Design Physical Model of Intelligent Cardiac Exercise Rehabilitation System

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Introduction

Cardiac rehabilitation (CR) has been shown to reduce the risk of recurrence, improve the quality of life, and enhance the prognosis of patients with cardiovascular disease. In CR, drug therapy serves as the foundation, while exercise rehabilitation plays a central role. The rehabilitation medical system is transitioning from informatization to intelligence.However, the current development of clinical rehabilitation systems varies, and the lack of intelligent assistance significantly hampers the efficiency and quality of rehabilitation.

Aim

To address this issue, this study aims to develop an intelligent cardiac exercise rehabilitation system that can assist in decision-making for the development of rehabilitation programs. This system will cover the entire process of rehabilitation, including evaluation, program generation, implementation, recording, and automatic extraction of rehabilitation information, thereby achieving a comprehensive and intelligent approach to rehabilitation.

Method

1. Team Formation: A team was assembled to carry out the research.
2. Needs Analysis: A semi-structured in-depth interview method was employed to collect and categorize the requirements of the rehabilitation system.
3. Process Reengineering: The existing rehabilitation process served as a basis for developing an intelligent heart movement rehabilitation process, incorporating evaluation, program, and record components.
4. System Development: The functional architecture and interface prototype were designed and modified according to the requirements, as depicted in the flow chart.

Results

The needs analysis can be summarized as follows: Special Rehabilitation Module; automatic screening of rehabilitation contraindications; assistant decision-making of rehabilitation programs; structured input of rehabilitation process information and synchronization to the health care system and extraction. According to the above requirements of the process transformation, as shown in Figure 1.

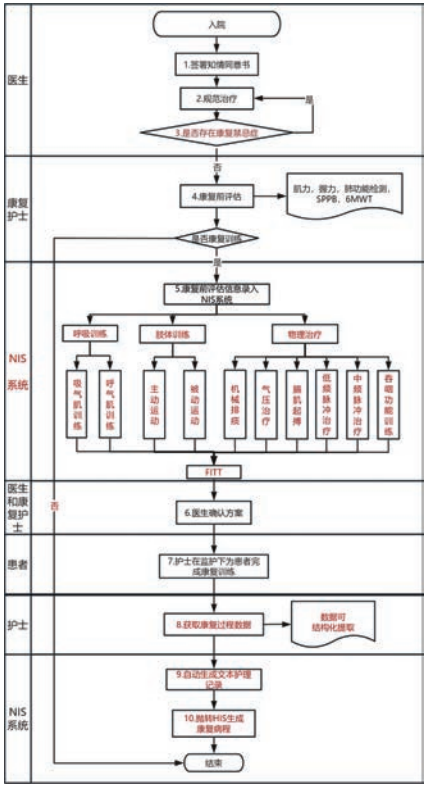

Figure 1 New Rehabilitation Process Diagram

According to this process, the rehabilitation system framework is designed, and the specific modules and functions are shown in Figure 2.

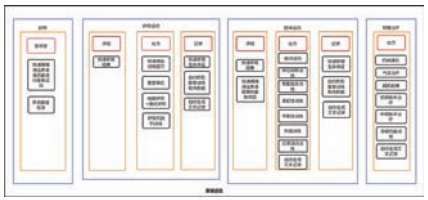

Figure 2 Functional Architecture Prototype

The functional flow between the modules is shown in Figure 3.

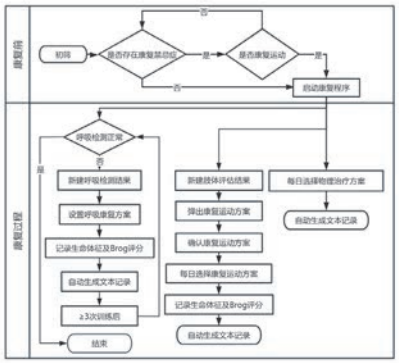

Figure 3 Functional flowchart

Use the interface as shown in figure 4-figure 7.

Figure 4 Respiratory training plan

Figure 5 Sports Training Plan

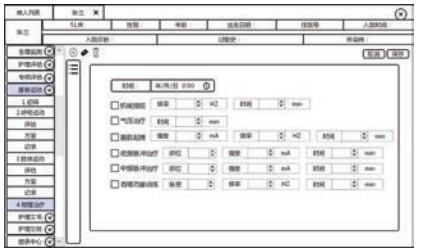

Figure 6 Physical therapy

Figure 7 Record Writing

Conclusions

The Intelligent Cardiac Exercise Rehabilitation System is a valuable tool for clinical exercise rehabilitation. It serves as an assistant decision-making tool, helping to generate exercise rehabilitation programs, improve the efficiency and quality of exercise rehabilitation, and enhance patient safety.Clinical nurses have a high level of satisfaction with the system.

Acknowledgments

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Abstract

1.Introduction
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2.Methods
Research Framework: 1. Team Formation: A team was assembled to carry out the research. 2. Needs Analysis: A semi-structured in-depth interview method was employed to collect and categorize the requirements of the rehabilitation system. 3. Process Reengineering: The existing rehabilitation process served as a basis for developing an intelligent heart movement rehabilitation process, incorporating evaluation, program, and record components. 4. System Development: The functional architecture and interface prototype were designed and modified according to the requirements, as depicted in the flow chart. [Corresponding Author: Linfang Li,2641360615@qq.com.]

3.Results
The needs analysis can be summarized as follows: Special Rehabilitation Module; automatic screening of rehabilitation contraindications; assistant decision-making of rehabilitation programs; structured input of rehabilitation process information and synchronization to the health care system and extraction. According to the above requirements of the process transformation, as shown in Figure 1. According to this process, the rehabilitation system framework is designed, and the specific modules and functions are shown in Figure 2. The functional flow between the modules is shown in Figure 3. Use the interface as shown in figure 4-figure 7.

4.Conclusions
The Intelligent Cardiac Exercise Rehabilitation System is a valuable tool for clinical exercise rehabilitation. It serves as an assistant decision-making tool, helping to generate exercise rehabilitation programs, improve the efficiency and quality of exercise rehabilitation, and enhance patient safety. Clinical nurses have a high level of satisfaction with the system.