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Research on the Establishment of an Integrated Medical, Nursing, and Care Service System for Elderly Patients with Chronic Diseases in the Shandong Section of the Yellow River Basin

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Abstract: Against the dual strategic backdrop of healthy aging and high-quality development in the Yellow River Basin, the Shandong section of the basin exhibits pronounced trends of population aging and high prevalence of chronic diseases among the elderly. Traditional medical, elderly care, and nursing services operate in a fragmented manner, with significant issues such as disconnection between medical care and elderly support, separation of nursing and care services, and imbalanced resource allocation, making it difficult to meet the long-term continuous care needs of elderly patients with chronic conditions. Grounded in the theories of holistic governance and collaborative governance, this study employs literature review, field research, case analysis, and expert consultation to examine the current state, practical challenges, and underlying causes of integrated medical-nursing-care services for elderly patients with chronic diseases in the Shandong section of the Yellow River Basin. It proposes establishing a comprehensive service framework encompassing four dimensions, service providers, service content, service processes, and service support; develops differentiated implementation pathways for urban and rural areas, and establishes a sustainable mechanism integrating policy, talent, funding, and regulatory oversight. This research provides theoretical insights and practical models for enhancing health service delivery for elderly patients with chronic diseases in the Yellow River region, promoting deep integration of medical, nursing, and care services, and advancing the realization of healthy aging.

Keywords: Shandong section of the Yellow River Basin; Chronic diseases in the elderly; Integrated medical-care-protection system; Service framework; Collaborative governance

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1. Introduction

Population aging and the high prevalence of chronic diseases have become critical issues in China's social development. The incidence of chronic diseases among individuals aged 60 and above remains persistently

high. Chronic diseases are characterized by prolonged duration, susceptibility to recurrence, and require long-term care, making reliance solely on medical institutions or home-based care insufficient to meet diverse health and wellness needs. Both the "Healthy China 2030" Planning Outline and the Yellow River Basin Ecological Protection and High-Quality Development Planning Outline explicitly call for improving the elderly health service system and promoting deep integration between medical and elderly care services [1]. The Shandong section of the Yellow River basin encompasses nine cities along the river, including Jinan, Zibo, Jining, and Heze, exhibiting a pronounced urban-rural dichotomy with uneven spatial distribution of medical and elderly care resources, particularly highlighting challenges in rural aging and chronic disease management. While domestic research has extensively explored integrated medical and elderly care services as well as chronic disease management for the elderly, most studies focus on individual cities or specific service dimensions, with limited comprehensive and specialized research on integrated medical, nursing, and care services for chronic diseases across the Shandong region. Existing studies suffer from gaps between theory and grassroots practice, inadequate regional adaptability, and poor implementability [2]. Additionally, technologies such as smart monitoring and big data have not been fully integrated into the medical-nursing-care service system, and age-friendly health and wellness services at the grassroots level remain insufficient [3]. Based on these findings, this study aims to develop an integrated medical-nursing-care service system tailored to the Shandong section of the Yellow River basin, addressing service fragmentation and enhancing the grassroots elderly health service network.

2. Core concepts and theoretical foundations

2.1. Definition of core concepts

2.1.1. The Shandong section of the Yellow River Basin

It specifically refers to the entire territories of the nine prefecture-level cities along the Yellow River in Shandong Province, encompassing urban communities, rural towns and villages, primary healthcare institutions, and various elderly care facilities. This region represents a typical area in the lower reaches of the Yellow River, characterized by high aging rates and concentrated demand for health and wellness services.

2.1.2. Chronic diseases in the elderly

These are chronic diseases characterized by high prevalence and requiring long-term management in individuals aged 60 years and above, primarily including hypertension, diabetes mellitus, coronary heart disease, and post-stroke sequelae, with features such as high incidence rates, significant complications, and substantial dependence on long-term care.

2.1.3. Integrated medical care, nursing, and elderly care services

Guided by the needs of elderly patients with chronic diseases, this initiative breaks down barriers between healthcare, elderly care, and nursing sectors by integrating resources encompassing diagnosis and treatment, rehabilitation care, daily living support, health education, and psychological counseling. It establishes a novel comprehensive wellness service model characterized by integrated service chains, multi-stakeholder collaboration, and closed-loop service processes.

2.2. Theoretical basis

2.2.1. The theory of holistic governance

Centered on public needs, this approach emphasizes the integration and coordinated collaboration of resources across departments and industries to address governance challenges such as fragmented public services, divided responsibilities, and information barriers. The chronic disease care services for elderly individuals in the Shandong section of the Yellow River Basin involve multiple departments, including health authorities, civil affairs agencies, and medical insurance institutions, as well as various service providers. Applying this theoretical framework provides a governance rationale for coordinating resources, clarifying responsibilities, and eliminating service gaps [4].

2.2.2. Collaborative governance theory

Emphasis should be placed on the equal participation, division of responsibilities, collaboration, and information sharing among diverse stakeholders, including governments, medical institutions, elderly care facilities, communities, and families, to foster a synergistic governance framework. The integration of healthcare, medical services, and elderly care cannot be achieved by a single entity alone; leveraging the theory of collaborative governance enables the establishment of an operational mechanism with clearly defined authorities and responsibilities, ensuring smooth coordination and preventing fragmented approaches or buck-passing.

2.2.3. Long-term care theory

Focusing on the continuous care needs of elderly individuals with disabilities, partial disabilities, or chronic diseases, this approach encompasses multidimensional aspects including medical care, daily living assistance, and emotional support, providing theoretical foundations for the design of integrated healthcare, nursing, and elderly care services as well as the establishment of comprehensive lifelong care workflows.

3. Current status and challenges of medical care services for elderly patients with chronic diseases in the Shandong section of the Yellow River Basin

3.1. Current development status

3.1.1. The care needs of elderly patients with chronic diseases exhibit differentiated characteristics

The prevalence of chronic diseases among the elderly in the Yellow River region remains persistently high, with the proportion of empty-nest and solitary elderly individuals increasing annually. Urban seniors primarily require rehabilitation care and psychological services, whereas rural elderly residents have a pressing need for basic medical diagnosis, daily care, as well as home-based nursing services, remote monitoring, and emergency assistance [5].

3.1.2. Structural shortcomings in the provision of medical, nursing, and care services are prominent

The chronic disease diagnosis and treatment system in municipal and county-level medical institutions is relatively well-established, but primary community health service centers and township clinics lack adequate rehabilitation and nursing capabilities. Public elderly care institutions face bed shortages, while private

institutions often provide insufficient medical support, offering only basic daily care services. There is a significant shortage of specialized nursing personnel, with low professional competence among grassroots practitioners, and inadequate coverage of standardized chronic disease care.

3.1.3. There is sufficient policy guidance, but insufficient detailed implementation measures

Shandong Province has formulated relevant plans for elderly care services and integrated medical-care services, yet lacks specialized supporting policies tailored for the Yellow River region. There is poor policy coordination among departments, insufficient data interoperability, and integration of medical, nursing, and care services remains superficial rather than achieving a deeply integrated operational framework.

3.2. Main existing issues

3.2.1. Service fragmentation and gaps in supply-demand alignment

The medical, elderly care, and nursing sectors operate independently: healthcare institutions prioritize acute-phase diagnosis and treatment while neglecting continuous rehabilitation; elderly care facilities provide care services but lack medical services; nursing services are concentrated in urban high-end markets with inadequate coverage at the grassroots level [6]. There is a lack of seamless transition mechanisms for post-discharge rehabilitation and home-based care for chronic disease patients, leading to a dual disconnect between medical care and elderly care, as well as between nursing services and elderly care.

3.2.2. Imbalanced resource allocation leads to significant urban-rural disparities

Central cities concentrate healthcare and wellness resources, whereas county-level and rural areas suffer from outdated facilities, talent shortages, limited-service offerings, and a lack of mechanisms for resource allocation at the grassroots level or targeted assistance. The accessibility of public wellness services remains inadequate, failing to meet the basic care needs of elderly individuals with chronic diseases in rural areas.

3.2.3. Ambiguous rights and responsibilities among multiple stakeholders lead to low collaborative efficiency

The healthcare and elderly care system involves multiple stakeholders, yet it lacks a clear delineation of responsibilities and collaborative frameworks. Government oversight and coordination at the highest level remain inadequate, institutional participation is insufficient, community hubs fail to fulfill their pivotal role effectively, and there is a lack of a sustained collaborative platform, leading to issues such as overlapping jurisdictions and weak coordination.

3.2.4. Shortage of professional talent and insufficient service specialization

The primary healthcare and wellness industry suffers from low salaries, limited career development opportunities, and severe talent loss in professional nursing and chronic disease management. Most current practitioners lack systematic training and possess insufficient professional competence. Furthermore, there is a disconnect between university education programs and grassroots needs, with inadequate mechanisms for targeted talent cultivation and practical training.

3.2.5. The safeguard mechanisms are inadequate, resulting in weak long-term sustainability

The absence of regional industry standards and regulatory guidelines results in funding reliance on fiscal

allocations with low participation from private capital; no unified service quality evaluation and dynamic supervision system has been established, leading to inconsistent service quality and hindering the long-term scaling up of pilot services.

3.3. Causes of the problem

The top-level design lacks consideration for regional differences, making general policies difficult to accommodate the disparities in urban and rural development along the Yellow River; healthcare, elderly care, and nursing services are administered by separate authorities, creating persistent industry barriers; the limited variety of funding models results in restricted profit potential for public welfare wellness initiatives and weak incentives for private capital participation; inadequate mechanisms for talent compensation and career advancement systems diminish industry appeal and hinder talent retention.

4. Development of a framework for an integrated service system combining medical treatment, nursing care, and support services for elderly patients with chronic diseases

4.1. Framework development approach

Adhering to the principles of demand orientation, problem-oriented approach, adaptation to local conditions, and collaborative development, this framework adopts a unified core structure supplemented by region-specific modules, balancing systemic standardization with urban-rural compatibility. It aims to establish a closed-loop integrated medical-care-and-nursing service system characterized by government guidance, institutional leadership, community support, and broad public participation.

4.2. Four-dimensional integrated service system architecture

4.2.1. Dimension of collaboration among service providers

Clarify the responsibilities and authorities of multiple stakeholders: The government is responsible for top-level planning, policy formulation, resource coordination, and industry supervision; medical institutions undertake chronic disease screening, diagnosis, treatment, rehabilitation, and technical guidance; elderly care facilities provide day care services and centralized elderly care services; urban and rural communities are responsible for demand assessment, service coordination, and health education; professional nursing teams handle home-based rehabilitation and chronic disease monitoring; families fulfill daily care responsibilities. Establish a cross-departmental joint meeting system to create a collaborative framework with clearly defined roles and smooth coordination.

4.2.2. Dimension of service content integration

The system integrates five major service sectors: Basic healthcare includes chronic disease screening, physical examinations and diagnosis/treatment, and medication guidance; Rehabilitation care covers postoperative physiotherapy, functional training, and home-based care; Daily living assistance encompasses meal assistance, bathing support, day care services, and home companionship; Health support comprises health education, psychological counseling, and hospice care; Smart services leverage intelligent devices for real-time monitoring of chronic conditions, AI-based early warnings, and remote follow-ups, ensuring comprehensive service coverage throughout the entire process [7].

4.2.3. Dimensions for service process optimization

Establish a closed-loop process encompassing demand assessment, solution customization, service implementation, outcome feedback, and dynamic adjustment. Conduct home visits to evaluate care levels and needs, develop personalized integrated medical-care-protection plans, implement services through multi-party collaboration, regularly conduct satisfaction and health outcome evaluations, dynamically optimize service content, and achieve precise care delivery.

4.2.4. Dimension of service resource support

Establish a health and wellness information sharing platform for the nine cities along the Yellow River, integrating data resources such as medical beds, elderly care facilities, and nursing personnel, to create a chronic disease health information database for the elderly and break down information barriers between institutions, communities, and regulatory authorities. Promote contractual collaborations between primary healthcare institutions and elderly care facilities to optimize underutilized resources and achieve shared development of facilities, talent, and services.

4.3. Differentiated implementation approaches for urban and rural areas

At the city level, a "high-end integrated" service model is established, featuring medical-care and wellness complexes as well as community-integrated service centers to meet high-quality personalized care needs; at the county and township levels, a "basic inclusive" service network is developed, centered around county and township medical institutions and extending to village-level service stations to ensure basic diagnosis, treatment, and rehabilitation care; in rural areas, a "simple baseline" service model is implemented, leveraging village clinics and village committees to conduct regular outpatient visits, promote neighborhood mutual assistance, and provide volunteer support, thereby meeting essential care demands [8].

5. A long-term guarantee mechanism for the integrated healthcare, nursing, and elderly care system

5.1. Policy support

Formulate detailed implementation rules for the integrated medical-care-rehabilitation services in Yellow River regions, standardizing industry service standards and access requirements; eliminate policy barriers between health, civil affairs, and medical insurance authorities, and expand the coverage of medical insurance for rehabilitation nursing and home-based care; implement preferential policies regarding land use, taxation, and subsidies to encourage private capital participation in healthcare and wellness services [9].

5.2. Talent support

Refine the talent development system comprising "institutional training + on-the-job training + targeted recruitment"; establish elderly care and wellness-related programs in universities; implement a regular training and certification-based employment system for grassroots practitioners; optimize compensation packages, professional title evaluation, and promotion pathways to enhance industry attractiveness and stabilize the professional workforce.

5.3. Financial guarantee

Establish a diversified financing mechanism involving government investment, social capital, public welfare, charitable contributions, and medical insurance as the safety net. Increase provincial fiscal allocations for rural health and wellness initiatives along the Yellow River; attract social capital through government procurement of services and Public-Private Partnership (PPP) models; leverage public welfare funds to support elderly individuals with severe chronic diseases in extreme poverty, ensuring sustainable service delivery [10].

5.4. Regulatory evaluation guarantees

Establish a comprehensive evaluation indicator system covering service quality, health outcomes, public satisfaction, and collaborative effectiveness, implementing dynamic monitoring and annual assessments; conduct regular supervision of institutional qualifications, service standards, and fee structures; maintain open channels for public feedback, and implement continuous improvements based on evaluation results to enhance service quality and efficiency.

6. Conclusion

The medical, nursing, and elderly care services for chronic diseases among the elderly in the Shandong section of the Yellow River Basin face practical challenges such as service fragmentation, imbalanced resource allocation, insufficient collaboration among stakeholders, talent shortages, and lagging support mechanisms. Addressing regional urban-rural disparities and grounded in the theories of holistic governance and collaborative governance, an integrated service system should be established across four dimensions, including service providers, content, processes, and supporting infrastructure, with differentiated implementation pathways tailored to urban, county, and rural areas. Long-term support mechanisms must be developed at the levels of policy, talent, funding, and supervision to effectively address the issues of disconnection between medical care and elderly care, as well as separation between nursing and long-term care services. Future efforts should focus on further investigating the varying needs of elderly populations across different cities and with varying degrees of disability, integrating big data and artificial intelligence to create intelligent medical-nursing-care models, monitoring pilot program outcomes to optimize the system framework continuously, and ultimately establishing replicable and scalable regional wellness development models that will support high-quality health service delivery for older people in the Yellow River Basin.

Disclosure statement

The authors declare no conflict of interest.

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