

# The Study of the Rational Allocation of China's Human Resources for Health

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## Abstract

*Aim:* Through the supply and demand of China's human resources for health status, age structure, educational level of existing health professionals and other aspects of statistical analysis to understand the current situation of China's health human resources, so as to put forward the healthy development of health human resource allocation optimization suggestions, and provide the basis for the formulation of relevant policies.

*Method:* Using the software of SPSS and EXCEL software to descriptive analysis on human resources for health in China.

*Results:* The lack of health human resources and inequalities exist at the same time, the distribution is greater than demand contradictions; Health care professionals degree level needs to improve; And so on. Therefore recommends the development of relevant policies to encourage aspiring young professionals to apply for health institutions for sustainable development reserve personnel and health services, and improve health care professional's career in medicine motivation to improve their social status. And should accelerate structural adjustment, increase academic and professional skills training human resources for health professionals in relatively poor areas, efforts to improve service levels.

**Keywords:** human resources for health, human structure, allocation

Human resources for health refers to all staff engaged in the provision of health services in the health departments and units, the status of human resources for health is one of the critical indicators to look at a country or a region's health service level, is a very important factor in health services system. Deepening medical and health system, improve China's medical and health services, fundamentally speaking, is to rely on the tireless efforts of the medical and health care workers. "CPC Central Committee and State Council on deepening the medical and health system" has been clear about the task to strengthen the construction of health human resources. Human resources for health is the key to implement health care reform and the development of health services. This requires us to focus on the strategy research of talent team construction and development further around the main steps of human resource management.

## 1. Data Sources and Methods

The data are mainly from three aspects: one is the "China Health Statistics Yearbook 2012", key indicators including the total number of health workers, the number of all types of health personnel, health professionals qualifications and titles; two is the "2012 China Statistical Yearbook," published by the National Bureau of Statistics, including Chinese population and regional population; three is the "health development "Twelfth Five-Year Plan" the State Council announced in 2012.

The main method is to read relevant literature to learn the development of health human resource, analysis these data with statistics software SPSS and EXCEL.

## 2. The Results Analysis and Discussion

### 2.1 Analysis of Human Resources for Health Situation in China

#### 2.1.1 Analysis of the Current Demand Situation of Human Resources for Health in China

The Ministry of health "health long-term talent development planning (2011-2020)" (hereinafter referred to as the "planning"), sets the goal of health talent team construction scale for the next 10 years. In order to make the talent scale can basically meet the needs of the masses of the people China health services, "plan" put forward, to 2015, total health personnel to reach 9.53 million people, the grassroots medical and health personnel to reach 3.87 million people (including practitioners reached 180,000), specialized public health institution personnel to reach 0.95 million people, registered nurses to reach 0.55 million people, pharmacists to reach 2.86 million people, other scarce talents synchronous growth. By 2020, per thousand population practicing (assistant) doctors reached 2.10 registered nurses reached 3.14, professional and public health agency personnel to reach 0.83 people; Urban and rural distribution and regional medical talents tend to be more reasonable, coordinated development of all kinds of talent team as a whole. By 2020, the total health workers reached 12.55 million, primary health workers to reach 4.62 million (of which GPs reached more than 0.3 million people), the professional organization of public health workers to reach 118 million, registered nurses to reach 4.45 million, pharmacists to reach 0.85 million people. The shortage of various types of health professionals will be significantly improved.

During the period of "11th Five-Year Plan", China's human resources for health has been got a great development, but with China's economic development and growth in demand for health services, by contrast, also seems inadequate. Compared with Western developed capitalist countries, China's number of practicing physicians and the number of registered nurses per thousand population has a great gap. According to the survey of talent demand in 2012 national health industry, many provinces reflect the health technical personnel shortage of medical institutions in this region. In terms of the institutional types, there's a shortage of health personnel agency primarily in county-level hospitals, public health agencies, and primary health care institutions. For a long time, China's uneven allocation of human resources has always existed, health professionals focused on medical institutions, in particular the city's major hospitals, primary health organizations (especially township hospitals) have a serious shortage of health workers, grassroots team needs further strengthened.

#### 2.1.2 Analysis of the Current Supply Situation of Human Resources for Health in China (as shown in table 1and 2)

As of the end of 2011, China has health personnel 8, 616, 040 people, including health technical personnel 6, 202, 858 people, women in the health technical personnel account for 66.5% of the proportion, As shown in table 1, the main reason of this phenomenon is more nursing staff, about one-third of the total number of health workers. Due to the personnel engaged in nursing professional health is given priority to with women, so women in the gender composition of human resources for health accounts for a larger proportion. Statistics show that in 2011, China was 4.58 per thousand population health technicians, practitioners ownership of 1.49, a registered nurse ownership of 1.66, compared the three indicators with the western developed countries such as Japan, Australia and the UK, there is still a gap with these countries; meanwhile, there is still a certain gap with the per thousand population practicing (assistant) doctors reached 1.88 registered nurses reached 2.07 in 2015 which are proposed in the "China health long-term talent development planning (2011-2020)".

Table 1. Gender constitute of China's human resources for health in 2011

Classification	Health Professionals						Other technical staff	Manager staff
	Total	Practicing physician	Registered nurse	Pharmacist	Technician	Other		
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
male	33.5	57.4	1.7	38.4	44.9	44.4	41.8	49.3
female	66.5	42.6	98.3	61.6	55.1	55.6	58.2	50.7

Table 2. health care workers per thousand population in developed countries in 2011

	Japan	Australia	Britain	Finland	Sweden	America	OECD
Practicing physicians per thousand population	2.1	3.0	2.7	2.9	4.1	2.4	3.2
Registered nurses per thousand population	4.1	9.6	10.1	24	16.5	9.8	8.7

## 2.1.3 Analysis of the age structure of human resources for health in China(as show in table 3)

China's health human resources is given priority to with 25 to 54 of young and middle-aged, accounting for 82.7% of the total number of national health workforce. 35 to 55 years of health human resource is the main force of China's health cause, because they are in the top of my career, work experience is rich. Table 3 shows the number of people for this age group accounted for the more reasonable proportion of the total number; And younger than 35 years human resources for health also occupy a certain proportion, they will be the main force of China's health care in the future, Therefore, in this part of the personnel should be strengthened to vocational education and skills training.

Table 3. China's age structure of human resources for health in 2011

Classification	Health Professionals						Other technical staff	Manager
	Total	Practicing physician	Registered nurse	Pharmacist	Technician	Other		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
≤25 years old	8.2	0.1	14.7	5.0	5.2	17.7	7.0	3.0
25-34 years old	35.0	27	40.3	27.3	34.8	36.3	32.2	21.6
35-44 years old	29.5	33.8	26.2	30.3	30	23.5	31.5	31.5
45-54 years old	18.2	21.9	15.8	26.7	21.2	14.8	21.9	31.7
55-59 years old	5.5	9.0	2.4	8.2	6.5	4.9	5.5	9.5
≥60 years old	3.6	8.3	0.5	2.5	2.3	2.9	1.9	2.8

## 2.1.4 Analysis of the Structure of Human Resources for Health Education in China (as show in table 4)

Medical and health services are high-tech industries and technology-intensive industries, engaged in this industry, health professionals must have the higher professional technology level. Therefore, compared with other industries, the health care industry workers should have higher education levels, although highly educated health workers are not fully representative of the professional standards must be high level, but in a way it can illustrate some of the problems. We can see from Table 4, in China's education of the health workforce, college and secondary school accounted for 70.4% of the total, 22.3% of college, and a master's degree accounted for only 3.4%. China's health workforce education constitute a pagoda shaped: spire is too small, the overall degree is low. According to China 2001-2015 Health Workforce Development Program requirements, the Chinese team of health professionals in 2005 to achieve the goal of all professional education, health technicians must have professional qualifications to mount guard, Including practicing (assistant) doctors education level by 2015 should all reach college, registered nurses who have a college degree or above the level of not less than 30%, compared with the health workforce development goals, there is a big gap. Therefore, Train a health human resources team of highly educated and high level is an urgent task of human resources for health development in China currently facing.

Table 4. 2011 academic constitute China's human resources for health

Classification	Health Professionals						Other technical staff	Manager
	Total	Practicing physician	Registered nurse	Pharmacist	Technician	Other		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Graduate	3.4	9.1	0.1	1.0	1.7	2.3	1.9	2.7
Bachelor	22.3	43.9	9.5	14.4	19.4	19.1	19.0	27.0
College	37.0	28.6	44.1	33.3	39.6	33.2	35.9	39.7
Secondary	33.4	16.2	44.0	39.1	34.4	38.0	28.8	19.7
High school and below	3.8	2.2	2.4	12.2	4.9	7.4	14.5	10.9

### 2.1.5 Analysis of Fair Allocation of Health Human Resources in China (as show in table 5)

We can be obtained from the "2012 Chinese Statistical Yearbook", by the end of 2011, the total number of the urban population Chinese for 690.79 million people, accounts for the national total population 51.27%, the rural population is 656.56 million people, accounting for 48.73% of the total number, along with the speeding urbanization, the urban population has clearly exceeded the total rural population. However, with the amount of personnel per thousand population health in the town of 7.90 people, with the amount of health technical personnel in rural per thousand population is 3.19 people, significantly lower than the town level, so is the distribution of occupation (assistant) physicians and registered nurses, it reflects the serious shortage of health personnel in rural area of China.

From the geographical perspective, per thousand population health professionals of the eastern (5.49) are higher than that of the middle (4.04) and West (4), Beijing (14.20) and Shanghai (9.92) and Tianjin city (7.33) are much higher than other provinces and municipalities directly under the central government.

Table 5. Configure density Chinese human resources for health

Region	Ownership per thousand population		
	Health technicians	Practicing (assistant) doctors	Registered nurse
Urban	7.9	3. 0	3.29
Rural	3.19	1.33	0.98
Nationwide	4.58	1.82	1.66

### 2.2 Discussion

#### 2.2.1 Uneven Distribution of Human Resources for Health, Medical and Public Health Personnel Uneven Levels of Quality Level

After years of unremitting efforts, China's health human resource situation has been significantly improved. In 2011 per thousand population professional doctors of China were 1.82 people, with a higher level of economic development of countries and regions (such as South Korea, Singapore and Mexico) compared to be roughly the same. In addition, the number of physicians per thousand population of urban and rural in China is nearing the level of developed countries. All these show that China's health workforce number is considerable. But the problem is that "it is not a lack of people missing," China's overall human resources for health quality level is not high enough. At present, the educational structure of Chinese health personnel into a triangle, the overall degree is low. Especially in rural areas, secondary education is dominate, accounting for 56.2% , below the high school education nearly 15%, bachelor degree or above is only 3.8%. Low quality of the health workforce will seriously affect the quality of health services, therefore, improve the quality of health workforce is one of China's current problems to be solved.

### 2.2.2 Irrational Structure of Human Resources for Health

Chinese health human resource structure is irrational. First, the proportion of health care is unreasonable. WHO recommended standards of care ratio of 1:2, the international average is 1:3.4, the proportion of the world's health care in some developed countries (such as Japan, UK) has even reached 1:4, While in the developed cities of China the proportion of health care was 1:1.10, the ratio in rural areas was lower, so there is a serious shortage of nurses. Secondly, the title structure is irrational. The proportion of high, middle and junior titles of the health services staff recommended by WHO was 1:3:1, the general was olive type, While the title of the structure of China's health technicians are presented pagoda type, from the perspective of professional and technical qualifications, senior professional titles accounted for 7.7%, intermediate 23.7%, higher and disability level accounted for 58%, and 10.5% of people without title. Finally, medical personnel and anti-security personnel structure is irrational. Community and grass-roots health institutions in rural towns should provide medical care, disease prevention, health care and other integrated services-based, but pay attention to the treatment, neglect prevention thought still exists, health care technicians who engaged in disease prevention were mostly triage personnel of medical department, or non-professional health workers resettled by demobilize, the overall quality is not high, it seriously affected the quality of preventive health care.

### 2.2.3 Irrational Distribution of the Health Workforce

China's health workers are mainly concentrated in the city, while the city's human resources for health and mainly distributed in large cities and large hospitals. Health workers in rural and underdeveloped areas is obviously insufficient, causing excess of health workers in developed regions, resulting in inadequate sanitation and waste of human resources coexist. In addition, regional differences in health human resources is also larger, with a volume of Eastern health personnel per thousand population was 5.49 people ,4.04 people in central, and 4.00 people in western. From the distribution of the service area, in the western region of China, an average per career (assistant) doctors need to serve approximately 8 square kilometers, registered nurse about 10 square kilometers, service levels were 7 and 7.8 times compared with the eastern region. From this we can conclude that there is a big gap in terms of the geographical configuration about China's human resources for health, in which the best staffing is eastern regions, and western regions is the worst. Therefore, the rational allocation of human resources for health is a key issue in the current health system to solve the major contradictions.

## 3. Suggestion

The basic strategy of Chinese human resources for health development is the amount of control, structural adjustment, improve, focusing on the construction of the rational allocation, adapt to the market, innovation and scientific management.

### 3.1 Further Optimize the Allocation of Human Resources for Health Structure of China

First, adjust the health workforce qualifications and title structure, to focus on higher-level health workers team building, and gradually improve the technological level and innovation capacity of health personnel to train medical personnel and internationally competitive with a high level of professional and technical personnel in medical technology. From the history of the development of medical education in China's view, China's medical education is mostly secondary education, after 2005, China's medical education o have some changes in the structure, from the data in 2011, the medical profession in the total number of colleges and universities is 2,001,756 people, 1,650,724 people in secondary vocational schools, higher education has gradually become the main train medical personnel. In Western countries, medical education are mostly higher, but more emphasis on the training of general practitioners, so China should take a modest reform of medical education in development of higher medical education and training of medical personnel more comprehensive higher, growth Chinese medical personnel. At the same time, to encourage the working of health care workers to participate actively in all relevant training to enhance their learning and improve their medical skills.

Second, to further improve health care allocation ratio, to cultivate more excellent care talents. Qualities of the health care and patient satisfaction have a great relationship with the rational allocation of nursing staff. From the statistics, the proportion of China's current health care is obvious imbalance. To alleviate this situation, on the one hand, the hospital must continue to improve the level of remuneration packages and benefits, improve the performance appraisal system, encourage health care workers to improve service levels ,these also can reduce the loss of personnel, maintain the stability of the care team, while strengthen training for health care workers, and constantly improve the level of work; On the other hand, to improve the level of clinical care hospitals, deepen the reform of

public hospitals, nursing management, further streamline internal hospital care management functions, establishment of a standardized nurse management system. To implement job management as a starting point, so that the income distribution of nurses, job promotion, rewards appraised more attention in clinical nursing practice, establish a stable clinical nurse team, and fully mobilize the enthusiasm of the clinical nurse incentives.

In addition, professional setting of various school is also very important, therefore, medical institutions should adjust the structure of professional settings, enhance training for nursing and other related professional medical workers, and give positive guidance in terms of employment, so that more outstanding nursing personnel and medical personnel flow to the primary health care sector, thereby solving the problem of the imbalance between primary care.

### *3.2 Doctors Practicing Implement Multi-point Policy to Ease the Primary Care Physician's Poor Health Institutions*

One of the characteristics of the medical industry is highly asymmetric information, and accordingly has a strong reputation mechanism binding on physicians, physicians practicing freedom fit. Freedom to practice is the meaning of practicing physicians can choose where and how to practice, and more practice is one of them ancillary rights, depending on physicians and medical institutions on the basis of equality and autonomy of the signed contracts. Doctors hand out to enjoy a variety of resources and welfare within the system, on the other hand go to the market to make money, so its actual income exceeds the market value of their human capital. Multi-physician practice policy allows multi-physician practice, to encourage doctors to open clinics in his spare time, changing the masses "minor ailments large hospitals are crowded" error habits, to help achieve the first diagnosis of primary health care sector, but also in patients with decentralized energy in a certain extent distributed to grassroots medical workers, thus easing the imbalance in hospitals and primary health care institutions health human resource allocation.

### *3.3 Standard Human Resources Scientifically and Reasonably, Ensure the Fairness Allocation*

From a regional geographical configuration, allocation of China's human resources for health is imbalance. In terms of quantity and quality of human resources for health, various provinces and cities are significant differences. China has long been configured health human resources according to the population, which led to the density of human resources for health inequalities to a certain extent, In densely populated areas, the number of health workers per square kilometer is more than the number in sparsely populated areas, which directly affects the part of the population of the availability of medical resources. From the perspective of economic development, the high economic level and abundant medical resources in the eastern part attract more health human resources flow to the East, and the economic level in the central and western regions is relatively low, health human resources is also relatively poor.

Governments at all levels should take appropriate measures to attract more health professionals to work in Western and primary health care institutions. When setting up the allocation standard, geographical factors should be considered, taking into account the spatial accessibility of medical services in certain populations. When formulate relevant policy planning, countries should be worked out the elastic system in accordance with the actual situation, appropriately tilted to the Midwest. In recent years, for example, under the support of relevant departments, the basic health institutions and township hospitals have been further clarified. What's more, other measures are all have been taken, such as the implementation of performance pay, improvement of primary health personnel welfare and the recruitment projects of practicing physicians for the township hospitals in western region. On the one hand, these measures are able to promote the rational flow of existing health workers, also can promote employment, improve grassroots medical and health conditions. At the same time, relevant departments should also develop around the supporting regulatory measures to ensure the effective implementation of policies to ensure equity in health human resource allocation.

## **4. Conclusion**

Human resources for health is an important support medical and health system, is the fundamental driving force of health development, but also is an important guarantee for a well-off society, it is necessary to meet the economic and social development and people's health needs. When configuring conducting human resources for health, we must continue to strengthen innovation systems and mechanisms to promote the construction of human resources for health from aspects of structure, quantity, quality, environment and management and so on.

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