensive health education to patients before discharge based on their actual conditions. After discharge, they can refer to cardiac rehabilitation and secondary prevention guidelines for coronary heart disease (Cardiovascular Disease Professional Committee of the Chinese Association of Rehabilitation Medicine, 2018), develop case management plans according to the characteristics of each stage outside the hospital.

3.2. Improve Support Systems to Drive the Return-to-Post Process

Increasing social support for middle-aged and young post-PCI patients can enhance their readiness to return to work (Hu, 2020), promote their return to post, and help maintain their work status. Employers can provide suitable work positions or adjust the nature of work based on the patient's physical condition, understand and accept issues such as physical function and physical limitations caused by disease-related factors, can promote the patients return to work (Cao et al., 2021). As healthcare professionals, with the continuous improvement of acute myocardial infarction treatment technology and the shortening of hospitalization periods, many patients are unable to complete rehabilitation treatment plans as scheduled during their hospital stay. It is recommended to establish the clinical treatment pathways for cardiac rehabilitation (Esser et al., 2019). Meanwhile, the government can play a leading role by clarifying the obligations of both employers and employees in the patients' return-to-work process. Through laws and regulations, the implementation of return-to-post policies for post-PCI patients can be ensured.

3.3 Improving Negative Psychological Feelings and Emphasizing Psychological Nursing

Simultaneously, studies (Vîslă et al., 2016; Sun et al., 2022) show that post-PCI patients are prone to negative emotions due to concerns about disease prognosis and surgical outcomes. Fear of disease progression refers to the negative emotional experience such as fear and anxiety related to the disease and treatment (Mentrup et al., 2020). Patients may be unwilling or unable to return to work due to concerns about their physical inability to bear work pressure and lack of social support, which in turn exacerbates negative emotions such as anxiety and depression and causes social problems, forming a vicious cycle (Geng et al., 2023).   It is known that both patients who have not returned to work and those who have successfully returned to work experience varying degrees of uncertainty about the recurrence of the disease and negative feelings of individual uselessness. Therefore, pay attention to the psychological care of patients, and adopt supportive psychological therapy . Self-efficacy will also gradually improve (Liu, 2024).

4. Conclusion

In summary, This study further enriches the understanding of the real feelings, experiences, and influencing factors of middle-aged and young AMI patients post-PCI in their return to work. It can provide a reference for medical staff to take targeted measures, promote social reintegration and disease rehabilitation, and successfully achieve a return to work and good maintenance.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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