

Study on the Planning of Medical Facilities in small towns under the policy of "medical community"

-- a case study of Lanxi , Zhejiang province

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Abstract

Medical and health facilities are important parts of urban public facilities. Current research pays little attention to the public policy effect of medical service, and Medical Facility Planning is usually poorly implemented. The problems of insufficient medical and health resources, low quality, unreasonable structure and layout are particularly prominent in small towns in China. "Medical community" refers to hospital and other medical service institutions and organizations in the same region linked together to rebuild a holistic medical organization structure, in order to promote the sharing of medical and health resources, and distribute high-quality medical resources to a grass-roots level. Take Lanxi City , Zhejiang Province as an example, it analyses the impact of "medical community" policy on medical facilities supply, Combined with medical facilities planning, this study puts forward a better path of implementation, in order to rationally allocate medical resources and promote equal access to basic medical and health services.

Keywords

"medical community", Medical Facility Planning, policy implementation, planning, small towns

1. Introduction

In the process of rapid urbanization, the livelihood of most cities in my country has insufficient public service capacity. Among them, the shortcomings of urban basic medical facilities service supply are particularly prominent ^[1]. Public medical services are public services that cover all citizens and meet their health needs, provided by the state to ensure the health of the people. Compared with big cities, the imbalance of medical facilities in our country is particularly prominent in small towns ^[2]. Due to the small scale of cities, the medical system in small towns is not sound enough, and the primacy of medical resources is very high. High-grade medical resources are often concentrated in a few giant hospitals. The system construction of medical facilities is not perfect. The total medical and health resources are not perfect. Problems such as insufficient quantity, low quality, unreasonable structure and layout, and incomplete basic medical and health systems are prominent. Especially in the construction of basic-level facilities such as community-level hospitals and street health service centers, large debts, low quantity and poor quality, and limited service capacity have become common problems, and they cannot play the necessary basic medical facilities sharing function ^[3]. At the same time, the aging population in most small towns has not only led to an increase in the demand for medical facilities, but also the inconvenience of the elderly, resulting in a particularly urgent need for medical equalization.

In order to solve the problem of the uneven development of my country's urban and rural medical facilities and the unreasonable allocation of resources, January 2017

The National Health and Family Planning Commission issued the Guiding Opinions on Carrying out the Pilot Work for the Construction of Medical Consortia in April 2017

The "Guiding Opinions of the General Office of the State Council on Promoting the Construction and Development of Medical Consortia" was promulgated. In May 2019, the National Health Commission published the "Guiding Plan on Promoting the Pilot Construction of a Compact County Medical and Health Community" (hereinafter referred to as the "Plan"), To clarify the ideas for the construction of the county community.

Medical community refers to a whole new medical organization structure reconstructed by linking hospitals in a region with other medical service institutions and organizations, and generally exists in the form of county medical community. According to the requirements of the "Plan", "Each county organizes the

Establish a number (generally 1-3), with county-level medical institutions (in principle, second-level and above-level medical institutions) as the leader, and several other county-level medical institutions, township health centers, and community health service centers as member units The close medical community".

The "Medical Community" policy is an important measure to rationally allocate medical resources and promote the equalization of basic medical and health services. The goal of the medical community is to make the medical services in the region more effective, and under the existing system, it can better solve the problems of the people's difficulty in seeing a doctor and the trouble of seeing a doctor, and form a household headed medical care system with hierarchical diagnosis and treatment in the region. Organize and system, integrate regional medical and health resources, promote the sharing of county medical and health resources, and decentralize high-quality medical resources to the grassroots. The medical community takes the lead in medical institutions to focus on the treatment of critically ill patients and the upward referral of difficult and complex diseases, and the overall management of disease prevention and control in the medical community. Primary-level medical and health institutions provide diagnosis and treatment services for common and frequently-occurring diseases, focusing on providing continuous medical and health services for patients with chronic diseases and rehabilitation patients with clear diagnoses and stable conditions, and implement basic public health services and major public health services as required.

The promotion of the "medical community" policy will inevitably have an impact on the traditional medical treatment model, which in turn will affect the supply of medical facilities. However, existing studies have paid very little attention to the public policy effects of medical services. Most studies on medical facility planning only focus on the technical level, and insufficient attention has been paid to the impact of medical reform-related policies on the supply of medical facilities, resulting in poor implementation of medical facility planning. , Insufficient implementation.

This article takes Lanxi City, Zhejiang Province as an example, to discuss the practical problems faced by medical facilities in Lanxi City under the background of the "Medical Community" policy and the corresponding planning strategies. Lanxi City has the typical characteristics of small towns in my country. The overall distribution of medical resources is uneven and concentrated in areas with the highest urbanization rate. The reality of a large gap in basic medical facilities combined with the reality of the increasingly serious aging of Lanxi City has become increasingly prominent. Analyze the impact of the Lanxi "Medical Community" policy on the planning of medical facilities, and then clarify the optimization strategy of medical facilities planning, and propose a more practical and operational implementation path.

2. Analysis on the supply of medical facilities in Lanxi city

2.1. The overall distribution of medical resources is uneven

By the end of 2018, Lanxi had 567,100 permanent residents and 660,500 registered residents, with an urbanization rate

Is 53.6%. There were 516 medical institutions of various types, employing 3,875 medical and health workers. In terms of facilities supply, the scale of medical facilities can meet the actual demand of 1,000 registered population in the whole region. However, the elderly population of Lanxi

(above 60) accounted for 23.8%, 5.9% higher than the national average of 17.9%, indicating a serious aging population. Therefore, compared with the actual demand of 1,000 resident population, there are gaps in the supply quantity of existing medical facilities at various stages.

Administrative division	Village Clinics	Maternity and Child Care Centers	Emergency Center	CDC	Dental Clinic	TCM Clinic	Common Clinic	Community Health Service Stations	Community Health service center	Township Health Centers	Hospital	Chinese Medicine Clinic
SH Street	26				1			5	1		2	3
YS Street	12				11		6	5	1		3	12
LJ Street	30	1	1	1	13	3	17	6	1		10	8
NB Street	16						2		1			
BS Village	11						1			1		
MJ Town	23						2			1		
HX Town	9						4			1		2
ST Village	16						1			1	1	1
YC Street	34				3		1		1		1	2
YB Town	20				1		1			1		
LD Village	16						1	2		1		1
ZG Town	17				1			1		1		1
CX Street	11					1	2		1		1	
XX Town	14						2	4		1		
MJ Town	32				2		1			1	1	1
HD Town	22									1	1	

Figure 1. Distribution of the number of medical institutions in Lanxi City

The uneven distribution of medical resources in Lanxi affects the fairness and efficiency of medical and health services. Overall medical resources (Table 1) are inclined to the two streets with the highest urbanization rate (Yunshan Street and Lanjiang Street). Except for Shanghua Street, general clinics are generally opened with the increase of urbanization rate in a region.

2.2. Space indicator configuration: Uneven partition

The area of the health service station/village clinic is at least twice that of the other areas (Figure 1); In terms of per capita land area (FIG. 2), the average and median of all zoning areas are 0.052 and 0.049 respectively. The land area of the 10 administrative divisions is lower than the average, which shows that the distribution of medical resources in this region is uneven.

In general, in terms of the configuration standards of basic medical facilities, Shanghua Street and Lanjiang Street are high quality areas in the central city, with high configuration standards and a large

number of community health service stations. Yunshan Street, Yongchang Street, Youbu Town, Zhuge Town and Majian Town had a better distribution of the number of medical institutions, while other towns and streets had a general distribution of medical institutions. The problem was more prominent, and the spatial configuration index of all kinds of medical facilities was low, which made it difficult to guarantee the medical environment. In terms of the land use of medical institutions, the land area of community health service stations in Lanjiang street and Shanghua Street shows a prominent peak, while the land area of community health service stations in Chifeng Street is the least.

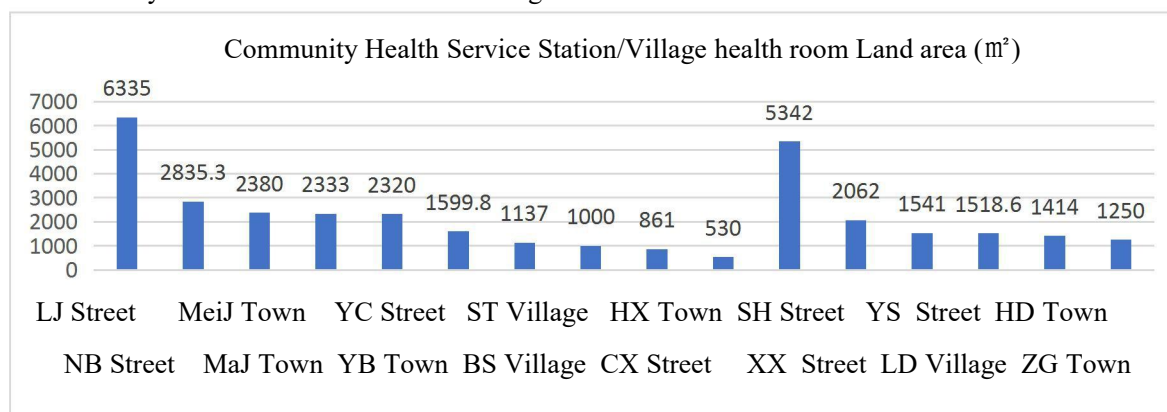


Figure 2. Area of community health service station/village clinic

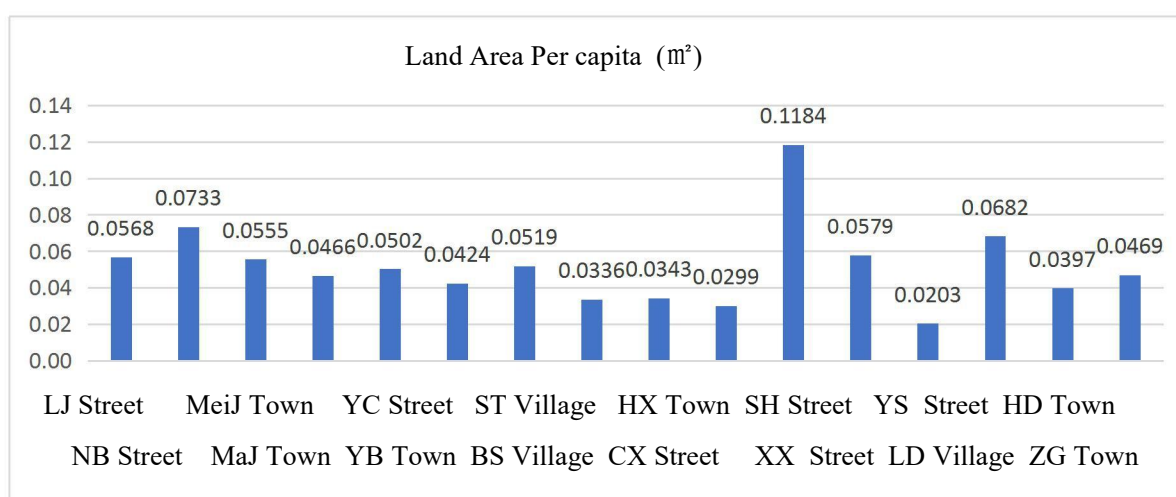


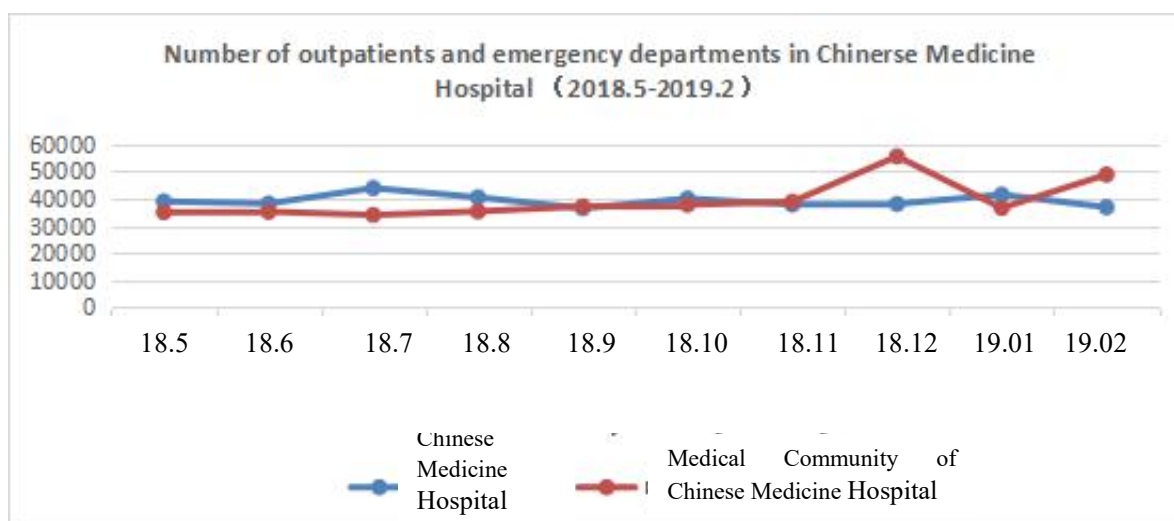
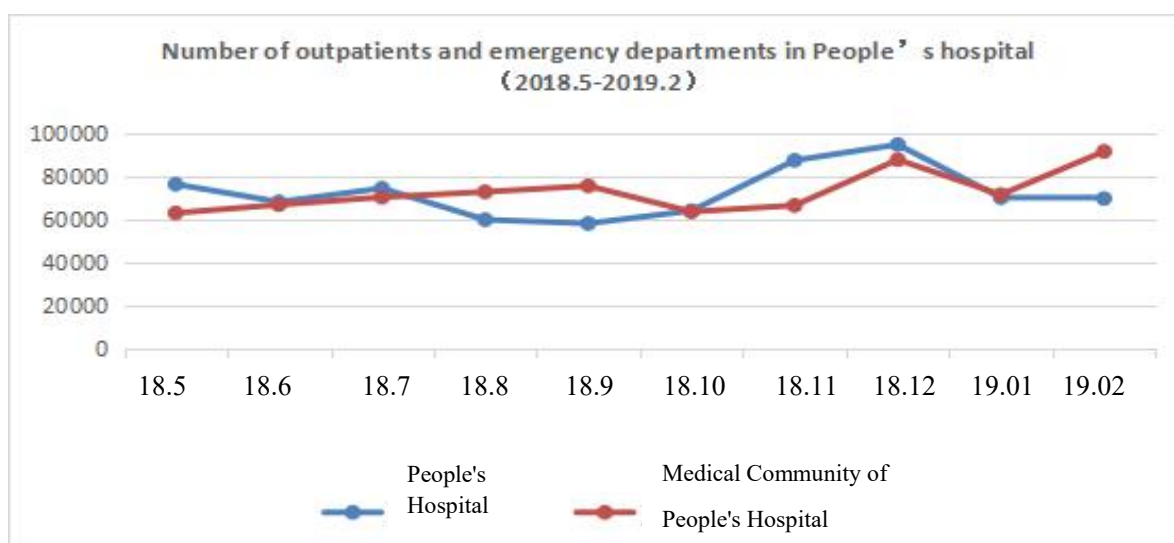
Figure 3. Per capita land area

The total amount of medical and health resources is relatively insufficient, and the quality needs to be improved. There were 3,875 medical and health practitioners, with relatively low numbers of practicing (assistant) doctors and nurses per 1,000 people. The proportion of health technicians with professional titles is low, and there is a relative shortage of middle and high level and characteristic talents. A considerable part of talents are concentrated in municipal medical and health units. The quality of middle and primary medical and health facilities needs to be improved, and the service capacity of primary medical and health institutions is insufficient and the utilization efficiency is not high.

The utilization rate of hospital beds is low and the function of net bottom is not strong. The development of medical and health services is unbalanced between urban and rural areas, the allocation of resources is unreasonable, and public health and rural and community medical and health services are relatively weak.

3. Demand for medical facilities under the HC policy

In response to the national mechanism, Lanxi officially implemented the operation of the medical system on March 29, 2019^[4]. With county-level hospitals as the leader, Lanxi integrated the medical and health resources of counties and townships and implemented the group operation and management. Lanxi city has two medical community systems: the People's Hospital medical community and the Hospital of Traditional Chinese Medicine medical community, which are responsible for the primary medical institutions in different administrative divisions. Through for two medical center body hospitals and grassroots hospital medical consultations in the month of data analysis (figure 3), namely compared respectively in March 2019, the medical body implement 9 months before and after nine months, two leading hospitals and medical total body corresponding to the medical hospital medical consultations, total body can be seen that the medical system to effectively implement, total The implementation effect of medical community in Lanxi People's Hospital is better than that of traditional Chinese hospital, which solves the problem of medical resource allocation to a certain extent.



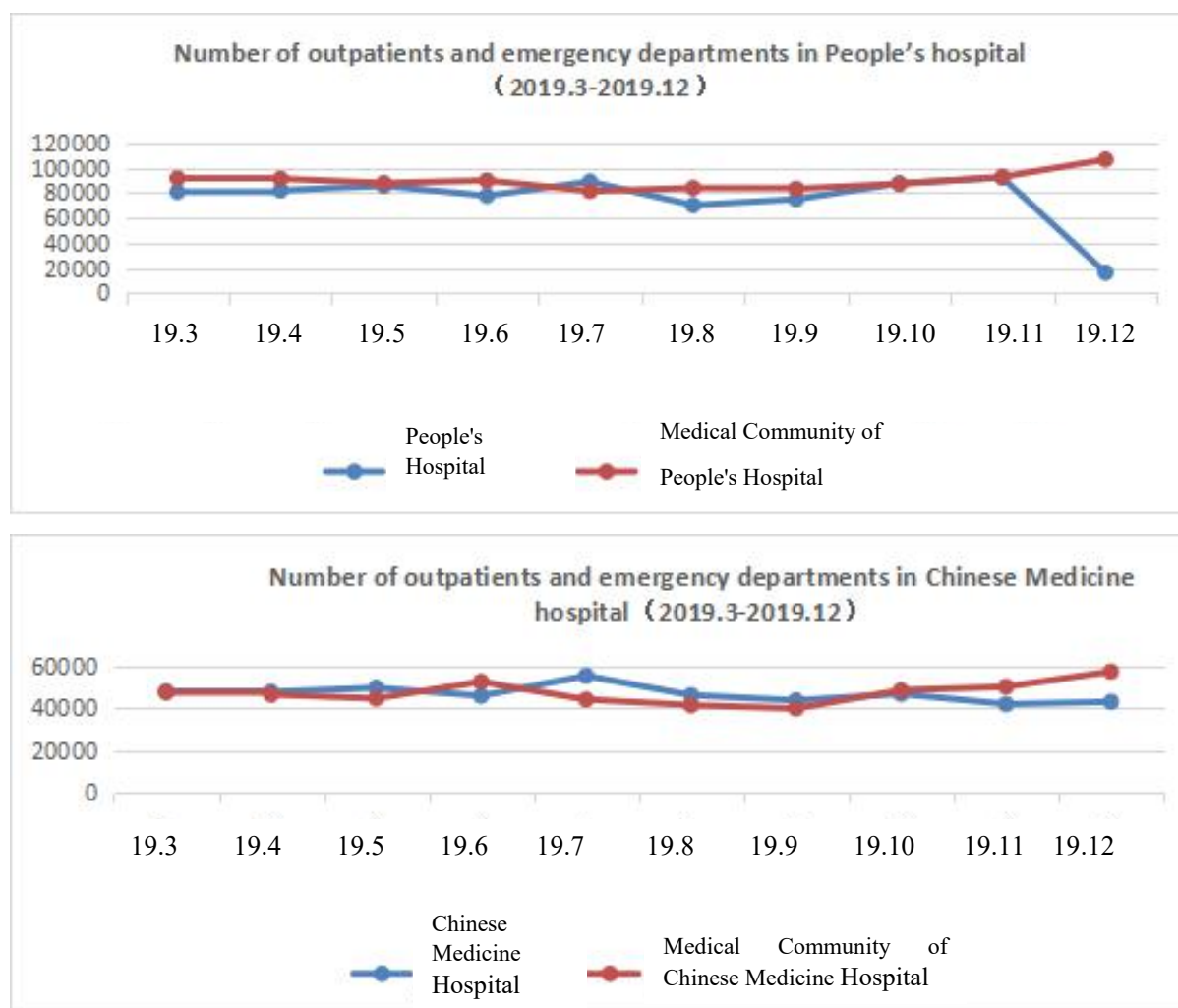


Figure 4 Comparison of the number of patients in leading hospitals and community hospitals before and after the implementation of the "Community of Hospitals" policy

Due to the uneven overall distribution and structure of medical resources, as well as uneven allocation of spatial indicators in Lanxi city, after the implementation of the "medical community" policy and the corresponding medical insurance policy, the medical supply problem in Lanxi city will become more prominent, mainly reflected in two aspects:

The increase in the number of primary care facilities has resulted in increased demand for medical facilities. Although the relevant supporting measures of the MEDICAL community can alleviate this situation theoretically, it is inevitable that the supporting measures are not implemented in place in the reality of a large gap in basic medical facilities. Based on the analysis of the age composition of registered population in lanxi city in the past ten years^[5], it is possible that the aging of Lanxi city will continue to prolong, and if it goes on like this, it will inevitably lead to new social problems.

Configuration standards based on specification indicators improve requirements. Due to the insufficient supply of basic medical facilities, especially in regions with low urbanization rate, there is a general problem of low standard of spatial allocation indicators^[6]. After the implementation of the "Medical community" policy, this problem will become more prominent. Convenient and comfortable medical environment is the basic premise to improve medical quality and an important factor to measure the development quality of medical cause^[7]. Therefore, if Lanxi wants to achieve medical equalization and balance the supply of basic medical facilities in a real sense, it should not only supplement the number of medical facilities network, but also adopt a series of ways. Make per capita land area, per capita floor area

and other hard indicators to improve, meet or even exceed the relevant standards. The quality of basic medical services should be comprehensively improved to ensure the implementation of the medical community system.

4. Medical facility planning and guidance strategy under the policy of "MEDICAL community"

4.1. We will strengthen balanced development and differentiated allocation of resources

4.1.1. Supplementary network, combined with the balanced layout of community life circle with the gradual "medical community" policy

With the gradual implementation of the "medical community" policy, the demand for basic medical facilities increases. At present, Lanxi city

The planning and layout of the medical facilities in the city of Chengdu reflects the shortage of beds and the large gap. In order to solve this situation and make basic medical care receive resident population in graded diagnosis and treatment, in addition to the above problems, community health service centers (village clinics) should be added in combination with accurate population number and mobility prediction, and the quantity and scale construction of basic medical care should be strengthened.

In addition to the layout of new community medical facilities (village clinics), rationalization suggestions should be put forward for the construction of urban community living circle at all levels. Based on the characteristics of the three community life circles: geographical space, social life demand and public service function, the micro-structure of the community can be better understood, so as to improve the implementation of community public service facilities, so that the community medical facilities (village clinics) can effectively serve the community residents. The overall layout of medical facilities in Lanxi urban area has the problem of insufficient configuration. In the process of encrypting the location of medical facilities, basic medical facilities can also be changed to spread

From the perspective of the behavioral characteristics of urban residents, the circular service radius layout method fully reflects the people-oriented concept and matches and links the specific layout of various medical facilities with the 15-minute community living circle^[8].

4.1.2. Due to district administration, differentiated allocation to adjust supply and demand relations

As mentioned above, there are obvious regional differences in the development status of basic medical facilities in Lanxi due to the difference in urbanization rate. The implementation of the "medical community" policy should mitigate such regional differences. The allocation of resources for basic medical facilities can adjust the supply-demand relationship through differentiation, and improve the regional differences from the two dimensions of old city and new district, urban area and rural area respectively (Figure 4).

(1) Old city and new city

According to the different needs and characteristics of the old city and the new city, medical resources can be adjusted and allocated in a differentiated way. For example, the index of land use for medical facilities in old urban areas is basically saturated, and it is difficult to implement new large-scale medical facilities^[9]. And some departments of the hospital are in overcrowding for a long time, the load is too concentrated. This case needs to be combined with urban renewal of old city, under the condition of the land use index temporarily unable to get expansion, adjustment of the existing urban function layout, for,, must confirm for the amount of existing medical use of land resources, through hospitals and community health facilities with the combination of medical policy for proper medical facilities layout adjustment. And by guiding the

resident population to the new city, it can divert the over-concentrated demand for medical treatment of the residents in the old city. For the new urban area, it is necessary to cooperate with the actual development of residential areas and road traffic planning, supply according to demand, and build all kinds of basic medical facilities according to a more optimized standard, so as to realize the improvement of the medical service function of the new urban area. Besides providing services for the citizens of the new area, it also plays a role in diverting and guiding the old urban area.

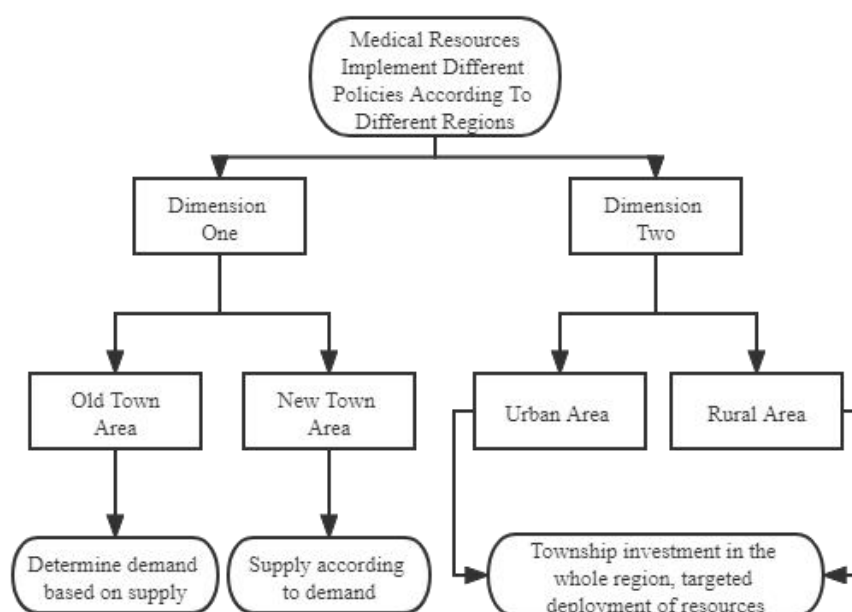


Figure 5 The supply-demand relationship is adjusted by differentiation

(2) Urban and rural areas

For urban and rural areas, medical funds can be directed to rural areas from the concept of coordinated urban and rural development and all-domain sharing of medical facilities, and village clinics can be set up in a 15-minute service circle within rural areas^[10]. In principle, one village health clinic shall be set up in each administrative village, which may be added in administrative villages with large population or scattered residents. Administrative villages with small population or area may set up village clinics jointly with neighboring administrative villages. In principle, there is no village clinic in the administrative villages where township health centers are located. Administrative villages without village clinics can set up mobile medical stations according to their needs to meet the needs of local farmers for nearby medical and health services. After the village was evacuated and relocated, the original village clinic was merged and transformed into urban community health service organization according to the setting plan. Medical facilities in rural areas can be reorganized and optimized by means of "removal, relocation, consolidation, construction and transformation" to improve medical and health conditions in rural areas. At the same time, the system of pairing assistance between large hospitals and community health service facilities can be established to realize the integrated development of urban and rural medical services and effectively promote the equalization of basic public medical services.

4.2. We will improve the quality of basic medical facilities

With the implementation of the "medical community" policy, the demand for basic medical care increases^[12]. In order to improve the quality of medical service in the construction of basic medical facilities in Lanxi, the spatial index configuration standard of basic medical care should be further improved. First of all, the new medical facilities should be constructed in strict accordance with the

relevant codes and established spatial allocation standards. Regions with demand and conditions can even exceed the standard construction within a moderate range, providing full flexibility for public health emergencies. Secondly, in view of the areas with saturated land use index in the old city, the reconstruction (expansion) project of basic medical facilities can be carried out in combination with the actual space situation, and then the gradual advancement of the old city renewal process can make full and reasonable use of the existing land for medical facilities. For the existing land generated through the adjustment of urban functions, priority should be given to the reconstruction (expansion) of basic medical facilities. If conditions are available, the existing basic medical facilities can meet the spatial index control requirements of relevant standards by means of modification (expansion). Built for unconditional change (enlarge) established medical infrastructure service center, can be part of the patient to a more grass-roots community health care facilities (village clinics), various based medical facilities can achieve even more than the corresponding spatial index standard, overall to improve the quality of lanxi city medical infrastructure space environment.

4.3. Recent planning: key area and general area

Traditional medical facility planning ignores the time dimension, and this study believes that attention should be paid to the recent planning in order to promote the effective implementation of planning. The implementation of the "d" for the medical facilities in the near future planning provides a powerful fulcrum, needle For lanxi area medical facilities planning, through the analysis of "medical total body" of the implementation of the results, as four classes, we hold the balance development and narrow the regional difference of configuration principle, divided into key areas and the general area (table 2). For the construction of basic medical facilities in key regions, it is necessary to improve the stock of medical and health facilities to a high standard and drive the high-quality development of basic medical facilities in general regions, rather than just focus on increasing the number of basic medical facilities as needed. Dynamic monitoring of the difference between the implementation of the planning and the actual demand through the supervision of the planning and construction process, and the establishment of a mechanism for the investigation, collection and feedback of the planning scheme among the masses. Combined with the results of the investigation, optimize the resource allocation scheme, and implement the guarantee planning accurately.

According to the characteristics of different types of regions, the rigid and elastic contents of resource allocation schemes can be implemented by differentiation, so that the overall quantity of medical resources and the planning and allocation scheme can be reasonably applied in the category of rigid control and elastic guidance, which is more conducive to the coordination and integration of existing medical and health facilities in the implementation stage. Through the recent construction planning and annual implementation plan preparation, ensure the accuracy and operability of planning implementation.

For medical facility plots with specific locations determined, the accuracy and rationality of site selection should be evaluated first, and the rigid control content should be determined, such as specific area, department setting, number of beds, per capita and other indicators. Rigid control content is not allowed to change the original rules. In addition, flexible and guided projects should be determined in the implementation process. On the premise of not affecting the radiation range of meeting the needs of the community and living circle, some projects can be flexibly adjusted to reflect the management mode of combining rigid and elastic medical and health facilities.

Administrative areas	The increase in the number of medical visits	The hospital level	Priority of the implementation of
Medical Community of Chinese Medicine Hospital（YS）	60.68%	1	Routine implementation
Medical Community of People's Hospital（LJ）	55.32%		
Medical Community of People's Hospital（YB）	41.96%		
Medical Community of People's Hospital（CX）	28.92%	2	
Medical Community of People's Hospital（MJ）	28.48%		
Medical Community of People's Hospital（ST）	25.73%		
Medical Community of People's Hospital（HX）	21.52%		
Medical Community of People's Hospital（NB）	20.74%		
Traditional Chinese Hospital medical community（ZG）	18.29%	3	Priority implementation
Traditional Chinese medical community（LD）	17.15%		
Traditional Chinese medical community（XX）	15.00%		
Medical Community of People's Hospital（BS）	14.41%		
Traditional Chinese medical community（HD）	11.63%		
Medical Community of People's Hospital（YC）	9.12%	4	
Medical Community of People's Hospital（MJ）	-4.41%		
Traditional Chinese medical community（SH）	-13.04%		

Table 2 Recent planning of key areas and general areas

4.4. Improving medical management system: multi-dimensional coordination and dynamic management

4.4.1. Policy coordination, index revision, system improvement

A. Building a platform for policy coordination

Medical facility planning should break out of the limitation as a technical tool for a long time and return to the scope of public policy. It should completely change the traditional supply mode of basic medical facilities as quasi-public goods and emphasize the development of medical facility planning from the perspective of multi-department coordination^[13]. All administrative departments should form unified policy objectives and implementation framework in the form of special planning for the layout of basic medical facilities through joint meeting system, and feedback it to spatial statutory planning such as territorial spatial planning and detailed regulatory planning, so as to ensure the effective landing of basic medical facilities^[14].

For a long time, the allocation principle of 1000 indicators in China has ignored the characteristics of basic medical demand in the new era and different regions,

The different needs of different residential communities, especially the differences in the degree of urbanization among different districts, lead to the failure of the 1000 quota in the specific implementation of basic medical facility planning in some areas, and the current standard of basic medical facility configuration implemented in Lanxi urban area is also below the standard. Therefore, in the future, the formulation of basic medical facility configuration standard in Lanxi urban area should be based on the 2018 Edition of Urban Residential District Planning and Design Standard, combined with the different characteristics of zoning development, and differentiated index configuration standard.

B. Revise the index allocation standard. For a long time, my country's thousand-person index allocation principle^[15] has ignored the characteristics of basic medical needs in the new era and different regions,

The demand differentiation between different residential communities, especially the differences in the degree of urbanization between the districts, has led to the failure of the 1,000-person indicator in the specific implementation of the basic medical facility planning in some areas. The basis for the implementation of Lanxi City The current standards for the configuration of medical facilities are also lower than the standards. Therefore, in the future, the formulation of the standard for the allocation of basic medical facilities in Lanxi urban area should be based on the 2018 edition of the "Urban Residential District Planning and Design Standards" ^[16], and combined with the characteristics of different district development, differentiated index allocation standards.

C. Improve the system of medical and health facilities, strengthen the cooperation mechanism between medical and health facilities at all levels, promote the implementation of hierarchical diagnosis and treatment system, and establish appointment and referral service platforms^[17]. The implementation of family doctor contract services and the convenience of medical insurance reimbursement procedures ensures that patients' "basic ailments" and "daily drug dispensing" and other daily needs can be solved in grassroots medical and health institutions, thus relieving the pressure of large medical institutions^[18]. Stationing increase health infrastructure, the scale expand or improve all kinds of functions, in addition to this, also should be based on the infrastructure of public health system services, from medical rights guarantee all people equal, intensive use of space resources, both the perspective of service radius and the feature set requirements, make the perfect system of medical facilities more adapt to the new era after the needs of the masses.

The allocation of public health facilities resources needs to tilt resources towards rural primary health facilities^[19], constantly narrow the gap between urban and rural health services, improve the level of equality of health services, and optimize the basic medical and health service system scientifically and effectively. Medical and health institutions at all levels have reasonable resource allocation and clear functional positioning. Through the dislocation development of different medical disciplines, a medical system with benign competition and continuous better development can be established. We should give full play to the leading role of public hospitals in the primary-level medical care system and improve the overall efficiency of the medical service system through technical support, personnel training and management guidance^[20].

Gradually establish and improve the medical and health care service system. Establish a service network in rural areas with municipal hospitals as the leader, township hospitals as the support, and village clinics as the basis; A new urban medical and health service system, led by municipal general hospitals and specialized hospitals and based on community health service institutions, out-patient departments and clinics, will be established in cities, so that the establishment of medical institutions within the city can meet the requirements of scientific planning, rational layout, optimal allocation and orderly development.

To guide the relocation of hospitals in old urban areas to new urban areas. At the same time, further encourage market participation, standardize and guide the mode of private capital to enter, improve the overall system of basic medical facilities in Lanxi urban area, and form a pattern of mutual promotion,

orderly competition and common development between public and non-public hospitals. To meet the people's needs for multi-level and diversified medical and health services.

5. Conclusion

In the planning of public service facilities, special planning oriented to implementation must pay attention to the relevant industries

For important policy research, the knowledge system of planning needs to be enriched and integrated, and the planning path should be combined with the implementation path of public service facilities policy, so as to explore the corresponding implementation mode and guarantee system. Otherwise, planning has no root and the result can only be reduced to an armchair strategist [5]. The contradiction of medical and health resources is prominent in small towns in China. Aiming at the current situation of unbalanced overall distribution, unreasonable structure and unequal allocation of spatial indicators of medical resources in Lanxi city, Zhejiang Province, combined with the implementation of the "medical community" policy, the corresponding medical resource allocation mode should be formulated: (1) Supplement network, combine with balanced distribution of community life circle, fully respond to the demand of medical equality brought by "medical community" policy; (2) The allocation of basic medical facilities resources can adjust the supply and demand relationship through differentiation, and improve the regional differences from the two dimensions of old city and new district, urban area and rural area. (3) Improving the quality of basic medical facilities; (4) Attach importance to short-term planning, "medical community"

The implementation of the policy provides a strong starting point for the planning of medical facilities in the near future. By analyzing the implementation effect, the policy is divided into key areas and general areas and promoted gradually according to the allocation principle of balanced development and narrowing regional differences. At the same time, multi-dimensional coordination and dynamic management should be carried out simultaneously to improve the medical management system.

The medical community policy is an important measure to rationally allocate medical resources and promote the equalization of basic medical and health services. The medical facility planning should be taken as an effective tool and the supporting guarantee of the "MEDICAL community" policy, and the "medical community" policy should be taken as the starting point of the near-term planning to enhance the implementation of the medical facility planning. Furthermore, it is of great significance to promote the sharing of medical and health resources and transfer high-quality medical resources to the grass-roots level, which is of great significance to improve the unbalanced development of urban and rural medical facilities and the unreasonable allocation of resources in China.

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