ORIGINAL RESEARCH ARTICLE

International Comparison of the Financing Mechanism of Basic Medical Insurance and its Implication for China

Meng Wang[1] Qiaoyun Yang[2] Yanjiao Chen[3]

Keywords: Basic health insurance; Financing mechanism; International comparison; Social equity

ABSTRACT

Background: For more than 20 years, China's basic medical insurance system has realized the span from "system construction" to "improving quality and efficiency". At present, as the core issue of medical insurance system design, the current financing mechanism is difficult to adapt to the current situation and tasks.

Objectives: Based on the theory of social equity, this paper uses literature analysis and comparative research to analyze the forms of social health insurance financing in four developed countries: Germany, the United States, Singapore and the United Kingdom. On this basis, it makes a systematic reference and reflection on the financing mechanism of basic medical insurance in China.

Methods: The author adopts the method of literature analysis and comparative study. Through the existing research literature and the theoretical analysis of the medical insurance financing mechanism, the conceptual connotation and dimension of the basic medical insurance financing mechanism are further summarized and analyzed, which provides the reference and theoretical basis for the writing ideas of this paper. By analyzing and comparing the typical practice of the social medical insurance model in four developed countries, the basic ideas, main practices, direction goals, principle adherence, implementation results, realistic difficulties and obstacles of obtaining medical insurance financing are discussed. This paper analyzes the development status of medical insurance financing mechanism between China and four developed countries by means of classification, induction and comparison, and puts forward the optimization path based on the experience of the latter's fair practice.

Results: It proposes that the current funding mechanism of China's basic medical insurance has three problems: An unbalanced funding structure and unreasonable sharing of responsibility; low level of coordination and unfair funding method; and dynamic growth mechanism of endogenous medical insurance funding has not yet been established.

Main Contribution to Evidence-Based Practice: On the basis of the international experience, the author puts forward some enlightening reform measures to solve the existing problems in China: first, through the reasonable definition of the rights and responsibilities of multi-stakeholder, to construct the appearance of fair implementation; Second, reform the existing fixed financing methods and establish a fair financing mechanism linked to income; The third is to improve the actuarial mechanism of fund adjustment and promote the dynamic and sustainable growth of medical insurance funds. We will further optimize the financing mechanism of basic medical insurance and promote the high-quality and sustainable development of China's basic medical insurance.

International Healthcare Review (online)

eISSN: 2795-5567

How to Cite
Wang, M., Yang, Q., & Chen, Y. International comparison of the financing mechanism of basic medical insurance and its implications for China. International Healthcare Review (online). https://doi.org/10.56226/63

Published online: 31 January 2024

Corresponding Author:

Qiaoyun Yang

Northwestern University, Xi 'an, Shanxi 710127,

2997629645@qq.com.

Authors' Affiliations:

[1] Meng Wang, Ph.D, Henan Normal University, Xinxiang Henan 453007, People's Republic of China;

[2] Qiaoyun Yang—Corresponding author, Graduate student, School of Public Administration, Northwestern University, Xi 'an, Shaanxi 710127, People's Republic of China, 2997629645@qq.com.

[3] Yanjiao Chen—PHD, Henan Normal University, Xinxiang Henan 453007, People's Republic of China.

What do we already know about this topic?
Making a systematic reference and reflection on the financing mechanism of basic medical insurance in China from four developed countries.
What is the main contribution to Evidence-Based Practice from this article?
On the basis of the international experience, these authors put forward some enlightening reform measures to solve the existing problems in China.
What are your research's implications towards theory, practice, or policy?
The article improved the actuarial mechanism of fund adjustment and promoted the dynamic and sustainable growth of medical insurance funds.
Authors' Contributions Statement: Wang Provided the idea and framework of the paper; Yang conceptualized and drafted the article; Chen developed the literature review.

Introduction

As the basic pillar to support the sustainable development of the medical insurance system, the financing mechanism is the premise and driving force to support the construction and operation of the medical insurance system, which is related to the people's livelihood. In the past 20 years since the reform of basic medical insurance for urban workers in 1994, China's medical insurance financing has gradually become more complicated, refined and diversified. In 2020, the Opinions of the CPC Central Committee and The State Council on Deepening the Reform of the Medical security System put forward the requirements of "sound, stable and sustainable financing and operation mechanism". Health system equity is an important social development goal pursued by all countries and regions. Under the current situation of the new normal of economic development, the establishment of a fair, stable, sustainable basic medical insurance financing mechanism that is compatible with the level of economic and social development and the affordability of all parties has become more important in China's development. This paper takes the financing and governance mechanisms of social medical insurance funds in four developed countries such as Germany, the United States, Singapore and the United Kingdom as examples, draws on their experience of equitable development, analyzes the path dependence obstacles and benefit pattern of China's existing medical insurance, and proposes improvement strategies for continuously deepening the reform capacity of the medical security system.

1.Research Background of the Article

According to the data released by the China Medical Insurance Bureau, by the end of 2021, the number of Chinese urban and rural residents insured by medical insurance will be 1.09 billion, including 740 million adults, 250 million primary and secondary school students, children and 19 million college students. In the past five years, the Chinese government has increased financial subsidies by about 160 billion yuan for these people's medical treatment. In addition, as the main body of medical expenses, the elderly group is growing rapidly, according to the current policy, retirees no longer pay, and the number of this group will continue to increase under the background of deepening aging. This will cause China's basic medical insurance system to fall into a situation of increased capital expenditure and reduced sources, and its sustainable development will face a severe test.

According to the current medical insurance practice in China, it is impossible to realize disease risk sharing and fund growth on a larger scale. The implementation of the reform of the medical insurance financing mechanism is the need for the sustainable development of China's medical insurance system, the need to deepen the reform of the medical and health system, and the need to improve the medical security level of the medical insurance participants and enhance the sense of happiness of the people.

The report to the 20th CPC National Congress proposed: "Improve the social security system, improve the multi-level social security system that covers the whole people, integrates urban and rural areas, is fair and unified, is safe and standardized, and is sustainable,

and expand the coverage of social insurance."

Based on China's national trends, the fair development of its health care reform is crucial. China's "14th Five-Year Plan" period is a key time node to correct the institutional defects existing in its current medical insurance system. In recent years, the improvement of the medical insurance financing mechanism has been listed as the annual focus of the China Medical Insurance Bureau for many times, and the medical insurance financing mechanism is also the top priority of its medical insurance reform in the next decade. According to the practical experience of medical insurance in various countries, it is important to study relatively fair financing policies to cope with the medical burden of aging in China.

2.The Research Purpose of the Article

Based on the theory of social equity, this paper studies the financing mechanism of China's basic medical insurance from the perspective of equity and efficiency, summarizes the characteristics and practical experience of the financing mechanism of medical insurance systems in foreign developed countries and draws on it reasonably, which is conducive to enriching the theoretical base of the research on medical insurance financing mechanism and broadening its theoretical applicability. It has important theoretical significance for constructing stable and sustainable mechanism of basic medical insurance financing growth.

Medical care is a difficult issue in China's new journey to fully build a modern socialist country. With the gradual deepening of China's economic and social transformation and market economic system reform, the aging of the population and the change of disease spectrum, and the continuous improvement of residents' demand for medical services, the existing medical insurance financing mechanism is difficult to play a higher quality role in the application of the basic medical insurance system. Paying attention to the issue of medical insurance financing from the international comparison level, analyzing the current financing mode in China, finding out the problems and carrying out active exploration are conducive to promoting the establishment of a scientific, reasonable and stable financing mechanism in China, the development of the government's livelihood undertakings and the improvement of the quality of social old-age medical services under the background of aging.

Literature Review and Scholar's Ideas

Medical insurance originated in Western Europe, and gradually established its important significance in the political, economic and social life of a country in the course of development. It has achieved relatively in-depth and perfect research results in the research history of some developed countries in the past hundred years.

From the perspective of medical insurance research content, some scholars' research mostly focuses on disease types and specific insured objects to carry out phased research. American scholar Munoz E (1989) believed that the federal model of diagnostic related group (DRG) prospective "all payment system" for hospitalized pediatric patients generated the greatest economic risk in the aspect of Medicaid, and there was cost transfer among payers. Compared with pediatric patients from commercial payers such as Blue Cross, Medicaid pediatric patients (adjusted by the DRG weighted index) had longer hospital stays and greater total hospital costs. State and private payers may underpay for the care of hospitalized pediatric patients using DRG prospective hospital payment plans. Medicare financing policies for pediatric patients may limit the quality of their care. Scholars Yeonggyu Yun and Hye-Young Jung (2021) constructed FCM with a hybrid approach, designed maps for low-income families and general families respectively, and examined three scenarios in which government subsidies for public medical insurance, insurance coverage and registration rate increase respectively. And come to the conclusion that the increase of government subsidies has the greatest impact on families. Ivankova Viera (2021) explores treatable death from an economic perspective: the role of health care financing and its importance to economic prosperity. Using descriptive analysis, panel regression analysis, and cluster analysis to examine the relationship between health care financing, specific treatable mortality for men and women at work, and economic prosperity, taking into account the classifications of health systems applicable in OECD countries, the results show that health care financing is also linked to economic prosperity through the health variability of the working age population. A retrospective cohort

study conducted by Wernly Bernhard et al. (2022) compared the difference in 30-day mortality in critically ill patients aged ⩾ 70 years treated in a European tax-based healthcare system (THS) and a social health insurance system. Demonstrating that this type of healthcare system does not appear to play a role in the intensive care treatment of severely ill patients with COVID-19 aged ⩾70 years.

From the perspective of health insurance financing methods, Fiedler John L (1993) introduced the legal basis, organization, operation, incentive structure, financial performance, and institutional development of the local user fee system in El Salvador, using the case of the evolution of public health care system costs in El Salvador in the 1980s. And proposed that the most effective way to deal with the public health financing crisis in the third world countries is to implement the user charge system. Tandon Ajay et al. (2023) argue that coercion and redistribution remain important principles for financing universal health coverage. Michel L Grignon et al. (2020) proposed to measure the inequity of health care financing in the United States and the income redistribution through health care financing in Canada by simulating the contribution of the average individual in each quartile of pretax income to the health care services purchased by Canada's public single-payer system through income tax and excise tax. The effect of this net benefit on income distribution inequality in Canada is calculated but has been ignored due to conceptual difficulties in determining the incidence of corporate income tax.

From the perspective of research on health care financing reform, Shabir Moosa (2022) proposed to reform the financing and payment methods of primary health care and universal health insurance in Africa; The change of population structure has an impact on the German medical insurance system. Christian Buhrer et al. (2020) believes that low-income and high-incidence civil servants and family civil servants in Germany are more likely to choose the social medical insurance (SHI) system. If the reform of the Hamburg Plan is implemented (if civil servants choose the social plan, the SHI system will be implemented. To change the system by paying half of the contributions) will likely increase the unfavorable choice for SHI's high-risk cases. Pascale Turquet (2012), who studied the financing reform of the Dutch, German and French health insurance systems, suggests that the diversification of financing sources may involve a broader public financial base, or it may involve more private resources and operators. In the case of the Netherlands and Germany, the reform went hand in hand with the introduction of competition among health insurance institutions. In France, private supplementary insurance has become indispensable for adequate access to health care. However, these measures have repercussions for redistribution, and social assistance programs are struggling to cope.

Domestic scholars in China have analyzed the practical experience of basic medical insurance, and conducted multidimensional, multi-level and multifaceted research on the financing mechanism. The following is a review and summary.

In terms of the medical insurance financing m ode, Shen P Y et al. (2016) analyzed the current s ituation of the integrated basic medical insurance system for urban and rural residents in various pa rts of China, focusing on the overall planning mo de and the financing mode. In the exploration of institutional integration, the financing standard was not uniform. It includes the implementation of dif ferentiated financing standards for urban and rural residents according to their identity, multi-file fin ancing standards, and unified financing standards f or urban and rural residents. The results show tha t the coverage of integration in eastern China is l arger, and the overall level of fund coordination is low.

In terms of the reform of medical insurance financing mechanism, Zhu K et al. (2020) analyzed the current situation of China's medical insurance financing mechanism from the perspectives of financing standards, funding sources and fund allocation, and proposed the establishment of a lifetime contribution mechanism for employee medical insurance. Li Y Q (2018) classified the dynamic adjustment mechanism of basic medical insurance financing for urban and rural residents in China into multiple elements and proposed that the adjustment mechanism should include adjustment objects, adjustment basis, adjustment frequency, adjustment timing and adjustment amplitude, adjustment authority and decision-making procedures. This paper focuses on the basis of adjustment from the aspects of daily early warning and regular assessment, and puts forward the theoretical framework of dynamic adjustment mechanism of financing with actuarial mechanism as the core.

In terms of the research methods of medical insurance financing, Cheng C H et al. (2015) took Jinan City of China as an example to analyze the financing policies of basic medical insurance for urban and rural residents with the dialectical materialist view [15], arguing that the integrated medical insurance for urban residents has not fundamentally improved the equity of financing, and a financing mechanism should be established that increases with the income level of all parties. Zhao S Y et al. (2013) confirmed the existence of heterogeneity of private information and preference by using empirical research method based on the micro-data of the pilot survey of basic medical insurance for urban residents in China and believed that the optimal insurance financing mechanism should be a combination of voluntary and compulsory financing. It is suggested that the heterogeneous medical service demand can be satisfied effectively through the implementation of differential payment policy in basic medical insurance.

The above studies provide constructive suggestions for further improving the financing mechanism of China's basic medical insurance in terms of perspective, content and methods, but there are relatively few studies on how to further improve the financing fairness mechanism of China's medical insurance.

Based on the above analysis, it is found that the international comparison of basic medical insurance financing mechanism and China's reform research are worthy of in-depth analysis. Through the review of the literature on the financing mechanism of basic medical insurance, it is found that although there are many research related to the financing of medical security, the research content is relatively scattered, and a complete system has not been formed, and the research case is strong, lacking of in-depth, systematic and comprehensive research. The research content of some countries mainly focuses on the practical research of basic medical insurance, focusing on the targeted solution of application problems, and some scholars have conducted research on the theoretical basis, institutional characteristics and development trend of financing mechanism. The method is based on empirical research. Some new opinions on the financing mechanism of basic medical insurance are put forward, such as realizing the effective response to the aging population and the burden of disease, broadening the financing channels, optimizing the budget management of basic medical insurance fund, and establishing a multi-level medical security system. These relevant literatures provide more convenience and reference for the research to be carried out in the topic selection. However, in the practical application process, it is necessary to make comparison and selection based on China's national and actual conditions in order to further improve the basic medical insurance system with Chinese characteristics.

The research of Chinese domestic scholars on basic medical insurance mainly differ from the research perspective. Most of them put forward the existing problems of medical insurance financing and put forward policy suggestions through data analysis. The research methods are mainly quantitative research, and some scholars also carry out valuable empirical analysis based on actuarial models, but the academic achievements of such research are relatively few. In addition, when studying the financing mechanism of basic medical insurance, the analysis mainly focuses on some regions in China, such as the financing subject, financing principle, financing level and financing method of medical insurance in specific provinces and cities. The research approach is traditional and single, and the overall research on mechanism construction and international comparative analysis are insufficient.

Through theoretical research, comparative research and literature analysis, this study aims to analyze the financing models and mechanisms of social medical insurance funds in four developed countries in multiple dimensions, and on this basis, systematically and deeply learn from and think about the financing mechanism of China's basic medical insurance, and put forward reform suggestions for the long-term sustainable development of China's basic medical insurance based on the theory of social equity.

Definition of core concepts

1.Basic medical insurance

Different scholars have defined the concept of basic medical insurance, but most of them focus on its objectives, coverage groups, financing models and policy systems. In his book Social Insurance, Hou W R (2009) defined basic medical insurance as a social measure to promote social stability, the state provides

basic medical services to the insured who encounter the risk of disease through social fundraising, rehabilitates the working ability of the beneficiaries, and provides sickness allowance so that the beneficiaries can still enjoy basic life during the treatment period.①

This paper defines basic medical insurance based on the research needs, the existing theoretical concepts and the implementation background of China's current medical insurance system. That is, employers, individuals, collective organizations, etc. shall pay funds in accordance with the provisions of relevant laws and regulations to establish a medical insurance fund, and when the insured falls ill, the medical insurance fund shall pay the prescribed medical expenses to avoid or mitigate the economic risks caused by illness and treatment of the insured.

2. Financing mechanism

The financing mechanism is the first premise of the treatment, reflects the internal mechanism of the medical insurance fund, and is the foundation and prerequisite for the formation of the medical insurance fund. Liu Jintao and Chen Shuwen suggested that the research object of financing mechanism should be accurately divided into four aspects: insured object, financing responsibility, financing channel and financing level, so as to ensure the integrity of the research of financing mechanism. This paper follows the definition of this concept.

3. Financing mechanism of medical insurance

The narrow medical insurance financing mechanism refers to the medical insurance fund collection mechanism; The broad medical insurance financing mechanism is not only the raising of the fund, but also the distribution, use and supervision of the fund. This paper
discusses the financing mechanism of medical insurance in a broad sense.

Methodology

1. Literature analysis

On the basis of literature analysis, this paper carefully consulted various literatures related to the topic selection, systematically collected a large number of policies, regulations and related literatures of China's medical security system and defined the conceptual connotation and dimension of the financing mechanism of basic medical insurance by using various methods such as information network, journals, academic literature and relevant experience data. This paper summarizes and analyzes the existing data one by one and provides the reference and theoretical basis for the writing ideas of this paper through the theoretical analysis of the existing research literature and the relevant medical insurance financing mechanism.

2.Comparative research method

By analyzing and comparing the typical practice of the social medical insurance model in four developed countries, the basic ideas, main practices, direction goals, principal adherence, implementation results, realistic difficulties and obstacles of obtaining medical insurance financing are discussed. This paper analyzes the development status of medical insurance financing mechanism between China and four developed countries by means of classification, induction, and comparison, and puts forward the optimization path based on the experience of the latter's fair practice.

Theoretical Basis

Equity theory was first proposed by John Stacy Adams in his article “Unfairness in Social Exchange". It focuses on the rationality of wage compensation and the influence of equity on employee motivation. With the development of diversification, the theory has been gradually applied to many fields, and has become a core perspective in social security research, mainly focusing on the distribution principles and standards of resources, power, opportunities and benefits. These distribution criteria are mainly manifested in the form of equality, demand, contribution, ability, merit and so on. The core idea of equity theory is that people should have equal opportunities to pursue their own ideals

and goals, and in this pursuit process, they will not be limited or discriminated by factors such as race, gender, class, and education level.

The principle of social equity is to ensure the right to survival and the balance between efficiency and equity, so that the basic life and reasonable demands of social members are respected and guaranteed, including endowment equity, process equity and outcome equity. Endowment equity means that all members of society are born with equal resources and conditions. Process equity mainly means that the process of social members participating in various activities is transparent and open, and the access and realization of opportunities are not controlled or hindered by human beings. Outcome equity refers to the equality of the results of social members in social activities, that is, distribution equity, which is the ideal goal of social equity. (Gong, W J & Zhou J Y.2012)

In the design of medical insurance system, adhere to the principle of "equal emphasis on fairness and efficiency". Equity focuses on the diversity of financing subjects and the division of responsibilities, emphasizes the fairness of the system, and insists on equality for all; Efficiency focuses on promoting high-quality medical development. Equity in health care financing is essential if individual and societal health goals are to be achieved. Under the current situation of medical insurance financing and development, the financing level of China's basic medical insurance is unfair to a certain extent, which is reflected in the inequity among different groups, the dislocation of medical and health resource allocation and the inequity of funding sources. We should not only acknowledge the imperfection of the current medical insurance financing mechanism in China, but also reduce this inequity to a reasonable range through reform. This is the embodiment of social justice theory in practice. This paper takes improving the construction system of China's basic medical security system as the theme and uses social equity theory to guide the construction of medical insurance financing mechanism.

Situation analysis

Overview of the development of financing mechanism of basic medical insurance in China

1.Reform, development and results of China's basic medical insurance system

Medical insurance is one of the basic livelihoods guarantees of the country. The reform and development of medical insurance is related to the people's well-being and is an effective fulcrum for the health and safety of all the people. It is conducive to transforming the advantages of the medical insurance system into real protection rights and interests of the people. Since the founding of the People's Republic of China in 1949, China's medical security has been constantly reformed and innovated, keeping pace with The Times, actively adapting to the social situation at different stages of development, showing different results and characteristics, establishing an increasingly perfect nationwide medical insurance system, and constantly advancing to a higher level of fairness and justice.

As a fund-raising mechanism, China's medical insurance system has played a huge role in maintaining social stability and promoting economic system reform. At present, China's medical insurance aims at "all the necessary insurance", which includes all citizens in the basic medical insurance, a safety net to cushion various risks that may be caused by diseases; In the scope of the main responsibility, it emphasizes the financing responsibility of the government in the basic medical insurance, and effectively increases the publicity of the basic medical insurance system. Establish a high-quality multi-level integrated medical security and service system to ensure fair and equal treatment for all citizens.

Table 1 Evolution and effectiveness of China's medical insurance system reform

Reform and development of the medical insurance system	effect
The initial formation stage of the medical insurance system framework (1949-1977). In 1951, the Regulations of the People's Republic of China on Labor Insurance was promulgated and implemented. In 1952, the national free medical system was formally established.	①Under the planned economy system, the labor insurance medical system and the public medical system have solved the problem of "medical treatment" for urban workers to a certain extent. ②The medical insurance system supported by the state finance has obvious characteristics of public welfare, and is a transitional measure in a specific historical development period in China, which puts forward a perfect direction for the next stage of medical insurance reform.
The period of the socialist market economy medical insurance system characterized by the new urban employee medical insurance system (1978-1998). From 1978 to 1985, measures were taken to share medical costs. From 1986 to 1993, local voluntary reforms were carried out for labor insurance and public health care. From 1994 to 1998, the promotion of the pilot reform of medical insurance for urban workers (Zhenjiang and Jiujiang pilot in 1994). In 1998, the Decision on Establishing a Basic Medical Insurance System for Urban Workers was promulgated.	①The implementation of medical cost sharing restrains the excessive medical service demand of employees to a certain extent, and makes it possible to use medical resources more reasonably. ②The expansion of the autonomy of public hospitals has aroused the enthusiasm of hospitals to a large extent, and urged hospitals to take effective ways to control and save costs. In some areas, a serious disease overall planning system has been established, alleviating the burden of medical expenses on patients with serious diseases. ③The medical insurance industry has entered a new stage of development, and deep-seated reform problems and needs have emerged: the financing level of medical funds in some pilot cities is relatively high, which has intensified the financial burden of the government and enterprises to a certain extent. To some extent, the financing problem limits the improvement of the insurance rate and the expansion of the medical insurance coverage. The reform of the drug production and distribution system is out of step with the reform of medical institutions.
Period of universal health coverage (1999-2012) In 2002, the Decision on Further Strengthening Rural Health Work was promulgated. In 2003, the Opinions on Establishing a New Rural Cooperative Medical Care System were promulgated. In 2007, the Guiding Opinions on Carrying out the Pilot Program of Basic Medical Insurance for Urban Residents were promulgated. In 2009, the "Opinions of the CPC Central Committee and The State Council on Deepening	① It has expanded the scope of security, changed the financing mode, diversified the financing mode from relying on financial funds in the past, and even established an insurance fund to broaden the financing channels; ②The medical insurance coverage rate of urban residents has increased rapidly, and a regional contribution-based medical insurance system has been formed. At the same time, a multi-level medical security system has been improved to promote the spread of disease risks on a larger scale. People's happiness has increased.

the Reform of the Medical and Health Care System" was promulgated.	
Medical security system with Chinese Characteristics in the New Era (2013 to present) In 2016, the Opinions on Integrating the Basic Medical Insurance System for Urban and Rural Residents were issued. In 2017, the Guiding Opinions on Further Deepening the Reform of Basic Medical Insurance Payment Methods were promulgated. At the end of May 2018, the National Healthcare Security Administration was officially established.	①At the institutional level, it has formed a multi-level medical security model with basic medical insurance as the main, supplemented by medical assistance, serious illness insurance, commercial insurance supplement, and medical charity, covering more than 1.3 billion people and basically realizing universal medical insurance. ② At the management system level, the establishment of the National Medical Insurance Bureau, so that various medical insurance systems can be unified management and operation, and further promote the reform and development of medical insurance has a strong management system mechanism support; ③At the level of operation mechanism, China's medical insurance has entered a new era of governance from "managing funds" to "building mechanisms", which has established a systematic system foundation for solving the problem of insufficient imbalance in the field of medical insurance. ④ Through smart supervision, protocol management, payment reform, and drug negotiation, the rapid growth of medical costs has been effectively controlled. A pilot program of long-term care insurance was launched to enable disabled people to live a life of dignity.

2.Development status of financing mechanism of basic medical insurance in China

2.1 About the financing mechanism of urban employee medical insurance fund

China's basic medical insurance system for urban workers was established in 1998, implementing a social medical insurance model that combines mutual aid funds with individual accounts. In terms of the division of financing responsibilities, the urban employee's medical insurance is compulsory, the employer is the health guarantor of the employee, the individual is the person in charge of his own health, and the retiree does not pay the basic medical insurance premium. In terms of the financing standard, the employer and the employee share the responsibility, and the employer pays the basic medical insurance premium according to a certain proportion of the sum of the contributive wage base of all the employees, which is generally about 6%; The employees shall pay 2% of their average monthly wages in the previous year; The rate is adjusted according to the economic development. If the employee's individual wage income is less than 60% of the city's average salary of the previous year, 60% shall be paid as the base; If the individual wage income of an employee is higher than 300% of the average wage of an employee in the previous year of the whole city, 300% of the average wage of an employee in the previous year of the whole city shall be paid as the base. The basic medical insurance premium paid by the employer is divided into two parts, one part is used to establish the overall planning fund, and the other part

is transferred into the individual account. The full amount of the medical insurance premiums paid by the employees shall be credited into their personal accounts. At the same time, for special groups, self-employed businesses without employees, part-time employees who have not participated in the basic medical insurance for employees of the employer and other flexible employees, they may voluntarily participate in the medical insurance for employees if they meet the conditions, and their individuals shall pay the basic medical insurance premiums in accordance with the provisions of the State.

In the course of implementing the medical insurance for urban workers in China, certain results have been achieved. From 2019 to 2021, the income of employees' medical insurance fund has continued to increase, and the level of medical insurance financing has steadily improved, providing financial guarantee for the improvement of medical insurance treatment level (see Table 1). However, at the same time, there are also risks and problems. Employee medical insurance pays more attention to the responsibility of the employer, and the imbalance between the actual burden of the employee medical insurance unit and the individual will increase the burden of the enterprise to a certain extent. In the case of inadequate implementation of mandatory contributions, some units make private deals with employees, and there is an unreasonable behavior of paying social insurance premiums directly to employees as part of their wages. Resulting in the reduction of the coverage of social medical insurance. In addition, in the aging level of the current intensified, the proportion of retirees and working people is on the rise, the retirees of employee medical insurance do not pay, but the increase of medical expenses and resource demand, aggravate the intergenerational contradiction, to a certain extent, contrary to the fairness of social medical insurance.

Table 2 Statistics of income collected from employees' medical insurance fund in China from 2019 to 2021 (unit: 100 million yuan)

Year/year	Revenue collected		
	Total	Unit contributions	Individual contribution
2021	19003.10	11864.04	7139.06
2020	15732	9145	6587
2019	15845	10005	5840

(Data source: Statistical Bulletin of National Medical Security Development

2.2 Financing mechanism of the Medical Insurance Fund for urban and rural residents

In 2016, The State Council of China issued a guideline that clearly pointed out that the new rural cooperative medical care system and the urban residents' medical insurance system should be integrated into a unified basic medical insurance system for urban and rural residents.

The new rural cooperative medical care (NCMS) system, which was piloted in 2003, is organized, guided, and supported by the government. Farmers voluntarily participate in the system with their families as their units, and farmers raise funds from various sources, including individuals, collectives and the government. It focuses on the overall planning of serious diseases. The system is managed according to the principles of setting expenditure on revenue, balancing revenue and expenditure, and openness, fairness and justice. Although the current formulation of financing standards is based on realistic economic and social indicators, it lacks a relatively scientific calculation method, and it is difficult to form a broad and convincing basis for the formulation of its standards. The implementation is mainly policy-oriented, and no corresponding mechanism has been established, making it difficult to clarify its growth expectations. (Xiong T Y & Zhang X p.2017) For a long time, the financing standard of the new rural cooperative Medical care (NCMS) has adopted the growth mode of uniform quota, completely relying on government orders, which is difficult to guarantee its fairness and makes the insured feel a lot of randomness, which implies the

sustainability of financing.(Li R F, He M M & Gao L M. 2013)

China's urban resident medical insurance launched a pilot program in 2007, carrying out incremental and gradual reform, and gradually establishing a security system covering the urban non-employed population. The financing channel of the urban medical insurance is "individual (family) contribution + government financial assistance". The medical insurance fund gives priority to paying the expenses of the insured in hospital and outpatient serious diseases, and its overall financing level and reimbursement ratio are lower than that of the employee medical insurance. Residents' medical insurance adopts the principle of voluntary family participation, implements the annual payment system, and the payment period corresponds to the treatment. Residents can enjoy the corresponding basic medical insurance treatment by paying fees every year according to the regulations. At the same time, urban residents' medical insurance does not set up an individual account, which will lead to adverse selection of medical insurance to a certain extent.

Following the principle of voluntary equity, the integrated medical insurance for urban and rural residents covers all eligible participants in the existing medical insurance for urban residents and the new rural cooperative medical insurance, including migrant workers who have difficulties in participating in employee medical insurance and flexible employment, lowering the threshold for residents to participate in the insurance to a greater extent, reducing personal health risks, and maintaining social equity and stability. In terms of financing methods, the fixed-amount financing method of "financial subsidies + individual contributions" is implemented. Financial subsidies are the main source of funds for medical insurance funds at present, including subsidies from the central government and local governments.

With the rapid progress of medical technology, the financing standards of urban and rural residents' medical insurance have been adjusted for many years, and there is greater pressure on some families to pay. According to data released by the National Medical Insurance Administration of China, from 2011 to 2022, the financial subsidy standard for resident medical insurance has increased from 200 yuan to 610 yuan per person per year, and the personal contribution standard has increased from 50 yuan to 350 yuan per person per year. The financial subsidy accounts for about 63% of the annual financing, and the ratio of financial subsidy to personal contribution has reached about 2:1. The subsidy reflects the government's commitment to non-employed people and rural residents. In general, under the background of the gradual release of residents' medical needs and the steady improvement of treatment levels, the reasonable adjustment of payment standards is mainly used to improve the level of residents' medical insurance treatment and expand the scope of medical insurance reimbursement. Although the financing standards of China's urban and rural medical insurance are increasing year by year, financial subsidies are still the main source of financing for residents' medical insurance. The overall financing burden of urban and rural medical insurance individuals is relatively light. Compared with the medical insurance and reimbursement treatment enjoyed by sick individuals, the payment of medical insurance individuals is low and the return is high. Generally speaking, residents in regions with different levels of economic development have different degrees of acceptance of individual payment standards, and it is not a sustainable development model for urban and rural residents to rely mainly on financial subsidies.

In the financing process of China's urban and rural medical insurance, local governments further promote the realization of the "six unified" medical insurance for urban and rural residents, improve the financing level of medical insurance, and urban and rural residents can enjoy the basic medical security rights and interests more equitably. In terms of the overall planning level, China's urban and rural medical insurance has basically realized the overall planning at the prefecture level. However, due to the problems of local interest protection, moral hazard and mechanism design, the overall planning progress at the provincial level is slow. Moreover, due to the differences in regional economic development and the operation and bearing of medical insurance funds, there are still differences in medical insurance treatment, and the imbalance of medical resource distribution is prominent. In addition, China's urban and rural medical insurance adopts the principle of non-compulsory payment, and some insured people have a fluke mentality, which affects the participation rate.

3. Problems existing in the financing mechanism of basic medical insurance in China

3.1 The financing structure is unbalanced and the responsibility sharing is unreasonable

At present, there is an imbalance in the financing structure of basic medical insurance in China. The payment responsibility of the government, units and individuals is not reasonable enough, and the fairness of the system design has been lost.

In the aspect of employee medical insurance, the ratio of employer to individual payment is about 3:1, and the employer's payment burden is relatively heavy, which increases its operating cost to a certain extent, thereby reducing the number of employees recruited by enterprises, and may also increase the active behavior of "missing insurance" and "escaping insurance", which is not conducive to the development and upgrading of micro and small enterprises. In the aspect of urban and rural residents' medical insurance, the medical insurance service cost is shared by the government financial subsidy and the individual payment, the ratio of the two payments is about 2:1, and the financing responsibility borne by the government is the main part, deviating from the original intention of financial subsidies to help individuals pay. With the break of the urban-rural dual structure, the accelerated process of urbanization, the increase of rural residents' income level, the ability to pay medical insurance fees is also improved, and the government and individual responsibility sharing mechanism needs to be further adjusted. In addition, the development of urban and rural areas is different, so it is unreasonable for the government to adopt the same subsidy quota. In addition, individual financing responsibility has been in a relatively weak position for a long time, and some insured people have unclear positioning of the role of the first person in their health responsibility, which is easy to lead to the occurrence of the risk of widespread welfare, and the formation of "path dependence", which extrapolates personal responsibility to the obligation of the government. Once the financial subsidy is reduced, it will stimulate group resentment, which is not conducive to social stability.

In addition, with the deepening of the aging trend of the population, the contradiction between the retirees' non-payment and the retirees' fund expenditure has become increasingly prominent, and the main responsibility sharing of China's medical insurance financing structure needs to be further refined.

3.2 The overall planning level is low, and the financing method is unfair

The pooling level is an important factor affecting the treatment level and implementation mode of the medical insurance system. The reform of China's medical insurance system is an exploratory and progressive process. The establishment and improvement of the medical insurance system also covers the whole people through the employee's medical insurance, the new rural cooperative medical insurance and the urban residents' medical insurance. In addition, due to the restrictions of the financial system and collection system, the backward management ability and management means, and the impact of different financial conditions in different regions, the medical insurance has been running at a low overall planning level for many years, with a tendency of "fragmentation", resulting in obstacles for the insured to enjoy medical insurance benefits across the overall planning region, reducing the security ability of medical insurance. It is not conducive to further spreading risks, nor is it conducive to the allocation of funds in a larger scope and play a greater role in medical mutual assistance, resulting in a double loss of fairness and efficiency.

At the same time, the residents' medical insurance is voluntary, the overall planning level is inconsistent, the household registration information between the medical insurance and the public security departments in some areas has not been dynamically shared, the number of permanent residents in various places is not clear, resulting in the difficulty in promoting the insurance coverage of this part of the population, and the floating population has the phenomenon of missing insurance.

The medical insurance for urban and rural residents implements the "quota + equal amount" payment mechanism according to the head to participate in the insurance voluntarily, that is, the insured in the same coordinating area pays the medical insurance fee standard uniformly, which is convenient for the medical insurance fund to raise and manage. On the surface, consistent payment standards are fair, but the design of the system does not fully consider the income gap of the insured subjects, which is easy to cause low-income people

to withdraw from the insurance mechanism due to the limitation of payment ability, and middle and high income people to enjoy more medical service resources and treatment with their contribution responsibilities inconsistent with their income level. This also violates the basic principle that the payment obligation of the social insurance system should be linked to the income of the insured.

3.3 The dynamic growth mechanism of endogenous medical insurance financing has not yet been established

The mechanism for the growth of medical insurance financing is the internal driving force for the steady and orderly development of medical insurance funds. China's current medical insurance financing system is in the economic downward pressure, the aging population and the change of disease spectrum of three superposition moment, the medical demand increases sharply, and the increase of residents' medical insurance premiums is mainly based on administrative instructions to adjust the financing level, and the medical insurance financing is based on quota financing. The management department's determination and adjustment of the residents' medical insurance financing standard has not fully considered the differences in the income bearing capacity of the population, social medical service demand and the frequency of upgrading, and the financing growth lacks regularity.

In particular, in recent years, the frequency of raising individual premiums for residents' medical insurance has increased, the financial subsidy standard has increased greatly and lacks stability, and residents' expectation of increasing medical insurance payments is also lacking, which will affect the enthusiasm of residents to pay and participate in insurance to a certain extent. The overall growth of residents' medical insurance financing mainly relies on the growth of government financial subsidies, which is not effectively connected with residents' per capita disposable income and other related economic indicators. In the long run, the rigid problem of residents' medical insurance benefits will increase the burden of government financing. When the financing growth rate is low, it will be more difficult to meet the rapidly growing demand for medical services.

On the whole, there is great instability in the financing of basic medical insurance in China at present, and the dynamic financing growth mechanism of spontaneous adjustment has not been established.

Comparative analysis

Analysis of medical insurance financing mechanism in developed countries

1. Germany: Pay attention to equity in financing, invest one to ensure more, and help each other

As a typical representative of European welfare states, Germany adheres to the principle of solidarity. Since 2009, the new medical insurance Law has implemented universal compulsory medical insurance for all residents, adopting the dual mode of public insurance (statutory medical insurance) and private insurance. The insurance coverage rate of its medical insurance system is 100%.

The financing system of German national medical insurance is both fair and efficient, and its financing mechanism has gradually shifted from labor-capital sharing to strengthening state intervention and pooling. Since January 1, 2009, the German medical insurance has set up a national centralized health fund, unified the rate and collection of the fund, and established a mechanism to coordinate and adjust the fund according to the risk structure, and the health fund agency has become the statutory medical insurance premium collection agency.

In the statutory medical insurance, its financing sources include the participant's contribution, the participant's cost sharing and the government's tax subsidy; According to the different object of financing, financing is divided into two kinds: employer and employee contribution and special group contribution.(Zhu M J. 2012) Among them, the financing method with employers and employees as the main body adopts a fixed percentage of income payment, the amount of payment is linked to personal income (the rate is unified at about 15%), and the sharing ratio between employers and employees is 1: 1,When the employee's legal income is lower than the maximum limit, he must be forced to participate in the statutory medical insurance, on the contrary, he can choose to voluntarily participate in public insurance or to participate in private medical insurance. This form reduces the burden of low-income people while preventing high-income people from paying too high premiums. At the same time, the employee pays, the

amount of the premium has nothing to do with the health status of the insured, and they will get the same medical services, and their spouses and children who do not work can be insured for free. For special groups of people, government tax subsidies play an important role. For example, internship units are solely responsible for interns whose monthly salary is lower than the bottom line of payment, provide relief and security deposit to the unemployed, and give appropriate preferential treatment to retirees' insurance contributions. The payment base of such groups is determined based on their statutory pension, occupational annuity pension, part-time work income and property income including housing rental and investment income.(Chen C & Huang W D.2022).And ensure that they "enjoy the same medical treatment after retirement as they did when they were working". German employees pay more for health insurance; In its medical system, everyone does his best, distributes according to need, everyone is equal, and follows the principle of mutual assistance, which fully reflects the fairness of the system design.

In addition, Germany has also introduced the cost-sharing mechanism of the insured through legislation, in which the insured will bear a certain proportion of the cost of the medical equipment or medicine purchased, which gradually replaces most insurance co-payment. In practice, the proportion of patients' self-responsibility in the total medical and health expenditure in Germany has been rising.(Zhang X J.2016)This flexible mechanism is conducive to coordinating the interests of all parties, controlling medical costs, and focusing on the improvement of efficiency.

2. United States: Mutual assistance among regions, emphasizing equal rights and obligations

As a giant of developed countries, America's medical system is a special case of developed economies. Its medical security system does not provide social medical insurance for the whole people, which is a typical guarantee based on the principle of social will. In the United States, 70% of the medical insurance is provided by private health insurance institutions, while the public health insurance accounts for 30%. It mainly targets 94% of the elderly, 33% of the children and 14% of the labor force. This largely market-based free operation of health care by private organizations results in relatively low health insurance coverage in the United States, but public health insurance is funded by federal and local governments out of tax dollars to cover certain groups. This achieves mutual assistance and horizontal transfer among regions, ensuring that the poor people in each state enjoy relatively equal medical support, with certain social welfare and fairness.(Yang H Y & Chen T H.2011).

The public health insurance in the United States is divided into Medicare, Medicaid and individual health insurance (established under the Obama Health Care Act)(Chang X, Su Q & Wen L J. 2019).

Medicare is funded through a Medicare payroll tax on those who work. For those earning less than $200,000 a year for individuals and $250,000 a year for families, employers and employees each pay 1.45% of their wages, totaling 2.9%, as hospital insurance costs. If the annual salary exceeds the above standard, the individual will bear 2.35%, and the employer will no longer bear it. This part of the tax is used exclusively for the medical insurance fund. Among them, the participation of part A (hospitalization insurance) is mandatory, and part B (supplementary medical insurance), C (Medicare Advantage plan) and D (prescription drug plan) are voluntary, and the contributions are set according to different income groups. This kind of medical insurance financing is highly correlated with individual income, and reflects micro equity while emphasizing the equality of rights and obligations.

Medicaid covers children from low-income families, pregnant women, the elderly, parents with young children and people with disabilities, and the financing comes from government subsidies. Individual medical insurance is mainly aimed at legal residents of the United States whose work units do not provide medical insurance and do not qualify for medical care insurance and Medicaid insurance. The insurance premium is determined by factors such as residence, age and smoking status, and is not affected by health status. The government provides insurance subsidies for residents whose income is 100%-400% of the federal poverty line. These two programs for vulnerable groups indicate that the US medical insurance has the characteristics of regional reciprocity to a certain extent.

3. Singapore: Tiered protection, multiple financing, both efficiency and equity

Since the implementation of the medical insurance reform in the mid-1980s, Singapore has continuously improved its medical care branch and supporting medical supply system, and gradually formed a diversified financing mechanism. It pays attention to the role of the government and the market in the allocation of medical resources, and is well known around the world.

Singapore implements the compulsory savings medical insurance model, emphasizing personal responsibility and self-protection for self-health, relying on the unified personal savings stipulated by mandatory government policies to gradually accumulate over a long period of time to cover the medical expenses required for future illness, which cannot achieve mutual aid. The government only provides more financial support for the poor and the elderly who cannot afford it.

Singapore's "3M" system is an efficient and comprehensive system, including the Medisave Plan, the Medisave Plan and the Health Fund Plan, which plays a role in coping with medical and healthcare expenses and controlling costs. In addition, it also implements the Severe Disability Insurance Scheme for the Aged, that is, the Old Age Health Insurance Scheme, which provides lifelong protection for the elderly insured who are physically disabled and unable to take care of themselves, forming a comprehensive security system. Singapore implements the Central Provident Fund plan, the state through the Central Provident Fund board to the individual account of the fund for unified management, the adoption of mandatory savings financing, all employees and their employers must pay according to the proportion of wages on a regular basis, freelancers need to declare income(Luo X M.2020). In addition, Singapore implements a hierarchical diagnosis and treatment system to establish a strict order for medical treatment, which fully realizes the efficient allocation of social medical resources while reducing resource crowding and improving the efficiency of the medical system.

The Medisave plan is a sub-account of the Central Provident Fund (CPF). The Medisave fund is collected in a fixed proportion according to salary at different age stages, and the amount of contribution is also limited, which has the characteristics of vertical equity.

The health insurance Double comprehensive plan is a form of social pooling, low-cost serious illness medical insurance plan, its implementation target is mainly for long-term illness and serious disease patients who need huge medical expenses, the use of funds has formulated a strict compensation mechanism, with a certain nature of commercial insurance. The plan is limited to Singapore citizens or permanent residents who have a Medisave account, the implementation of semi-voluntary participation, with opt-out, savings health plan members who meet the conditions will be automatically enrolled in the plan, unless the individual voluntarily opt-out, the premium is directly deducted from the health savings account of the insured or their immediate family members. ①The plan sets a gradient premium based on the age of the enrollee, with premiums generally increasing with age.(Li J P. 2022.) The plan improves the horizontal equity of financing and has a mutual-aid effect.

The Health Fund Scheme is a shield for the poor in Singapore. The funds come from the financial subsidies of the Singapore Government. Funds can be allocated to the health fund according to the actual situation to ensure that the vulnerable groups receive safe assistance.

4. In the United Kingdom, fairness takes precedence over efficiency

Britain is a model of a high welfare state. It implements the National health insurance model. Its health insurance system includes the National Health Service (NHS), Medicaid and private health insurance. Medical insurance follows the principle of universality. All citizens have the right to basic medical security. Except for special charges, the public enjoys basic medical insurance free of charge. In order to protect the "acute diseases" encountered in life, some people will choose to buy private health insurance to seek for better quality medical security.

Britain's National Health Service (NHS) is funded mainly by general taxation and national insurance contributions. It has a sound health service system, forming a full-cycle closed-loop treatment path of general practitioners, general hospitals, specialized hospitals and community health service centers. The medical expenses are mainly allocated by the public finance, which is distributed through the central

finance to the local health departments and then to the hospitals and general practitioners. This tax-supported model of free health care and medical services for all citizens, employers, employees, independent workers and farmers and other taxpayers implement progressive tax rates, the higher the income, the more they pay, sharing the financing of the whole people's disease and medical care, while ensuring the intensity of financing, reflecting social equity.

From the perspective of the British medical insurance financing and operation mechanism, the UK as the world's first universal free medical system, all citizens enjoy a unified standard of medical services, reflecting the full fairness and care for the weak, because it has not only allocated medical resources according to demand, but also exempted the burden of high medical expenses on the people. However, the British medical care service is mainly funded by the public finance of the government. Faced with the increasing medical expenditure, the financial burden of the government is heavy; At the same time, health resources have a strong planning, the market mechanism can not regulate it, the lack of competition and vitality, easy to cause long queuing time, low efficiency to see a doctor, difficult to guarantee the quality of service and other problems.

Based on the analysis of the equity status of basic medical insurance financing in four developed countries, Germany, the United States, Singapore and the United Kingdom, it is further understood that scientific reference should be made to the practical experience of equitable development in developed countries, and revelatory reform measures should be provided for the reform of China's medical insurance financing mechanism. Most of the four developed countries, Germany, the United States, Singapore and the United Kingdom, have their own rigorous, standardized and multi-level institutional systems, which provide experience and reflection in the practice of equity and efficiency. In Germany and the United Kingdom, the financing of health care is included in the legal framework to ensure coverage, such as Germany's mandatory participation in health insurance, so that everyone has basic protection; The United Kingdom takes the lead of the government to achieve universal medical insurance coverage and pays attention to fairness in the direction. The United States also has its unique development mode of medical insurance financing. Affected by the value concept of self-responsibility, it has never established universal public medical insurance. The implementation of medical insurance is dominated by the market and emphasizes the correspondence between individual rights and obligations, which ensures efficiency to a certain extent and helps maintain the vitality of the medical insurance system. At the same time, its social health insurance financing implements the national mandatory payroll tax, which can be properly adjusted in the states and regions to help each other. Singapore's medical insurance financing has built a diversified financing mechanism of individual health care savings, social medical insurance and government medical subsidies, taking into account efficiency and fairness, which has great reference significance for the division of powers and responsibilities in China's new round of medical insurance financing reform.

Discussion

The reform of China's basic medical insurance financing mechanism under the reference of international experience

1. Reasonably define the contribution rights and responsibilities of multiple parties, and build a equity-oriented responsibility sharing mechanism

Implementation of joint contribution and sharing, balanced sharing of responsibilities. Strengthen the awareness of co-construction, responsibility sharing should match the bearing capacity of all parties, and gradually promote the balance between the responsibility of units and employees, government subsidies and residents' individual contributions. While appropriately increasing the responsibility of individual contributions, the responsibility of central and local governments should be institutionalized, and the awareness of co-construction among regions should be enhanced by raising the level of overall planning. So that all people can share the benefits of health care.

In terms of individual main responsibility, laws and regulations in many countries and regions around the world have clearly stipulated the responsibilities and obligations of individuals to participate in basic medical insurance. For example, Singapore emphasizes that the responsibility mechanism of individuals in medical insurance financing is worth learning, and the practice

of German medical insurance also fully proves that only by forcing everyone to participate in their insurance can everyone enjoy basic protection, and only by "universal participation" can the fairness and sustainable development of the system be guaranteed. Based on this, China can consider including retirees in the main scope of medical insurance financing.

At present, the principle of voluntary participation is implemented in China's urban and rural medical insurance, and the mandatory participation of employees in medical insurance also has some behaviors such as insurance omission and insurance evasion. In order to further optimize the current medical insurance financing structure and implement individual main responsibility, it is necessary to incorporate citizens' participation in basic medical insurance into the legal level, and clearly stipulate the legal consequences of their participation obligations and non-fulfillment of obligations, and appropriately consider adjusting medical insurance contributions to medical insurance tax to eliminate the adverse selection caused by voluntary. Secondly, establish a departmental linkage working mechanism in terms of collection, clarify departmental responsibilities, and break data barriers. Revise documents related to the medical insurance collection policy, further clarify the responsibilities of the medical insurance department and the tax department, establish an effective data reconciliation mechanism among the three departments of medical insurance, tax and finance, and improve the accuracy and security of data transmission; Further promote the functional improvement and nationwide use of China's unified national medical insurance information platform, promote the exchange and sharing of data from multiple departments such as human resources, finance, and civil affairs, and ensure the smooth process of medical insurance collection and payment inspection.

2. Reform the fixed-amount financing method and establish a fair financing mechanism linked to income

The financing of basic medical insurance for urban and rural residents in China needs to grasp the requirements of "sound, stable and sustainable financing mechanism", optimize the financing structure of individual contributions and government financial subsidies, standardize the benchmark rate system, and follow a gradual and orderly way to establish a mechanism linking medical insurance contributions with economic growth and residents' disposable income. Judging from the link between the medical insurance financing standard and wage income in Germany and Singapore, the reform of the existing fixed financing method is the only way to promote the fair development of China's medical security system. The medical insurance financing mechanism should comprehensively consider the basic national conditions, the difference in the bearing capacity of multiple subjects of financing, and the basic needs of national medical and health service treatment.

Reasonably learn from the development logic and successful practices of the German medical insurance system, follow the general law of social insurance, the adjustment of contributions is commensurate with the level of economic and social development, the amount of fundraising is collected according to the income capacity of residents, and the new policy of linking with the disposable income of individuals or families and paying at a certain rate is adopted to alleviate the phenomenon of unfair financing and reverse adjustment. Thus, the automatic adjustment of the contribution base becomes the source of endogenous growth of the financing level, and the financing level of residents' medical insurance can grow normally, stabilize social expectations, and effectively protect the legitimate rights and interests of the people.

In addition, explore the link between individual payment years and the level of medical insurance reimbursement, and guide the expectations of the masses; Change the individual financing mode of residents' medical insurance, promote the household as a unit of organization to participate in insurance, avoid family members to participate in insurance selectively; Promote the progress of China's medical insurance pooling, accelerate the pace of provincial and even national pooling on the basis of comprehensive implementation of municipal pooling, so as to raise it to a level that is compatible with the development of the system and the needs of the people, so as to enhance mutual assistance and fair development among regions of the medical insurance system.

3. Improve the actuarial mechanism of financing adjustment, and promote the dynamic and sustainable growth of medical insurance financing

The financing adjustment of medical insurance is affected by a variety of dynamic factors, and its reform process is also complicated. In order to build an institutionalized and standardized medical insurance financing growth mechanism, it is necessary to take actuarial mechanism as the core, circulate and continue, consider macro and micro change factors, and determine the basis for adjustment. (Li Y Q.2021)

Adhere to the principles of efficiency and fairness, reasonably set up daily early warning and regular evaluation index system for the operation of the medical insurance system, comprehensively consider the guarantee effect of the system and the risk of fund operation, analyze the impact of changes in external social and economic conditions on financing adjustment, but also consider the adjustment of the level of security and the release of medical demand in the process of urban-rural integration. Adhere to the principle of actuarial balance, promote the scientific and fine management of medical insurance financing, and promote the further improvement of the insurance participation rate; We will implement a regular evaluation mechanism for the performance of government financial subsidies at all levels, track the use direction and implementation effect of financial medical insurance funds, reflect on problems and reasonably adjust medical insurance financing policies.

In addition, the preservation and appreciation of the medical insurance fund is a key measure to enhance the financial affordability of medical insurance and improve the sustainability of the medical insurance system. At present, China's medical insurance fund pool is limited, and it is difficult to avoid the risk of inflation under the conditions of market economy, and there is the possibility of depreciation. On the other hand, with the development of medical technology, the aging of the population, unhealthy lifestyles, and the increasing incidence of chronic diseases, medical costs are constantly pushing up, and the payment pressure of medical insurance funds is increasing. It is necessary to effectively strengthen the operation and management of the fund, real-time risk monitoring, and selectively invest through government bonds, social security fund councils or professional investment institutions on the premise of ensuring the safety of the fund and considering the overall situation across China. With the technical means of informatization, the application of artificial intelligence and big data will be highlighted to promote the intelligent, precise and scientific supervision of medical insurance. It is necessary to establish a national-level medical insurance fund adjustment system to enhance the country's macro-control capacity and ensure that this system can benefit all people fairly. We will build a diversified financing model for medical insurance, including government financial subsidies, individual contributions, unit commitments, lottery and social donations.

Conclusions

In the process of research, the author consulted relevant literature of social equity theory and medical insurance system, gained a preliminary rational understanding of the financing mechanism of China's basic medical insurance, and briefly expounded the existing problems of medical insurance financing in China from the perspective of international comparison, providing certain insights for the reform of China's medical insurance system. It provides some reference for the construction and improvement of China's social security system.

Health care financing is not going away as a national political issue. Due to the lack of top-level design and systematic promotion, China's current medical insurance system has not found an accurate balance between fairness and efficiency. The financing mechanism of basic medical insurance is the foundation and core of the development of medical security, and a fair and inclusive medical insurance policy is what the people want. Drawing on international experience to conduct financing policies, financing responsibilities and financing methods, it is indeed necessary to base on China's historical economic development trend and national demand from time to time, eliminate fragmentation, maximize the range of common factors, and ensure the improvement of medical security efficiency, so as to promote the medical insurance system with Chinese characteristics to the track of high-quality and sustainable development. In short, China's medical security industry should be guided by the theory of social equity, adhere to the principle of combining fairness and efficiency, and continue to deepen reform,

including strengthening efforts in promoting the modernization of medical insurance governance and improving the efficiency of security, so as to further release the increasingly rich reform dividends. In the future, China's healthcare reform will continue to develop in a fairer and more efficient direction.

RECEIVED: 07 August 2023 ● ACCEPTED: 23 October 23. ● TYPE: Original Research Article ● FUNDING: Philosophy and Social Science Planning Project of Henan Province in 2021(2021BKS020); Xinxiang City Social Science Union research project:54. Study on the supply path of community home care service in Xinxiang City. 2023 (54) ● DECLARATION OF CONFLICTING INTERESTS: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. ●

References

Antunes, V. (2022). On Nursing Research and Evidence-Based Practice: Topics for researchers and practitioners. International Healthcare Review (online), 1(1). https://doi.org/10.56226/ihr.v1i1.12

Chang X, Su Q & Wen L J. (2019). International experience of social medical insurance system and its implications for China. Learning and Practice (10),112-119. Doi: 10.19624/j.cnki.cn42-1005/c.2019.10.012.

Chen C & Huang W D. (2022). The Successful Experiences and Enlightenment of the German Statutory Health insurance ——from the Perspective of the Participation Mechanism. Social Security Research (02), 103-111. http://kns-cnki-net-s.vpn.htu.edu.cn:8118/KXReader/Detail?invoice=Auf4wMFWhS6SKeabTx9VeoyN%2Fuyp%2BBc1FjH33C1d4Nqtct9PfaqDbPDVIMsdy1rb8YUStTcVZZQVNgWMZBFFQBXbiknMq1zyiDVVV8RZHoU2%2BUi1M3u%2FHvSJnPNc0cqtA2GQK1DALCwKeDlLwS5N0cW%2FNxe7U%2BivWqPcQ6Psi3w%3D&DBCODE=CJFD&FileName=SHBY202202010&TABLEName=cjfdlast2022&nonce=5D31F175C4D3432F8744D8C6BB0852F5&TIMESTAMP=1690347588243&uid=

Chen, S., & Qin, Y. (2023). On Ethics, Biomedical Education and Health Promotion: International and Chinese Perspectives. International Healthcare Review (online). https://doi.org/10.56226/46

Chen, Y., Moreira, P., Liu, W., Monachino, M., Nguyen, T. L. H., & Wang, A. (2022). Is there a gap between artificial intelligence applications and priorities in health care and nursing management? Journal of Nursing Management, 1–7. https://doi.org/10.1111/jonm.13851

Cheng C H, Chen L Y, Sun X& Jia T H. (2015). Research on the Financing Policy of Basic Medical Insurance for Urban and Rural Residents ——Taking Jinan as an Example. Primary Health Care in China (08),13-16.doi:10.3969/j.issn.1001-568X.2015.08.0006.

Christian Bührer and Stefan Fetzer and Christian Hagist. (2020).Adverse selection in the German Health Insurance System – the case of civil servants[J]. Health policy, 124(8): 888-894.https://doi.org/10.1016/j.healthpol.2020.04.006

Dsouza B, Prabhu R, Unnikrishnan B, Ballal S, Mundkur SC, Chandra Sekaran V, Shetty A, and Moreira, Paulo. (2023) Effect of Educational Intervention on Knowledge and Level of Adherence among Hemodialysis Patients: A Randomized Controlled Trial. Glob Health Epidemiol Genom. 2023 Mar 31;2023:4295613. doi: 10.1155/2023/4295613. PMID: 37033597; PMCID: PMC10081894. https://ops.hindawi.com/author/4295613/

Dsouza, B. (2022). On Sustainable Health Systems: A Research Emergency in Pandemic times. International Healthcare Review (online), 1(1). https://doi.org/10.56226/ihr.v1i1.7

El Salvador[J]. Social Science & Medicine, 36(6) :735-747.https://doi.org/10.1016/0277-9536(93)90034-2

Fiedler John L. (1993). Increasing reliance on user fees as a response to public health financing crises: A case study of

Gong, W J & Zhou J Y. (2012). Rethinking the Core Value Concept of Social Security: A theoretical Analysis of Social Justice from the perspective of Sociology. Journal of Party School of Chengdu Municipal Committee of CPC .2012,0(4): 57-62.doi:10.3969/j.issn.1008-679X.2012.04.013.

Han T, Han M, Moreira P, Song H, Li P and Zhang Z (2023) Association between specific social activities and depressive symptoms among older adults: A study of urban-rural differences in China. Frontiers in Public Health 11:1099260. DOI: 10.3389/fpubh.2023.1099260 .

Ivankova Viera et al. (2021). Examining the Economic Perspective of Treatable Mortality: The Role of Health Care Financing and the Importance for Economic Prosperity; [J]. Frontiers in Public Health,9 780390-780390.https://doi.org/10.3389/fpubh.2021.780390

Jacennik, B.; Zawadzka-Gosk, E.; Moreira, J.P.; Glinkowski, W.M. Evaluating Patients' Experiences with Healthcare Services: Extracting Domain and Language-Specific Information from Free-Text Narratives. Int. J. Environ. Res. Public Health 2022, 19, 10182. https://doi.org/10.3390/ ijerph191610182

Kehinde, O., Dixon-Lawson, K., & Mendelsohn, A. (2023). On Community Pharmacists and Promotion of Lifestyle Modific ation in Adults with Hypertension: Practice Protocol. International Healthcare Review (online). https://doi.org/10.56226/49
Li J P. (2022). Singapore's medical security system and its efficient operation. Journal of Social Sciences, 02-21(007).2022-02-21(007). DOI: 10.28131/n.cnki.ncshk.2022.000598.
Li R F, He M M & Gao L M. (2013). Research on sustainable development of new rural Cooperative Medical system in Central and western China from the perspective of financing. Research on Health Economics (01),35-38. doi: 10.14055/j.cnki.33-1056/f.2013.01.006.
Li Y Q. (2018). Study on Dynamic Fund Adjusting Mechanism of URHIS Financing System. Journal of Northwest A&F Un iversity (Social Sciences Edition) (05),86-93. (In Chinese) Doi: 10.13968/j.cnki.1009-9107.2018.05.12.
Li Y Q. (2021). Establishing actuarial mechanism is the key to dynamic adjustment of residents' medical insurance premi um. China Medical Insurance (02),37. http://kns-cnki-net-s.vpn.htu.edu.cn:8118/KXReader/Detail?invoice=DDo6vH7hlCPlIVVe WxMjwemWCibwWEZQtkLgtys2D4sMlMaQNR9ywUTEcBs9zencrbHyOmMGpLq6EEkd8Nw1QPL1eCBizfikv6rr8IbNWHjXQKmjoju 6xUmhqawLyoldPzX%2F26u0D5egNoZ0Pwl24APTY%2FUlIPeXAbGlf9NIlsw%3D&DBCODE=CJFD&FileName=YLBX202102021&TA BLEName=cjfdlast2021&nonce=99F8496EDD2D48C08C1E69B09780EEDB&TIMESTAMP=1690347663475&uid=
Li, N., GUO, M., YOU, S., & JI, H. (2022). On Patient Readiness for Hospital Discharge: an update on recent Evidence. I nternational Healthcare Review (online). https://doi.org/10.56226/ihr.v1i2.30
Liu J T & Chen S W. (2011). Analysis of the Financing Mechanism of the Long-Term Care Insurance for the Elderly in China .Journal of Dalian University of Technology (Social Sciences Edition)(03),44-48. (In Chinese) doi:10.19525/ j. isssn1008-407x.2011.03.008.
Lloyd Williams, D. (2022). On Healthcare Research Priorities in the USA : From Long COVID to Precision Health, what el se is new?. International Healthcare Review (online), 1(1). https://doi.org/10.56226/ihr.v1i1.14
Loureiro Pais Batista, S. M., Pereira Gaspar, A. C., Madeira dos Santos, B., da Cunha Silva, F., Fonseca Marta, F., Pinto P edrosa, I., Lopes Martins, R. M., Sousa Albuquerque, C. M., Nunes Pereira de Azevedo e Andrade, A. I., & Carvalho Du arte, J. (2023). Nurses' knowledge of patients´' swallowing ability : a cross sectional study in Portugal. International Healt hcare Review (online). https://doi.org/10.56226/64
Luo X M. (2020). Sustainability Analysis of Singapore's Health Service System and Medical Insurance Fund (Master's Thesis, Shanghai Jiao Tong University) .2020. DOI: 10.27307/d.cnki.gsjtu.2020.002648.
Michel L Grignon et al. (2020). On Measuring the Inequity of Financing Health Care in the United States and the Redistribution of Income Through Health Care Financing in Canada[J]. American Journal of Public Health, 110(11): 1603-1604. https://doi.org/10.2105/ajph.2020.305891
Monachino, M. . (2022). On Healthcare Research for Disease Prevention: Critical Knowledge Gaps in European Public He alth. International Healthcare Review (online), 1(1). https://doi.org/10.56226/ihr.v1i1.6
Moreira, P. (2022). On New Clinical Research Methods and Technologies: From decentralised designs to Artificial Intellige nce. International Healthcare Review (online), 1(1). https://doi.org/10.56226/ihr.v1i1.11
Munoz E et al. (1960). Health care financing policy for hospitalized pediatric patients. [J]. American journal of diseases of children 1989;143(3):312-315. doi:10.1001/archpedi.1989.02150150066019
Nguyen, T. L. H. (2022). On Improving Healthcare with a world perspective: Evidence for Global Health Programs. Intern ational Healthcare Review (online), 1(1). https://doi.org/10.56226/ihr.v1i1.10
Pascale Turquet. (2012). Health insurance system financing reforms in the Netherlands, Germany and France: Repercussions for coverage and redistribution?[J]. International Social Security Review, 65(1): 29-51. https://doi.org/10.1111/j.1468-246x.2011.01418.x
Shabir Moosa.(2022).Financing and payment reforms for primary health care and universal health care in Africa[J]. Africa n Journal of Primary Health Care & Family Medicine, 14(1): e1-e2. https://doi.org/10.4102/phcfm.v14i1.3716
Shen P Y, Qi H Y, Geng R, Shou W J & Li R F. (2016). Study of overall plan and financing status of integration of urban and rural residents in basic medical insurance system. Medicine and society.(11),34-36. Doi: 10.13723/j.yxysh.2016.11.011.
Shu, G, Song & Li, J. (2021). Current Situation, Problems and Countermeasures of Basic Medical Insurance Financing Me chanism in China. Medicine and Philosophy .2021,42(19): 60-64. Doi: 10.12014/j.issn.1002-0772.2021.19.13.
Tandon Ajay and HoangVu Eozenou Patrick and Neelsen Sven. (1982). Compulsion and redistribution remain key tenets for financing universal health coverage.[J]. Social science & medicine, 2023, 115744-115744.https://doi.org/10.1016/j.socscimed.2023.115744
Tian, M., Li , X., Zhou, F., Wang , Y., Wang, Q., Pan , N., & Ji , H. (2023). On the Psychological experiences of Hemato poietic stem cell donors: an update on International Evidence. International Healthcare Review (online). https://doi.org/10.56226/31
Wei, L., & Xue, J. (2022). A Longitudinal study on the Emotional Support Mechanism of the Mental Health of Empty N esters: Recent evidence from China National Health and Retirement Survey. International Healthcare Review (online). http s://doi.org/10.56226/37
Wei, Y. (2023). Opportunities and challenges in cross-border healthcare: A case study based on the Court of Justice of the European Union. International Healthcare Review (online). https://doi.org/10.56226/65

Wernly, B., Flaatten, H., Beil, M. et al. (2022). A retrospective cohort study comparing differences in 30-day mortality among critically ill patients aged ⩾ 70 years treated in European tax-based healthcare systems (THS) versus social health insurance systems[J]. Scientific Reports, 12(1): 17460-17460. (2022). https://doi.org/10.1038/s41598-022-21580-y

Xiong T Y & Zhang X P. (2017). Reflections on the equity of financing for the new rural cooperative medical system in China. Continuing Medical Education 2017,31(10): 96-98. Doi: 10.3969/j.issn.1004-6763.2017.10.046.

Yang H Y & Chen T H.(2011). Research on the Equity of America's Finance Expenditure on Medical insurance System. Northwest population (03), 43-47. Doi: 10.15884 / j. carol carroll nki. Issn 1007-0672.2011.03.002.

Yeonggyu Yun and Hye-Young Jung. (2021).Impacts of public medical insurance reforms on households: An application of fuzzy cognitive map for scenario evaluation[J]. Soft Computing, .25, 7947–7956 (2021). https://doi.org/10.1007/s00500-021-05617-4。

Zhang X J. (2016). Inspiration from German medical insurance financing model to China. Legal Review 2016,0(1): 293-293. Doi: 10.3969/j.issn.2095-4379.2016.01.189.

Zhang, B., Li, Y., Cao, M., & Xu, C. (2023). On Workplace bullying in nursing: Findings from a rapid review of the litera ture . International Healthcare Review (online). https://doi.org/10.56226/51

Zhang, L., Lei, J., Zhang, J. et al. Undiagnosed Long COVID-19 in China Among Non-vaccinated Individuals: Identifying Persistent Symptoms and Impacts on Patients' Health-Related Quality of Life. J Epidemiol Glob Health (2022). https://doi.org/10.1007/s44197-022-00079-9

Zhang, L., Moreira, J. P., & Xi, Y. (2022). What is Long COVID-19? Clarifying Definitions and Symptoms. International Healthcare Review (online). https://doi.org/10.56226/ihr.v1i2.28

Zhao S Y & Zang W B. (2013). School of economics of Sichuan University School of Public Administration of Southwestern University of Finance and Economics. Insurance research (9), 120-127. Doi: 10.13497 / j. carol carroll nki is. 2013.09.014.

Zhu K & Lin L. (2020). Research on the financing mechanism of basic medical insurance in China. Research on Health Economics (08),17-21. Doi: 10.14055/j.cnki.33-1056/f.2020.08.004.

Zhu M J. (2012). Study about the Historical Development of the Financing of German's Statutory Health Insurance. Chin a Medical Insurance 2012,0(3): 75-77. Doi: 10.3969/j.issn.1674-3830.2012.3.18.