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Research Article

National Sports AI Health Management Service System Based on Edge Computing

Huali Yang[1] **and Xiaowei Han**[2]

[1]*School of Physical Education, Hebei Normal University for Nationalities, Chengde, 067000 Hebei, China*
[2]*School of Basic Medicine, Weifang Medical University, Weifang, 261053 Shandong, China*

Correspondence should be addressed to Xiaowei Han; hanxw@wfmc.edu.cn

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With the development of the economy, people's living standards continue to improve, and the management awareness of their own health and safety has gradually increased. The human body usually has a long process of transition from being healthy to the appearance of disease, and people's lifestyle and daily behavior will affect the health of the body to a large extent. This paper studies the national sports AI health management service system based on edge computing. This paper organically combines edge computing, artificial intelligence, and health management service systems. Through detection devices with smart sensors and smart health systems, a comprehensive health management service platform for the masses is constructed to promote the development of sports health management services. Upgrade and transform to make it more in line with the modern intelligent environment. The advancement of modern technology has gradually transformed my country's traditional health record management service to an intelligent electronic health record management system. From the experimental data, it can be seen that the filing rate and pass rate of residents' electronic files have reached 88.275% and 87.435%, but the utilization rate of health files is only 31.685%. The establishment of a supporting health management service system is precisely to effectively increase the utilization rate of health files, so that users can truly enjoy intelligent, professional, and real-time health services.

1. Introduction

In the context of modern social culture and economic development, technologies such as the Internet, cloud platforms, fog computing, big data, and artificial intelligence. continue to impact and influence various industries. The health industry is also being reintroduced in this era. With the increase of people's health awareness, the cognitive demand for health and consumer demand is constantly evolving and growing. Under this general background, health management, as a new health service model, has received more and more attention from people. However, there are still many difficulties in development. If we continue to follow the current service models, it is difficult to make health management implementation and promotion, whether it is the lack of industry norms and technical standards; the prominent contradiction between human resource supply and demand; the lagging of information standardization and network construction; or the lack of commercial sustainability of existing management service organizations, more research, and practice to promote the solution. As an important part of health management, community health service is a primary health service system that takes human health as the center, family as the unit, and community as the service scope. It has certain research value to allow communities, families, and individuals to better enjoy health services and conduct health management more scientifically.

Research on health management service system abroad has been going on for many years, and many results have been obtained. Iamsumang conducted research on the application of dynamic hybrid Bayesian network in online system health management. In the article, he introduced a new modeling method and analyzed the application examples of the algorithm in health monitoring and learning in online system health management. By modeling theoretical or empirical degradation models with continuous variables, a hybrid dynamic Bayesian network (DBN) is introduced to represent complex engineering systems with potentially faulty physics. This method can be flexibly and intuitively extended from small localization functions to large complex dynamic systems. If more data analysis can be conducted in the research, the accuracy of computational reasoning can be better improved [1]. Thorat has conducted research on patient health management systems based on wireless sensor networks. He believes that the scattered relationship between various units in the health care field has affected the development of health management systems. If close cooperation in the medical field can be achieved based on the Internet of Things and wireless sensors, the current deficiencies in health management services can be resolved to a large extent. From the system simulation experiment, the health management system he established still has room for optimization in database selection [2].

In recent years, China has actively advocated the organic integration of advanced science and technology with sports health management and other fields. Pan has conducted research on the application of big data in medical and health management and services. In his research, he discussed the background of medical information and summarized the current situation, market analysis, and construction process of medical information health management. The big data application of medical health management and services in daily life include clinical decision-making, remote treatment, and personalized medicine. After analyzing the current challenges of medical big data, he put forward suggestions to improve the status quo. From a practical point of view, these suggestions can indeed help to improve medical and health management services. If the advanced edge computing and artificial intelligence in Internet technology can be further combined, the intelligence and scientificity of the service system can be further improved [3].

Based on edge computing and artificial intelligence, this article has launched an in-depth study on the health management service system. The research is mainly carried out from the following aspects: this article describes the technologies and methods involved in the health management service system, including edge computing, artificial intelligence, query optimization algorithms for distributed heterogeneous databases, and decision-making in the data transmission scheduling method. This article introduces the structural framework and database design of the health management service system, and the experimental data confirms the superiority of the system in increasing the utilization rate of user health files and improving the user's health management service experience.

2. Technology Used in the Health Management Service System Based on Edge Computing

2.1. Edge Computing. Edge computing refers to the use of an open platform that integrates network, computing, storage, and application core capabilities on the side close to the source of things or data and provides the nearest services nearby. Its applications are initiated on the edge side to generate faster network service responses and meet the industry's basic needs in real-time business, application intelligence, security, and privacy protection [4]. Compared with cloud computing, edge computing can achieve user response faster and improve processing efficiency. At present, relevant research on edge computing technology at home and abroad is mainly aimed at the connection between mobile devices and cloud platforms, which mainly depends on the rapid development of mobile devices in contemporary society and its important position in modern society [5]. In order to effectively solve the high network load, high bandwidth, low latency, and other requirements brought about by the rapid development of the mobile Internet and the Internet of Things, the concept of mobile edge computing (MEC) was proposed and has received extensive attention from academia and industry [6].

As a hot technology, edge computing has been widely used in the business field. Among them, Internet companies hope to extend their existing cloud service capabilities to the edge network by taking advantage of their own service industry-related advantages [7]. The main difficulty in the current system lies in the integration of heterogeneous data and the collaboration between various platforms. As the data belongs to different subsystems, a unified data model needs to be established at the edge nodes [8]. Although the various attributes of edge devices continue to improve, in order to make the overall performance more efficient, it is necessary to strategically migrate cloud services under the premise of considering the operating capabilities of edge devices and future scalability [9].

2.2. Artificial Intelligence-Based Health Management System. Artificial intelligence is a branch of computer science, and its essence lies in the simulation and expansion of human intelligence through machines [10]. Judging from the current health service provision, the development of artificial intelligence mobile communication technology can provide a more convenient way to meet the diverse health needs of residents [11]. When analyzing the needs of the health management service system, this article believes that the system should have the functions of collecting user health information, storing and transmitting user health data, and analyzing and counting user health data. Therefore, in the system design, this paper combines the edge computing concept to divide the system into five levels [12]. Figure 1 shows the structural design of the health management service system.

As can be seen from Figure 1, the system includes user layer, business layer, service layer, data layer, and hardware facility layer. A complete structural framework design can improve the scientific nature of system intelligent services while ensuring data security [13]. The user layer is oriented to the end users of the system, including ordinary residents, medical personnel, and medical institutions. Business layer involves data collection, storage, query, and statistics. The application service layer is mainly the related technology used when the system realizes the business function. The data support layer contains system data and computing framework based on distributed computing.

2.3. Query Optimization Algorithm for the Distributed Heterogeneous Database. The distributed heterogeneous

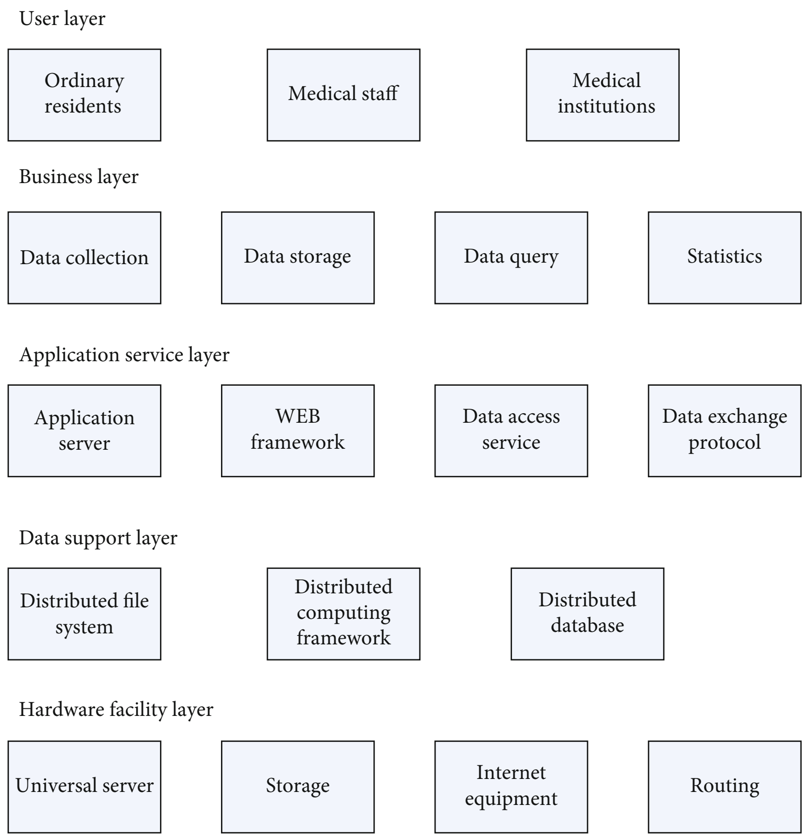


Figure 1: Structure design of the health management service system.

database system is a kind of database system based on computer network, physically dispersed and logically unified, with site autonomy and different data models [14]. The most basic operation in a database is query operation, and query cost is an important criterion for measuring a database system. Query operations often involve multiple tables. For distributed heterogeneous databases, these tables may be stored on different sites; so, the choice of join operation is very important [15]. In distributed heterogeneous databases, there are two goals for query optimization: one is to minimize the total cost of the query; the other is to minimize the local response time of the query. The total cost of distributed query is different from that of centralized query. In addition to the total CPU cost and the total I/O cost of the query, the cost of data communication between sites is also added.

Assuming that the relationship R, S is located at site 1 and site 2, A is an attribute of R, and its corresponding attribute in S is B. The connection operation on it satisfies the formula:

$$R\infty A = BS = (R \propto A = \mathrm{BS})\infty A = BS, \tag{1}$$

$$T = C0 + C1 \times X. \tag{2}$$

Through the semiconnection step, the communication cost required to complete the entire board connection operation can be calculated as

$$T = 2C0 + C1 \times (\mathrm{Size}(B)) \times \mathrm{Val}(B[S]) + \mathrm{Size}(R) \times \mathrm{Card}(R)'\Big). \tag{3}$$

The SDD-1 algorithm is based on the semiconnected algorithm, which is a multirelational semiconnected algorithm [16]. Assuming that R and S are two relations to be semiconnected, the semiconnected selection factor, semiconnected cost, and semiconnected revenue of the algorithm satisfy the formula

$$SFsj(R \propto \mathrm{S}) = \mathrm{card}\ (\pi a(S))/\mathrm{card}\ (S), \tag{4}$$

$$\mathrm{cost}(R \propto \mathrm{S}) = \mathrm{size}(\pi a(S)) = \mathrm{card}\ (\pi a(S)) \times \mathrm{length}(a), \tag{5}$$

$$\mathrm{benefit}(R \propto S) = (1 - SFsj(R \propto S))/\mathrm{size}(R). \tag{6}$$

At the same time, the effective semijoin and the most beneficial semijoin satisfy

$$\mathrm{benefit}(R \propto S) > \mathrm{cost}(R \propto S). \tag{7}$$

The basic idea of the SDD-1 algorithm is to use the greedy algorithm to repeatedly search for the most beneficial semijoins until the query is completed and then transmit all the data to the site with the largest amount of data for final assembly [17]. The basic steps are as follows: (1) generate a set of beneficial semiconnections from all semiconnections of relations. (2) Find the most beneficial semiconnection from the set of beneficial semiconnections, add it to the execution strategy, delete it from the set of beneficial semiconnections, and modify all affected statistical values. (3) Repeat the first two steps until all beneficial semiconnections have been added to the execution strategy. (4) Choose the site with the largest amount of data as the assembly site and execute the semijoin operation in the order in the execution strategy [18].

When performing multijoin query optimization, in order to measure the degree of similarity between two antibodies, the concept of similarity can be introduced [19]. Assume that i, j are two antibodies, and $i[k], j[k]$, respectively, express the genes of their kth locus. Then, the similarity formula design meets

$$S(i, j) = \sum_{k=1}^{k=2N-1} \text{Round}\left(\frac{(2N-1-K)(N-1)}{2N-1}\right). \quad (8)$$

The antibody concentration is a measure of the proportion of antibodies similar to the antibody in the entire immune system [20]. It is known that X is an antibody, and $C(k)$ is the size of the intermediate relationship. Then, in a nonempty immune system composed of M antibodies, the antibody concentration and fitness function can be set as

$$\rho(i) = \sum_{j=1}^{j=M} S(i, j), \quad (9)$$

$$F(x) = \sum_{K=1}^{K=N-1} C(k). \quad (10)$$

2.4. Decision Method in Data Transmission Scheduling. In intelligent systems based on edge computing, data transmission scheduling is a very important research content. Cross-layer data transmission scheduling issues involve buffer storage, modulation methods, available channels, and so on. The system state will shift to different states with different transmission strategies [21].

The dynamic programming method is a method of solving the decision-making process in operations research. It is mainly aimed at multistage decision-making problems and transforms multistage decision-making problems into single-stage decision-making. In order to obtain the optimal strategy with long-term benefits, it is necessary to consider the immediate benefits in the current state and the average benefit value of each step [22]. The edge device receives the data transmitted by the sensor, and after data preprocessing, it needs to send the data to the cloud computing center. The following formula is used to express the average benefit of each behavior in the decision-making process:

$$\rho\pi(s0) = \lim_{n\to\infty} \frac{1}{n} E\pi\left[\sum_{i=0}^{n-1} R(Si, \pi(Si))\right], \quad (11)$$

Where $\rho\pi(s0)$ is the average benefit obtained when executing the strategy π in the initial state. Considering the optimal strategy under future benefits, the equation can be expressed as

$$\rho^* + h^*(s) = \max_{a\in A}\left[R(s, a) + \sum_{s}{}^{\prime=1} |s|ps\right]. \quad (12)$$

When using the strategy iteration method to solve the MDP problem, starting from a strategy and continuously improving until there is no change, the number of linear equations and the number of states in the solution process are equal. First, evaluate the strategy, choose a strategy rule, and solve the equation system containing l linear equations in the same form as formula (13).

$$r(i, a(i)) + \beta\sum_{j\in S} P(j|i, a(i))V(j) = V(i), \quad (13)$$

where $\beta(\in[0, 1))$ is the discount factor. When performing strategy improvement operations, a new decision function can be obtained through calculation to satisfy

$$\max_{a\in A(i)} = r(i, g(i)) + \beta\sum_{j\in S} P(j|i, g(i)). \quad (14)$$

When the rule is terminated, if the above formula is true for all states $i \in S$, then the operation will be terminated for a long time; otherwise, it is necessary to replace f with g and jump to the first step to perform the operation again. When the strategy iteration method solves the MDP problem, it is necessary to know all the state information of the system, and there will be a linear equation system for each state; so, it is more difficult to solve the calculation. Therefore, if the state space of the system is not very large, it can be solved directly by this method [23]. When the system scale is large, it is more troublesome to calculate.

The Q learning algorithm is a kind of reinforcement learning method, which has a relatively wide range of references in artificial intelligence. The idea of reinforcement learning is the constant interaction between the agent and the environment, seeking to maximize benefits in the decision-making process]. Set $Qi(si, ai)$ to represent the maximum discount cumulative benefit value obtained when selecting the strategy from the initial state, then there is

$$Qi(si, ai) = r(si, ai) + \gamma V_i^*(si, ai), \quad (15)$$

$$Qi(si, ai) \leftarrow Q(si, ai) + \partial[ri = 1 + \gamma Q(si+1, ai+1) - Q(si, ai)]. \quad (16)$$

The W learning algorithm is a self-organizing behavioral selection scheme applied to multiple parallel task target systems, which is developed on the basis of Q learning [24]. W learning can well realize the distributed learning function of multiagents, which overcomes the shortcomings of insufficient environmental information in complex heterogeneous networks. When the system selects and executes the strategy

Table 1: Health data statistics.

Sign	Name	Definition
A101	File creation date	Time to create health file
A102	Event name	Basic information about health events
A103	Event location	Location of health incident
A104	Message number	Serial number of the information file
A201	User name	Name of health service recipient
A202	Emergency contact	Emergency contact for health service recipients

Table 2: Maternal and child health management service data.

Index (%)	A	B	C	D	E	F
Newborn visit	80.5	90.23	97.81	88.63	83.27	92.44
Child health management	90.64	92.68	93.73	85.54	91.76	88.82
Child system management	61.48	58.59	83.46	78.67	76.78	80.21
Early pregnancy test	86.61	87.53	72.59	90.54	70.64	81.29
Maternal health management	60.43	91.85	99.34	85.89	89.63	93.26
Postpartum visit	80.28	95.36	98.05	95.15	90.87	92.23

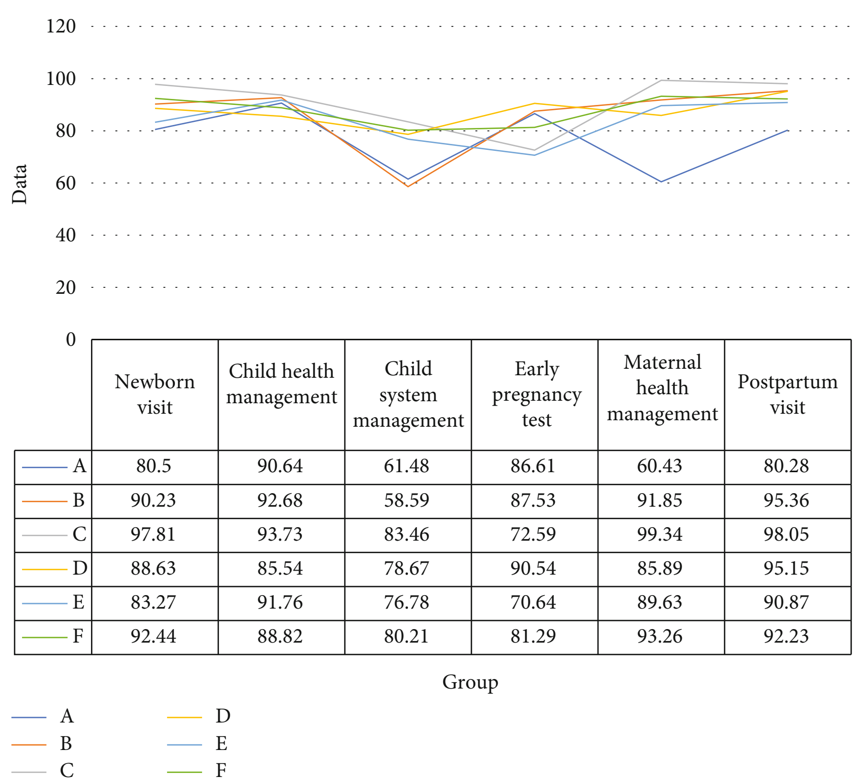


Figure 2: Maternal and child health management service data.

$ak(x)$ with the largest W value, it satisfies

$$Wk(x) = \max_{i\in 1,2,\cdots,n} Wi(x). \tag{17}$$

The W value represents the importance of implementing the recommended behavior and is the difference between the predicted benefit and the actual benefit. In this algorithm, a single agent does not need to know the information of other agents participating in the competition, and at the same time, it no longer needs to obtain the state transition probability of the system, but only needs to know the local environmental

Table 3: Elderly health management service data.

Index (%)	A	B	C	D	E	F
Elderly health management	60.93	70.26	57.89	75.35	64.37	68.21
Examination table	87.13	75.67	64.28	81.39	72.28	85.68
Common disease detection	73.21	63.84	80.36	75.92	83.23	69.42
Health advisory	70.21	79.18	81.43	82.75	75.36	65.36

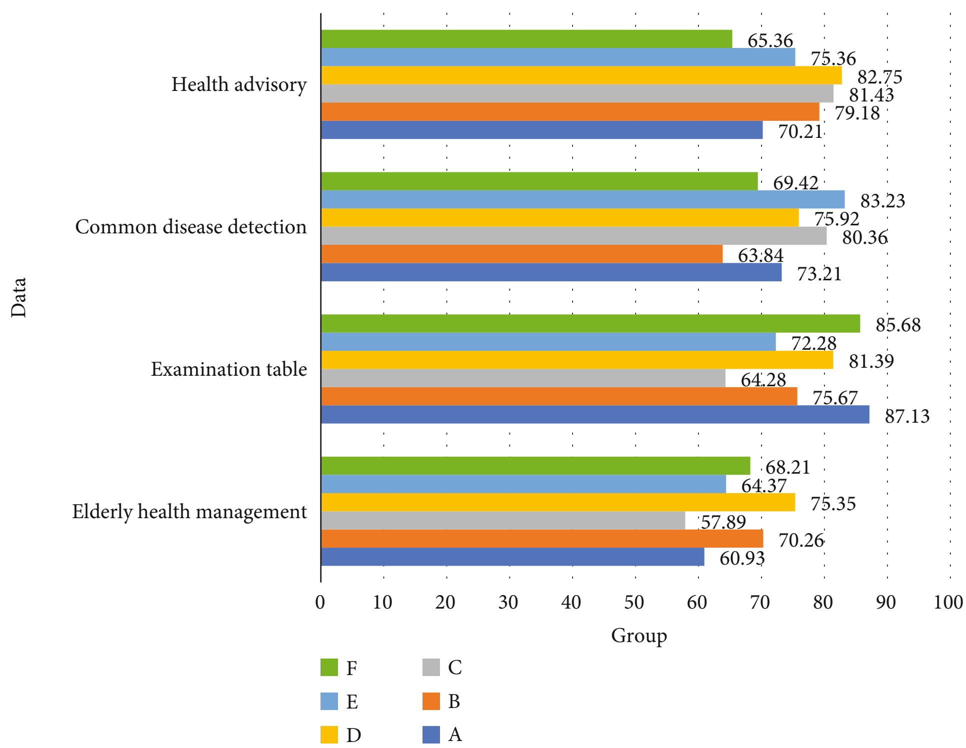


Figure 3: Elderly health management service data.

Table 4: Health management service data for patients with hypertension and diabetes.

Index (%)	A	B	C	D	E	F
Health management of patients with hypertension	94.53	81.82	84.86	90.21	87.28	82.36
Standardized management of hypertension patients	81.27	68.27	94.92	89.13	82.68	78.53
Manage crowd blood pressure control	42.19	36.58	51.23	60.82	59.63	48.35
Diabetes patient health management	90.18	86.57	85.32	84.18	91.63	82.15
Standardized management of diabetic patients	60.38	73.15	76.74	85.28	79.34	82.55
Manage crowd blood sugar control	38.15	45.43	50.28	49.63	54.15	40.28

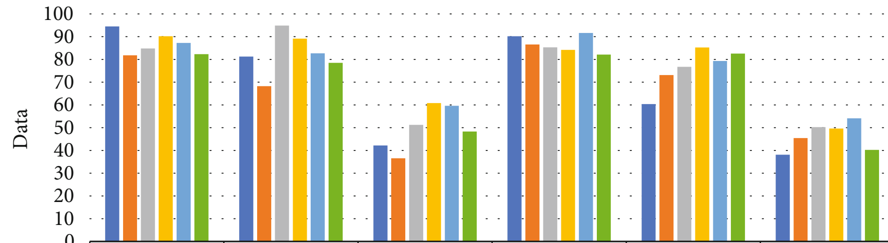
knowledge [25]. The update method of the W value is

$$W(x) = Q(x, a) - \min_{a \in A} Q(x, a), \tag{18}$$

$$Wi(si) = (1 - \partial)wi(si) + \partial(Qi(xi, ai)). \tag{19}$$

3. Simulation Experiment of the Health Management Service System Based on Edge Computing

3.1. Experimental Background. As an important part of health management, community health service is a primary health service system that takes human health as the center, family as the unit, and community as the service scope. At



	Health management of patients with hypertension	Standardized management of hypertension patients	Manage crowd blood pressure control	Diabetes patient health management	Standardized management of diabetic patients	Manage crowd blood sugar control
A	94.53	81.27	42.19	90.18	60.38	38.15
B	81.82	68.27	36.58	86.57	73.15	45.43
C	84.86	94.92	51.23	85.32	76.74	50.28
D	90.21	89.13	60.82	84.18	85.28	49.63
E	87.28	82.68	59.63	91.63	79.34	54.15
F	82.36	78.53	48.35	82.15	82.55	40.28

Figure 4: Health management service data for patients with hypertension and diabetes.

the same time, as a focus of health management issues, how to better play the role of community health services so that communities, families, and individuals can better enjoy health services and conduct health management more scientifically has certain research value. Based on the above background, this article explores how to develop a family-applicable health management service system through the investigation of community hospitals, with the help of service design tools and artificial intelligence technology, combined with existing health management problems and people's health needs.

3.2. Experimental System Structure Design. In the system structure, the goal of this article is to allow users to participate in the establishment of health records through health management, so that community medical treatment, prevention, and health care can move toward a scientific, systematic, and sustainable medical service path, trying to use the existing community health service institutions which a closer link is formed between the resource system and community residents, and an attempt is made to break the status quo of information islands. Secondly, through the establishment of family-based health files with individuals as the core, and using technologies such as big data and cloud platforms as a supplement to traditional epidemiology and medical statistics, it provides more comprehensive theoretical assistance to the medical service system.

The system designed in this paper includes five parts: user layer, business layer, service layer, data layer, and hardware facility layer. The user layer faces the end users of the system, including ordinary residents, medical personnel, and medical institutions. The business layer involves data collection, storage, query, and statistics. The application service layer is mainly related technologies used when the system realizes business functions. The data support layer contains system data and computing framework based on the concept of distributed computing.

3.3. Experimental System Database Design. In the era of big data, we need to consider the impact of data growth on database stability before system development. When selecting a database, it is necessary to comprehensively consider its data storage capacity and stability when facing a large number of users. The health management service system contains a lot of user data; so, this article finally chose the nonrelational database HBase for the system. In order to distinguish various data indicators in the database, this article divides the data types into string, date, integer, byte, and other types. Table 1 is a statistical table of some health data.

4. AI Health Management Service System Based on Edge Computing

4.1. Service Effect of the Health Management Service System for Different Groups. Health management refers to the user's health needs as the orientation, through medical means to check, evaluate, analyze, and predict their health status and risk index and provide health guidance and health plans, so as to coordinate the interaction between individuals, organizations, and society. This article will focus on multiple groups such as mothers and infants, the elderly, hypertension, and diabetes and explore how the health management service system can help them. In order to improve the credibility of the research, this paper investigates the health service

Table 5: Completion of public health file management services.

Index (%)	A	B	C	D	E	F
Health file creation rate	95.53	98.31	80.67	85.89	93.72	89.11
Electronic file creation rate	95.53	86.92	80.12	85.89	92.08	89.11
Health record pass rate	85.31	82.18	84.33	93.16	90.28	89.35
Health file utilization rate	30.52	26.49	35.71	29.36	36.15	31.88

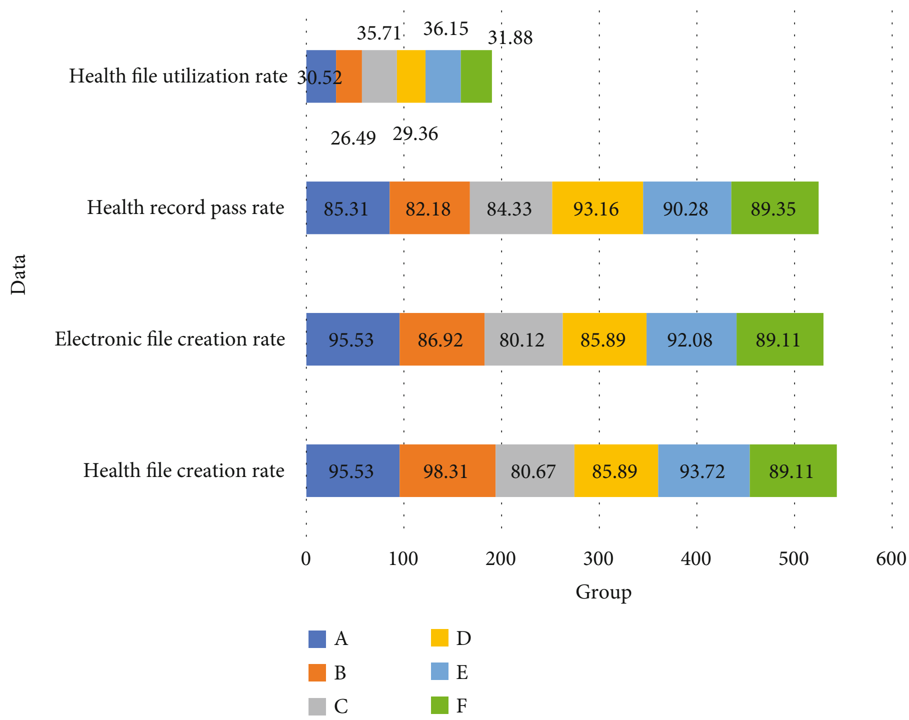


Figure 5: Completion of public health file management services.

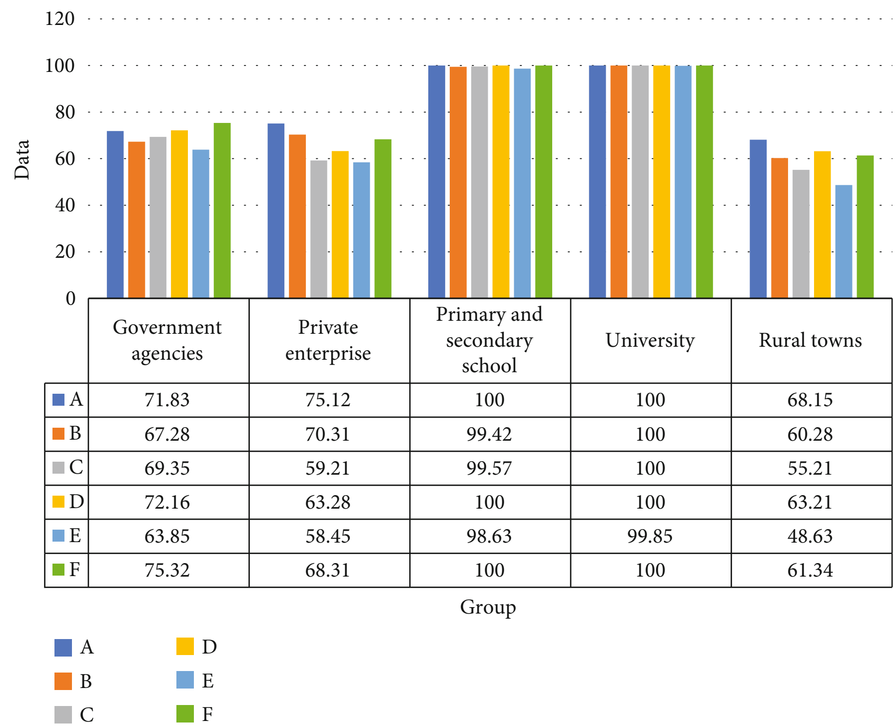
Table 6: Health management service coverage of each unit.

Index (%)	A	B	C	D	E	F
Government agencies	71.83	67.28	69.35	72.16	63.85	75.32
Private enterprise	75.12	70.31	59.21	63.28	58.45	68.31
Primary and secondary school	100	99.42	99.57	100	98.63	100
University	100	100	100	100	99.85	100
Rural towns	68.15	60.28	55.21	63.21	48.63	61.34

data in six different areas of the city, and the difference in the data reflects the service effect of the system to different groups.

Compared with other groups, people tend to pay more attention to the health and safety management of newborns and pregnant women. This article focuses on newborn visits, child health management, child system management in child health management services, and early pregnancy in pregnant women's health management. Testing, maternal health management, and the probability of postpartum visits were investigated. A-F are the six areas of this survey. Table 2 and Figure 2 are the data of pregnant women and children's health management services.

It can be seen from Table 2 and Figure 2 that in the child health management service, the average newborn visit rate is 88.81%, and the average child health management rate is 90.53%, and the indicators exceed the expected 80% target value. At the same time, the average management rate of the children's system is only 73.2%, and only two of the six regions barely reach the target value, and the management rate of the children's system in the B region is only 58.59%. In maternal health management services, the average values of early pregnancy detection rate, maternal health management rate, and postpartum visit rate are 81.54%, 86.73%, and 91.99%, respectively. The postpartum visit rates in the six regions all reached the target value, but the performance



	Government agencies	Private enterprise	Primary and secondary school	University	Rural towns
A	71.83	75.12	100	100	68.15
B	67.28	70.31	99.42	100	60.28
C	69.35	59.21	99.57	100	55.21
D	72.16	63.28	100	100	63.21
E	63.85	58.45	98.63	99.85	48.63
F	75.32	68.31	100	100	61.34

Figure 6: Health management service coverage of each unit.

Table 7: Survey data of residents' physical exercise and eating habits.

Index (%)	A	B	C	D	E	F
Exercise days per week	2.53	2.65	3.21	2.87	2.41	2.72
Daily exercise time (minutes)	35.15	39.28	43.37	42.51	38.76	40.85
Exercise intensity	1.58	1.71	1.63	1.74	1.47	1.68
Standard salt intake	46.15	70.38	70.26	45.62	53.15	66.37
Salt intake awareness	75.28	76.13	69.35	72.68	74.13	68.21
Awareness of edible oil intake	72.15	68.95	69.34	71.03	73.28	70.05

in the early pregnancy detection rate was relatively poor. Table 3 and Figure 3 are the elderly health management service data.

It can be seen from Table 3 and Figure 3 that among the elderly health management services, the average value of elderly health management services is only 66.17%. Except for area D, which has a value of 75.35%, the performance in other areas is relatively average. The average completion rate of the elderly physical examination table is 77.74%, but there is still a certain distance from the target value of 85%. In addition, the frequency of detection of common diseases in the elderly and the frequency of health consultation were 74.33% and 75.715%, respectively. On the whole, there is still a lot of room for improvement in health management services for the elderly. Table 4 and Figure 4 are the health management service data for patients with hypertension and diabetes. The indicators 1-6 in the legend correspond to the indicators in the chart.

It can be seen from Table 4 and Figure 4 that in the health management services for patients with hypertension, the average health management rate and standardized management rate are 86.84% and 82.47%, respectively, far exceeding the target value of 60%. The blood pressure control rate of the management population is 49.8%, which is a small gap from the 50% target value. In the health management services for diabetic patients, the average health management rate and standardized management rate were 86.67% and 76.24%, respectively, but the population blood glucose control rate was only 46.32%. On the whole, the health management service system is more scientific in the management of hypertension and diabetes patients, but the control effect of various indicators is not good enough.

4.2. Social Coverage Rate of the Health Management Service System Based on Edge Computing. In this paper, starting from four aspects: health file establishment rate, electronic file

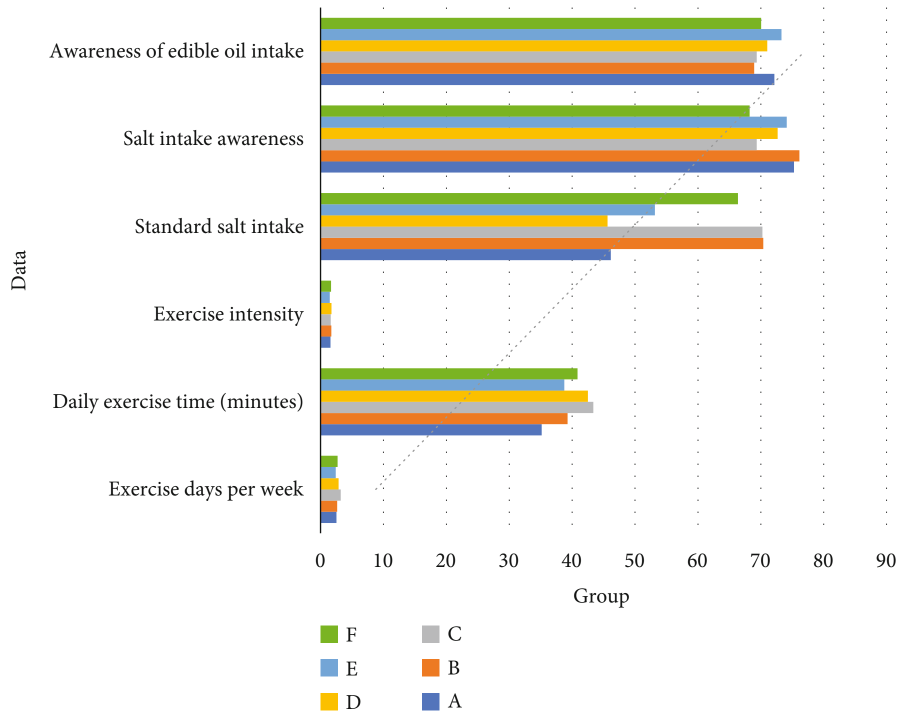


Figure 7: Survey data of residents' physical exercise and eating habits.

establishment rate, health file qualification rate, and health file utilization rate, the coverage rate of health management service transformation from traditional mode to electronic system is investigated. Table 5 and Figure 5 show the completion status of residents' health file management services.

It can be seen from Table 5 and Figure 5 that among the 6 surveyed areas, the health record establishment rate B is the highest, at 98.31%; the electronic health record establishment rate in area A is the highest, 95.53%; the health record qualification rate is the highest district D that is 93.16%; district E has the highest utilization rate of health files, which is 36.15%. Among the four indicators surveyed, overall, the index of the health file creation rate is the best completed, followed by the rate of electronic file creation, and the health file utilization rate is the worst indicator, none of the 6 regions. Table 6 and Figure 6 show the health management service coverage of each unit.

It can be seen from Table 6 and Figure 6 that in the 6 regions surveyed, the health management coverage rates of primary, secondary, and university are basically close to 100%, and the health probability coverage rates of government agencies and private enterprises are 69.965% and 65.78%, respectively, estimated 60% of the target. In contrast, the health management coverage rate in rural towns is only 59.47%, and the worst performing area E coverage rate is only 48.63%. It can be seen that the health relationship service in rural areas needs to be promoted, because many residents have not formed a correct understanding of their own health management. Table 7 and Figure 7 are survey data of residents' physical exercise and eating habits.

It can be seen from Table 7 and Figure 7 that the results of the one-way analysis of variance showed that the differences in the number of days of exercise per week, average daily exercise duration, and exercise intensity of residents from different functional areas were statistically significant ($P < 0.05$). In terms of the number of days of exercise per week, the residents in area C have the most days at 3.21 days; in terms of the average daily exercise time, the residents in area C also spend the longest time at 43.37 minutes; in terms of exercise intensity, the intensity of residents in urban agricultural areas, the highest is moderate exercise intensity. From a comprehensive point of view, the average daily exercise time of residents is 2.73 days, and the average daily exercise time is 39.98 minutes.

Maintaining good eating habits and reducing the intake of fat and salt can play a very good role in promoting people's health. According to the results of the one-way analysis of variance, the differences in the salt intake compliance rate and salt intake awareness rate of residents from different functional areas were statistically significant ($P < 0.05$). Among them, the salt intake compliance rate and salt intake awareness rate are both in zone B, and the indicators are 70.38% and 76.13%, respectively; in terms of the awareness rate of edible oil intake, residents in zone E have the highest awareness rate. It is 73.28%.

5. Conclusions

This article's research on the service status of the health care management system mainly involves the following aspects: (1) the status of key population health management services, including child health management services, maternal health management services, and elderly health management services. (2) Health management services for people with chronic diseases, including health management services for patients with hypertension, and health management services for diabetic patients. (3) Social coverage of health management services, including residents' health record management, the coverage rate of health management services in enterprises and institutions, the coverage rate of health management services in primary and middle schools, and the coverage rate of health management in rural towns. Through the survey data, it can be found that the health management service system based on edge computing and artificial intelligence has made more and more people aware of the importance of health management through professional and convenient service effects and promoted the standardization of community medical management services.

The AI health management service system based on edge computing gradually affects people's perception of their own health. At this stage, our country is gradually transforming from traditional health record management services to intelligent electronic health records management. From the survey data, the filing rate and pass rate of residents' electronic files have reached 88.275% and 87.435%,respectively, but the utilization rate of health files is only 31.685%. The establishment of a supporting health management service system is to effectively improve the utilization rate of health records, so that users can really enjoy intelligent, professional, and real-time health services. The artificial intelligence-based health management service system narrows the distance between ordinary residents and medical institutions through big data sharing. The health management service system will provide professional and targeted health care strategies based on the user's physical data, encouraging users to actively use physical exercise, healthy diet, and regular physical fitness to achieve disease prevention and have a healthier body.

Taken together, the research in this article has yielded certain results, but limited by various conditions, and the research still has the following areas worthy of improvement: (1) there are many institutions and services involved in the health management service system, but taking into account the operability of the research, this article only selects some representative indicators for analysis, which will lead to a lack of comprehensiveness in the final results. (2) Most health management service systems need to be paid before they can be used. Due to the different research directions, this article does not describe the payment mechanism of medical health management services and social medical insurance reimbursement too much. (3) How to ensure the security of user health data in the system in the era of big data is an important direction in subsequent research.

Data Availability

No data were used to support this article.

Conflicts of Interest

The author(s) declare(s) that they have no conflicts of interest.

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