The Current Status of the Construction of Geriatric Departments at Secondary and Tertiary General Hospitals in Guangxi, China: A Cross-Sectional Study

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Research Article

Keywords: China, General hospital, Geriatric department (GD), Construction, Aging

Posted Date: February 24th, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1365531/v1>

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Abstract

Background

To actively respond to the aging society challenges, the number of geriatric departments (GDs) at China's secondary and tertiary general hospitals (STGHs) is increasing rapidly. This study aims to introduce the current status of the construction of GDs at STGHs in Guangxi Zhuang Autonomous Region, assessing what needs to be done in the future.

Methods

250 STGHs in Guangxi Zhuang Autonomous Region of China was investigated. Using a self-designed questionnaire to collect information through the basic information of hospitals, department settings, medical staff structure, and patient admission rate aspects. Finally, a total of 196 hospitals were analyzed and reported descriptive.

Results

About 98 GDs have been established, which were composed of four models: independent organizational system, combined department, separate outpatient service, and special cases. In these geriatrics, there were 2172 beds in tertiary general hospitals (TGHs) respectively in total, whereas 548 beds in secondary general hospitals (SGHs) totally. The structure of some GDs was incomplete, and the equipment for elderly was inadequate. The number of patient admission in TGHs in the last 3 years was more than 20 times higher than those in SGHs. The two-way referral channel was low efficiency.

Conclusions

After the rapid growth of China's GDs, now, there are some deficiencies in the quality of the construction, hierarchical diagnosis and treatment, the talent system, services providing aspects. Standardized management, overall structure, talent system construction, rehabilitation and nursing service are further direction of China's GDs in the future.

Background

China's aging trend is getting serious year by year since the 21st century. That is due to the decline of fertility and the extension of life expectancy in the past [1]. The latest report showed that in China, there were 240 million elderly aged over 60, accounting for 18.7% of the country's total population [2]. The rapid aging of the population and an alarming increase of chronic noncommunicable diseases have become one of the major problems of public health in China [1, 3].

Over the past decade, China's central and local governments have made great efforts to improve the elderly health service system. Since 2013, the Chinese government has begun to encourage secondary and tertiary general hospitals (STGHs) to establish geriatric departments (GDs) [4]. This means that China has begun to accelerate the construction of geriatrics. After that, dozens of national policies have been issued to vigorously promote the construction of GDs at STGHs in China. In 2019, the State Council proposed that in 2022, the proportion of GDs at STGHs should not be less than 50% [5]. Now, the number of GDs in China is increasing rapidly.

However, the field of geriatrics in China is still immature and facing a lot of challenges, because almost all GDs were established after the year of 2000 and some of them were transformed by cadre health care [6]. Most senior doctors were not trained for geriatrics specialty when they study in universities as undergraduate, master even doctoral students,

and many junior physicians were directly admitted to GDs as soon as they graduate from medical school without any practical experience. A lack of national systematic geriatric training programs, examinations or qualifications resulted in the current situation [6]. So, here comes the question: What about the current status of the construction of GDs in China, and what needs to be done in the future?

Guangxi Zhuang Autonomous Region, located in Southeast China, is a province that has a 50 million population with medium economic development level. It has about 8.63 million elderly aged over 60 years old, accounting for 16.7% of its total population [2]. This article tends to introduce the current status of GDs at STGHs in Guangxi Zhuang Autonomous Region in China, stating our views and practice on the existing problems, and providing the future direction.

Methods

According to the study purposes, the object of this study is to investigate STGHs in Guangxi Zhuang Autonomous Region. Inclusion criteria were as follows: 1) general hospital in Guangxi Zhuang Autonomous Region; 2) the level of hospital is secondary or tertiary. However, hospital branches were excluded. Finally, a total of 250 hospitals met the criteria and were included in the study.

Through literature research, geriatric policy and guidance documents enacted by the national and sub-national governments, and expert consultation, a questionnaire was designed for the current status of the construction of GDs at STGHs. It mainly included: 1) basic information of hospital such as name, level, contact number; 2) GD's setting; 3) medical staff structure of the GD; 4) the patient admission of the GD.

The investigation was conducted from April 1 to August 31, 2021. The questionnaire distributed to each study object by the department of aging health of the Health Committee of Guangxi Zhuang Autonomous Region through the Administrative Management Information System. It shall be filled in by the hospital management department, then collected via emails. Each object was requested to fill in the questionnaire in order. In the basic information of the hospital, there is an item about whether the GD has been opened in your hospital. If not, then stop filling in the remaining items and submit the questionnaire.

Questionnaires are checked immediately after collection. Hospitals will be contacted for modifications if problems occurred such as missing filling and wrong filling. Questionnaires' exclusion criteria are as follows: 1) unable to contact hospitals for modifications on incomplete data; 2) modifications have not been done within the time limit; 3) a logical contradiction occurred in answers, for example, inconsistent information provided on similar questions 4) unrealistic information founded. The study was strongly supported by the health administrative department of the provincial authority to ensure the authenticity of the data.

Data entry was performed by two professionals to ensure accuracy. Statistical data were demonstrated by EXCEL statistical software version 2010. Analyses were done with SPSS statistical software version 26.0. Descriptive statistics were reported as means and standard deviations or median for continuous variables and frequencies for categorical variables. Only used the median to describe data when it was not normally distributed.

Results

Among the 250 facilities investigated, 203 questionnaires were submitted. Seven questionnaires were excluded, and 196 questionnaires were finally included. The overall respondent rate was 81.20% (203 / 250) and the effective respondent rate was 78.40% (196 / 250). To be more specific, the effective response rate of secondary general hospitals (SGHs) was 74.18% (135 / 182), and that of tertiary general hospitals (TGHs) was 89.71% (61 / 68).

Basic information of hospitals

At present, there have been 98 GDs (50% of the study object) established in Guangxi Zhuang Autonomous Region, China, including 43 TGHs and 55 SGHs. In 1986, the first GD of the TGH has been established, after that there is a slightly increased trend for the next 35 years, except for a large increase in the year of 2019. SGHs started to establish GDs after 2009 and its growth rate increased sharply after 2017 as Fig. 1 shows.

Models of the establishment

98 GDs were consisted of four models: independent organizational system, combined department, separate outpatient service, and special cases. Only 36 GDs were independent organizational system, including 24 TGHs and 12 SGHs. There are 56 GDs operated by the combined department model, of which SGHs account for the majority. Actually, in the model of the combined department, neither the ward nor the work team belongs to the GD. For example, some hospitals divided a certain number of beds in neurology ward to receive elderly patients. This will have a great impact on providing appropriate services and care for geriatric patients. Doctors prefer to accept elderly patients with neurological diseases because they are neurologists. The separate outpatient GD cannot provide inpatient services, only drug services are available. In addition, there are two special cases, one is to provide VIP convalescent services for patients with economic ability in the hospital. The other facility has no outpatient and ward, only family doctor service is available (Fig. 2). In the following results, only some specific information of 36 GDs operated by the independent organizational system was reported since other models cannot represent the GD.

Department settings

In the 36 GDs which are operated by the independent organizational system, there were 2172 beds and 1084 wards in TGHs respectively in total, 548 beds and 163 wards in SGHs totally (Table 1). The structure of some GDs was incomplete(Fig. 3), and a lack of equipment related to the elderly in most GDs (Table 2). In addition to disease treatment, most GDs also undertake the health tasks of preventive health care and rehabilitation (Fig. 4).

Table 1
The ward setting of 36 GDs at STGHs

Items	TGHs n = 24				SGHs n = 12			
	Minimum	Maximum	Total	C	Minimum	Maximum	Total	C
Numbers of Beds	16.0	618.0	2172.0	60.0	9.0	102.0	548.0	47.0
Net usable area per bed(m ²)	5.0	20.3	211.4	7.0	1.8	8.5	69.0	6.1
Bed spacing(m)	0.5	2.0	26.0	1.08 ± 0.341	0.4	1.6	12.5	1.0
Total floor area of ward(m ²)	144.4	5337.2	44194.0	1741.0	60.0	2430.6	8168.4	491.0
Number of wards	5.0	323.0	1084.0	24.0	3.0	32.0	163.0	11.5
Number of comprehensive evaluation rooms	0	8.0	23.0	1.0	0	3.0	10.0	0.5
Total area of comprehensive evaluation room(m ²)	0	125.0	400.6	11.0	0	287.7	413.2	4.3
n = number; m = meter; m ² = square meter; C = concentration trend;								

Table 2
The medical equipment of 36 GDs at STGHs (n)

Items	TGHs n = 24				SGHs n = 12			
	Minimum	Maximum	Total	C	Minimum	Maximum	Total	C
Basic equipment								
Wheelchair	2	58	158	5	2	18	42	3
Sitting weighing scale	0	3	11	0	0	1	1	0
Transfer vehicle	1	38	84	2	0	3	9	1
walking aids	0	10	28	0	0	5	10	0
IV Infusion pump	0	48	146	3	0	15	27	1
Syring driver	0	130	358	18.84 ± 32.409	0	10	41	4
Insulin pump	0	45	118	2	0	7	8	0
Emergency equipment								
Emergency trolley	1	16	54	1	1	2	14	1
Emergency airway set	0	7	23	1	0	2	9	1
Bag mask device	1	15	52	2	0	2	14	1.17 ± 0.577
Cardiac monitor	1	119	418		1	16	45	4
				22.00 ± 30.734				
ECG machine	0	23	52	1	0	2	7	1.00 ± 0.577
Ventilator	0	29	66	1	0	1	4	1
Defibrillator	0	7	35	1	0	3	8	1.14 ± 0.900
Geriatric equipment								
Sports rehabilitation equipment	0	2	7	0	0	0	0	0
Physical rehabilitation equipment	0	20	34	0	0	0	0	0
Color Doppler ultrasound instrument	0	2	5	0	0	0	0	0
Electric nursing bed	0	137	144	0	0	0	0	0
n = number; Iv = intravenous; ECG = electrical cardiogram; C = concentration trend								

Items	TGHs n = 24				SGHs n = 12			
	Minimum	Maximum	Total	C	Minimum	Maximum	Total	C
Autonomous transfer device	0	1	1	0	0	0	0	0
Gripping device	0	3	6	0	0	0	0	0
Tableware for the elderly	0	10	10	0	0	0	0	0
Toys for the elderly	0	20	22	0	0	0	0	0
n = number; lv = intravenous; ECG = electrical cardiogram; C = concentration trend								

Medical staff structure

In the 36 geriatrics departments run by the independent organizational system, there are 1764 medical staff in total (Table 3). Among them, about 0.25 doctors and 0.45 nurses per bed in tertiary hospitals, and nearly 0.13 doctors and 0.30 nurses per bed in secondary hospitals.

Table 3
Professional title and education of 36 GDs' staff at STGHs [n (%)]

Items	N	Professional title			Education			
		Junior	Middle	Senior	Junior college	Undergraduate	Master	Doctorate
Tertiary								
Doctor*	547	122(22.3)	196(35.8)	228(41.7)	0	180(32.9)	329(60.2)	38(7.0)
Nurse*	986	571(57.9)	339(34.4)	75(7.6)	268(27.2)	700(71.0)	17(1.7)	1(0.1)
Secondary								
Doctor	69	35(50.7)	23(33.3)	11(16.0)	19(27.5)	49(71.0)	1(1.5)	0
Nurse	162	140(86.4)	21(13.0)	1(0.6)	134(82.7)	28(17.3)	0	0
Total	1764	868(49.2)	579(32.8)	315(17.9)	421(23.7)	957(54.3)	347(19.7)	39(2.2)
N = number; * One case had no professional title								

Patient admission

The number of patient admission in TGHs in the last 3 years was more than 20 times higher than those in SGHs (Table 4). Outpatient is the main channel for elderly patients to access GDs. However, the two-way referral channel was not fully operational.

Table 4
Patient admission of 36 STGHs' GDs in recent three years (n)

Items	TGHs n = 24				SGHs n = 12			
	Minimum	Maximum	Total	C	Minimum	Maximum	Total	C
Total	368	9357	178531	1636	16	1937	7122	351
Emergency admission	1	2405	23877	186	0	372	1370	34
Outpatient admission	94	7633	146581	1310	16	1753	5445	335
Primary health facilities referral admission	0	305	4351	30	0	112	350	0
Referral to primary health facilities	0	894	5759	20	0	103	264	0
Telemedicine	0	530	1632	0	0	0	0	0
Difficult and complex diseases	6	3674	34317	394	0	91	287	0
Average length of stay(d)	7	80	1030	10	6	71	354	12
Average bed utilization(%)	64	206	6638	97	60	105	1145	82
Average hospitalization expenses(RMB)	5066	50713	1065245	12150	3301	25347	136676	6343
n = number; d = day; %=percentage; RMB = Renminbi; C = concentration trend								

Discussion

Although the number of GDs has increased rapidly in recent years, the quality of department settings was not guaranteed at all. It's easier to find that the construction mode has not been unified through the result. The major reason was the lack of national standard specialized in it over the last few years. Because of that, it seriously hindered the development of GDs in China and put the regulators in a dilemma when judging its quality. What is exciting was China's National Health Commission and other departments jointly issued the guideline for the construction and management of GDs in China (trial version) on November 26, 2019, the content of which has six parts: 1) general principles; 2) setting and operation; 3) staffing; 4) department management; 5) quality monitoring 6) appendix [7]. Local governments are also formulating their own standard based on it, although it takes some time. For the requirements in the standard (trial version), we need to make improvements in the following aspects in the future.

First, the construction mode should be standardized and the main service groups should be identified clearly. All the GDs should be run by the independent organizational system, mainly receiving elderly patients suffering from geriatric syndrome, various diseases, and other acute or chronic diseases [7]. It is also to ensure the medical service quality of geriatrics.

Second, the setting of departments should be completed and standardized. Outpatients, wards, and comprehensive evaluation rooms, all need to be set up. Twenty beds, seven square meters of net use area of each bed, one meter of bed

spacing, and four square meters of the toilet are minimum and mandatory required settings for the ward [7].

Third, basic equipment related to geriatrics should be prepared. Table 4 shows us that both STGHs are short of geriatric equipment. However, in the current national management standard (trial version), the equipment of basic and emergency in the ward have been specified, but geriatric equipment still need further supply [7]. Furthermore, some managers have not realized their importance to patients. These appliances are not only helpful for patients, but also less costly, like some rehabilitation tools, electric nursing beds, walking aids, tableware and toys for the elderly, etc. It is necessary to give full play to the advantage within geriatric departments, in order to provide comprehensive services in medical, rehabilitation, and nursing for elderly patients by completing equipment.

Urban secondary hospitals are the intermediate link of China's urban tertiary medical system, connecting primary health institutions and tertiary hospitals. They mainly provide diagnosis and treatment of common diseases around local areas, refer difficult and complex diseases to tertiary hospitals, and accept convalescent patients referred by tertiary hospitals [8]. However, GDs at SGHs are facing great survival problems. Patients always seek perceived high-quality medical service in tertiary hospitals despite complaining of high medical costs and long wait time [9]. Table 4 also proves this point. The reason for this includes the patient traditional concept, the inadequate medical quality and resources of GDs at SGHs, etc. These problems not only reduce efficiency in using health resources but also hinder the implementation of hierarchical diagnosis and treatment [10, 11]. Thus, it is of great significance to strengthen the construction of GDs at SGHs. But, it requires local governments to identify the responsibilities of miscellaneous departments, designate a strong department to lead the effective cooperation among other departments that ensure all policies are feasible and achievable [12].

Following suggestions help to solve these problems: 1) Strengthened the government's financial support and quality supervision. 2) Increasing the medical insurance of medical staff who work in the GDs at SGHs to attract more talents. 3) Spreading the concept of China's hierarchical diagnosis and treatment, guiding ordinary patients to give priority to SGHs.

As mentioned at the beginning of the article, there are deficiencies in the talent training of geriatrics in China [6]. The latest management standard (trial version) of the GD requires 0.3 doctors and 0.6 nurses per bed, but Table 3 shows that we didn't reach that standard [7]. Thus, the quantity and quality of geriatric talents are two major problems that need to be solved in the future.

Although China has established master's and doctor's courses in geriatrics, the incubation period is too long for institutions to train a geriatric talent. Therefore, we should also make efforts in the following aspects in the future: 1) like imaging technology and stomatology, the government should set the GD up independently at the undergraduate stage to speed up the training of geriatric professionals. 2) strengthening the training and assessment of existing talents. It is necessary to establish access standards for professionals in geriatrics, perfect the occupational qualification certification system related to elderly health that ensures staff quality. Moreover, it is also important to establish skill and work quality assessment system, assess and train regularly staff in the GD to improve medical quality.

Based on the advantages of home care, China is now gradually establishing a community and home care-dominated, public and private nursing home-supplemented system [12–15]. However, many elderly patients still have to go to the GD of the hospital to seek rehabilitation and nursing services. The reasons for this include poorly primary health care system, high costs in the private nursing home and few beds in the public nursing home, etc [9, 10, 13]. With the medical quality being higher than that of primary health institutions, and the expenses can be reimbursed, the GD of the general hospital has become the best choice for some patients to seek rehabilitation and nursing services.

In the guidance on perfecting the elderly health service system jointly issued by China's National Health Commission and other eight departments in 2019, medical institutions are encouraged to positively carry out elderly rehabilitation nursing services [16]. At present, in Guangxi Zhuang Autonomous Region, in addition to western medical rehabilitation services, some GDs have carried out traditional Chinese medical rehabilitation services, some have a family nursing service called "Internet plus nursing services" [17, 18]. The rehabilitation needs of inpatients and continuous nursing services after discharge have been met. However, that's not enough. Figure. 4 and Table 2 showed that not all geriatric departments possess rehabilitation services, and they are quite short with rehabilitation equipment. Limited by professionals, fewer rehabilitation and nursing services can be provided. Although the internet medical service platform has been positively explored throughout China, it is still in the primary stage at present. Therefore, the rehabilitation and nursing services of the GD need to be further developed in the future, to improve China's elderly health service system and maximize the health needs of elderly patients.

Contribution To The Construction Of Global Geriatric Departments

We didn't demonstrate an advanced GD construction mode, but introduced the current status of the construction of the overall GDs in a medium-economic level province in China, including the overall service supply rate, department setting, medical staff structure, and patient admission rate. We analyze the existing problems, and provide some suggestions for future improvement. Other countries with similar situations or countries that are about to face similar situations can refer to and respond in advance.

Limitations

First, the questionnaire is self-designed since the development of mostly GDs was not long, and there are few relevant studies and references available in China. Owing to the various form of the GD and the GD practice being deepened, the questionnaire design items may not fully reflect the current state of the construction of GDs.

Second, the economic development and health needs of different regions in China are different, and the actual development of regional comprehensive medical system is also quite different. This study only investigated the GD at STGHs in Guangxi Zhuang Autonomous Region, China with an incomplete reply. Although the research object has certain limitations, this study has been guided and strongly supported by the local government, with good representativeness, large scale, good accessibility, and authenticity.

With the development of China's GD practice, more in-depth studies with large samples and multi-region representatives will be necessary in the future.

Conclusion

The construction of the GD in China is a complex and long-lasting system project, which cannot be achieved overnight and needs continuous efforts. After the rapid growth of the number, it is very important to standardize management and strengthen supervision, promote the establishment of hierarchical diagnosis and treatment model, consolidate the geriatric medical talent system, and further improve the rehabilitation and nursing services. Maximizing the important role of geriatrics in people's health can further improve China's elderly health service system so that China's aging society problems can be effectively dealt with.

Abbreviations

GD: Geriatric department; STGH: Secondary and tertiary general hospital; SGH: Secondary general hospital; TGH: Tertiary general hospital

Declarations

Ethical approval and consent to participate

This study was approved by the ethics committee of The First Affiliated Hospital of Guangxi Medical University [2022-KT-E-(048)]. This study has been approved by the Health Commission of Guangxi Zhuang Autonomous Region, China. The data also has been approved to be made public by them. It is not possible to identify individuals from the information provided.

Consent for publication

Not applicable.

Availability of data and materials

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Competing interests

The authors declare that they have no competing interests.

Funding

This work was supported by the Health appropriate technology promotion on project of Guangxi (2021001) , which is directly funded by the Health Commission of Guangxi Zhuang Autonomous Region, China.

Authors' contributions

YY, BH and XL were carried out the study conceptualization and design. BH, XL, HZ, YL and XG were prepared the investigation and collected the data. BH and XL analyzed the data. BH wrote the first draft of the manuscript. XL, HZ, YL, XG, ZL, YW, JT and HH read and revised the manuscript. YY was responsible for the Funding acquisition and Supervision of study. All authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Acknowledgements

All authors would like to acknowledge the Health Commission of Guangxi Zhuang Autonomous Region for its strong support. We also thank to the hospitals for their valuable information and cooperation.

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Figures

Figure 1

Time distribution of geriatrics in 98 STGHs in Guangxi Zhuang Autonomous Region, China

Figure 2

Models of the establishment of 98 GDs at STGHs

Figure 3

The structure of 36 GDs at STGHs

ICU= intensive care unit.

Figure 4

The business of 36 GDs at STGHs