

# The Research on the Outpatient Cost Adjustment Framework of the Urban Workers in a Southern China City During 2013 to 2015

INQUIRY: The Journal of Health Care Organization, Provision, and Financing  
Volume 56: 1–7  
© The Author(s) 2019  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/0046958019894093  
journals.sagepub.com/home/inq



Na Wang, Msc<sup>1</sup>, Ruiming Liu, PhD<sup>1</sup>, Jinglin Lu, MA<sup>1</sup>,  
Peng Quan, PhD<sup>1</sup> , and Zongfu Mao, PhD<sup>2</sup>

## Abstract

Based on a large amount of data, the study aimed to analyze all expenses of outpatients in a southern China city from 2013 to 2015. It draws a conclusion that the total cost of outpatient has increased in the past 3 years, and various cost indexes either increased or decreased in different ways. Drug costs and treatment fees are the main influencing factors for the change in total outpatient cost. The structural change from 2013 to 2015 was 70.15%. Drug costs, laboratory fees, and inspection fees are the main indexes that account for the increasing total outpatient costs. This study puts emphasis on the cost of human resources, which eliminates the phenomenon of “Yi Yao Yang Yi” (support medical cost with medicine) and “Yi Xie Yang Yi” (support medical cost with medical device). This study also focuses on the balance of outpatient cost, as well as the compensation function of medical insurance, which encourages multiple participation and coordinated adjustment.

## Keywords

outpatient cost, Chinese medical revolution, drug cost, medical insurance, urban worker

### What do we already know about this topic?

The total medical expenses have increased year by year. The drug costs and treatment fees are the main influencing factors for the change of total outpatient expenses. The treatment fee is reduced year by year, and the drug cost, laboratory fee, and inspection fee are the main indicators for the increase of the total outpatient cost.

### How does your research contribute to the field?

The charge costs and treatment fees are the main influencing factors for the change in total outpatient expenses. The treatment fee is reduced year by year, and the drug cost, laboratory fee, and inspection fee are the main indicators for the increase of the total outpatient cost.

### What are your research's implications toward theory, practice, or policy?

The theoretical significance is to help provide a theoretical reference for the medical cost adjustment and provide support for the improvement of human resources costs. The practical significance is to help us build a medical cost adjustment framework, make reasonable medical expenses, and provide a scientific reference for the relevant price formulation.

## Introduction

In China's new medical reform, the issue of medical expenses has attracted much attention, including medical expenses such as excessive drug costs,<sup>1</sup> the increase of laboratory fee and inspection fee, along with the low cost of nursing and surgery, have caused overtreatment.<sup>2</sup> Most scholars have studied this problem and proposed some solutions. In fact, the excessive growth of medical expenses in China is an institutional problem. The problem is the structural interaction of

various factors such as politics, economy, culture and society, the mutual influence of each system, and the inevitable result of the game. In particular, China is in the process of launching a complex medical system reform, as medical expenses are receiving much attention.<sup>3</sup> The incentives for the growth of medical expenses are complex. Technological advancement, payment methods, medical system structure, and income equality of residents are all influencing factors. Therefore, controlling the excessive growth of medical expenses is one



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons

Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

of the important goals of China's new round of medical reform.

In Chinese new medical reform, medical expenses have received much attention, such as excessive drug costs, increased inspection and inspection fees, and lower cost of care and surgery.<sup>4</sup> Excessive medical care has led to an increase in the cost of medical services, which is an important reason for the rapid growth of medical expenses in China. Studies have shown that the reform of medical insurance control methods will change medical supply behavior.<sup>5,6</sup> Excessive medical care has led to changes in the structure of patients' medical expenses, which lead to loss of benefits for insured residents.<sup>7</sup> Therefore, controlling the excessive growth of medical expenses is one of the most important goals of China's new round of medical reform.<sup>8</sup>

Although some scholars have accumulated many results,<sup>9</sup> the research on the mechanism and motivation of China's medical expenses are still not enough. In recent years, the medical insurance institution has purchased the service on behalf of the buyer. The idea of restricting suppliers to control expenses is deeply rooted. Especially, many departments in China have jointly issued policies to reduce outpatient expenses since 2014, including large-scale medical equipment inspection and treatment, improving treatment, surgery, rehabilitation, and care. Chinese medicine and other medical service prices reflect the value of medical staff's technical services, and increase their positive incentives and respect. There are few studies on outpatient expenses in China now. Some experts have proposed multidimensional solutions to the problem of excessive medical expenses, such as medical cost risk control.<sup>10,11</sup> The phenomenon of the excessive cost increase is worth exploring.

In the process of strengthening the construction of the social security system, the emerging "Zhanjiang model" (Zhanjiang is a southern China city) has been marked with the successful practice of the insurance corporation to serve the national medical security system, which has attracted the attention of the government and the society. This model optimizes medical care. The quality of health resources management and service enables the limited and sufficient utilization of medical resources and realizes the cooperation between the social security department, the insurance company, and the designated hospital. Then, what is the composition of the total outpatient cost of Zhanjiang in this mode? What are the factors driving growth and decline? What role does the health insurance fund play? The purpose of this study is to analyze

the changes in outpatient expenses of urban workers in Zhanjiang City from 2013 to 2015, to explore a reasonable outpatient cost adjustment framework, and to propose corresponding recommendations and countermeasures.

## Methods

The data came from 19,951 outpatients who participated in urban employee medical insurance in Zhanjiang from 2013 to 2015. Among them, 15 836 cases in 2013, 2825 cases in 2014, and 1290 cases in 2015. These patients' data were collected from different medical institutions, including primary health care institutions and tertiary hospitals, including Chinese medicine hospitals and integrated Chinese and Western medicine hospitals, but the proportion of outpatient expenses is not much different. The raw data include inspection fee, nursing fee, treatment fee, surgery fee, laboratory fee, and drug fee (including chemical medicine fee, traditional Chinese medicine fee, and herbal medicine fee, etc.). Inspection fees and laboratory fees are the main indexes that constitute medical expenses, with a total proportion of more than 70%, which has a greater impact on the total medical expenses. Troubleshoot and incomplete data are excluded. The disease in this data sample involves multiple systemic diseases, of which respiratory diseases account for 43.76%, children's system diseases account for 20.79%, circulatory diseases account for 14.11%, genitourinary diseases account for 4.33%, and other system diseases account for a small proportion. Because it is outpatient data, death cases are not considered.

The data in this study are properly licensed. Each medical institution in the city has a medical expense data system, and each patient's medical expenses information is entered into the system. Each medical institution submits these data to the Social Security Bureau in the middle of each month. Therefore, the outpatient medical expenses data collected by the Social Security Bureau are derived from each medical institution. The data were analyzed by excel. The structural change degree method is used to analyze the structural changes of various expenses and the contribution to the total cost changes.

## Results

### *Summary of Outpatient Medical Expenses*

The total cost of outpatient clinics increased from 4793.85 CNY in 2013 to 6673.17 CNY in 2015, showing an

<sup>1</sup>Guangdong Medical University, Dongguan, China

<sup>2</sup>Wuhan University, Wuhan, China

Received 18 March 2019; revised 11 November 2019; revised manuscript accepted 15 November 2019

#### **Corresponding Author:**

Peng Quan, School of Humanities and Management, Guangdong Medical University, Dongguan 523808, China.

Email: quanpeng0@qq.com

**Table 1.** Medical Expenses for Outpatients of Urban Workers in a Chinese City.

	2013 (N = 15 836)			2014 (N = 2825)			2015 (N = 1290)		
	Mean	SD	%	Mean	SD	%	Mean	SD	%
Western medicine	1581.73	3349.17	22.61	2261.35	2702.65	36.58	1912.21	2731.95	28.61
Chinese patent medicine	0.46	19.53	0.01	21.92	141.41	0.31	29.69	151.73	0.47
Chinese herbal medicine	4.11	54.70	0.06	4.44	45.35	0.08	5.92	90.43	0.10
Examination fee	0.04	0.89	0	1.04	6.47	0.02	1.99	6.88	0.05
Inspection fee	51.15	218.60	0.84	453.08	864.66	8.24	1087.10	1192.23	19.32
Nursing fee	9.52	49.98	0.14	25.74	120.51	0.42	56.49	73.86	0.98
Treatment costs	2813.67	5571.08	43.47	2694.09	4757.88	38.19	2218.47	5632.39	24.52
Surgery fee	17.58	205.28	0.26	136.70	412.06	1.98	246.93	522.08	3.47
Lab fee	67.30	258.91	1.21	422.47	556.87	8.75	1037.55	695.50	21.22
Others	248.29	1352.79	3.36	127.62	497.80	1.70	76.82	609.19	1.25
Sum	6228.49	8120.78	100	6148.45	6800.76	100	6673.17	7158.05	100

Note. %, The ratio of a certain expense to the total cost.

increasing trend year by year, and the increase in 2013-2014 was larger. For specific indexes, drug costs, inspection fees, and treatment fees accounted for the 3 largest proportions among the 10 indexes. The proportions were 43.47%, 38.19%, and 24.52%, respectively. There was a trend of decreasing year by year, and the proportions of treatment fees in the 3 years were statistically different. Followed by the proportion of Western medicine costs, from 22.61% to 36.58%, the average value of 1581.73 ~ 2261.35 CNY. The proportion of laboratory fees increased rapidly, from 1.21% in 2013 to 21.22% in 2015. The increase in the inspection fee also increased rapidly, from 0.84% to 19.32%. These 2 indexes, the laboratory fee, and the inspection fee were in significant contrast with the treatment fee. As shown in Table 1, among the 10 indexes, besides the Chinese herbal medicine fee, the difference was statistically significant.

### Changes in the Cost Structure

The results showed that outpatient costs increased significantly. The largest structural change is the laboratory fee, followed by treatment fees and inspection fees. It is noteworthy that the treatment cost decreased and the inspection fee increased. As shown in Table 2, the Western medicine fee increased. The other indexes' changes are smaller than the Western medicine fee.

As shown in Table 3, from 2013 to 2014, Western medicine fees, laboratory fees, inspection fees, and treatment fees were the main medical expenses items that caused structural changes in outpatient medical expenses. These 4 fee cumulative contribution rates reached 89.5%. From 2014 to 2015, treatment fees, laboratory fees, inspection fees, and Western medicine fees were the main medical expenses items that caused changes in the structure of hospitalization medical expenses. The cumulative contribution of these 4 fees was 94.2%. It draws a conclusion that

**Table 2.** Changes in Outpatient Cost (%).

	2013-2014	2014-2015	2013-2015
Western medicine	13.97 <sup>a</sup>	-7.97	6
Chinese patent medicine	0.3	0.16	0.46
Chinese herbal medicine	0.02	0.02	0.04
Examination fee	0.02	0.03	0.05
Inspection fee	7.4	11.08	18.48
Nursing fee	0.28	0.56	0.84
Treatment fee	-5.28	-13.67	-18.95
Surgery fee	1.72	1.49	3.21
Lab fee	7.54	12.47	20.01
Others	-1.66	-0.45	-2.11
Structural change	38.19	47.9	70.15

<sup>a</sup>Positive values represent the percentage increase; negative values represent the percentage decrease.

laboratory fees, treatment fees, inspection fees, and Western medicine fee play important role in outpatient medical expenses.

The treatment fee includes the expenses incurred by the doctor during the treatment, such as diagnosis and manual reduction. The inspection fee includes the expenses incurred by computed tomography (CT), B-ultrasound, etc. The nursing fee refers to the expenses incurred by the nurse during nursing, and the examination fee is the outpatient service. Doctors pay for medical examinations and physical examinations, so the treatment fee is different from the indexes such as nursing fees, inspection fees, and examination fees.

### Gray Correlation Analysis

Gray correlation analysis of the outpatient medical expenses of urban workers in Zhanjiang City from 2013 to 2015 showed that the correlation coefficient and correlation degree

**Table 3.** Contribution Rate of Each Index in Total Outpatient Medical Expenses (%).

	2013-2014	2014-2015	2013-2015
Western medicine	0.366	0.166	0.085
Chinese patent medicine	0.008	0.003	0.007
Chinese herbal medicine	0.001	0.001	0.001
Examination fee	0.001	0.001	0.001
Inspection fee	0.194	0.231	0.263
Nursing fee	0.007	0.012	0.012
Treatment costs	0.138	0.285	0.27
Surgery fee	0.045	0.031	0.046
Lab fee	0.197	0.26	0.285
Others	0.043	0.01	0.03

**Table 4.** Correlation Coefficients of Medical Expenses in Outpatient Cost.

	2013	2014	2015	Mean
Western medicine	0.99	0.97	0.97	0.98
Chinese patent medicine	0.85	0.96	0.89	0.89
Chinese herbal medicine	0.99	0.97	0.98	0.98
Examination fee	0.85	0.99	0.85	0.9
Inspection fee	0.86	0.96	0.83	0.89
Nursing fee	0.9	0.96	0.87	0.91
Treatment cost	0.94	1	0.94	0.96
Surgery fee	0.87	0.99	0.86	0.91
Lab fee	0.87	0.95	0.84	0.89
Others	0.85	0.96	0.88	0.89

between Western medicine fee and Chinese herbal medicine fee were the largest, indicating that the inspection fee had the greatest impact on the hospitalization expenses, followed by the treatment fee, again the surgery fee and the examination fee, and the correlation coefficient between the inspection fee and the laboratory fee. Its impact on the total cost of outpatients is also the smallest. Three years of correlation and correlation sequence study found that the impact of the medical expenses of urban staff outpatients on the total cost of the top 5 indexes is: Chinese herbal medicine fees (0.98) = Western medicine fee (0.98) > Treatment fee (0.96) > Surgery fee (0.91) > Nursing fee (0.91). See Table 4 for details.

## Discussions

Attention should be paid to the composition and changes of outpatient expenses. First, as can be seen from Table 4, the total cost of medicines (including Western medicine, Chinese herbal medicines, and Chinese medicines) and testing and inspection costs constitute the outpatient service. The inspection fee includes the cost of blood examination, perspective cost, CT fee, ultrasonic test fee, etc. The laboratory fee is the cost of 3 routine examinations of blood, urine, and stool. The

main indexes are also the main factors affecting the growth of outpatient total costs. Although the impact on the growth of outpatient total expenses is large, the development trend is diametrically opposite, that is, the cost of medicines is increasing year by year, and the cost of treatment is decreasing year by year. Second, the total cost of outpatient clinics has increased year by year. Specifically, compared with the surgery fee, nursing fee, and inspection fee, the drug fee, inspection fee, and inspection fee are significantly increased, and the specific increase and decrease of various cost indexes have obvious differentiation characteristics. In response to this, it is proposed to control medical expenses and establish countermeasures for compensation mechanisms. After the introduction of the low drug charging policy, the compensation source of Zhanjiang City Public Hospital was replaced by the original hospital. Most of the operating and development costs have become the government's financial input and medical services. From the past situation, due to the influence of policies, medical income is not supplemented by medical service fees. Without financial subsidies, it is difficult to continue. The medical service project charges urgently require government financial support to provide a guarantee for the government to establish a medical service price adjustment linkage mechanism. Therefore, the government should clearly define and quantify the connotation, methods, and standards of financial compensation to ensure the sustainable development of public hospitals. Government subsidies can achieve artificial control over the price of medical services, thereby reducing the cost of medical expenses. Increasing hospital income through financial subsidies is the most direct and effective way to delay the growth of medical expenses, especially per capita medical expenses. Later, to maintain the normal operation of public hospitals, only the government can avoid the disguised growth of service charges, in order to alleviate the pressure on the patient level.

To sum up, the cost of medicines is the main factor leading to the increase in the total outpatient cost, and the cost of treatment is the main factor that may lead to the reduction of the total outpatient cost. In other words, the increase in the cost of medicines (especially the cost of western medicines) is an important reason for the increase in the total cost of outpatient services.<sup>12,13</sup> If the total cost of outpatient services is reduced, it is mainly due to the reduction of treatment costs. Therefore, it is necessary to establish a reasonable pricing mechanism for medical service projects. In 2017, Zhanjiang City fully implemented the reform of the medical system of public hospitals. The biggest change is the "cancellation of drug additions" under government pricing or government guidance. Some medical services are priced by the hospitals themselves. They reduced part of the inspection fee, equipment inspection fee, medical service fee, and improved the technical labor value of medical personnel. Finally, the structure of medical expenses has changed, the cost of medicines has decreased, and the cost of inspections has increased. The second is the internal factor. Like public

hospitals in other cities, the hospital's development direction and medical philosophy are guided and controlled by the government and authorities. Under the advocacy and supervision of many parties, the price of medical services is becoming more and more transparent. The professional quality and industry norms of medical personnel are largely high. It has achieved certain results in cost control by intensifying rectification and punishment of medical violations, such as large prescriptions, major inspections, and large treatments.

The government's strengthening of control and guidance is a guarantee. From the perspective of the total cost of outpatient clinics and their composition development in Zhanjiang from 2013 to 2015, the objective existence of medical charges is not only significantly lower than medical expenses, but also the value of medical technology services is too low. Therefore, according to the comprehensive level of medical institutions, medical personnel, technical difficulty, risk intensity, manpower and time, consumables, etc, the administrative price control should be gradually abolished, and the role of the market mechanism should be brought into play to gradually improve medical personnel such as surgery, nursing, and medical care, to promote the decline of drug prices and high-value medical consumer goods, thereby changing the current unreasonable deformed medical cost structure and proportion. While distorting the current service price, we must continue to accelerate the marketization of medical service pricing. When determining the price of medical services, we should respect the value of human capital and establish a market-based price system based on project costs. The third is to implement relevant reforms and institutional support. The effect is that the policy effects of a single government sector must be compromised. Therefore, it is necessary to carry out joint reforms in government agencies and departments such as health, sanitation, prices, finance, development and reform, statistics, and personnel to better-organize implementation monitoring. Only by coordinating planning, comprehensively implementing policies, strengthening the standardization of medical care, improving medical insurance, and reforming medical care, can we promote the growth of medical costs and the realization of economic and social development goals. Only by adhering to internal and external governance, strengthening internal management and external supervision of public hospitals, establishing and improving medical cost monitoring and disclosure mechanisms, and regulating and guiding medical service behaviors, can we indirectly control the unreasonable growth of medical expenses in public hospitals.

Improving health human resource cost indexes is the key and core. On one hand, the current pricing of medical services is unreasonable and there are many problems. At present, the basic process of price adjustment of medical services in China is: price and health administrative departments dominate, after the price adjustment, doctors and other health professionals and opinions of all parties are issued and implemented. This model has a big problem, mainly in the process of formulating

the price of medical services, the lack of participation of doctors and other health professionals, making the medical service price list unrealistic in terms of project setting, connotation formulation, and pricing unit. It not only lacks a systematic and scientific price measurement mechanism but also does not reflect the difference between technical labor value and material consumption value. The value of the health workforce is not outstanding. To improve the treatment of medical staff, their income is not linked to medical service income. It is necessary to improve the management system of public hospitals, deepen the reform of the personnel system, and accelerate the establishment of a salary system that meets the characteristics of the medical and health industry. On the other hand, the current pricing of health care service is unreasonable to a large extent. It reflects the value of health workers. It is necessary to insist on increasing the medical expenses of core indexes such as inspection fees, nursing expenses, and surgery fees. In fact, in in-hospital management, human resources are the most important. In 2017, China began to try to implement comprehensive reforms in public hospitals at all levels across the country. It is stipulated that from 0:00 on July 1st, all drug additions (excluding Chinese herbal medicines) will be canceled, and the price of medical services will be adjusted. In this price adjustment, the human resource price adjustment is obvious. Judging from the specific measures of Zhanjiang City, this reform will continue to deepen the linkage between medical service prices and medical care, medical insurance, and medical reform, with a focus on improving the prices of medical care, surgery, nursing, rehabilitation, and Chinese medicine. It reflects the value of medical staff technical services and reduces the cost of some inspections and large instruments. The price for the cancellation of the registration fee has been incorporated into the examination fee. They adjust the price of 8 medical services, including diagnosis, surgery, nursing, Chinese medicine (rehabilitation), pathological examination, bed, large-scale instrument inspection, and inspection. To increase the price item, they lower the price item and combine the price items into one categories. The price adjustment plan takes the form of a guide price. Therefore, increase the medical expenses of inspection fees, nursing expenses, and other indexes, and strictly control the unreasonable growth of medical expenses. The value of human resources is prominent, and it is expected to form a reasonable price adjustment model for the total cost of outpatient services and various medical service cost indexes. Therefore, the participation of outpatient expenses, multipronged approach, and coordination can be said to be the correct way to adjust the structure of outpatient expenses. After all, any single-factor surgery cannot effectively control the total outpatient cost, because it can not only effectively suppress outpatients. The total cost can alleviate or partially eliminate the phenomenon of "expensive medical treatment," and, help to reduce the panic of some patients and to optimize the overall adjustment of outpatient expenses and reduce negative defense medical behavior. We can learn from the medical service price

adjustment process and model in developed countries, such as the United States, and establish a medical service price committee, medical representatives and research institutions composed of representatives of various professional disciplines, prices, medical insurance, health and family planning committees. Representative agencies dynamically propose adjustment and revision of project proposals every year, and cooperate with third-party research institutions to carry out measurement of relevant medical service projects. Pricing organization experts review and determine prices, and medical insurance companies carry out budgetary impact analysis and form a scientific and orderly dynamic adjustment development model. The cost of foreign health human resources is relatively high, which mainly reflects patients paying higher treatment fees and nursing fees. Many governments and private institutions are trying to reduce medical expenses through price transparency.<sup>14</sup> France, Germany, New Zealand, Portugal, and other countries have introduced competitive factors in the field of medicine and health to reform the price of medicine, which can provide reference for China to adjust the price of medical services.<sup>15-18</sup>

As an important part of the total cost of outpatient services, the cost of medicine is undoubtedly an important factor in the cost of various medical services, but the excessive cost of medicine has become the biggest hidden danger for patients to seek medical treatment. In addition, the rapid increase in laboratory fees and inspection fees in the past 3 years is undoubtedly worse for patients with medical difficulties. There are still some problems in China's health care system, such as the distortion of the price mechanism. The financial compensation mechanism relies on the independent operation of the hospital, the concentration of the drug system, and the resolution of drug rebates. These problems enable medical service providers to take various measures and means to deal with medical insurance management agencies. In fact, both doctors and patients tend to overprovision or use medical services and may "collectively" get more medical insurance reimbursement fees. In this way, doctors can get more income and patients can get more medical services and reimbursement expenses. It is necessary to properly control outpatient drug charges and inspection fees, and eliminate the phenomenon of "medical treatment by medicine," "medical care," and "collusion of doctors and patients" to effectively alleviate "expensive medical treatment," especially 3 indexes. It is necessary to coordinate and adjust the cost to achieve the goal of reducing the 3 total prices.

Intensify the entry point for medical insurance compensation. As a compensation mechanism for patients' medical expenses, medical insurance has been used and fully utilized in the new medical reform. It plays the role of medical insurance in the medical expenses of urban workers. At the same time, the original medical insurance payment method has been unable to adapt to changes in the medical environment. Since 2013, Zhanjiang City has covered all medical insurance and implemented a combination of personal payment and

government subsidies to raise the medical insurance fund. The utilization rate of medical services has changed from the previous downward trend to the upward trend. With the convenience of medical treatment and reimbursement, the insured person has received tangible treatment, and the number of insured persons, hospitalization rate, and medical expenses have increased significantly year by year. After the government led the introduction of commercial insurance institutions to participate in the construction of basic medical insurance, the medical insurance fund was coordinated by the government, commercial insurance companies, and individuals "three in one"; social security funds were managed, used, and reimbursed. Therefore, under the new medical insurance system, medical adjustments were made. Insurance, an appropriate increase in the investment in medical insurance funds, reduces the burden of personal medical insurance for patients so that medical insurance shows charisma.

In summary, the framework of the outpatient cost coordination adjustment is constructed to maintain a relatively balanced total outpatient cost.<sup>19</sup> To highlight the value of healthy human resources indexes, it is an optimized path to participate more in a multipronged, and collaborative way.<sup>12,13</sup> At the same time, it draws on the relatively mature medical service price adjustments in foreign countries such as the United States, such as the multiparticipation model based on medical professional groups. At the same time, it is hoped to deepen the understanding of the complex relationship between medical insurance, patients, and suppliers to cope with this typical complex dynamic mechanism.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by Guangdong University Young Innovative Talents Project (2018KQNCX090).

### ORCID iD

Peng Quan  <https://orcid.org/0000-0001-5416-536X>

### References

1. Dong H, Duan S, Bogg L, et al. The impact of expanded health system reform on governmental contributions and individual copayments in the new Chinese rural cooperative medical system. *Int J Health Plann Manage*. 2016;31(1):36-48.
2. Shen S, Hua X. Analysis of the influencing factors for over-treatment in patients with high-grade squamous intraepithelial lesion on primary cervical cytology diagnosis. *Clin Med China*. 2017;33(10):939-942.
3. Yip WC-M, Hsiao WC, Chen W, Hu S, Ma J, Maynard A. Early appraisal of China's huge and complex health-care reforms. *Lancet*. 2012;379(9818):833-842.

4. Giorgi A. The theory, practice, and evaluation of the phenomenological method as a qualitative research procedure. *J Phenomenol Psychol.* 1997;28(2):235-260.
5. Chen F-J, Laditka JN, Laditka SB, Xirasagar S. Providers' responses to global budgeting in Taiwan: what were the initial effects. *Health Serv Manage Res.* 2007;20(2):113-120.
6. Simpson AN, Bonilha HS, Kazley AS, Zoller JS, Simpson KN, Ellis C. Impact of outpatient rehabilitation Medicare reimbursement caps on utilization and cost of rehabilitation care after ischemic stroke: do caps contain costs. *Arch Phys Med Rehabil.* 2015;96(11):1959-1965. e1954.
7. Ikegami N, Campbell JC. Japan's health care system: containing costs and attempting reform. *Health Aff (Millwood).* 2004;23(3):26-36.
8. Zhang Y, Zhou Z, Si Y. The role of parental health care utilization in children's unnecessary utilization in China: evidence from Shaanxi province. *Int J Equity Health.* 2017;16(1):47.
9. Liu X, Hsiao WC. The cost escalation of social health insurance plans in China: its implication for public policy. *Soc Sci Med.* 1995;41(8):1095-1101.
10. Brown ME, Bindman AB, Lurie N. Monitoring the consequences of uninsurance: a review of methodologies. *Med Care Res Rev.* 1998;55(2):177-210.
11. Hadley J, Waidmann T. Health insurance and health at age 65: implications for medical care spending on new Medicare beneficiaries. *Health Serv Res.* 2006;41(2):429-451.
12. American Medical Association. Financing AMADoHC. *Medicare RBRVS: the physicians' guide.* Chicago: American Medical Association; 2000.
13. Baadh A, Peterkin Y, Wegener M, Flug J, Katz D, Hoffmann JC. The relative value unit: history, current use, and controversies. *Curr Probl Diagn Radiol.* 2016;45(2):128-132.
14. Baker LC, Bundorf MK, Royalty AB, Levin Z. Physician practice competition and prices paid by private insurers for office visits. *JAMA.* 2014;312(16):1653-1662.
15. Chone P. Competition policy for health care provision in France. *Health Policy.* 2017;121(2):111-118.
16. Schut FT, Varkevisser M. Competition policy for health care provision in the Netherlands. *Health Policy.* 2017;121(2):126-133.
17. Barros PP. Competition policy for health care provision in Portugal. *Health Policy.* 2017;121(2):141-148.
18. Brekke KR, Straume OR. Competition policy for health care provision in Norway. *Health Policy.* 2017;121(2):134-140.
19. Laugesen MJ. The resource-based relative value scale and physician reimbursement policy. *Chest.* 2014;146(5):1413-1419.