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Discussion on the application of remote rehabilitation management service based on a smart medical platform to improve the quality of life of patients with urinary incontinence

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Abstract: *Discuss the application of remote rehabilitation service based on a smart medical platform to improve the quality of life of patients with urinary incontinence, and give full play to the advantages of "Internet + medical" convenience, efficiency, and flexibility. The digital smart medical platform provides comprehensive and life-cycle health services for patients with stress incontinence and female patients with postpartum incontinence, aiming to improve the quality of life of urine patients and improve the effectiveness of health management and rehabilitation. Through the digital smart medical platform, patients can obtain professional medical advice and guidance anytime and anywhere, as well as access to rehabilitation plans and treatment plans for their conditions.*

Keywords: *smart medical treatment; urinary incontinence; quality of life*

1. Introduction

Postpartum urinary incontinence (PPUI) is an involuntary leakage of urine from the external urethra when abdominal pressure is increased [1] and is most common in women. Stress urinary incontinence is a urinary condition that affects women of all ages. It is not life-threatening, but social, professional, familial, and psychological, and can seriously affect the quality of life of patients and impose a heavy economic burden on patients and society [2]. Studies have shown that urinary incontinence is a pervasive problem in women, especially in nulliparous and multipartum women, and is affected in many ways [3]: maternal age, mode of delivery, neonatal weight, changes in gestational weight, postconceptional pelvic floor exercises, and other factors [4-6]. Patients with urinary incontinence leak urine for a long time, resulting in urine maceration and irritation, flushing, itching, and even infection and ulceration around the genital skin. Often because of the smell of the lower body, they will feel ashamed of themselves and fear being discriminated against by those around them; Serious psychological problems such as reduced social interaction, anxiety, anxiety, irritability [7-9], and affected by social and cultural background and limited cognitive level of patients, patients often refuse to seek medical treatment independently, thereby further aggravating symptoms, forming a bad vicious circle, aggravating the patient's psychological sense of shame and guilt, making it impossible to carry out normal work and life. Therefore, it is imperative to increase attention to urinary incontinence, increase effective intervention methods to reduce the incidence of urinary incontinence, improve the recovery rate, and improve the quality of life of patients through reasonable education [10-11].

2. Application Status of Smart Medical Platform for Patients with Urinary Incontinence

Traditional clinical interventions for urinary incontinence include drug therapy, physical therapy, behavioral intervention, and surgical treatment [12]. However, with the development of society, the progress of the times, and the policy plans formulated by relevant departments such as the National Health Commission of China, smart medicine has become a key direction for the development of urinary incontinence intervention. These new technologies and policy initiatives contribute to more accurate and personalized diagnosis and treatment of urinary incontinence and significantly improve recovery outcomes and quality of life [13].

The vigorous development of WeChat platforms, mobile applications, and official popular science

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accounts has effectively supplemented the diagnosis and treatment of traditional urinary incontinence. Through real-time dissemination of popular science knowledge in the form of multimedia, the establishment of point-to-point two-way communication between medical staff and patients and patient-patient communication zone, etc. It enables medical care to implement health counseling for patients at any time, helps patients receive health education at home, and has played a positive role in the effective prevention and control of the disease, their health control, and the improvement of patient compliance [14].

At this stage, there are still problems such as fragmented online network platforms, lack of comprehensive functional zoning, uneven treatment effects of offline physical rehabilitation medical institutions, high fees, low efficacy, and low trust of patients. In terms of digital smart healthcare, the popularity of urinary incontinence is relatively low, and at the same time, the development of digital smart healthcare is limited by factors such as complex procedures in formal large hospitals and difficulties in round-trip transportation. This leads to a lack of medical knowledge, insufficient awareness of the importance of self-healing, and poor compliance and execution in patients with urinary incontinence. In addition, patients will also face the problem of a lack of personal privacy during the diagnosis and treatment. These problems expose people with urinary incontinence to more disease damage and social stress.

The design idea of a comprehensive and multi-angle smart medical platform for patients with urinary incontinence is proposed to meet the people's livelihood needs of patients for high-quality medical services. Through the network terminal platform, real-time, efficient, and private services can be provided for urinary incontinence patients, and throughout the entire process of patient health management. This new medical model breaks the time and space limitations of traditional medical methods, and can still provide support and services for stress urinary incontinence patients and female postpartum urinary incontinence patients in the post-pandemic era. At the same time, digital smart healthcare is also conducive to reducing medical costs, easing the difficulty of seeking medical treatment, reducing medical expenses, and improving the work efficiency of medical staff. Most importantly, digital smart healthcare can effectively improve the quality of life of patients with urinary incontinence and allow them to enjoy a better life.

3. Design Ideas of Intelligent Medical Platforms for Urinary Incontinence Patients

The team made full use of the convenient and fast functions of "Internet+" to mainly serve patients with mild to moderate stress urinary incontinence and postpartum urinary incontinence, and made a simple and fast smart medical platform.

The main contents include: under the framework of digital smart healthcare, establish online electronic files and assess patients' daily urination status as the background basis for smart medical plans; Through digital technology, electronic management and backup of patients' medical records, examination results, medication status and personal information are carried out, so that doctors and patients can consult them at any time; At the same time, it provides life, exercise, diet guidance, and health guidance for patients with defecation incontinence from pelvic floor muscle training guidance and weekly nutritional meal planning; And established a personalized medical supplies sales network platform to facilitate patients to buy matching high-quality nursing supplies after receiving doctor's advice; Finally, one-on-one medical psychological wisdom consultation services are carried out, reasonable and effective psychological intervention is implemented for patients, the service concept of doctors and patients as partners is to form a benign psychological counseling relationship with visitors, feedback each other between doctors and patients, and help patients relieve the discomfort and shame caused by stress urinary incontinence through continuous and long-term psychological intervention, so as to actively participate in health care.

The platform aims to ensure that every user has equal access to care and treatment, reduce the suffering of patients, and raise awareness and prevention of stress urinary incontinence. Grasp the rapid development of Internet +, apply smart medical care to urinary incontinence rehabilitation treatment, and inject new-era wisdom into traditional medical treatment, as shown in Figure 1.

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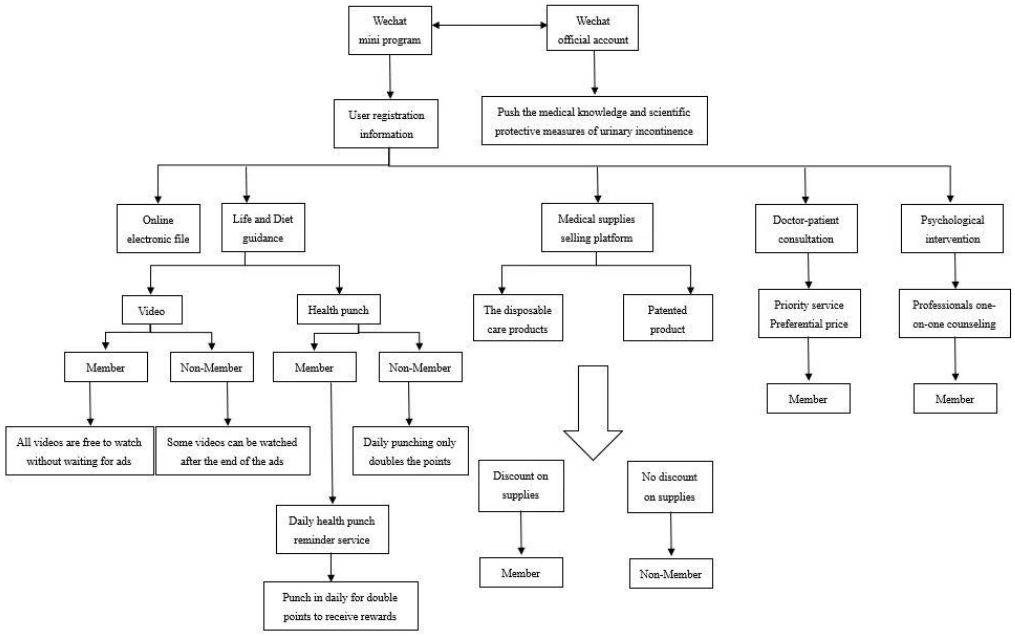

Figure 1: Design ideas of smart medical platform

4. Smart Medical Platform Operation Carrier

4.1 Online Electronic Archives

After the user registers, the platform will collect the user's basic information, such as name, gender, age, height, weight, etc. In addition, the platform will also require users to fill in questions about urination habits and symptoms, such as whether there are symptoms such as frequent urination, urgency, and incomplete urination, which will help doctors better understand the user's condition.

In daily life, users can use the app provided by the platform to record their urination and related symptoms. Each time a record is made, the user is asked to enter information such as fluid intake, drainage, incontinence, leakage, pad usage, and bowel movements. This data is entered in real-time in an online e-file and displayed on the user's page. Users can view their history at any time and export an electronic profile for analysis.

For clinicians, these electronic files will become one of the important bases for assessing the patient's condition and recovery process. By analyzing the data, doctors can better understand the patient's condition and disease trends, and develop more accurate and effective treatment plans.

4.2 Life, diet, and exercise guidance

The platform pushes relevant popular science articles, interesting videos, pictures, and other content intelligently every day. Through professional and interesting science education, patients are introduced to the causes, clinical manifestations, susceptible groups, and preventive measures of stress urinary incontinence. At the same time, to reduce the incidence of urinary incontinence and improve the recovery rate of patients, the platform also provides targeted lifestyle, diet, and exercise guidance. Based on the basic medical conditions of patients, formulate appropriate prevention plans and rehabilitation plans, and help customize corresponding rehabilitation plans based on personal electronic files.

4.2.1 Daily health check-in and personalized diet plan

First of all, the platform analyzes information such as patients' health status, physical indicators, and eating habits, formulates personalized meal plans for them, and provides users with a variety of choices. These meal plans include an appropriate increase in the intake of nutrients such as fresh fruits, vegetables, and fruits. Secondly, the platform will also help patients arrange urine time reasonably, use toilets regularly, and cultivate good urinating habits to facilitate the recovery of urine function. Through daily health check-ins, we can adjust our diet plan and track the recovery process at any time to ensure that patients can get the best possible recovery. Daily health check-ins and personalized diet plans can provide

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patients with precise rehabilitation programs to help them manage and improve their physical health more effectively.

4.2.2 Integration of 5G distance teaching and sports program formulation

For patients without an exercise foundation, we provide healthy exercise instructor services, instructors can know the patient's exercise status and rehabilitation progress at any time, adjust the plan and make suggestions in time, and provide remote rehabilitation guidance and supervision services for patients; For patients with a certain exercise foundation, we provide individualized exercise programs, patients can choose their preferred exercises, background programs, remote instructors for them to correct the program and correct suggestions.

4.3 One-on-one smart doctor-patient consultation

To better meet the needs of patients, the platform has opened channels for online consultation with doctors. Patients can communicate with professional doctors through mobile consultation or message consultation to obtain accurate, fast, and comprehensive medical services. In addition to brief consultation and rehabilitation advice, doctors will actively encourage patients to seek medical treatment promptly and cooperate with the platform to carry out online and offline simultaneous processing according to different reasons. According to the patient's condition and treatment progress, the rehabilitation plan is adjusted, and necessary medical treatments such as drug treatment and surgical intervention are provided. At the same time, the doctor will also guide the patient to develop healthy living habits, such as moderate exercise, a reasonable diet, and regular work and rest.

4.4 Psychological Interventions

Stress incontinence has direct or indirect effects on social, family, work, physiological, psychological, and sexual life. Patients often feel inferior, restless, and panicked, which leads to obvious psychological disorders. Therefore, the platform has set up a nursing psychological intervention area, distributed a self-test form of health psychology questionnaire, pushed popular scientific manuscripts on how to care, pay attention to, and correctly channel patients' bad psychological emotions, and recruited a large number of professional psychologists.

In the psychological intervention process, the platform will strictly adopt various privacy protection measures to ensure that the patient's personal information is not leaked. Under the principle of doctor-patient partnership, the same method as doctor-patient consultation is adopted, and in the process of diagnosis and treatment, according to the special needs and concerns of patients, all aspects of patients' emotional feedback are considered, patients' mental health is paid attention to, and psychological intervention work is actively carried out. Professional doctors will listen to patients' voices, experience the pain caused by the disease, help them resolve negative emotions, restore self-confidence, and improve their quality of life.

5. Establish an Individualized Medical Supplies Sales Platform

The digital smart medical platform can also screen high-quality medical care tools for users, and achieve a full range of high-quality and convenient services from medical treatment to nursing. The advantage of this model is to provide patients with more personalized and precise medical support. Patients can enjoy more complete, high-quality, and convenient medical services, resulting in better rehabilitation and quality of life. Its sales equipment services include product purchase, product correct use instructions, daily care guidance, after-sales service, etc., and will follow up with daily health monitoring and other functions. The products sold are disposable nursing pads, disinfectants, detergents, adult diapers, pull-up pants, and self-developed patented products (Figure 2).

It also avoids the embarrassment of patients when handling urine bags, patients are comfortable to wear, convenient to care for, use food-grade silicone material, no irritation to the skin, and will not cause bedsores and other diseases.

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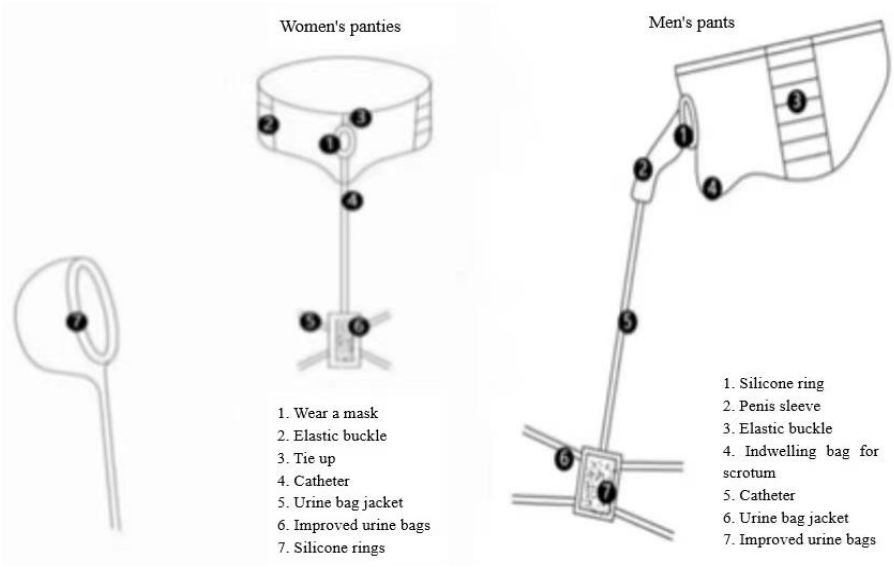

Figure 2: Convenient pants for men and women

6. Conclusion

At this stage, it is necessary to promote the expansion of high-quality hospital resources, increase the supply of resources, and improve and optimize the distribution pattern of hospital resources among regional cities. To this end, we have built a smart hospital platform using mobile Internet technology, which can effectively and reasonably balance medical resources and solve the current medical problems of many patients with urinary incontinence in remote areas. To obtain more professional and efficient clinical treatment and rehabilitation suggestions, hospital resources will be allocated more scientifically, reasonably, and effectively, and promote the development of urinary incontinence diagnosis and treatment and rehabilitation in remote areas. The advent of the 5G era has brought more information technology to smart hospitals, and the construction of smart hospital platforms is undoubtedly the key direction for the future development of Chinese hospitals.

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