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Review Article

Health risks and health poverty alleviation practices in China: Review and prospects

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ABSTRACT: Targeted poverty alleviation is an important means and strategic decision to eliminate poverty in China, and health poverty alleviation, as an important part of targeted poverty alleviation, has an irreplaceable role in poverty alleviation. Existing studies have found that health poverty is mainly triggered by the external environment and individual characteristics, and health risks such as natural risks, family risks, and social risks all affect the occurrence of poverty. This paper summarizes China's health poverty alleviation policy evolution, practical effects and experiences, and thinking about future research trends in health poverty. It is important for academia to provide theoretical support and prospective analysis before policy formulation and has important reference significance for the accurate formulation and smooth implementation of policies in political circles. At the same time, it is also of great practical significance for the formulation of health poverty alleviation policies in the new era and for preventing the people who have been lifted out of poverty from falling back into poverty and consolidating the results of the poverty alleviation campaign.

KEYWORDS: health risk; health poverty alleviation; policy practice; prospect

Poverty is one of the current problems facing the world today. Health, as an important human capital for individuals to access social resources and achieve self-development[1], is a major factor affecting poverty. In 2018, the data on the registered impoverished population showed that the proportion of poverty caused by illness and disability among poor households exceeded 40% and 14%, respectively, especially among the elderly over 65 years of age, whose proportion even exceeded 16%. Poverty caused by illness has become the main cause of poverty among China's rural poor, which is the "roadblock" to targeted poverty alleviation[2].

In 2020, President Xi Jinping spoke at the National Poverty Eradication Summarization and Commendation Conference about China's comprehensive victory in the battle against poverty, with all the rural poor lifted out of poverty under the current standards, all the poor counties lifted out of poverty, and the overall regional poverty resolved, completing the arduous task of eliminating absolute poverty. However, the eradication of absolute poverty is not the end but the starting point of a new life and struggle. At this stage, China still has a long way to go in the cause of poverty alleviation. Many people who have been lifted out of poverty are still at risk of returning to poverty, and many marginalized people are also at risk of poverty, and returning to poverty due to illness is still a major problem in the fight against poverty. Health poverty alleviation is an important part and a basic link of China's targeted

poverty alleviation. This paper summarizes the past effectiveness and experience, which is of great practical significance for the formulation of health poverty alleviation policies in the new era and for preventing people who have been lifted out of poverty from falling back into poverty and consolidating the results of poverty alleviation. At the same time, for academia, grasping the future research trends of health poverty and providing theoretical guidance and forward-looking analysis before policy formulation will be conducive to the accurate formulation and smooth implementation of policies in political circles.

1. Health risks and the incidence of poverty

1.1. Health poverty: From low income to deprivation of capabilities and scarcity

Poverty, as a historical concept, has shifted in connotation as perceptions have evolved. Initially, poverty referred primarily to the material deprivation of people's daily lives and was defined as the inadequacy of total household income to cover the minimum amount of expenditure on the necessities of life required for the normal physiological functioning of household members[3]. Subsequently, the connotation of poverty is gradually extended from the perspective of income to the perspective of capacity, that is, poverty is the deprivation of basic capabilities and the loss of opportunities, not just low income[4]. Good health and education not only raise an individual's income level but also equip individuals with the ability to escape poverty and achieve sustainable development. In the country, researchers believe that health poverty is a kind of loss of opportunity and deprivation of ability, that is, the loss of opportunity to participate in medical security, health care, and access to basic public health services due to the low level of economic development and insufficient ability to pay, as well as the deprivation of the ability to participate in economic activities due to the resulting decline in the level of health, which brings about a reduction in income and the onset or exacerbation of poverty[5]. It can be seen that health poverty is not only the deprivation of the population's ability to derive economic benefits as a result of chronic physical or mental illnesses, but also the poor's equal access to public goods and services and their opportunities and power to escape from illnesses[6]. In addition, the lack of resources has been recognized as a major factor contributing to health poverty. The lack of basic medical and health services and the lack of medical personnel have left part of the population without guaranteed medical resources, and the inaccessibility of medical resources has prevented them from escaping from illnesses[7].

1.2. Health risks and the incidence of poverty

Poor families face greater health risks than normal families. Health risks weaken the economy and are one of the main causes of poverty[8]. There are four main areas of health risks: natural risks, family risks, social risks, and personal risks[9].

In terms of natural risks, researchers generally recognize the link between poor people and environmental change[10], and that the natural environment is an important factor affecting health. In rural areas, the survival of the population depends on the environment. On one hand, damage to the environment reduces the means of subsistence; on the other hand, pollution of the environment induces diseases, reduces the human capital of peasant households, lowers their incomes, and ultimately leads them into a "poverty trap"[11]. Migrant workers who choose to work outside their homes face pollution in their living and working environments, and their living environments are crowded and have poor infrastructure, and more of them are in labor-intensive manufacturing industries with long working hours and poor working conditions[12]. Overall, environmental pollution is an important transmission mechanism that affects health and, consequently, income inequality[11]. For environmental problems that

exist now and may exist in the future, a comprehensive approach to improving integrated environmental quality, intervening in pollutant exposure, assisting environmentally impaired residents, and fostering environmental health literacy is needed to advance environmental health[13].

In terms of household risks, poor areas tend to have poorer sanitary conditions, and it is difficult to prevent disease by improving rural sanitation. The problem of drinking water safety in some rural areas remains unresolved, and there are also high levels of fluoride, arsenic, brackishness, pollution, and schistosomiasis, which seriously affect the quality of life and health of the local population[14]. At the same time, lack of adequate housing for the poor, lack of sanitary latrines[15], and especially some endemic zoonotic diseases can deepen the poverty trap[16]. In addition, dietary risk factors have become the number one cause of health problems in the population, and they are highly correlated with diseases such as cardiovascular diseases and cancer[17]. The Global Nutrition Report in 2018 states that China is the second-most undernourished country and that low-nutrition diets are the main cause of the decline in healthy life years. Malnutrition adversely affects the physical and mental capacities of individuals, which in turn hinders productivity levels and makes them more vulnerable to poverty, and there is also a two-way link between malnutrition and poverty, which reinforce each other in a vicious cycle[18]. Therefore, optimizing dietary structure and improving dietary nutrition can effectively reduce the prevalence of chronic diseases, lower the risk of returning to poverty, effectively consolidate and expand the achievements of poverty alleviation, and comprehensively promote rural revitalization[19].

In terms of social risk, working environments for the poor tend to expose them to increased risks of environmental diseases and disabilities[20]. The poor generally have low human capital and are more likely to be engaged in manual work, some of which is unprotected and takes place in poor working conditions, increasing the risk of occupational diseases[15]. In addition, it is difficult for the poor to enjoy better welfare benefits, social security, and a high sense of well-being and fulfillment, and the poor are vulnerable to social exclusion, feeling emotions such as loneliness, low self-esteem, and negativity, making it difficult to get rid of poverty. Therefore, the goal of poverty governance in China should also change from solving the survival problems of the poor to eliminating social exclusion, promoting social equality and social inclusion, and establishing a long-term mechanism for solving relative poverty[21].

In their own respect, some residents have misconceptions about health protection, placing too much emphasis on medical protection and not enough on health issues[22]. Low health awareness and failure to adopt healthy living habits increase the risk of disease. Therefore, health education is required to raise the health awareness of individuals and to avoid the health risks that may be associated with poor health lifestyles[23].

1.3. Mechanisms of health poverty

There is a cumulative circular causal relationship between health and poverty[24], and the impact of disease on health triggers poverty mainly through both explicit and implicit transmission mechanisms[25]. The specific transmission mechanism can be seen in **Figure 1**.

Under the explicit mechanism, the individual's health will be impacted by factors such as living environment, lifestyle, individual health endowment, education level, working environment, etc.[26], and then the individual's human capital will be reduced, which has an impact on other livelihood capitals such as financial capital, physical capital, social capital, and other livelihood capital. In terms of human capital, an individual's illness not only deprives them of the ability to work for a certain period of time but also the opportunity to participate in education and training. In addition, caring for the sick person crowds out the time and opportunity costs of other family members, which reduces the human capital of

other family members as well. In terms of financial capital, since the sick person is unable to continue working for a short period of time, other family members need to spend time and energy caring for the sick person and are forced to change to a lighter job closer to home, which reduces the income of the family members as a whole. In addition, the cost of medical care for the sick person increases the family's expenditure, and when the family's expenditure is persistently higher than the family's income, the family has to use savings and borrow money to pay for the medical expenses. This leads to a vicious circle of "illness-reduced family income-increased family expenditure-poverty". In terms of physical capital, when trapped in "disease-poverty", some families choose to sell fixed assets such as real estate in order to obtain cash to cope with various risks, which reduces family assets and makes it more difficult for families to escape from poverty. In terms of social capital, traditional society makes it difficult for peasant households to form formal health risk-sharing mechanisms in the communities where they live, and they rely more on informal risk-sharing mechanisms, relying on kinship, neighborhood, and mutual aid networks within the community to transfer risks[15]. However, informal risk-sharing mechanisms are limited and unsustainable, and for families impoverished by chronic diseases, they do not have access to resources and support in the long term, which reduces their social support, and ultimately reduces the social capital of the family.

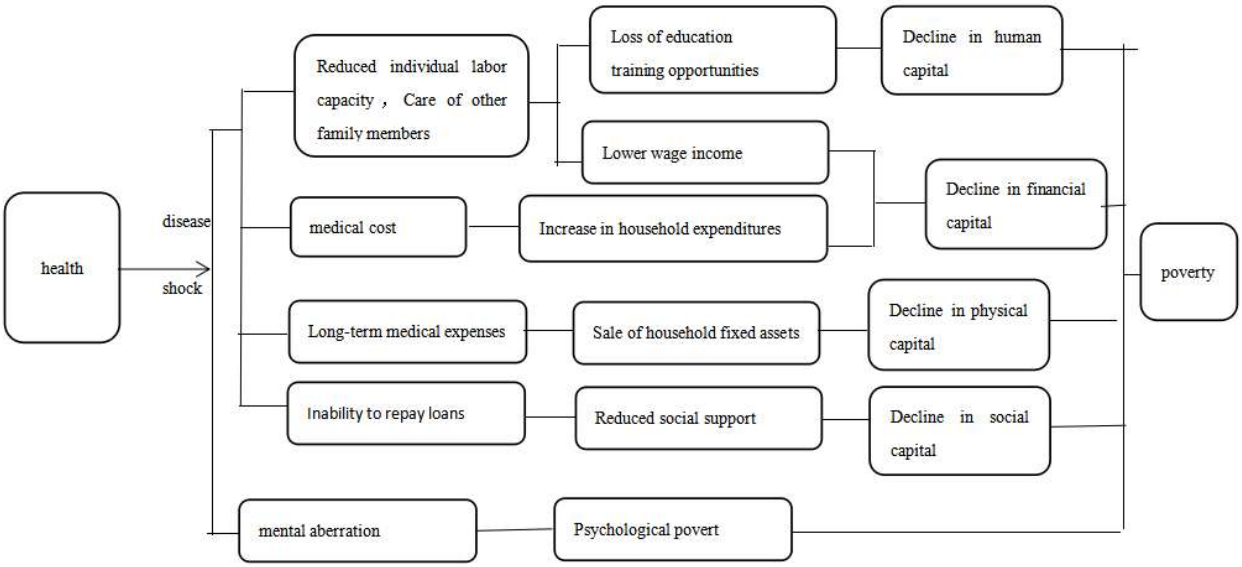

Figure 1. Mechanisms of health poverty.

Under the implicit mechanism, individuals are prone to negative thoughts such as low self-esteem, self-isolation, and obstinacy, resulting in a state of psychological poverty[25].

2. Policy evolution and practical effect of health poverty alleviation in China

2.1. Presentation of health poverty alleviation

Since the mid-1980s, China has been carrying out organized, planned, and large-scale poverty alleviation and development work in rural areas. From small-scale relief-type poverty alleviation, institutional reform-promoted poverty alleviation, large-scale development-type poverty alleviation, whole-village poverty alleviation, to targeted poverty alleviation, significant achievements have been made in poverty alleviation. From the founding of New China to the end of the twentieth century, "health" was not covered in the scope of poverty governance as an element of anti-poverty. In fact, health

is closely related to health care, and health care policies have always had a fundamental impact on the anti-poverty cause[27]. Therefore, in a broad sense, all policies supporting the development of health for the poor can be considered as health poverty alleviation, including domestic support and international assistance, governmental support and non-governmental organization support, formal support, and informal support[25].

"Health poverty alleviation" is a new term that emerged after General Secretary Xi Jinping's research in Hunan in 2013[28]. Health poverty alleviation is an important component of targeted poverty alleviation and is a fundamental part of targeted poverty alleviation and poverty eradication. In a narrow sense, health poverty alleviation means that the state, based on the public nature of health, guarantees the basic right to health of the poor through the policy-supporting mechanism to make health care services for the poor accessible and available, health care costs affordable and bearable, disease risks can be prevented and reduced[25], to improve health, and to restore or partially restore their capacity to participate in economic and social activities[28].

2.2. Evolution of the health poverty alleviation policy

Based on the historical process of health poverty alleviation development, China's health poverty alleviation can be categorized into three stages of historical evolution: the initial budding stage (1979–2000), the basic exploratory stage (2001–2014), and the mature stage of development (2015-present)[25].

The initial budding stage was demarcated by the initiation of the health care system reform in 1984[27], which was followed by a series of policies. In 1993, The Decision of the Central Committee of the Communist Party of China on Several Issues Concerning the Establishment of a Socialist Market Economic System, adopted at the Third Plenary Session of the Fourteenth Central Committee of the Communist Party of China, proposed the development and improvement of the rural cooperative medical system. The Opinions on Developing and Improving Rural Cooperative Medical Care proposed strengthening the three-tier medical and preventive health-care network and the construction of rural health teams and emphasized the construction of rural cooperative medical care in impoverished areas. At this stage, the construction of health care in China was still in its infancy.

The basic exploratory stage was marked by the Central Committee of the Communist Party of China and the State Council on Decision on Further Strengthening Rural Health Work in 2002. This stage saw the strengthening of coordination in the area of rural health care, including the strengthening of rural public health work, the promotion of the construction of a rural health service system, the increase of investment in rural health care, the establishment and improvement of a rural cooperative medical system and a medical assistance system, the strengthening of the supervision of rural medicine and health care in accordance with the law, and the strengthening of the leadership of rural health care work. At this stage, the state is focusing on solving the problem of rural health care and has begun to emphasize the prevention and control of disease, and the new rural cooperative medical system has begun to focus on the coordination of critical illnesses, with an emphasis on solving the problem of people returning to poverty as a result of critical illnesses such as infectious diseases and endemic diseases.

The mature stage of development started with the introduction of the Decision of the Central Committee of the Communist Party of China and the State Council on Winning the Battle Against Poverty in 2015, which signaled that China's poverty alleviation and development had entered a sprint period. The state began to focus on the precise combating and deep cleaning of poverty-causing factors[29], proposing to carry out medical insurance and medical assistance to lift people out of poverty, and to implement health poverty alleviation projects. In order to implement that decision, the National Health

and Planning Commission and 15 other central government departments jointly issued The Guiding Opinions on the Implementation of Health Poverty Alleviation Programs in 2016, which clarified the overall requirements, objectives, and safeguards for the implementation of health poverty alleviation programs for impoverished areas and the rural poor. Simultaneous efforts have been made in the areas of medical protection, categorization and treatment, capacity building of medical and health services, public health and disease prevention and control, forming a "four-in-one" health poverty alleviation pattern, and integrating health poverty alleviation policies into poverty eradication strategies in an all-round manner[30]. In 2016, the Central Committee of the Communist Party of China (CPC) and the State Council issued and implemented The Healthy China 2030 planning outline, proposing to integrate health into all policies and placing more emphasis on the prevention and control of disease and the implementation of healthy lifestyles. The proposal of the healthy poverty alleviation project and the healthy China strategy have laid a realistic foundation for the development of the field of health poverty alleviation[31].

2.3. Effectiveness of the health poverty alleviation policy in practice

At present, the national health poverty alleviation adheres to the scientific ideas of "who to support", "who to help", "how to help" and "how to refund" and is committed to making it possible for the poor to "affordable medical care, recover successfully, see a doctor conveniently, and get fewer illnesses" by focusing on four aspects.

"Affordable medical care", that is, the basic realization of full coverage of medical care: since the 18th National Congress of the Communist Party of China, basic medical care for the rural poor has been fully guaranteed, and nearly 10 million families that had fallen into poverty due to illness have been successfully lifted out of poverty. The implementation of "diagnosis and treatment before payment" and "one-stop" settlement services has simplified procedures and reduced the burden of medical expenses on poor patients. "Recover successfully", that is, by formulating disease classification standards and implementing categorized relief treatments. The types of special treatments for critical illnesses and the coverage of treatments have been continuously expanded, increasing from 362,000 people for nine critical illnesses in 2016 to 2.9 million people for 30 critical illnesses in 2020. By the end of September 2019, China had provided a total of 15.64 million poor patients with categorized treatment, with a coverage rate of 98%, and more than 70% of the treated patients had been lifted out of poverty. "See a doctor conveniently", that is, to enhance the capacity of medical and health services. Data from the National Health Commission shows that as of the end of 2021, there were 23,000 county-level medical and health institutions, 35,000 township health centers, and 599,000 village health centers across the country, and at least one public hospital in each former poverty-stricken county had been realized, eliminating the "blank spot" of 6903 village health centers without village doctors, and the phenomenon of "difficult to see a doctor" had been greatly improved. At the same time, the rate of residents seeking medical treatment within the county has exceeded 90%, and the proportion of medical consultations within the county at the township and village levels has remained at more than two-thirds for a long time. "Get fewer illnesses", that is, full coverage of endemic disease monitoring and improvement of residents' health literacy. In rural areas, the level of residents' health literacy has increased from 10.64% in 2017 to 20.02% in 2020, and the prevention and control of key diseases in key areas has achieved historic results. By the end of 2020, the monitoring of key endemic diseases had achieved full coverage, and the overall control and elimination rate of all endemic diseases in the county had reached 99.9%. By the end of 2021, there had been a total of 1.435 million family doctors nationwide, and 431,000 teams had been set up to provide

contracted services to residents. Basically, all registered chronically ill poor people had signed up for family doctor-contracted services.

3. The practical dilemma and path optimization of health poverty alleviation in China

In 2020, China's poverty alleviation campaign achieved a comprehensive victory. The policy of health poverty alleviation has played an important role in ensuring basic medical care for the poor and has achieved remarkable results in poverty alleviation. However, health risks always exist for every member of society, and health poverty alleviation remains one of the most important tasks in the fight against poverty. In the process of promoting the policy of health poverty alleviation, there are still many shortcomings in practice that deserve to be summarized and considered.

3.1. The practical dilemma of health poverty alleviation

3.1.1. Higher welfare dependency of the assisted poor, targeting accuracy needs to be improved

Helping poor households out of poverty is the ultimate goal of targeted poverty alleviation. In government-led top-down relief poverty alleviation, poor households are often prone to welfare dependence, not wanting to get out of poverty, unwilling to get out of poverty[32], which makes the self-development capacity of poor households not effectively cultivated[33].

Accurate identification is a prerequisite for targeted poverty alleviation, and democratic evaluation and record-keeping are the most important ways to identify the poor. At present, the identification of poverty alleviation targets is mainly based on the income level and the estimation of grass-roots cadres[34]. On one hand, grass-roots cadres have difficulty obtaining accurate information on the family situation of each household, and the lack of data support makes it impossible to achieve completely accurate identification[35]. On the other hand, the problem of poverty arises as a result of a combination of factors[36]. The traditionally defined poverty line may underestimate poverty in terms of population health[37], and focusing on income alone cannot accurately measure the specifics of the poor. Due to the effects of elite capture, lack of supervision, and the subjective nature of democratic evaluation, in the process of identifying the poor, it is easy to appear that "poor households" are not necessarily poor, and those whose incomes and consumption expenditures are lower than the poverty line are not documented and cannot receive the relevant assistance[38].

3.1.2. Limited health care resources in rural and poor areas

In rural and impoverished areas, the foundation of health-care institutions is very weak. In terms of the construction of human resources, they still face recruitment difficulties, serious staff attrition, weakened service capacity, and insufficient follow-up strength, making it difficult to form a stable, high-quality, and sustainable talent team. According to the China Health Statistics Yearbook, in 2020, the number of healthcare technicians per 1000 population in urban areas was 11.46, while in rural areas it was only 5.18; the proportion of practicing physicians in township and village health centers with a bachelor's degree or higher was 29%, far lower than the national level (59.5%). In terms of infrastructure, in 2020, the number of beds in healthcare institutions per 1000 population in urban areas was 8.81, while in rural areas it was only 4.95. It can be seen that the infrastructures of primary healthcare institutions in rural areas are still relatively weak, and it is difficult for high-quality healthcare resources to be sunk into rural and impoverished areas, resulting in the ideal hierarchical diagnosis and treatment of "minor illnesses be cured at hospitals within the township's level, severe illnesses be cured at hospitals within the

country's level, and only patients with difficult miscellaneous diseases be referred to hospitals in the superior administrative unit" being difficult to establish[39].

In terms of service capacity, the signing rate of family doctors for key populations has increased from 28.33% in 2015 to 75.46% in 2020, and basically all registered chronically ill poor populations have signed for family doctor-contracted services. However, to a large extent, the current family doctor contracting service only stays at the primary level, and the intermediate and advanced services are fewer and more difficult to provide[40]. In addition, some family doctor services are just a formality, "signing but not making appointments" occurs from time to time; and there is a lack of strong supervision and assessment mechanism[41].

3.1.3. The level of medical insurance coverage in rural and impoverished areas needs to be improved

It has been noted that out-of-pocket payments are the main health financing mechanism in developing countries. Private health expenditures in these countries are estimated to be 64.4%, 89% of which are made by households, and these high health-care expenditures cause households to face financial burdens, resulting in poverty[42]. Whereas instruments such as mutual health insurance can alleviate health risks[8]. Public health insurance benefits and premium subsidies accounted for a substantial, one-third reduction in the health-inclusive poverty rate[43]. In China, although the new rural cooperative medical system has to a certain extent alleviated the economic burden of disease on the population, the level of protection is limited, and due to the rapid rise in medical costs, the economic burden of disease on the population is still heavy[44]. A researcher's survey based on seven provinces showed that the per capita difference between annual household income and out-of-pocket medical expenses was below the national poverty line of 2300 yuan in all provinces and that medical expenses were an important cause of poverty[45].

In recent years, the medical costs of treating serious and critical illnesses have been on the rise. The Research Report on Development Index of Multi-Level Medical Security for Serious and Critical Illnesses released by the Health Economics and Medical Security Research Center of Nankai University shows that in 2020, the total degree of protection of the nation's multi-level medical security system for serious and critical illnesses was 68.06%. Among them, the degree of protection of basic medical insurance was 57.39%, and the degree of individual out-of-pocket payment for medical expenses was 31.94%. The proportion of individual out-of-pocket payments is still high, which, on the one hand, makes it possible for non-poor people to be impoverished due to illness[46]. On the other hand, it also makes it difficult for poor people to get out of poverty by improving their own development capacity.

Chronic diseases also impose a heavy medical burden on the poor. In recent years, the number of people suffering from chronic diseases in China has shown rapid growth. According to a joint research report on China's health care reform issued by the National Health and Family Planning Commission and other organizations, there are nearly 300 million chronic disease patients in the country, and China has entered a period of high chronic disease burden. This stage is characterized by a large number of patients, high medical costs, a long duration of illness, and high demand for services. According to the Report on Nutrition and Chronic Disease Status of Chinese Residents (2015), the medical burden of chronic diseases accounts for 70% of the total burden of disease, and chronic diseases are the main cause of returning to poverty due to illness. Statistics from the Poverty Alleviation Office of the State Council show that the burden of disease is high among poor people suffering from critical illnesses and long-term chronic diseases.

On the basis of the very limited endogenous development capacity of medical technology and human resources in rural and impoverished areas[47], counterpart assistance has not been carried out effectively, and there is a lack of motivation between the supporting and receiving healthcare organizations[36], resulting in the slow construction of medical associations and medical communities.

3.1.4. Disease prevention and health promotion are not emphasized

At the end of 2017, there were still 1.13 million poor people suffering from critical illnesses and 4.574 million poor people suffering from long-term chronic diseases, and chronic non-communicable diseases have become the main cause of death and disease burden for residents. Accordingly, the 2018–2020 Report on Rural Health Poverty Alleviation proposes that while the country promotes the construction of a medical security policy system, it is more important to strengthen the advocacy of disease prevention and healthy lifestyles. Through early detection and early intervention of disease, patients can reduce their medical costs. In fact, health poverty alleviation has yet to break out of the basic framework of "disease-centered"[47]. On one hand, poor groups pay less attention to disease prevention and health management. According to a survey by the National Health Planning Commission, the overall level of health literacy among the population is 6.84%, with the lowest level of chronic disease prevention literacy at 4.66%. In particular, the early symptoms of many controllable chronic diseases are not obvious, and when patients feel serious discomfort, they realize that they are unable to recover[48]. On the other hand, basic medical insurance, critical illness insurance, and medical assistance consume limited medical funds and medical resources, and relatively few resources are invested in public health services and health promotion[30].

3.1.5. Long-term mechanisms and cohesion mechanisms for health poverty alleviation are still not well established and sound

With regard to the long-term mechanism, the state currently faces problems such as heavy financial pressure and inefficient and imprecise use of funds. First, in the area of medical care, the state has established and perfected various medical assistance systems and medical insurance systems. In order to ensure the smooth operation of these systems, the central and local financial authorities have shared responsibility for the expenditure of funds. In terms of public health, expenditures have been increasing in recent years, and according to the China Health Statistics Yearbook, government health expenditures amounted to 21941.9 billion yuan in 2020, an increase of 17.9% from 2019. It can be seen that the financial burden is heavy, causing greater pressure on fiscal expenditure. In addition, although the growth of expenses invested in health by the state far exceeds the growth of GDP, excessive treatment, drug abuse on prescription, excessive use of large-scale equipment for inspection, and misuse of equipment and devices still occur in some hospitals, resulting in less efficient and less precise use of funds[47].

The development and implementation of measures for poverty alleviation cannot be carried out without the participation and collaboration of various departments. Therefore, the way of interaction and cohesion mechanisms between various departments directly affect the implementation effect of health poverty alleviation[47]. In 2018, the Audit Office audited the situation of 145 national poverty alleviation and development work-focused counties in 20 provinces and found that 43 cities and counties, due to the insufficient cohesion of the work of the departments of education, health, and poverty alleviation and inadequate data sharing, have resulted in 304,000 impoverished households not enjoying the education and health poverty alleviation policies. Among them, 287,400 impoverished households in 27 counties were not able to enjoy health poverty alleviation policies, such as the subsidization of individual contributions for the new rural cooperative medical care, involving funds of 69.1601 million yuan. The unclear division of powers and responsibilities among multiple policy subjects leads to problems such as separate governance, dispersed funds, mutual shirking of responsibilities, and isolated information[25],

ultimately leading to a lack of synergy in which the various policy subjects are unable to constitute a synergistic guarantee[41]. Externally, the participation of social forces in health poverty alleviation is still insufficient, with a low rate of policy awareness among the poor and a low utilization rate of health poverty alleviation policies[32].

In addition to the above five aspects, in the process of practice, there is also the problem that the mental health problems of the poor population have not been emphasized[25,30]. The psychological problems of the poor population in the process of targeted poverty alleviation are diverse, and when the state pays attention to the psychological problems of the poor population, it can help them realize psychological and spiritual abundance and promote the harmonious unity of material and spiritual life[49].

3.2. Reflections on the practice of the health poverty alleviation policy

The development of health services in impoverished areas is lagging behind, with a relative lack of health resources, low service capacity, and poor accessibility, making it difficult to meet the health service needs of the population. At the same time, the economic burden on the population is excessive, the flow of service utilization is unreasonable, and funding for health services is insufficient, with serious indebtedness. All of these have become important obstacles to the development of health services in impoverished areas and to the sustainable growth of people's health levels and incomes, and there is a need to continue to optimize policies for health poverty alleviation.

3.2.1. Accurately identifying poverty alleviation targets and strengthening the cultivation of endogenous motivation of poverty targets

The traditional reporting mechanism and manual registration method cannot ensure the accurate identification and dynamic assistance of poverty targets[50]. To accurately identify poverty alleviation targets, the Ministry of Civil Affairs can be uniformly responsible for accurate identification and recognition, setting the corresponding assistance standards[51], and establishing relevant electronic files and information systems to unify the caliber of data and carry out dynamic management[52], as well as establishing and improving the relevant supervision mechanism, relying on third-party institutions such as universities and other third-party institutions, and establishing a variety of assessment methods[36]. Secondly, it is necessary to stimulate the endogenous motivation and vitality of poor groups. It is necessary to set up various employment training and assistance programs to help poverty alleviation targets establish the main position and sense of responsibility, get rid of poverty ideology and welfare dependence[52], and realize the development of "transfusion-type" assistance to self-reinforcing "hematopoietic-type" assistance[7]. At the same time, it is also necessary to pay attention to unregistered poor households; such groups are on the edge of poverty and are easy to fall into new poverty due to sudden illness[53].

3.2.2. Further promoting the sinking of quality medical resources to rural and impoverished areas

The government should play a leading role in the construction of facilities and the selection of talents[54]. In the selection and dispatch of talents, it is necessary to strengthen the construction of a high-level and specialized talent team. Establish and improve a professional and institutionalized talent training and introduction system to cultivate and attract excellent and interdisciplinary talents to take root in rural and impoverished areas. Establish an open and transparent promotion system and a scientific and perfect reward mechanism to ensure the introduction of talents and avoid talent loss[22]. In addition, it is necessary to promote high-level medical and health care talents to visit rural areas for diagnosis, gradually realize the full coverage of medical delivery, and improve the quality of health poverty

alleviation[54]. At the same time, attention is paid to the training of county and village medical personnel to improve their diagnosis and treatment techniques and capabilities[55], and village doctors should be included in the medical and health management system for standardized management[56]. In terms of facility construction, it is necessary to promote the standardized construction of county hospitals, public health institutions and township health centers and to equip them with basic medical facilities to meet the basic functional needs[55], especially for the construction of specialties for local common and high-incidence diseases. In terms of service capacity, it is necessary to improve the long-term mechanism of tertiary hospitals' counterpart assistance[57], strengthen the construction of healthcare systems at all levels, link different hospitals with county-level hospitals, widespread downward to township health centers and village health offices, and link up to tertiary hospitals, so as to achieve the sharing and sinking of high-quality medical resources.

3.2.3. Moderate increase in the level of health insurance coverage

China has established a multi-level medical insurance system, including basic medical insurance, medical assistance, and commercial health insurance, but there is a lack of effective cohesion between the systems, so it is necessary to further clarify the positioning of the multi-level medical insurance system, define the boundaries between them, and improve the cohesion mechanism[58]. It is necessary to further improve the basic medical insurance, critical illness insurance, medical assistance, and special medical assistance systems to construct a "four-fold medical protection" system. Basic medical insurance plays the main role in preventing the return to poverty due to illness; critical illness insurance plays an important role in reducing the risk of a health-related return to poverty; medical assistance plays an important role in providing basic support; and the special medical assistance system plays a supplementary role in all three[59]. Focusing the reform of health insurance contribution reduction and exemption preferences for the population out of poverty on the basic health insurance for urban and rural residents, the compensation for the population out of poverty and the marginalized groups should be tilted in terms of basic health insurance and critical illness insurance, and the payment line should be lowered moderately while the reimbursement ratio and the capping line should be adjusted upward appropriately[60].

3.2.4. Policies are titled towards disease prevention and health management

"Get fewer illnesses" is the "preventive injection" of health poverty alleviation[61]. Disease prevention and health management should be improved in multiple forms, such as government-led, community-assisted, and individual participation[7]. At the government level, the policy of health poverty alleviation should be expanded from "medical assistance" to "disease prevention"[30].The government should increase investment in the prevention of poor areas beforehand and use more funds to improve the production and living conditions in poor areas from the perspective of health[2]. Medical teams are regularly dispatched to rural areas to carry out disease screening work, moving the disease prevention gate forward. At the community level, it is necessary to increase the publicity and education of health knowledge, strengthen the correct understanding of rural poor families on dietary nutrition, hygiene, and safety, and guide rural poor families to develop good dietary and hygiene behaviors so as to build a good first line of defense for health protection[53]. At the individual level, the subjective initiative of the population out of poverty should be brought into play so that they can actively participate in health checkups, chronic disease prevention and control, patriotic health campaigns, and other medical and health activities, improve their health literacy and self-management abilities, and truly become the dominant player in their own health[50].

3.2.5. Establishment of a sound long-term mechanism and cohesion mechanism for health poverty alleviation

In terms of long-term mechanisms, the boundaries of health poverty alleviation benefits should be reasonably determined, the content and standards of "basic medical protection" should be clarified, a bottom line should be established, the reimbursement ratio of medical insurance should be reasonably determined, and the phenomenon of "add code layer by layer" should be avoided[47], and a stable mechanism for raising and guaranteeing funds for social assistance for low-income families in rural areas should be established[62]. The relevant departments should strengthen the supervision and management of medical institutions, regularly inspect doctors' prescriptions, patients' treatment plans, and the use of drugs outside the catalog, so as to achieve reasonable examination, reasonable treatment, and reasonable use of medication, to prevent the occurrence of over-treatment behaviors in medical institutions, and to improve the efficiency and effectiveness of the implementation of health poverty alleviation policies[2].

In terms of the cohesion mechanism, the relevant departments should establish a complete set of synergistic mechanisms, realize information sharing, and form a strong policy synergy to ensure the smooth implementation of health poverty alleviation policies and reach a strong implementation effect[63]. At the same time, widely mobilizing social forces can, on the one hand, provide more technical and resource support for poor areas and alleviate the government's financial pressure; on the other hand, optimize the efficiency of poverty alleviation by pooling the advantages of all parties, innovating helping methods, and expanding the field of help[50]. It is also necessary to focus on "external transfusion", gather social synergy, form a co-frequency resonance mode among the government, enterprises, and social organizations, integrate the poverty alleviation strengths of all parties, and improve the level of poverty alleviation[53].

4. Prospect

After China has achieved the eradication of absolute poverty by 2020, the future focus of health poverty and health poverty alleviation will mainly concentrate on the sustainable income growth of low-income populations.

For those moving out of poverty, new factors affecting health poverty should be further explored. For peasant households that rely on manual labor for their livelihoods, especially low-income peasant households, nutritional health plays a more critical role in human capital. In recent years, more researchers have paid attention to the impact of dietary habits and nutritional status on the health of the population and considered nutritional poverty alleviation as a new mode to promote health poverty alleviation and targeted poverty alleviation, advocating the implementation of nutritional health poverty alleviation, nutritional science popularization poverty alleviation, and nutritional industry poverty alleviation[64].Nutrition is the material basis of health, and the dietary nutrition of the population is closely related to the food environment. The food environment mainly refers to food availability, food accessibility, food affordability, and food quality[65]. The main barriers affecting the nutritional health of low-income populations emerging from poverty include the price of healthy food, the quality of healthy food available, and the overall quality of the proximity of retail outlets[66]. The relationship between nutritional health and income growth has long been a concern of foreign academics, especially since the 1980s. Many studies[67,68] have shown that nutritional health has a significant contribution to income growth. Therefore, a poorer food environment and food security can lead to nutritional imbalances, which in turn affect physical health and the accumulation of human capital. When human capital declines, low-income people who have been lifted out of poverty are forced to make adjustments to their

livelihood strategies, which have a significant impact on their income growth. From the perspective of food environment and food security, this mechanism of "food environment-affecting nutritional health-affecting human capital-affecting livelihood strategies-affecting income growth" is of strong academic value.

In addition, in the process of health poverty alleviation, in order to ensure that the poor population successfully gets rid of poverty, a large number of policies and support measures are tilted towards the poor population, resulting in the treatment of the poor population and the non-poor population appearing to have a "cliff effect". The poor population enjoys financial health care resources 2–3 times more than the non-poor population, so the non-poor population has become a new short board for health poverty alleviation[69]. Therefore, the focus of health poverty alleviation should not only be on the poor but also on marginalized groups with lower incomes and insufficient endogenous motivation, so as to prevent such groups from returning to poverty as a result of illness. In addition, urban low-income groups also face different health poverty problems due to the high cost of living and the pressure of living.

Author contributions

Conceptualization, ZZ and RL; writing—original draft preparation, RL; writing—review and editing, ZZ. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

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