

Construction of intelligent medical care and education platform for pregnant, infant and child under the background of fertility friendliness

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Summary: Childbirth is a major matter for both the family and the country. Continuously improving the system related to childbirth, actively promoting the implementation and refinement of various policies, allowing women of childbearing age to have peace of mind in raising children and working, reflects the care of the Party and the state, and will further promote the healthy and sustainable development of the economy and society. The National Health Commission and other departments have issued the “Guiding Opinions on Further Improving and Implementing Active Fertility Support Measures”, making major decisions to gradually adjust and improve fertility policies and promote long-term balanced population development based on the changing situation of China’s population development. According to research, family members still face various problems when it comes to “childbirth”: how can novice parents take good care of their children; How can mothers return to the workplace after maternity leave; Reflection on resources such as child education and healthcare. In response to the above issues, the idea of building a smart medical care and education platform for pregnant women, infants, and children has been proposed. The platform aims to build a comprehensive service platform that integrates resources from multiple fields such as medicine, education, and health management. It utilizes advanced AI technology and big data analysis to provide pregnant women, infants, and their families with comprehensive, all-round, and personalized health management and education services. A comprehensive companionship program from pregnancy, maternity, infant care to child growth education will help alleviate family anxiety about childbirth and contribute to a fertility friendly society.

Keywords: Fertility friendliness; Pregnancy and infant; Smart medical care; Education platform

I. Research Status and Development Trends at Home and Abroad

Internationally, significant achievements have been made in the application of smart healthcare and educational technology, especially in remote healthcare and intelligent health management. The development of telemedicine technology in the United States is rapid, and multiple companies and institutions have launched mature telemedicine platforms. European intelligent health management systems, such as Ada Health in Germany, use AI technology for symptom analysis and health advice, covering multiple countries and collaborating with multiple medical institutions to provide intelligent health management services. Many educational institutions in Europe have adopted online education platforms and virtual learning environments, such as Open University in the UK, which offers a wealth of online courses and resources to drive the digital transformation of education.

Although there have been some preliminary explorations in maternal health management and child education in China, there is a lack of systematic and intelligent comprehensive service platforms. This project will fill this gap by combining advanced technology and experience from both domestic and international sources to create a smart healthcare and education platform with international competitiveness.

Some domestic medical institutions and enterprises have begun to explore maternal health management, such as some hospitals launching pregnancy management apps that provide pregnancy knowledge, health monitoring, and doctor consultation services. But these applications are mostly single function and have not formed a comprehensive service platform for the system.

II. Research objective

1. The project aims to address the current anxiety among women regarding pregnancy preparation and childbirth, as well as various health issues, companionship problems, and unexpected situations during pregnancy. It mainly utilizes AI and big data technology to serve women who have a need for pregnancy, while providing early education resources and parent-child interaction guidance to provide early education and companionship for newborns, promote children’s early understanding and emotional development, and establish an integrated, comprehensive, and diversified information system to ensure data exchange of various health, education, and companionship services, thereby enhancing the scientific and accurate health management of pregnant women and infants.

2. The project integrates various resources such as medical, educational, and family services through a platform, integrating data from medical institutions, educational institutions, and community services to provide users with a one-stop chain of solutions to meet the diverse and personalized needs of pregnant women, infants, and young children.

3. The project is committed to building an intelligent and personalized health management and education platform, providing multilingual versions to meet the needs of diverse user groups; In the process of use, collecting and analyzing user data, utilizing advanced service technologies of artificial intelligence and machine learning, improving the accuracy of implementation diagnosis, providing real-time interaction and support, thereby enhancing the user experience and service satisfaction of the project.

4. The project can also promote technological innovation and service model optimization in the maternity and infant industry based on

its own innovation and development, and achieve high-quality development of related industries.

III. Research content

1. Investigation and research on the issue of a fertility friendly society

With the development of social economy and changes in population structure, the issue of childbirth has gradually become a hot topic of social concern. Through investigation and research, it has been found that the decline in fertility rate, decreased willingness to have children, and delayed childbearing age are currently the main social issues related to childbirth. These issues are influenced by various factors such as economic pressure, improvement in education level, career development, and changes in social attitudes. This study will analyze these influencing factors in detail, propose corresponding countermeasures and suggestions, and provide theoretical support for the construction of a fertility friendly society.

2. Construction ideas for the intelligent medical care and education platform for pregnant women, infants, and children

(1) Data integration: Integrate data from medical institutions, educational institutions, and community services through the platform, authorize relevant professionals to access relevant data, in order to better coordinate services and provide personalized support.

(2) Intelligent services: using AI tools to analyze health data, providing customized health management plans and preventive measures for pregnant women and children; Automatically adjust educational content and learning plans based on children's learning behavior and progress.

(3) Real time interaction and support: Provide video or instant messaging consultation services, establish online support communities, and allow families to exchange experiences and receive professional guidance.

(4) Continuing education and training: Enhancing professional skills and maintaining service quality through continuous education and training; Regularly evaluate service effectiveness, adjust and improve service strategies in a timely manner.

(5) Multi party cooperation and resource integration: Collaborate with health, education, and social service institutions to share resources, such as jointly developing family education projects or community health activities, linking public health programs, education funding, and community services.

3. Innovation and design of intelligent medical care and education platform for pregnant women, infants and children

(1) Intelligent medical services: remote diagnosis and consultation, health monitoring, personalized medical solutions. Utilize video conferencing and intelligent diagnostic tools to provide expert level medical consultation and preliminary diagnosis for pregnant women and infants. Monitoring health status through wearable devices and predicting potential health issues through data analysis to generate customized health management and treatment plans.

(2) Comprehensive care support: nutritional management, mental health support, rehabilitation, and nursing. Provide scientific dietary advice and nutritional meal services for pregnant women and children, offer psychological counseling services to help pregnant women and new parents cope with stress and psychological changes during pregnancy and parenting, provide postpartum rehabilitation guidance and early childhood development support.

(3) Educational resource integration: Early education resources and parent-child interaction guidance support children's early cognitive and emotional development. Provide prenatal care, parenting skills education courses, and seminars for prospective parents.

(4) Community and Companion Services: Provide a platform for communication and support, such as parenting counselors, home tutors, etc.

(5) Application of data and AI technology: Collecting and analyzing user data to improve service quality and personalized experience. Using AI technology to improve diagnostic accuracy, optimize service processes, and user interaction.

(6) User Experience and Interface Design: Ensure that the platform interface is user-friendly, easy to use, and provides multiple language versions to meet different user needs.

4. Operation plan for the intelligent medical care and education platform for pregnant women, infants, and children

The platform operation plan includes five modules: health management, education and training, online mall, online support community, and data analysis and personalized services

(1) Health management module: health consultation, birth planning, pregnancy and childbirth management, postpartum recovery, and child health management. Provide professional health counseling services, regularly monitor health status, and offer fertility planning and psychological counseling.

(2) Education and training modules: pregnancy education courses, infant and toddler care training, preschool education, and school integration. Provide nursing, nutrition, delivery coping skills, and pre-school education knowledge training.

(3) Online shopping mall: provides pre pregnancy, pregnancy, childbirth, postpartum, parenting and preschool education supplies, recommends personalized products based on user data, and tracks order status and logistics information in real time.

(4) Online support community: Establish mother support groups, provide online consultation and user interaction platforms, and share parenting experiences.

(5) Data analysis and personalized services: By collecting and analyzing user data, provide personalized health management and education programs. Utilize big data technology to analyze user behavior and needs, optimize service processes and user experience, and ensure the accuracy and effectiveness of services.

IV. Innovation points and project characteristics of platform construction

1. Innovation points

(1) Route innovation: Design targeted technical routes around the issues faced by fertility friendly children, and solve the problems faced by parents of children at different stages.

(2) Technological innovation: Utilizing AI language models for intelligent diagnosis, health monitoring, and personalized education services, improving the accuracy and intelligence of services, and enhancing user experience.

(3) Integrated Innovation: Combining medical care and education, the project combines medical and health management with educational resources to provide high-quality and comprehensive services, ensuring that users receive comprehensive support and guidance at every stage.

2. Project Features

(1) Full process companionship service: The project focuses on “pre pregnancy companionship, pregnancy and childbirth companionship, postpartum companionship, infant and toddler care companionship, and child education companionship”, providing comprehensive and continuous health management and education support through full process companionship services.

(2) Multi domain systematic resource integration: integrating resources from multiple fields such as healthcare, education, psychology, and nutrition, providing comprehensive services, and achieving the organic integration of medical care and education.

(3) Intelligent application: Using AI big language models and big data technology to achieve personalized and precise health management and education services, improving service efficiency and effectiveness.

(4) Sustainable development: Establish a multi-party cooperation mechanism to promote the coordinated development of the industrial chain and achieve continuous optimization and upgrading of services.

V. Expected results of platform construction

1. Build an intelligent and comprehensive platform for intelligent medical care, nursing, and education for pregnant women, infants, and children

(1) Comprehensive Service Integration: Organically integrating medical, educational, and family services, providing one-stop services from pregnancy to child growth, achieving systematic and coordinated services.

(2) Data interoperability and sharing: Establish a unified data platform to achieve information sharing and data integration between different service providers, eliminate information silos, and improve service coherence and user experience.

2. Improve service efficiency and quality

(1) Intelligent service delivery: Utilizing AI, big data, and IoT technologies to achieve intelligent and automated health monitoring, educational guidance, and service response, improving service response speed and accuracy.

(2) Resource optimization configuration: Through data analysis and intelligent scheduling, optimize resource allocation and service processes, reduce resource waste, lower operating costs, and improve service efficiency.

3. Promote technological innovation and service model optimization in the industry:

(1) Technology driven innovation: Introducing and applying advanced AI, big data, and IoT technologies to promote technological innovation in maternal and child health management and education services, and enhance the technological content and competitiveness of services.

(2) Service model upgrade: Explore and practice new service models, such as telemedicine, online education, intelligent health management, etc., to enhance the personalization and precision level of services and meet the diverse needs of users.

(3) Collaborative development of industrial chain: Through multi-party cooperation and resource integration, promote the coordinated development of healthcare, education, and related industries, and form a healthy and sustainable industrial ecosystem.

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