Application Progress of Telemedicine in Home-Based Cardiac Rehabilitation of Patients with Coronary Heart Disease

Zhang Jingtao, Li Ting*, Wang Xina , Zhang Minge
Shaanxi Provincial People's Hospital, Xi'an, Shaanxi 710068
**Corresponding Author*

Abstract:Patients with coronary heart disease will undergo surgical treatment in clinical practice. Cardiac rehabilitation has an important impact on the postoperative rehabilitation of patients with coronary heart disease. Telemedicine can provide long-distance rehabilitation guidance for patients with coronary heart disease during their stay at home, which is convenient for patients' postoperative home management. This paper mainly explores the ways and functions of telemedicine in home-based cardiac rehabilitation of patients with coronary heart disease.

Keywords:Coronary heart disease; Cardiac Rehabilitation; Telemedicine

1. Introduction

Patients with coronary heart disease need cardiac rehabilitation treatment. The content of cardiac rehabilitation includes medical evaluation, personalized counseling and exercise education. It can guide patients to prevent cardiovascular disease, help patients correct bad lifestyles, and prevent risk factors for coronary heart disease, which can effectively improve patients' physical and mental health. Telemedicine refers to the use of modern advanced information and communication technology to provide long-distance education and consultation for patients with coronary heart disease, and to enhance the home cardiac rehabilitation effect of patients through telemedicine.

2. The Application of Telemedicine in Home Cardiac Rehabilitation of Patients with Coronary Heart Disease

2.1 Use Smart Applications

The rapid development of modern information technology has enriched medical forms and provided digital convenience for hospitals. In the home cardiac rehabilitation of patients with coronary heart disease, medical staff can make reasonable and advanced use of intelligent applications to establish contact with home patients, so as to check the patient's exercise completion status and weight indicators at home anytime and anywhere. Patients can also use smartphones to view their health information and make follow-up appointments in the program. For example, a hospital can design an "intelligent exercise rehabilitation management system" that not only uses pressure sensors to accurately estimate the patient's exercise type, but also combines the patient's physical condition to predict the exercise intensity they can achieve, reminding patients to adjust exercise time and type according to the preset exercise intensity range. The system can monitor patients' arrhythmia. Patients only need to place their fingers on the smartphone camera and pause their fingers briefly on the camera. The system uses optical sensors to calculate the patient's heart rate, and then uploads the heart rate to the terminal server to accurately calculate the patient's heart rate category. Compared with traditional medical technology, intelligent applications have more advanced technology and can effectively ensure patient safety. At the same time, they can also set up different terminals, which to some extent promotes the development of home cardiac rehabilitation in the medical field and brings good news to the treatment and prognosis of coronary heart disease patients. For example, hospitals can design an intelligent application for external health management, which includes a computer version management end, a medical version mobile end, and a patient version mobile end. The computer version management end can release some health knowledge related to disease prevention to patients with coronary heart disease. Medical

staff can use the intelligent application to follow up with patients with coronary heart disease. Patients can download the application on their smartphones before discharge and establish personal medical records in the application. The application of this intelligent application can further improve patients' self-management ability. In addition, hospitals can also establish intelligent applications for exercise rehabilitation. Patients can query their exercise rehabilitation prescriptions and exercise intensity in the intelligent application. Medical staff can use the intelligent application to supervise patients, effectively monitor their exercise fatigue level, and effectively monitor changes in their vital signs before and after exercise. Based on the patient's physical condition, a reasonable cardiac rehabilitation plan can be set up, and the rehabilitation plan can be adjusted at any time according to the patient's physical changes. Due to the convenience of intelligent applications, medical staff can use them to push self-monitoring methods and health management knowledge to patients, allowing them to receive timely rehabilitation care at home, thereby enhancing the home cardiac rehabilitation effect of coronary heart disease patients.

2.2 Using Wearable Devices

Wearable devices refer to devices that can be worn on patients and can observe various indicators of coronary heart disease patients from the display screen, in order to achieve real-time monitoring and analysis of patient data. Medical staff guide patients to carry out sports rehabilitation nursing, and require patients to wear heart rate monitoring equipment in a standardized manner, so that the movement data of patients at home can be shared into intelligent applications using the Internet, and medical staff can feedback their rehabilitation to patients based on the movement data, and guide patients to adjust their movements. Home rehabilitation 1 can significantly reduce patients' medical costs, which can improve patients' satisfaction with medical care and also enhance their compliance with rehabilitation training. Wearable devices can also monitor various vital signs of patients at home, using vital sign indices to determine if the patient has any adverse physical conditions and whether they have engaged in effective exercise. For example, when patients conduct exercise training at home, they need to wear a portable wearable electrocardiogram monitor. This monitor can effectively monitor whether the patient's exercise intensity is within the preset range and issue reminders to the patient about the exercise intensity. At the same time, patients can also wear dynamic electrocardiogram recorders, which can record the patient's electrocardiogram signals. When the patient's heart rate is significantly abnormal or the patient falls, the equipment can promptly issue voice alarms and send text messages to the patient's family members to ensure that the patient can receive corresponding treatment in a timely manner. Wearable devices not only ensure the safety of home cardiac rehabilitation for patients, but also enable them to promptly detect changes in their condition. Medical staff should enhance patient education, guide patients to observe abnormal data, and inform patients of abnormal situations with wearable devices, so that patients can master the methods of distinguishing equipment abnormalities and avoid panic caused by equipment abnormalities.

2.3 Using Information and Communication Software

Medical staff can use information communication software such as QQ and WeChat to provide effective guidance for home cardiac rehabilitation of coronary heart disease patients. Through communication software, they can regularly send text, pictures, and videos related to the disease and cardiac rehabilitation to coronary heart disease patients, and use communication software to answer patients' questions online. They can also use communication software to carry out medical work such as symptom monitoring and evaluation, follow-up reminders, etc., which can significantly improve the compliance of coronary heart disease patients with cardiac rehabilitation at home and further improve their quality of life. For example, medical staff can use WeChat to send medication guidance, exercise guidance, cholesterol management, blood pressure monitoring, and other knowledge related to cardiac rehabilitation to patients with coronary heart disease, and make educational knowledge more interesting in the

form of comics, encouraging patients to persist in reading relevant knowledge. Through long-term intervention, the risk factors for coronary heart disease recurrence in patients can be well controlled, avoiding worsening of the patient's condition. Information and communication software can further expand the medical service scope of medical staff, allowing patients to enjoy more comprehensive cardiac rehabilitation nursing interventions.

3. The Role of Remote Medical care in Home-Based Cardiac Rehabilitation for Patients with Coronary Heart Disease

3.1 It is Beneficial to the Improvement of Patients' Motor Function

Medical staff can use telemedicine to carry out long-term cardiac rehabilitation guidance for patients, let cardiac rehabilitation guidance penetrate into patients' daily life, and design personalized cardiac rehabilitation programs for patients. Under the remote guidance, the patients correctly wear wearable devices during the home, and exercise at the appropriate intensity every day. At the same time, medical staff use communication software to conduct motivational interviews with patients, encourage patients to adhere to cardiac rehabilitation training such as exercise, and stimulate patients' willingness to restore physical function, so as to ensure that patients adhere to effective exercise, so that the patient's body movement function can be effectively improved, which is conducive to the patient's recovery of physical and mental health.

3.2 It is Beneficial to the Improvement of Patients' Exercise and Medication Compliance

Remote healthcare can set up a daily check-in function to record the time and frequency of patients' exercise and medication through check-in, which helps patients form good exercise and medication habits in their daily lives. If a patient misses a certain exercise or medication, the remote medical system can send a text message to the patient. At the same time, medical staff can use smartphone application platforms to regularly send patients knowledge related to exercise, medication, diet, and self-management, and update the information sent to patients at any time. This can effectively improve patients' compliance with exercise and medication at home, and sufficient exercise can also help patients establish confidence in cardiac rehabilitation after percutaneous coronary intervention surgery.

3.3 It is Beneficial to Reduce the Economic Burden of Patients.

Medical staff can use the telemedicine mode to communicate with patients with coronary heart disease at home in real time. Patients can put forward their own questions about the disease in time through intelligent applications. Medical staff can also understand the patient's condition and questions in a short time, and then answer the patient's questions in time, and guide the patient to carry out correct cardiac rehabilitation training online. Because the online platform is not limited by time and region, medical staff monitor the patient's vital signs at any time, so as to adjust the cardiac rehabilitation program according to the patient's condition changes, which can prevent the increase of economic burden due to the aggravation of the disease. At the same time, patients can enjoy medical services without leaving home, which can reduce the transportation cost caused by frequent admission of patients to the hospital, promote the reduction of the economic burden of patients, and also reduce the psychological burden of patients.

4. Conclusion

Summarizing the above contents, it can be seen that patients with coronary heart disease can use intelligent applications, wearable devices, information and communication software and other telemedicine methods during home-based cardiac rehabilitation, so as to break through the limitations of time and region, and provide patients with scientific and reasonable cardiac rehabilitation guidance in time, so that patients can effectively improve the body's motor function during home, significantly improve the patient's compliance with self-management such as exercise and medication, and significantly reduce the patient's economic burden, so that patients can achieve good home-based cardiac rehabilitation.

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