ISSN 2706-6819 Vol.4, Issue 11: 61-68, DOI: 10.25236/IJFM.2022.041110

A Comparative Study on Healthcare Resources in Greater Mekong Subregion

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Abstract: *The significant socioeconomic variety of the Greater Mekong Subregion (GMS) and the favorable conditions for the establishment and spread of infectious illnesses emphasize the need for international cooperation. This article focuses on an assessment of healthcare resources in four countries in the Greater Mekong Subregion (Cambodia, Laos, Myanmar, Thailand, and Vietnam). First, the socioeconomic and demographic conditions of the five countries will be analyzed, and second, the health resources of the five countries will be exanimated, mainly from these three aspects: health manpower, health facilities, and health expenditure. The five Mekong countries' socioeconomic progress is uneven and divisive. In terms of health resources, these five countries face a lack of government investment, a high personal health burden on citizens, and a scarcity of health resources. The distribution of health-care resources within and between GMS nations is highly variable. Resource sharing and mobilization are critical in the process of GMS health cooperation for more effective and equitable utilization of available resources in the GMS.*

Keywords: *Health Care Resources, Health system, Resource allocation, GMS*

1. Introduction

Southeast Asia is critical to the global spread and long-term evolution of influenza viruses, [1] and is seen to be the most likely location for the birth of a new influenza strain with the potential to spread worldwide. [2] Particularly since the emergence of pandemic, there has been a rising recognition that international cooperation in public health is critical. [3] The Greater Mekong Subregion (GMS) is a platform for cooperation among the six Mekong countries: Cambodia, Vietnam, Laos, Myanmar, Thailand and China (specifically Yunnan Province and the Guangxi Zhuang Autonomous Region). The Greater Mekong Subregion's economic and social growth is comparatively lagging behind, with Cambodia, Laos, and Myanmar being among the least developed nations in the world due to a variety of issues. Lancing-Mekong region has a complicated human geography, most of it is tropical, with high temperatures, constant rain, and high humidity. It is a region with high rates of emerging infectious diseases including chikungunya fever and the Zika virus, in addition to high rates of malaria, dengue fever, TB, and AIDS. The health and safety issues in the area have had a significant negative influence on the region's ability to sustain its business and society. Health became one of the eight strategic thrusts of the GMS Economic Cooperation Program Strategic Framework. [4] The GMS Economic Cooperation Program Strategic Framework 2030[5] advocates that the six countries should promote cooperation in health, women, poverty reduction and other livelihood areas based on practical needs.

The GMS was initially established to promote economic cooperation among member nations, the social and economic development of sub-regional nations, and the achievement of shared regional prosperity. Since cooperation is the key concept in the GMS, resource mobilization and sharing can be especially crucial, especially in the face of a pandemic-ridden environment given the vast differences in socioeconomic conditions in the Greater Mekong Subregion and the context of the GMS initiative to strengthen cooperation among countries. [6] The need for sharing public health resources within the region will be influenced by the current situation of national public health resources and health status in the region. Therefore, this paper analyzes and compares the public health resources of five countries within the Greater Mekong Subregion (Vietnam, Thailand, Myanmar, Cambodia, and Laos) by collecting data from these countries and analyzing the differences between these six countries regarding health resources to provide a basis for Mekong cooperation in the field of public health.

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2. Method

The data sources are mainly publicly available databases and yearbooks, including World Bank Open Database, Global Health Observatory Database, Global Health Expenditure Database, and World Health Statistics Yearbook.

The analysis of the data begins with an analysis of the socioeconomic and demographic situation of the five countries, which are important influences on national health resources. Second, in the analysis of health care resources. Indicators of healthcare resources include health spending, health spending share, number of practicing physicians, and number of practicing nurses. [7] In addition to these health resources are also divided into stock and increment, stock refers to the total amount of health resources originally owned and increment refers to the additional health resources to be added. [8] Therefore, all things considered, during the data analysis phase, this paper will classify these indictors into three categories: health manpower, health facilities, and health expenditure. About health manpower, we focuses on physician ratio、nurses and midwives ratio、dentists ratio and pharmacists ratio in each country; in terms of health facilities, we analyses hospital beds ratio and the number and classification of hospitals by country; for health expenditure, we mainly focus countries' current health expenditures as a percentage of total national GDP, health expenditure per capita and the composition of current health expenditure. In the analysis, the world average is used as a reference, and then the health resources of the five Mekong countries are compared and the problems faced by these countries in terms of health resources are summarized.

3. Socioeconomic and demographic situation

According to the World Bank's latest World Bank classification criteria in July 2020, none of the five countries under study are high-income countries, with only Thailand being upper-middle income, while the other four countries are all lower-middle income. In terms of total GDP, the highest country is Thailand ($ 506 billion), followed by Vietnam ($ 362.6 billion), and the lowest is Laos ($ 8.83 billion). Analyzed in terms of GDP growth rate from 2017 to 2021, all five countries are growing in terms of total GDP, with the highest growth rate in Vietnam (28.86%) and the lowest in Myanmar (5.89%), and the world total GDP growth rate is 18.05%, with only two countries, Vietnam and Cambodia (21.55%), exceeding the world total GDP growth rate.

In terms of GDP per capita, Thailand ($7233) and Vietnam ($3694) are still the first and second highest, but the lowest is Myanmar ($1187), with Laos ranking third among the five countries in terms of total GDP, ahead of Cambodia and Myanmar, which have a higher total GDP. The fastest growing country is Vietnam (24.2%) and the slowest growing country is Myanmar (3.12%), with only Vietnam and Cambodia both having a GDP per capita growth rate greater than the world average (13.27%).

Table1 shows that the socio-economic situation varies widely among these five countries, with the best socio-economic situation in Thailand and Vietnam, and Vietnam's development momentum is more rapid compared to other countries. The other three countries are more backward in development, and all of them are classified as least developed countries by the United Nations, and both GDP per capita and GNI are much lower than the world average, which brings considerable challenges to the public health situation of these countries and the public health cooperation of GMS.

Table 1: Socio-Economic Status of the Five Mekong Countries (2017-2021)

	Total GDP (billion, $)		GDP per capita ($)		GNI, per capita ($)	
Year	**2017**	**2021**	**2017**	**2021**	**2017**	**2021**
Cambodia	22.18	26.96	1385	1590	1230	1550
Lao PDR	17.07	18.83	2455	2551	2260	2520
Myanmar	61.45	65.07	1151	1187	1180	1550
Vietnam	281.4	362.6	2365	3694	2700	3560
Thailand	456.4	506	6593	7233	5970	7260
World	81400	96100	10826	12263	10489	12070

From Table 2, in terms of total population, all five Mekong countries have grown, with the largest population in Vietnam (98.17 million), followed by Thailand (69.96 million), and the smallest population in Laos (7.379 million). The highest population growth rate is in Laos (1.42%), followed by Cambodia (1.35%), which exceeds the world average population growth rate (0.9%), while the other three countries

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are below the world average population growth rate.

Table 2: Demographic profile of the five Mekong countries (2017-2021)

	Total population (million)		Population age structure (%)						Population distribution (%)			
			Age 0-14		Age 15-64		Age 65 and over 65		Urban population		Rural population	
Year	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Cambodia	16.01	16.95	31	31	64	64	4	5	23	25	77	75
Lao PDR	6.95	7.38	33	32	63	64	4	4	34	37	66	63
Myanmar	53.38	54.81	27	25	68	68	6	6	30	31	70	69
Vietnam	94.6	98.17	23	23	70	69	7	8	35	38	65	62
Thailand	69.21	69.95	17	16	66	70	11	14	49	52	51	48
World	7519	7837	16	25	66	65	9	10	55	57	45	43

In terms of population age structure, the countries with a high proportion of population aged 0-14 years in 2021 are Cambodia, Laos and Myanmar, with 31%, 32% and 25% respectively, all above the world average (25%); the proportion of population aged 15-64 years is only slightly below the world average (65%) in Cambodia (64%) and Laos (64%); while the highest proportion of population aged 65 years and above reaches is Thailand (14%), which exceeds the world average (10%). According to the UN standard for classifying aging societies (7% of the population aged 65 and above), Thailand and Vietnam are already among the aging countries. In terms of urban and rural population distribution, although the proportion of urban population in all five Mekong countries has increased in 2017 compared to 2021, the proportion of urban population in all five Mekong countries is relatively low and does not reach the world average, with the highest country being Thailand (52%) and the lowest country being Cambodia at 25%.

4. Healthcare resources

4.1 Health manpower

Table 3: Healthcare Human Resources

(*: year in which the data is available: data unavailable)

	Physicians (per1,000 People)	Nurses and midwives (per 1,000 people)	Dentists (per 10,000 people)	Pharmacists (per 10,000 people)
Cambodia	0.20 *(*2014)*	1.01 *(*2019)*	0.85 *(*2018)*	0.34 *(*2014)*
Lao PDR	0.50 *(*2014)*	0.72 *(*2019)*	0.77 *(*2020)*	2.29 *(*2020)*
Myanmar	0.74 *(*2019)*	1.08 *(*2019)*	0.73 *(*2019)*	0.78 *(*2019)*
Thailand	0.93 *(*2019)*	3.12 *(*2019)*	2.67 *(*2019)*	6.31 *(*2019)*
Vietnam	0.83*(*2016)*	1.45 *(*2016)*	…	3.39 *(*2016)*
World	1.80 *(*2017)*	4.00 *(*2017)*	5.18 *(*2018)*	8.30 *(*2019)*

As shown in Table 3, none of the five countries exceeded the world average for the proportion of doctors, the proportion of nurses and midwives, the proportion of dentists, and the proportion of pharmacists. Taken together, Thailand performs the best in terms of human resources for health and is closest to the world average compared to other countries. According to the World Health Organization's Global Strategy for Human Resources for Health: Health Workforce 2030, the SDI for the minimum density of doctors, nurses and midwives needed is 44.5 doctors, nurses and midwives per 10,000 people. [9] Not only does the total density of doctors, nurses and midwives in all the five countries not meet the minimum density standard, but even the world average is some distance away from this goal. According to the World Health Statistics Yearbook 2019, almost 40% of countries worldwide have less than 10 doctors per 10,000 people, almost 60% have less than 40 nurses and midwives per 10,000 people, 64%

ISSN 2706-6819 Vol.4, Issue 11: 61-68, DOI: 10.25236/IJFM.2022.041110

have less than 5 dentists per 10,000 people, and 60% have less than 5 pharmacists per 10,000 people; inadequate human resources for health is a phenomenon that exists in most countries internationally.[10] And while the global density of physicians per 10,000 people has increased in recent years, regional disparities remain significant, according to the World Health Statistics Yearbook 2022. [11] These disparities may be accelerating due to the pandemic's impact on health care workers. Between January 2020 and May 2021, the pandemic claimed the lives of approximately 80,000 to 180,000 healthcare workers. [12] In addition, stress and burnout have contributed to workforce attrition, with many health workers choosing to leave the profession. Many countries continue to face shortages of health workers in key job categories, leading to significant disruptions in other essential health services。All the data in Table 3 are from the most recent data available to WHO, the most recent data are from 2019 or earlier, and in some countries, there are missing data. These data are prior to the outbreak in 2020, when the five countries had human resources for health deficits and large differences between countries, which will be exacerbated and magnified during the outbreak.

4.2 Health facilities

As shown in Figure 1, except Vietnam, the hospital bed ratios of the other four countries are below the world average. The five countries have low levels of hospital bed density, with Cambodia and Myanmar having less than and just under 1 hospital bed per 1,000 people, respectively. From the ratio of hospital beds, it can also be approximately inferred that the number density of hospitals in Cambodia and Myanmar is also low. The public health system in Cambodia is divided into three levels: National or Central Level (3rd Level), Provincial Level (2nd Level), and Operational District Level (1st Level). Each level has different responsibilities and is classified according to different criteria, including population size, accessibility, and the level of population density in the area. According Health Strategic Plan 2016-2020 [13] by Open Development Cambodia, in 2015, there were 47 hospitals, 244 clinics, 8,488 private healthcare facilities, and approximately 2,156 pharmacies operating in Cambodia. Private healthcare services are usually found in densely populated urban areas. Many local and international organizations also play an important role in Cambodia's health sector, establishing non-profit health facilities at the district and community levels to support the poor in rural area. In 2015, there were more than 180 NGOs working in the health sector.

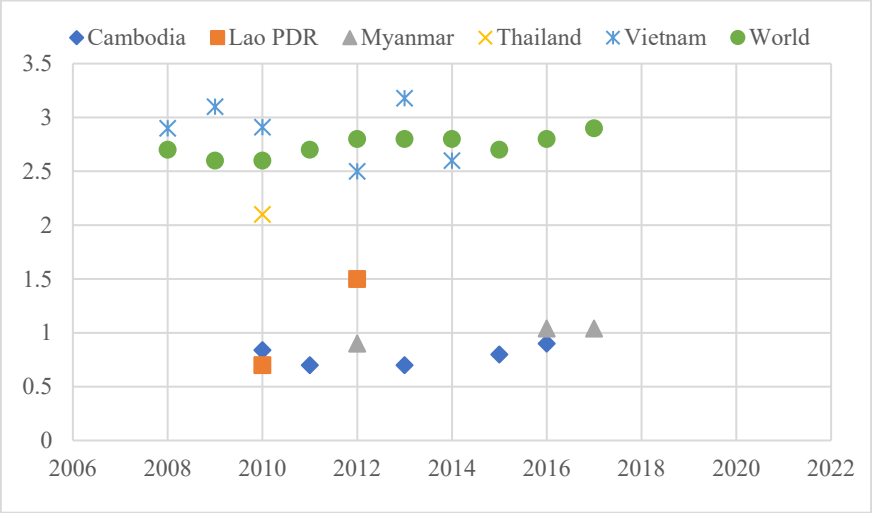

Figure 1: Hospital beds (per 1,000 people)

According to the 2015 Private Health Care Statistics report from the Myanmar Ministry of Health Services, there are 193 private hospitals, 201 private specialist clinics, 3,911 private general clinics, and 776 private dental clinics in the country. According to Health in Myanmar 2014, there were 330 township hospitals, 617 station hospitals, 55 regional, state, and district hospitals, 4 general hospitals, and 50 specialist/teaching hospitals in Myanmar in 2014. There were 80 school health teams, 348 maternal and child health centers, 87 primary and secondary health centers, and 1684 rural health centers. Preventive care and public health initiatives are primarily handled by these facilities.

Healthcare systems in Lao PDR consist of: a) Public healthcare system (predominant), b). private healthcare system (attendance increase), c). joint public-private healthcare system (PPP). And the level of healthcare in public sector consists of four levels: a). primary care, including 1060 Health centers, b).

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intermediate care, including 135 district Hospitals, 25 CEmONC (Comprehensive Emergency Obstetric and Newborn Care), 110 BEmONC (Basic Emergency Obstetric and Neonatal Care), c). secondary care, including 17 provincial hospitals, d) (Lower)Tertiary care: 3 general hospitals, 2 specialized hospitals, 3 centers for Eye, Dermatology and Rehabilitation, located in Vientiane capital. [14] Currently, there are more than 17 private hospitals and over 1,000 private clinics registered with the Ministry of Health in Laos.

In terms of the number of hospitals, particularly public hospitals, Vietnam and Thailand are in a little better position than other nations. Vietnam's public hospitals are split into three levels: central (47 hospitals), provincial (419 hospitals), and district. The country's healthcare system is a public-private collaboration (684 hospitals). The nation also contains 182 private hospitals, the majority of which are. It is estimated that hospitals in Vietnam accommodate more than 50% of healthcare visits and consume more than 95% of total health insurance expenditures. In Vietnam, hospital autonomy changes began in the 1990s, allowing hospitals to collect user fees. Beginning January 2018, public hospitals, mostly at the provincial and federal levels, began to operate autonomously, and yes, they are no longer reliant on direct budget subsidies for running costs. Public hospitals, for example, play an essential role in delivering healthcare services to the public. In 2019, Thailand's population of 68 million is served by 927 government hospitals and 363 private hospitals with 9,768 primary care health units (SHPH clinics), responsible for Thai citizens' health at the sub-district level. SHPH has played a significant role in the Thai public health. Additionally, there are 25,615 private clinics.

4.3 Health expenditure

The analysis of national health cost can understand the state of health financial resources of the country. Health cost assessment can understand the scale and strength of the whole society's health investment in a country by analyzing the level of health financing, the financing structure and the development trend of a country, which reflects the importance of the country's health to the population. [15] Regarding health expenditure, this question will analyze two indicators, total health expenditure as a share of GDP and total health expenditure per capita. In terms of health expenditure structure, three indicators are analyzed: government health expenditure, out-of-pocket health expenditure, and the share of external health expenditure.

Table 4: Current health expenditure and health expenditure per capita

	Current health expenditure (% of GDP)	Current health expenditure per capita (current US$)
Cambodia	7	113.31
Lao PDR	2.6	68.22
Myanmar	4.68	60.02
Thailand	3.79	296.17
Vietnam	5.25	180.72
World	9.83	1121.97

The proportion of total health costs to GDP is an important indicator commonly used around the world to measure whether health development is compatible with national economic growth. It reflects the strength of the whole society's investment in health and the importance of health care for residents under certain economic conditions in a certain period of time, but there is no universally accepted standard for the proportion of total health costs to GDP in a country. [16] As can be seen from Table 4, in terms of public health as a percentage of total GDP, these five countries have lower health expenditure as a percentage of GDP than the world average, with the highest being Cambodia and the lowest being Laos. Looking at the trend from 2017 to 2019, the health expenditure as a percentage of GDP in Cambodia and Vietnam is on an increasing trend, Myanmar and Thailand is on a decreasing trend, and only Laos is on a slight increase of 0.05% in 2019 after a decrease of 0.28% from 2017 to 2018. Total health costs per capita is an indicator of the level of enjoyment of health costs per capita by eliminating the effect of population growth factors on the absolute value of total health costs. None of the five countries exceeded the world average, with the highest being Thailand and the lowest being Myanmar. Except for Laos, all other four countries showed an upward trend in per capita health expenditure, with the highest increase being in Thailand and the lowest in Myanmar. Although Laos experienced a slight decrease in personal health expenditures from 2017 to 2018, the increase was larger in 2019.

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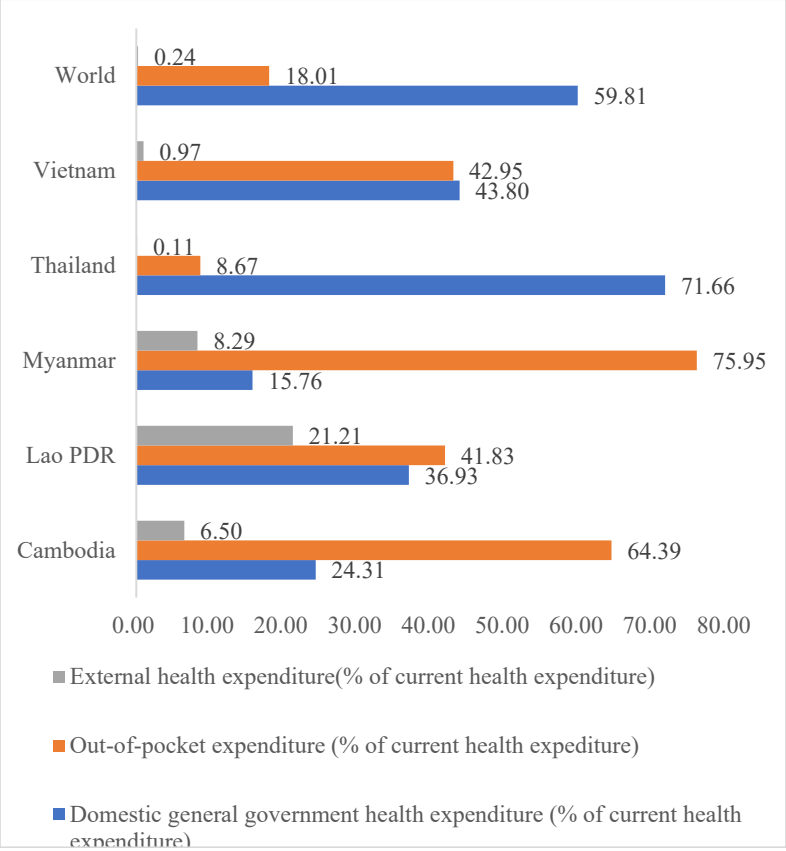

Figure 2: The composition of current health expenditure in 2019

From Figure 2 we can see, government health expenditure as a share of government expenditure is the proportion of general government expenditure that finances the current health expenditure, and it reflects the extent to which government public finance is invested in the health sector. It can be seen that only Thailand (71.66%) is higher than the world average in government health expenditure in the five Lan Mekong countries, while the lowest is Myanmar at 15.76%. In order to expand the coverage of medical insurance, Thailand introduced a universal coverage program in 2002, the "30 Baht Plan", which provides medical care for all. The "30 Baht Plan" means that participating citizens pay only 30 Baht (about 1 dollar) per visit to designated medical institutions for both outpatient and inpatient services, and low-income farmers are exempted from paying for the following basic health care services: preventive health services and health promotion services, outpatient and Inpatient services, no more than 2 deliveries, normal hospital room and board, and treatment of common oral diseases such as tooth extraction, etc. [17] Such a policy has also led to a much higher percentage of government health spending in Thailand compared to other countries.

Out-of-pocket spending refers to the portion of a country's residents who spend directly on health expenditures out of their own pockets, including out-of-pocket expenses for medical care for residents who are covered by multiple health insurance systems. The proportion of personal health expenditures to total health costs can more directly reflect the degree of burden of health care costs on a country's residents. The highest proportion of personal health expenditure is in Myanmar (75.95%), and there is no doubt about this result because the proportion of government health expenditure in Myanmar is the lowest, and the lowest is in Thailand (8.67%). The other four countries have a higher percentage of personal health expenditures than the world average, which means that the population enjoys fewer health insurance benefits and not much government subsidy, and needs to pay for their own medical care.

External health expenditure is composed of direct foreign transfers and foreign transfers distributed by government encompassing all financial inflows into the national health system from outside the country. This data actually shows the level of development of a country and the level of dependence on other countries, such as Thailand (0.11%) and Vietnam (0.97%), whose External health expenditure ratio is not high and is much lower than that of the other three countries, although Vietnam's External health expenditure ratio has some differences with the world average. The largest external dependence is in Laos with 21.21%, which is about 88 times of the world average.

ISSN 2706-6819 Vol.4, Issue 11: 61-68, DOI: 10.25236/IJFM.2022.041110

5. Conclusion

The comparison of the above data shows that, first of all, the socio-economic development of the five Mekong countries is uneven and there is an obvious polarization phenomenon. Among the five countries, Thailand is a traditional agricultural country with liberal economic policies and is an externally-oriented economy. In the 1980s, Thailand experienced rapid development of manufacturing industries such as the electronics industry, industrial restructuring, sustained rapid economic growth, and good improvement and development in all areas of society, with a corresponding increase in people's living standards. While Cambodia, Laos, Myanmar and Vietnam are four countries with late start of economic construction and low level of urbanization defects directly lead to their economic development level lagging behind China and Thailand, and the industrialization, informatization and agricultural modernization level of these four countries are relatively lagging behind.

Second, the five countries suffer from inadequate government investment in health, a heavy burden on residents' personal health, and a lack of health resources. Although the total per capita health expenditure and the proportion of total health expenditure to GDP in the five Lan Mekong countries are both on a growing trend, they are all lower than the world average. When a country's socio-economic development level is low, the strength of investment in health depends on the judgment and decision of national policy makers, while when a country's socio-economic development reaches a certain level of height, the relationship between various indicators of health costs and GDP in this country will show a certain pattern. Cambodia, Laos, Myanmar, and Vietnam have a low socioeconomic level, and the proportion of total health costs to GDP varies irregularly, and there is a phenomenon that the strength of health investment does not match the economic development. In contrast, Thailand's economic level is relatively high, and the stable economic development ensures the sustainability of health investment The total health costs as a proportion of GDP in the country will increase with the growth of GDP. As in Thailand, a high percentage of health expenditure is spent by the government and less by individuals. In terms of health manpower and infrastructure, all five countries are not at the world average. Cambodia, Laos, and Myanmar have limited capacity to train health personnel due to limited national financial resources, while the lack of information exchange between the training side and the demand side of health personnel limits the number of health care recruits in their public medical institutions. Clinical medicine and nursing students cannot find suitable jobs in the health field after graduation, and the lower capacity of medical students to train and absorb employment also contributes to the uneven allocation of health human resources. [18]

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