Research on the Supply Diversification Mode and Path of Public Service for the Aged from the Perspective of Medical and Elderly Care Integration

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Abstract. In order to improve the supply and efficiency of the aged care resources, innovate programs and forms of the aged care services, and actively respond to China’s rising aging population. The paper, on the basis of synergetic management, explores the most optimized mode of collaborative supply and constructs its operation mechanism through research on integration of medical and aged care. Also, the paper offers improved path of providing health care and aged service by increasing overall supply, optimizing structure and raising supply efficiency.

The Problem

China is experiencing rapid population aging. By the end of 2018, the country’s population aged 60 and above has reached about 250 million, accounting for 17.9% of the total population, with 170 million aged above 65 that accounts for 11.9% of the whole. The proportion has increased for 21 consecutive years. As the number of disabled and partially disabled elderly is sharply increasing in population aging, so is their evidently growing demand for medical provision, life care and health nursing. But medical and aged care resources are limited, and two systems are separated, so it is far from meeting demands of the elderly. Under the circumstances, the integration of medical and aged care is an irresistible trend.

Since the policy was put forward, many scholars in China have conducted in-depth research on the specific mode of "medical and aged care services integration". For example, Guo Xiaomin (2017) thoroughly studies specific modes. Based on surveys, she categorizes modes as One-Way Embedded, Two-Way Embedded and Overall Embedded. Li Changyuan and Zhang Huipeng (2018) study the theoretical logic of "community + home", an integration mode existing in China's ethnic regions. They think the enabling factor is the biggest one influencing this mode. Some scholars have analyzed existing problems in the current policy implementation. For example, Xu Qian and Chang Xiuli (2018) believe that due to problems in institutions establishment, resource input, supervision and management mechanisms, it is still premature to implement the pension system under the integration mode. Chen Ning (2018) takes Liaoning Province as an example to study some major problems in the process of developing integration mode, revealing problems including the lack of professional skills of service staff, the low efficiency of resources integration and the lack of supervision. Zhang Ying and Liu Xiaomei (2019) believe that it is difficult to establish a stable and effective win-win mechanism between medical providers and nursing homes, which is the main obstacle to the popularization of the integration mode in China.

It can be seen that domestic scholars focus their research on mode types, specific forms and various problems faced by the integration mode, but lack systematic planning for the operable cooperative supply mode, which raises the necessity and research scope for this paper.

The Synergy Theory and Medical and Aged Care Integration

Synergy Theory was first proposed by the physicist Haken in the 1970s. It is believed that
synergy is the interaction between the various parts of the system, so that the whole system forms a new structure and features that do not exist at the micro-individual level. The theory and medical-aged care integration naturally have the junction in terms of ideas and resources integration.

First, Philosophy Integration

Medical-aged care integration is essentially the optimal allocation of resources. The collaborative management and the elderly care service under this mode have something in common in essence. Collaborative management seeks to solve social public problems, and the integration mode offers solution to problems facing aged care. Both of them involve public management. Guided by synergy theory, constructing aged care mode integrated with medical care which requires the participation of various parties, is an innovation of social pension system in future required by the time.

Second, Resource Integration

Collaborative management can be summarized as the most convenient, concise and efficient collaboration, rational integration of processes and resources, and creation of more social performance values. To promote medical-aged integration in all ways, not only government policy support and top-level planning is required, but also consideration to all levels of society should be given, such as the proportion of main aged-care institutions and medical care providers, social capital investment, social security system, the professional staff, the accountability system and evaluation mechanism, etc. All these are dilemmas and difficulties facing us.

Existing Modes

According to the research of scholars and the results of field research from Zhejiang Province, the main integration modes can be categorized as Hospitals with Aged Care Service, Nursing Homes with Health Care Service, Partnership between Medical and Aged Care Providers and Home Care.

Main Integration Modes for the Elderly Care

Hospitals with Aged Care Service. This mode means integration of relevant public medical resources as well as effective utilization of existing resources, so as to transform some medical institutions into one that provides both medical care and elderly care services. The mode is adopted in Zhejiang province is the Geriatrics Department set up by Ningbo Qianhu Hospital, which integrates the existing medical resources and old-age resources of the hospital.

Nursing Homes with Health Care Service. Some nursing homes that meet regulatory standards can integrate medical resources and carry out socialized operations, providing medical services as well as elderly care services. Such a mode is exemplified by Ningbo Guang’an Nursing Home, and Hangzhou Xinheyuan Nursing Home, etc. These aged care providers meeting regulatory requirements, attract funds to purchase specialized medical equipment, recruit professional medical staff, adjust the rules and regulations, and provide more professional medical services than general pension institutions.

Partnership between Medical and Aged Care Providers. The mode is realized by partnership between the medical institutions and aged care providers through signing cooperation agreements based on equality and reciprocity, achieving resource sharing for offering integrated aged care services. There is no dominant party in this mode which follows principles of voluntariness, equality and mutual benefit. When the elderly care institutions need medical services, the medical institutions offer their hands quickly until the hospitalized elderly returns to nursing homes. The medical complex established by Ningbo Qianhu Baiting Pension Investment Co., Ltd. and Ningbo Lihuili Hospital is a typical example.

Home Care. This mode includes health care providers at community level supplying on-site medical services for the elderly at home, and innovative family doctor providing customized service
for the elderly. This mode exists in many communities such as the pilot unit Community Care Service Center in Pinghu, Zhejiang province.

Comparative Analysis of Above Modes

At present, the four main modes have their own characteristics, as follows:

Table 1. Comparison of the Main Service Modes of Medical and Elderly Care Integration.

<table>
<thead>
<tr>
<th>Types</th>
<th>Provider</th>
<th>Fundraising</th>
<th>Operation</th>
<th>Service</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals</td>
<td>Public hospital</td>
<td>Fiscal Input</td>
<td>Set up nursing</td>
<td>Public resources</td>
<td>Adequate</td>
<td>Quality problem</td>
</tr>
<tr>
<td>Nursing Homes</td>
<td>Nursing Homes</td>
<td>Private Fund</td>
<td>Attract medical resources</td>
<td>Nursing with medical care</td>
<td>Market oriented</td>
<td>Limited resources</td>
</tr>
<tr>
<td>Partnership</td>
<td>Hospital and Nursing Homes</td>
<td>Labor division</td>
<td>Professional service</td>
<td>Coordinating and sharing</td>
<td>Inefficiency</td>
<td>Underserved</td>
</tr>
<tr>
<td>Home Care</td>
<td>Community Doctors</td>
<td>Market and government</td>
<td>Select suppliers</td>
<td>Customize service</td>
<td>Human</td>
<td>Poor reliability</td>
</tr>
</tbody>
</table>

During the implementation, these modes encounter problems such as unclear service sequences, barriers among service supply sectors and the lack of unified planning for the payment guarantee system. To break these bottlenecks, it is necessary to support, guide and supervise the reform of medical-aged care integration with policy innovation.

The Operation Mechanism of Diversified Collaborative Supply Mode of Medical-Aged Care Integration

The pension service under such integration mode is a collaborative management mode across departments, regions, and organizations and individuals. This integration mode is based on the coordinated cooperation of all levels of the whole society, comprehensively utilizing resources provided by the government, enterprises, society and the local, uniting all parties to solve problems faced by pension system. The purpose is to integrate functions of all parties which are all assigned through the connectivity and coordination, to seek their common goal.

According to Samuelson's theory, the Pareto condition of the provision of aged care services is that the sum of the marginal replacement rates of all consumers for all consumer products is equal to the marginal rate of conversion of the provision of aged care services. Therefore, in order to achieve the most optimized supply of aged care services, it is necessary to fully display the public preference of the aged care services on types, totals and distribution. In the dynamical matching between the supply and demand of the aged care service, the influencing factors cooperate effectively through competition, cooperation and checks and balances in the collaborative supply operation mechanism, to judge whether the total supply $Y$, structure $u$ and efficiency $\Phi$ are improved.

The most optimized supply plan is described as:

$$A^* = \max \{ (Y_1^*, u_1^*, \phi_1^*), (Y_2^*, u_2^*, \phi_2^*), \ldots, (Y_n^*, u_n^*, \phi_n^*) \}$$

If adding weights to above three algebras $\lambda_y$, $\lambda_u$, $\lambda_\phi$, plus $\lambda_y + \lambda_u + \lambda_\phi = 1$.

The most optimized supply plan is:

$$A^* = (Y_1^*, u_1^*, \phi_1^*)$$

and:

$$\left( \lambda_y Y_1^* + \lambda_u u_1^* + \lambda_\phi \phi_1^* \right) = \max \left\{ \left( \lambda_y Y_1^* + \lambda_u u_1^* + \lambda_\phi \phi_1^* \right), \left( \lambda_y Y_2^* + \lambda_u u_2^* + \lambda_\phi \phi_2^* \right), \ldots, \left( \lambda_y Y_n^* + \lambda_u u_n^* + \lambda_\phi \phi_n^* \right) \right\}$$
The diversified collaborative supply operation mechanism is shown in Figure 1.

Figure 1. Collaborative Operation Mechanism between Diversified Supply Entities of Medical-Aged Care Service Integration.

**Path to Build a Coordinated Supply Mechanism for Rural Home Care Services**

**Cultivating Diversified Providers of Medical-aged Care Integration Services, and Improving the Diversified Investment Mechanism**

By promoting the integration of urban and rural residents' pension insurance system and long-term care insurance system, we will improve the diversified and long-term investment mechanism. The government mainly offers financial support and policy guidance to realize targeted service for the disabled elderly who cannot live without government guarantees. The enterprise mainly undertakes to provide diversified and differentiated aged care products for the elderly and develop aged care services. Non-profit organizations such as charitable and voluntary organizations are useful supplements. The community mainly provides a good service platform for social forces.

**The Government Desperately Needs to Establish a Special Fiscal Budget System, Expand Government Funding, and Form Diversified Channels for Fund Raising**

The government should provide active financial support for the integration of medical-aged care services. Through land supply, financial aid and tax policy, the government explores to establish multi-level urban and rural endowment system that is organically linked to the basic medical insurance system, social assistance system, and long-term care insurance system. The government should promote the management mode of the medical-aged care service center and gradually form the government-led diversified-participation fund-raising mode.

**Setting Up an Old-age Service Resource and Information Sharing Platform to Improve the Sharing Platform to Improve the Sharing Mechanism for Collection and Application of Health Information of the Elderly**

By building a comprehensive information platform with complete functions, we will improve the platform for sharing provincial, city and county pension information, and integrate the big data concept, cloud computing technology and the aged care service. In the era of personalized, customized and experiential consumption led by the Internet, we will provide targeted supply through technologies such as “Internet + health care”, create a new mode of intelligent aged care services, give full play to the benefits of the network and promote integrated development of the traditional aged care service and newly emerging industries.
Improving the Government's Mechanism for Purchasing Home-based Care Services

The government purchases service is an important way for non-profit organizations to participate in the aged care service. The core is to introduce a competitive mechanism to achieve the Pareto optimality of quasi-public goods. On the basis of separation of service provision from production, the government assumes the role as organizer, manager, guider and supervisor of the aged care service, and abides by the boundaries of power and responsibility. As an organizer and manager, the government should focus on the synergistic governance function of diversified supply entities.

Improving the Government's Supervision and Evaluation Mechanism for the Purchase of the Aged Care Services, and Promoting the Improvement of the Level and Capability of the Supply of Medical-aged Care Services

We should fully inspire the enthusiasm of medical institutions and volunteers, rely on the nursing professional institutions to establish an aged care service training base, and introduce professional service organizations to provide elderly people with long-term care, psychological counseling, legal rights protection and other aged care services to protect the elderly basic rights and interests. We will also promote the establishment of a standardized system for professional services such as life care, rehabilitation physiotherapy, and spiritual comfort.

In summary, in the context of medical-aged care services integration policy, from the perspective of collaborative management, the paper explores the diversified supply mode of medical care and public pension services integration and its operational mechanism, optimizes supply structure, and improves supply efficiency to respond to population aging in China.

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