Research on Informatization Construction of Public Health System in the Process of Urbanization

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Abstract. The public health system is an important part of Chinese medical and health system. Today with the rapid development of urbanization and information technology, a series of defects such as delay, distemperedness of responding mechanism in emergency, ineffectiveness in organization and command, and blocked information channels have been constantly improved and upgraded. The most important problem for informatization construction of the urbanization process is to solve the residents' urbanization problem, and the public health informatization construction will be one of the essential ways to solve this problem.

1. Introduction

According to the current situation of the informatization construction of public health system in China, it is clear that the informatization construction of public health system in urbanization process is necessary. The informatization construction not only helps to achieve health information sharing among citizens and realize medical consultation over distance, but also be beneficial to the promote of the service level of the public health system. Therefore, strengthening the informatization construction of the public health system is an important method to solve the problems of residents’ urbanization

2. Current Situation of Informatization Development of Public Health System in the Process of Urbanization

The 18th National Congress of the Communist Party of China mentioned that industrialization, informatization, urbanization and agricultural modernization should be developed at the same time. And the key steps are improving the structure of demand and industrial structure, promoting the regional coordinated development and urbanization, focusing on solving major structural problems which restraint the sustainable and healthy development of the economy, in order to enhance the strategic adjustment of economic structure. Accelerating the pace of urbanization in an all-round way has become one of the key links in the strategic adjustment of economic structure, which is also an important foundation for building a well-off society in all-round way. Informatization construction plays an essential role in the process of urbanization. At present the construction of new countryside and villages has made significant progress in achieving Chinese development goals. The population of urbanization significantly increased. To improve the livelihood of the people and develop productivity as well as ensure everyone’s right of social security and warfare system, the construction of public health is the main content, considering the characteristics of the public health system and the actual condition of urbanization process, this paper studies informatization construction of the public health system on the basis of the existing medical and health informatization construction.

According to the international criteria of informatization level of medical system, the construction of medical informatization is divided into three levels: hospital information management system, clinical information management system and public health informatization. The first level of hospital information management system is at the stage of extensive application and continuous upgrading.
The application and acceptance rate of clinical information management system is relatively low, while the third level of public health informatization construction is now moving into top gear [1]. There are successful examples of the information construction of public health system in foreign countries, but it is still in the early stage in China. The SARS (severe acute pneumonia outbreak disaster) in 2003 revealed the serious problems of lagging of the development of public health in China and the distemperedness of responding mechanism to public health emergencies. After the disaster, people thought more about how to maintain orderly management under normal conditions, cope with public health emergencies with calm and ensure people's health with high efficiency. The state has paid unprecedented attention to the research, establishment and improvement of China's public health system. For many years, China's health administrative departments have managed the medical institutions in the traditional way, lacking computer network as a technical platform, being unable to obtain data information from all aspects on time and, making it more difficult to conduct data processing and analyzing. Because public health information cannot be gathered quickly, information collection and analysis is delayed, warning system failed to work, the regional health resources are allocated unreasonably, the regional medical resources needed and its existing health resources cannot be measured and compared accurately, the resources needed cannot be equipped with in time and there is no effective control of excess medical resources, the reconstruction of medical institutions becomes blind waste. Administrative departments are unable to provide dynamic supervision and comparison with regard to the operating conditions and medical quality condition of the medical institutions under their jurisdiction. The informatization construction of medical institutions cannot be unified and standardized, and data sharing cannot be conducted.

3. The Main Problems Existing in the Informatization Construction of Public Health System in the Process of Urbanization

3.1 Problems of Management Methods in the Process of Informatization Construction of Public Health System

There are contradictions between the management ways of the administrative departments of medical institutions and the guiding ideology and principles of national public health informatization construction, which leads to the contradiction between the vertical construction of national and local public health information system and the horizontal construction of regional public health information system.

3.2 Problem of Integration of Public Health System and Medical Service System

In accordance with the general policy of the establishment of national public health information system which narrated as "vertical to the bottom and transverse to the edge", there is a split in the structure construction of the state and regional systems. The integration problem between public health system and medical service system is generated. Errors like data being repeated reported and causing data inconsistency happened frequently.

3.3 The Contradiction Between the Standard Construction of Public Health Information System and Data Sharing

Health information standardization, which guarantees the data accuracy of the medical and health information system, is the primary content of the construction of public health information system. For a long time, many important criteria for decision-making at all levels of governments in our country have been provided by the many independent information systems in the public health system, which usually operate in different business areas. Due to the lack of standardization foundation in the process of information system construction, it is hard for different systems to share and exchange data and administrative departments find difficult to integrate the resources from different regions and different departments, thus resulted in the huge waste of resources and undermining the function of the public health system. At the same time, it brings great difficulties to the data collection of public health information system. Therefore, the standardization of information
should be considered at the beginning of the construction of public medical and health information system [2].

3.4 Shortage of Labor, Wealth, Material and Power

Sustaining and effective capital investment is an important and decisive element of the effectiveness of public health information system construction. Over the years, although China's investment in public health construction is increasing year by year, the investment in public health informatization construction is relatively insufficient. In terms of talents and technology, the informatization construction of public health system needs a large number of talents who have rich professional knowledge on both public health and information technology development. Such interdisciplinary talents are in great shortage at present.

3.5 Gaps in Public Health Information Network Coverage

The public health information network that covers provinces, cities, counties and national institutions of disease prevention and control does not cover medical institutions of county level and above, community health service centers, hospitals of rural towns and villages and private clinics. They are the reporting unit of epidemics and public health emergencies, but they could not report straightly online.

3.6 Information System Construction of Health Law Enforcement and Supervision Lags Behind

With the improvement of people's living standards and the rapid development of information technology, the informatization development of public health system needs health supervision information system adapted to health law enforcement and supervision. However, at present, only some regions carry out the informatization on health law enforcement and supervision, and there is no complete system formed in China.


4.1 Standard Construction of Public Health Informatization

According to the standard of Health information exchange protocol at level 7 (Health Level Seven, HL7, a fully informatized public Health system is built. The system is used on all aspects for daily Health statistics data collection, summary and analysis, the report of outbreaks or epidemics, vaccination management, the report of public laboratory results, the management of medical insurance people, even the management of electronic Health records (EHR) and so on[3]. It involves multiple departments, including patients, hospitals, government health departments, centers for disease prevention and control, public laboratories, and even legal and social security departments. This requires the entire public health system, as well as the related medical information system, laboratory information system and other systems to have the same or communicative data exchange format.

4.2 Increase the Attention and Financial Support of Government Authorities

The informatization construction of public health system is a project for public welfare. The construction process requires the cooperation of multiple departments and fields, a large amount of organization and coordination work, and the mobilization of various forces. It is a project with large investment and long investment period. Therefore, the government should take the lead to increase financial support for the informatization construction of public health system. The investment in the informatization construction of the public health system is not one time, the maintenance cost for the operation of the system needs to be put in annually. The investment channels should be determined
to ensure the source of funds, so that the established informatized public health system can be operated for a long time [4].

4.3 Strengthen the Cultivation of Inter-Disciplinary Talents and Health Staff

The informatization construction of public health system needs a large number of talents who have rich public health professional knowledge and are familiar with the development of information technology. In order to make the informationized public health system work fully, the cultivation of such versatile talents should be constantly strengthened. When constructing the informationized public health system, we should not only consider the quality improvement of the personnel, but also pay attention to the introduction of high-quality health information talents.

5. Conclusions

To sum up, strengthening the informatization construction of China's public health system requires all provinces and regions to study, establish and improve the emergency corresponding mechanism, disease prevention and control system, medical treatment system and health law enforcement and supervision system. In order to improve the level of public health service and the ability to cope with health event, ensure public health security, the provincial governments should make special health informatization development plan. With the guidance of the plan, regional and city governments should make relative developing plans of health informatization development in the rapid process of urbanization. The planning should be around the guiding ideology of "overall planning, the country's leadership, unified standards, joint construction and resource sharing," and the construction of an information-based public health system should adhere to the guiding principle of "unified planning, step by step implement, key elements highlighting, vertical and horizontal networking, standardization, resources sharing, early warning and forecasting, multiple investment, hierarchical responsibility, clear functions and hierarchical equipment" [5].

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References