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Research Article

Design of an automatic and intelligent ward-round nursing system

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Abstract: In order to avoid the existing wireless operation system information with typing problem caused by the network problems, make patient monitored simply, reduce the burden of doctors and nurses, improve the level of nurse suite and intelligent information, we have adopted a set of computer centered in mobile intelligent terminal as the main body through the different network communication, and completed with the operation and function of nursing with the content online and mobile using the system, the system can ward intelligent management and strengthen the communication between the disease and medical personnel. This system effectively complements the deficiencies of some soft software and APPS in the market.
Keywords: ward-round nursing; intelligent system; wireless; mobile; APP.

INTRODUCTION

At present, both in developed countries and developing countries, health care reform has become the key topic, how in under the premise of rational utilization of medical resources to improve efficiency and reduce cost is a hot problem in the word (Miao, Y. *et al* ., 2018 July; Hunter, D. J. 2016), and mobile medical advantages of low cost, efficient and fast become an important means to solve this problem. The Europe and America and other developed countries on the service efficiency and quality of medical supervision are strict, hospitalization for real-time monitoring of the patient (Ciani, O. *et al* ., 2018). And with the development of science and technology of the Europe and

America and other developed countries' mobile medical and intelligent room inspection applications have made great progress (Kossioni, A. E.*et al* ., 2018). It greatly reduces the work burden of health care workers, improve work efficiency. Currently, more than half of the world's mobile medical applications are in the United States and about 20 percent are in Europe (Wyman, M. 2018).

China's mobile medical industry is still in the primary stage (Jones, R. 2018, October). At present, most hospitals do not record and track the work of nurses, so that it is impossible to find out which link

went wrong after something happened. In addition medical staff still needs to carry out ward rounds with a large number of paper documents in the inpatient department, and then enter them on PC when they return to the office, which seriously affects the medical efficiency (Bass, P. F. 2018). At present, the application of wireless room-checking system in the market is relatively narrow, which cannot be integrated with the existing hospital system and relies heavily on the network (Clyne, A. 2018). At the same time, existing systems or devices have fewer formats or methods of collecting information and sometimes they cannot store all the information comprehensively and timely. As a result, some important information cannot be saved. And it also affects the use of system data, important data or one-time data.

Intelligent ward rounds are no longer about pushing heavy trailers and turning over thick data, but about quickly acquiring or filling in patient information through intelligent mobile terminals (Goldratt, E. M., & Cox, J. 2016; Kaplan, J. 2015). Intelligent ward rounds are directly faced with front-line doctors and nursing staff, greatly improving work efficiency and providing better services for patients. Although intelligent house rounds are faced with many problems such as complicated business and lack of unified standards, but intelligent, information and integration are bound to be the development trend of house rounds.

Quick Response Code

Methods

The server is connected to the mobile terminal through a wired network (Tucker, M. L., & Bruestle, J. 2018). The server is connected to the host via a wired network (Kobezak, P. *et al .,*2018 January). The mobile terminal is connected to the host through wired network connection, wireless network connection and USB direct connection (Majumdar, A. K. 2018).

Results and Discussion

System introduction

The practical system realizes the face-to-face communication between the mobile device terminal and the main control computer, and improves the speed of data transmission (Tucker, M. L., & Bruestle, J. 2018; Schilling, K. *et al .,*2018, July). Both the main control computer and mobile terminal have operation function modules, which can improve the intelligence, reduce the burden on nurses and patients, and better control the patients' condition in real time.

The system is easy to use and has a high degree of intelligence, which strengthens the communication between patients and medical staff and reduces the work burden of medical staff, especially nurses (Goldratt, E. M., & Cox, J. 2016; Kaplan, J. 2015).

Research content

The system in operation process and the existing operation system for the design of the analysis of existing problems, puts forward a set of computer centered, based on mobile intelligent terminal as the main body, through the different network communication, complete with the operation and function of nursing (Goldratt, E. M., & Cox, J. 2016; Schilling, K. *et al .,*2018, July). The system contents online and mobile use, can realize orders, information query, print, upload and storage, nursing ward round information upload and storage, sound recording or video recording, and other functions of automatic intelligent operation and nursing of system equipment.

The equipment design of the automatic intelligent room inspection and nursing system includes the main control computer, mobile terminal and server, which can be connected by wired network and wireless network for data communication and exchange (Ciani, O. *et al .,*2018; Kossioni, A. E. *et al .,*2018; Bass, P. F. 2018; Kobezak, P. *et al .,*2018, January). The main control computer has the functions of login, doctor's order issuing, information management, information database, nursing statistics and so on. The mobile terminal has functions such as login, fingerprint identification, information query, vital signs input, doctor's order execution, uploading and downloading, printing, etc., which can be inputted and outputted through microphone, camera and touch screen and alarm processing when abnormal values are inputted (Kobezak, P. *et al .,*2018 January ; Schilling, K. *et al*

.,2018 July). The server processes the data and can process and store a large amount of patients' information. It can also send the information needed by the mobile terminal and the host to them. At the same time, it has the security performance of backup and recovery.

The system characteristic

This system equipment can not only transmit data through the network, but also transmit data through wireless network connection and direct data transmission to prevent data loss or long uploading times when the network is disconnected or the network is not good. The system equipment has a variety of information collection formats and collection methods to make the data more comprehensive; The system equipment has fingerprint recognition, photography, recording and other functions (Ciani, O. *et al .,*2018; Kossioni, A. E. *et al .,*2018; Bass, P. F. 2018; Kobezak, P. *et al .,*2018 January).

System function

This system is an automatic intelligent medical personnel rounds and nursing system design, including the main control computer, mobile terminal, server which can communicate with each other (Kobezak, P. *et al .,*2018 January). The main control computer is connected to the server through the network, and can also be connected to the network through face-to-face technology, data lines and mobile terminals (Schilling, K. *et al .,*2018 July).

The main control computer has the functions including login, doctor's order issuing, information management, information database, nursing statistics and so on. Those can input and output information via keyboard, monitor and printer (Tucker, M. L., & Bruestle, J. 2018).

The mobile terminal is connected to the main control computer and server through the network. It has functions such as login, fingerprint identification, information query, vital signs inputting, and doctor's order execution, uploading and downloading, printing and so on. It can input and output information through microphone, camera and touch screen .It also can alert wrong information when an exception is entered. It is more convenient and concise for mobile terminals to record patients' information .And the recorded information is more detailed (Bass, P. F. 2018; Kobezak, P. *et al .,*2018, January).

The server processes the data. It can process and store a large amount of patients' information. It can also send the information needed by the mobile terminal and host. At the same time it can backup and recover the information. It also have other security performances.

Proposed problem solving

The system will realize the integration of the intelligent ward round nursing system and the existing hospital's network, combine the network transmission data, and realize USB interface transmission and wireless data transmission when the network is disconnected or the network is not good (Majumdar, A. K. 2018).

The main control computer, mobile terminal and server will be connected with each other's hardware devices (Kobezak, P. *et al* .,2018 January).

The system will achieve the acquisition of information in a variety of formats and achieve the transmission of information in different formats after collecting information in a variety of formats (Bass, P. F. 2018).

The system will process medical images to obtain useful information (Kossioni, A. E. *et al* .,2018).

Conclusion

Routine ward rounds are one of the most complicated and demanding tasks in the hospital, as well as a basic job for residents and nurses. At present, nurses' ward rounds are at a low level of informatization and intelligence. Patients have less mobility with medical personnel and medical institutions, so they cannot communicate in a timely manner. In addition, the daily ward rounds have heavy tasks and require a lot of manpower and material resources (Kossioni, A. E. *et al* .,2018; Bass, P. F. 2018). At present, there are also some nurse rounds systems in the market, but their application is narrow and the format of information collection is less.

In order to improve work efficiency, simplify patients' monitoring, reduce the workload of doctors and nurses, understand the basic situation of patients and understand the progress of patients' conditions, playing a role in communication between patients and doctors, and preparing for their next diagnosis and treatment (Miao, Y. *et al* .,2018, July ; Kossioni, A. E. *et al* .,2018). The device is convenient and highly intelligent, which strengthens the communication between patients and medical staff reducing the work burden of medical staff, especially nurses.

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