

A Review of Research on China's Centralized Drugs Bulk-buying Platform for Public Welfare

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Abstract: Inflated drug prices have always been a problem in the circulation of medicines in China, and in recent years, the relevant departments in China have formulated a series of policies to control drug prices, one of the strongest and most effective of which is to carry out centralized procurement of medicines. The state has also introduced a series of related policies around the centralized procurement of drugs, including the establishment of a centralized procurement platform for drugs. Therefore, this paper focuses on the concept of centralized drugs bulk-buying platform, the current development status, functions and advantages, and the review of related literature, puts forward the research deficiencies of the existing literature, and looks forward to the direction of future research, with a view to enriching the research on centralized drugs bulk-buying platform.

Keywords: public welfare; Centralized drugs bulk-buying platform; Research review.

1. Introduction

Drug prices are related to the national economy and people's livelihood, and for a long time, high drug prices have been a problem in China's drug supply chain. In recent years, in order to cut off the gray revenue chain in the field of health care, China's relevant departments have formulated a series of policies to control the price of medicines, of which one of the most powerful and effective initiatives is to carry out centralized purchasing of medicines. 2015, the General Office of the State Council issued the "Guiding Opinions on the Improvement of Centralized Purchasing of Medicines in Public Hospitals," marking the official implementation of centralized purchasing of medicines in public hospitals in China. After more than ten years of development, China has basically formed a government-led, province-based centralized drug procurement model. In addition, a series of related policies have been introduced around the centralized procurement of medicines, including the establishment of a centralized procurement platform, which is the embodiment of the informationization and platformization of the centralized procurement model, so that the participation of public hospitals has been enhanced, and key information such as the price of medicines has been made public and transparent, so that the burden of the people's use of medicines has also been reduced accordingly. However, most of the current academic research on China's centralized procurement of medicines stays at the policy level, assessing the effects of the policy and the factors affecting the policy, and there is little research on the development of the centralized procurement platform. Therefore, this paper mainly summarizes and reviews the concept of centralized drug procurement platform, the current development status, functions and advantages, and related literature.

2. Concept and Current Development of Centralized Drugs Bulk-buying Platform

2.1. Conception

A centralized drug procurement platform is an online procurement platform established to meet the drug

procurement needs of hospitals and pharmacies. The platform is set up between medical institutions and pharmaceutical manufacturers, integrating the resources of drug suppliers, pooling the needs of downstream medical institutions, and obtaining a greater price advantage by exchanging volume for price to achieve drug price transparency, standardization of the procurement process, and improvement of procurement efficiency [1].

2.2. Status of Development

At present, most of the domestic centralized drugs bulk-buying platforms are trading platforms with a profit-making nature. Typical representatives are the Shenzhen Centralized Purchasing Platform for Medicines and the Xinjiang Medicinal Capital Hui Collective Purchasing Cloud Platform. Shenzhen's centralized drug procurement platform is led by the Shenzhen Municipal Commission of Health and Planning, selected as a third-party centralized purchasing organization of the drug business enterprises (later for the whole drug network) is responsible for the city's public hospitals of the centralized purchasing of medicines, suppliers are determined through negotiation or bidding and other ways [2]. Xinjiang Yaodou Hui centralized procurement cloud platform is the first pharmaceutical supply chain platform in Xinjiang and even in the greater southwest and northwest of China to carry out drug band purchasing, and the company has a number of cooperative supply hospitals, clinics, and health centers, forming a large volume of centralized procurement. As a result, Yaodou Hui can supply pharmacies, hospitals and clinics at the most favorable price, and the product price generally saves public expenditure by about 20% [3].

However, due to the obvious government constraints on centralized drug procurement in China, the role of centralized drug procurement under the market mechanism cannot be fully realized. Therefore, a part of the government-led centralized drug procurement platform will consider certain public welfare. For example, Shanghai's centralized drug procurement platform and Chongqing Pharmaceutical Exchange are both non-profit centralized drugs bulk-buying platform led by the administrative authorities. Shanghai GPO is a public welfare platform led by the local government, which draws on the common practice of international

pharmaceutical group purchasing (GPO), follows the principle of "fairness, openness and justice", carries out centralized purchasing and bargaining of medicines, and provides services such as group purchasing, supply chain modification and logistics management for healthcare institutions and pharmaceutical enterprises [4]. Chongqing Drug Exchange carries out transactions in accordance with the basic idea of "prioritizing quality, reasonable price, combination of quantity and price, standardized distribution, and time-limited settlement". Sellers and buyers sign purchase and sales contracts on the online platform of Chongqing Pharmaceutical Exchange and settle the payment within a specified period of time [5].

3. Functions and Advantages of the Centralized Drug Procurement Platform

3.1. Functions of the Centralized Drug Procurement Platform

(1) Purchase of medicines: Healthcare providers such as hospitals and pharmacies can purchase medicines directly on the platform, which will provide real and effective assistance in terms of information on medicines, prices and suppliers. Hospitals can purchase the required drugs through the platform, and can also check the detailed information of the drugs, such as name, specification, manufacturer, shelf life, etc.

(2) Supplier management: The procurement platform provides supplier management services such as drug supplier-related information, contract management and contract execution, which facilitates the purchaser to effectively evaluate the suppliers. Purchasers can also query other required information on the platform and evaluate the service quality of suppliers, so as to select more suitable suppliers.

(3) Procurement process management: The platform will standardize the procurement process, including the management of procurement application, planning, approval, execution, and acceptance, in order to improve procurement efficiency. Purchasers can also unify the management of procurement processes through the platform to avoid procurement delays caused by unstandardized processes.

(4) Data analysis: The platform provides procurement data analysis services, providing hospitals and pharmacies with data analysis support such as procurement data reports and supplier evaluation reports. Purchasers can see their own data reports at a glance on the platform to understand their own procurement situation, and they can also view the evaluation reports of each supplier through the platform to determine whether the supplier they choose meets their procurement needs.

3.2. Advantages of a Centralized Drug Procurement Platform

(1) More transparent prices: the platform can take advantage of supplier resource integration to provide drug price information, making drug prices more transparent and effectively reducing the procurement costs of hospitals and other purchasers. Hospitals can visually compare the drug prices of different suppliers through the procurement platform, and then choose more favorable suppliers to reduce procurement costs.

(2) More standardized process: The platform can make the

procurement process more standardized, avoiding obvious information bias in the communication between hospitals and drug suppliers, and effectively improving the efficiency and accuracy of procurement. Hospitals can manage the procurement process uniformly through the centralized procurement platform, reducing errors and delays in the procurement process.

(3) Clear data analysis: The data analysis service provided by the procurement platform can help hospitals and other purchasers to better manage suppliers, optimize procurement plans and improve procurement efficiency. Through the platform, hospitals can visually view their own procurement data, analyze the procurement situation and improve the procurement plan.

(4) More considerate service: the platform also provides online customer service to answer purchasers' questions and provide technical support at any time. Hospitals and other purchasers can consult the customer service to get timely and effective solutions to their problems and improve the procurement experience.

In summary, the centralized drug procurement platform provides efficient and transparent drug procurement services for hospitals and pharmacies, and brings higher procurement efficiency and better procurement experience for purchasers.

4. Literature Review

4.1. Study on a Centralized Procurement Platform for Medicines

Currently, one type of research on centralized purchasing platforms for pharmaceuticals is quantitative. For example, Zhang Xinxin et al. constructed a bilateral Nash bargaining game model between duo-oligopoly competing pharmaceutical firms and centralized purchasing platforms, and concluded that centralized purchasing can only enhance the social welfare of the drug market when all firms participate in centralized purchasing or the degree of differentiation of medicines is sufficiently large [6]. Abbas Ahmadi et al. studied a healthcare consisting of a for-profit GPO, a number of suppliers, and a number of healthcare providers supply chain, suggesting that healthcare organisations can join a GPO by paying a membership fee, and the GPO then charges a contract management fee based on a certain percentage of the product value, concluding that GPOs can enable supply chain members to achieve a win-win situation [7]. Hu et al. constructed a supply chain model that includes a pharmaceutical manufacturer, a GPO, and a number of healthcare organisations, and found that the higher the contractual efficiency of the GPO, the higher the profit that can be gained by the various members of the supply chain [8]. By comparing the two models with and without price regulation, Wu Lu et al. suggested that in the presence of price regulation, healthcare organisations will be more willing to choose a decentralized purchasing strategy when the volume discount rate and market size increase [9]. The centralized purchasing model proposed by Safaei and Heidarpour et al. determines the co-operation strategy based on the factors of purchasing cost, distance from the pharmacy, and the difference in demand within the group, and concluded that the use of GPOs can reduce the purchasing expenses of pharmacies, lower the total cost, and improve the supply chain profit [10]. Through theoretical modelling, Ye Guangliang and Cheng Long found that GPO can reduce drug prices by improving bidding efficiency, thereby improving

social welfare and healthcare provider surplus [11].

There is also a part of research on the centralized drug procurement platform that is qualitative. For example, Yang Yan et al. by selecting the same specification drugs from the same factory in 2017 and 2015, and comparing the drug price in 2017 and the sales volume in 15 years with the sales volume in 15 years, found that the drug price reduction of centralized purchasing of medicines in Shenzhen is not significant, and the price of some shortages of medicines even rises instead of decreasing, and it seems that in the long run it is necessary to use a variety of approaches to enhance the price reduction effect of centralized purchasing [12]. Guan Xiaodong and Guo Zhigang used literature analysis and comparative analysis to conclude that the centralized bidding and procurement of essential drugs should be adhered to, combined with the advantages of GPO procurement, improve the evaluation criteria, and guarantee the quality of benchmark drugs [13]. Du Wenxi et al. use the theory of policy tools to construct a two-dimensional policy analysis framework, and believe that the current policy measures to promote the function of the centralized purchasing platform are relatively few, and suggest that the information management level of the centralized purchasing platform should be improved [14]. Jiang Changsong et al. believe that the centralized purchasing platform for medicines is a powerful support for centralized purchasing of medicines and medical consumables and the promotion of pharmaceutical price management, and that it is necessary to continue to further enhance and improve the functions of the platform and broaden the coverage of the platform in order to make the role of the centralized purchasing platform efficiently played [15]. Tang Yuqing et al. used thematic analysis to conduct in-depth interviews with different stakeholders, and found that the centralized procurement platform for medicines had incomplete data and was incompatible with other related platforms, and suggested that the centralized procurement platform for medicines should be technologically upgraded [16].

4.2. Research on Public Welfare

At present, a part of scholars discussing the public welfare of medical institutions involves the centralized procurement of drugs. By analyzing the centralized procurement policy of drugs in S city, Li Jing et al. proposed that centralized procurement is the best procurement route for drugs in public hospitals, and emphasized that the public welfare of public hospitals is not equivalent to welfare, but also follows the law of market value, and suggested that public hospitals should create a new evaluation system [17]. Li Huaqiang et al. used the rooted theory approach, arguing that the duopoly of public hospitals and the imperfection of centralized purchasing policies lead to drug markups, proposing the design of a reasonable incentive mechanism to achieve a reasonable balance of medication, and perfecting the centralized purchasing system, in order to follow the public welfare of healthcare institutions well [18]. Guan Zhongjun et al. Considering the new transformation of medical services facing refinement and diversification, using normative analysis and other methods, they concluded that public hospitals should insist on the implementation of centralized procurement of medicines and establish a management mechanism centered on public welfare and operational efficiency [19]. Wang Chaocai and Zha Ziyang used the double difference method to construct an evaluation system,

suggesting that public hospitals increase financial subsidies so as to return to the public welfare, and at the same time, the national implementation of centralized procurement of medicines can also achieve the role of controlling the price of medicines [20].

In addition, some other scholars have explored the public welfare of medical institutions without addressing centralized drug procurement. For example, using the Hotelling model, Herr analyzed the impact of heterogeneous objectives of hospitals on quality differences, profits, and overall welfare, and proposed that public hospitals would not only focus on profit acquisition, but also assume certain social responsibilities, and that privatization of public hospitals would increase the overall social welfare if public hospitals were similar to private hospitals [21]. Eggleston and Yip argued that Chinese public hospitals had multiple attributes such as for-profit and public welfare, and doctors do not only consider their own interests only when treating patients, but also pay attention to patients' benefits at the same time, and the reform of public hospitals in China needs to achieve a balance of interests among patients, hospital administrators, and doctors [22]. Li Jian et al. used the fuzzy comprehensive evaluation method to analyze the evaluation index of public welfare, and concluded that the protection of patients' rights and interests and hospital duties are the fundamental of public hospital public welfare [23]. Godager believed that as the specific implementer of drug prescription, doctors will not only consider their own benefits, but also consider the patient's residual at the same time when they prescribe [24]. Brekke et al. healthcare organizations generally have altruistic attributes, and in decision-making will consider patient surplus in their decision making [25].

5. Conclusions and Research Perspectives

In this paper, from the concept of centralized drug procurement platform, the current development status, functions and advantages, and the related literature review, the research on centralized drug procurement platform has been sorted out. To a certain extent, the centralized drug procurement platform has achieved the purpose of drug price transparency, procurement process standardization, and procurement efficiency improvement. Researchers have been very detailed on the centralized drug procurement platform, and this paper summarizes the existing literature and puts forward several shortcomings and future research prospects.

First, most of the literature on centralized purchasing platform for medicines explores the problems and effects of centralized purchasing platform by using qualitative analysis such as literature analysis, questionnaire survey, and thematic analysis, and only a few researches carry out quantitative analysis on the operation of centralized purchasing platform in reality.

Secondly, most of the literature on public welfare explores the impact of public welfare of medical institutions on supply chain members and overall supply chain performance, and lacks the exploration of how public welfare centralized purchasing platforms affect upstream and downstream members of the supply chain and supply chain performance. As a matter of fact, most of the centralized purchasing platforms for medicines in China are mostly government-led platforms hosted by governments or enterprises, which have a certain degree of public welfare, and therefore, exploring

the impact of public welfare In fact, most of the centralized drugs bulk-buying platforms in China are government-led and hosted by the government or enterprises, which have a certain public welfare nature, so it is indeed necessary to explore the impact of public welfare on the drug supply chain.

Finally, most of the quantitative studies on centralized purchasing platforms for medicines are focused on foreign centralized purchasing systems for medicines, but unlike other countries, China's centralized purchasing platforms for medicines have a certain degree of public welfare, so we need to put forward the development of centralized purchasing platforms for medicines in line with China's national conditions.

Based on this, this paper makes the following outlook for the future research of centralized drug procurement platform: (1) Adopt quantitative research method, construct theoretical model with the real situation, and explore the influencing factors and effects of the centralized drug procurement platform for public welfare. (2) To make in-depth research on how to build a functionally perfect centralized drug procurement platform, such as enhancing the platform's informatization construction and giving full play to the platform's advantage of information transparency, in order to better realize the government's supervisory function.

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