

Research on the status quo of health information management under the background of big data era

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Abstract: With the advent of the era of big data, information management technology has been widely used in all walks of life, especially in the field of health plays an important role. The rapid development of big data makes health information management usher in new opportunities for development. Its innovation in health information collection, data storage and processing, data analysis and application has achieved good results, but there are still problems such as incomplete health information collection, low degree of data sharing, data privacy and security disclosure, and lack of related talents. Therefore, more efforts should be made in these aspects in the future, so as to ensure that in the context of big data, the innovation and application of health information management can improve the efficiency and quality of medical services, and promote the realization of personalized medicine and precise health management.

Key words: Big data; Health information management; Medical service; Advice and outlook

1. Introduction

Health information management is gradually formed under the background of the development of medical informatization and information technology. In a broad sense, it refers to the management of health information resources, not only refers to health data, but also includes a variety of health information systems and platforms, and even includes health information producers and managers, equipment and facilities and funds. With the change of health concepts and the development of big data technologies such as the Internet of Things, cloud computing and artificial intelligence, health information management plays an important role and potential in promoting people's health and improving the quality and efficiency of medical services. This paper aims to discuss the status quo of health information management under the background of big data era, so as to better understand and grasp the development trend and application needs of this field, provide more scientific and reasonable reference and support for health management and medical decision-making, and promote the further development and application of health information management.

2. The definition and characteristics of big data

Big data refers to the collection of data whose content cannot be captured, managed and processed by conventional software tools within a certain period of time. Big data usually has the following four characteristics: First, the volume; Second, Variety; The third is Velocity; The fourth is Value, which is embodied in large amount of data, various types of data, fast data processing speed and low density of data value.

For the large amount of data involved in the health field, including patients' personal information, medical records, medical images, etc., and these data are diverse, in addition to traditional structured data, it also includes unstructured text, image, video and other data forms. Big data processing technology can effectively integrate and manage these huge data sets. Extract useful knowledge and information from the data. Moreover, big data technology processes information quickly and can provide feedback and results in a timely manner, providing a basis for medical decisions and treatment plans. In addition, the health data system is huge and the value density is low. Useful information can be obtained through data analysis and mining to provide new treatment methods and preventive measures for patients. At the same time, it can also help hospitals and medical institutions to rationally allocate and utilize resources and improve the utilization efficiency of medical resources. To sum up, the application of big data can promote the development of health information management and provide support and guidance for decision-making and treatment in the medical field.

3. The status quo of health information management in the era of big data

1. Imperfect infrastructure construction and low utilization rate

In the era of big data, health information management is mostly realized by health information management system and software. Collecting, storing and managing personal health data with the help of health information management system is helpful to improve the efficiency and quality of medical services. However, at present, some basic hospitals have insufficient investment in information infrastructure, lack of necessary hardware equipment or network support, which makes registration, charging, taking medicine and so on spend a lot of time, reduce patients' satisfaction with the medical environment, and is not conducive to the establishment of harmonious doctor-patient relationship. However, for hospitals or health-related enterprises that have a relatively sound health information management system, due to the lack of understanding and use of the system, a large number of copies, redundant information or blanks of health information are obtained, thus unable to collect the complete health information of patients, so it is difficult to comprehensively monitor and accurately assess the physical condition of patients. Hindering the further implementation of health information management.

2. The integration degree of information resources is not high, and the sharing degree is low

With the development of science and technology and the popularization of the Internet, people's health information continues to increase, including personal medical records, living habits and so on. The data is mainly stored in local medical institutions, health

management departments and health-related technology companies. However, due to the lack of connectivity of health data among various regions and institutions, and the incomplete interoperability of various data between different platform systems, there is a “siloed phenomenon” of data. First, the data distribution is not centralized, limiting the sharing of data. Various medical institutions, government departments and related health service companies enjoy their own health data and want to maintain ownership and control over it. Within hospitals alone, there are multiple management systems, such as Hospital Information System (HIS) and laboratory Information System (LIS), which are costly and difficult to access information between systems. Second, the data standard and information exchange mechanism are not uniform, which hinders the sharing of information. Health information usually comes from different data sources, such as hospitals, families, communities, etc. In the era of big data, the collection of health data is no longer constrained by time and space, and health data can also be obtained through mobile apps, online diagnosis, telemedicine and other network technologies. There are different standards and formats among the acquired health data, which hinders the effective integration and communication of health information. Third, national and regional laws and regulations limit the sharing of health data. In the era of big data, the rapid development of information has made personal privacy and data protection an unavoidable and important issue. The sharing of personal health information needs to comply with the requirements of relevant laws and regulations, which limits the pace of information sharing. These phenomena make the sharing of health information a difficult problem.

3. Data privacy and security issues

With the development of medical and information technology, more and more personal health information is recorded, stored and shared to promote the personalization and optimization of medical services. However, the process of health information management is also facing increasingly serious health data privacy disclosure and security threats.

First of all, different from data in other fields, health information involves personal privacy, including medical records, diagnosis results, medication records, genomic information, etc. This information is private and sensitive to the individual. Leaking or misusing this health data can lead to serious consequences such as identity theft, misuse of personal health information, insurance fraud, and more. Secondly, in the digital medical environment, the storage and transmission of health data is at risk of hacking, data leakage and tampering. If such health data is accessed or tampered with by unauthorized persons, it will have a serious impact on an individual's health diagnosis, treatment and medical decision-making. Finally, health data breaches can also lead to reputational damage to medical institutions and health service-related companies, and negatively impact the credibility of the entire healthcare system.

4. Lack of relevant talent

In the era of big data, health information management has occupied a very core position in the field of health. It involves the collection, collation, storage and analysis of a large amount of health data, which plays an important role in promoting the sustainable development of the health field and improving the quality of medical services. However, at present, there is a talent shortage in the field of health information management in our country. First of all, due to the rapid update of technology and knowledge in the field of health information management, and the continuous emergence of new technologies such as medical information system and electronic medical records, there is a certain gap between the talents cultivated by schools and the actual demand. Secondly, health information management needs interdisciplinary comprehensive ability, which involves the knowledge in many fields such as medicine, information technology, laws and regulations, and requires relatively high quality of talents, resulting in the shortage of talents. The above reasons make the talent gap in the field of health information management relatively large at the present stage, which restricts the development and application of health information management.

4. Suggestions to improve the application level of health information management

1. Increase infrastructure construction

Establish high-speed, stable and secure network infrastructure. High-speed network infrastructure can quickly and reliably transmit patient information, save patient visit time, help medical team make diagnosis and treatment plan faster, and improve medical efficiency and patient satisfaction. The medical information system shall be introduced and improved to realize the digital management and interconnection of medical data. The medical information system can store patient cases, laboratory results, imaging data and other information in electronic archives to achieve centralized information management and rapid retrieval, and improve the efficiency and accuracy of medical decision-making. In addition, telemedicine technology can also be introduced, including remote consultation, remote monitoring, remote surgery, etc., which can not only provide patients with more comprehensive and professional medical services, but also provide patients with more convenient health management methods, improve the utilization efficiency of medical resources and enhance the medical experience of patients.

2. Promote the construction of health information standardization system

The standardization of health information is to realize the purpose of sharing health information through the consistent expression and unambiguous understanding of information. The construction of health information standardization system should include the formulation of unified health information standard, the promotion of the application of health information standard, and the establishment of the supervision and evaluation mechanism of health information standardization. Formulate standards applicable to health information management, including data standards, information exchange standards, terminology standards, etc., so that the data between different institutions and systems can be exchanged and shared. Promote the application of health information standards through training, publicity and other means, and help medical institutions and health-related institutions to establish scientific and systematic health information management and

dissemination mechanisms. In addition, the establishment of a supervision and evaluation mechanism for health information standardization can also find and correct problems in the implementation of the standards in a timely manner, ensure the accuracy and reliability of health information, and promote the process of health information standardization.

3. Strengthen data privacy and security protection

The rapid development of big data has had a serious impact on the privacy and security of health data. In order to protect personal privacy and prevent data leakage and abuse, the following measures can be taken: (1) Formulate stricter and clearer laws and regulations, clarify the rules on the use and protection of personal health data, and strengthen penalties for violations of relevant laws and regulations. (2) Use data anonymization and desensitization technologies to process data, reduce the risk of being identified, and protect personal privacy and sensitive information. (3) Use data security technologies such as data encryption, identity authentication, and control of access rights to prevent data leakage and unauthorized access. (4) Strengthen awareness education on privacy protection, raise public awareness of personal health data protection, and help individuals better protect their health data.

4. Strengthen personnel training

With the Internet of Things, cloud computing and other big data technology into the field of health, the lack of health information management related talents is increasingly serious, which is also an important factor restricting the further development of health information management. First of all, we should increase investment and support for the cultivation of talents in the field of health information management, encourage more schools and institutions to set up related courses and majors, and increase the supply of talents. In the process of talent cultivation, cooperation and exchanges between health information management and medicine, information technology, law and other fields should be strengthened to cultivate interdisciplinary health information management talents. Secondly, a reasonable salary and incentive mechanism should be established to attract more talents to engage in health information management. Finally, encourage health information management talents to participate in scientific research and innovation activities, ensure continuous learning and the ability to learn new knowledge, and promote the development and innovation in the field of health information management.

5. Conclusion

The advent of the era of big data has brought great development opportunities for health information management. Big data technology is a key technical means in the health information management system, which has a significant impact on the collection and storage of health information, data analysis and mining, and the allocation and utilization of medical resources. However, we need to solve the problems of low data sharing, data privacy and security, and data standardization, so as to promote the sustainable development of health information management.

References:

- [1] Guoyu Li. Research on Privacy in the Era of Big Data [D]. Fudan University,2014.
- [2] Meixia Tian,Wei Du. Research on status, trend and strategy of health management informatization in the era of big data [J]. Jiangsu Science and Technology Information,2018,35(07):20-23.
- [3] Runtang Meng,Yi Luo,Chuanhua Yu etal. Application and challenge of health big data in public health field [J]. Chin J General Medicine,2015,18(35):4388-4392. (in Chinese)