Preplanned Studies

Quantitative Analysis on NCDs Prevention and Control Policies Based on the Perspective of Policy Instruments — China, 1990–2020

Yanfang Zhao; Yang Gao; Man Li; Yamin Bai; Dan Liu; Shengqun Mi; Zhuoqun Wang; Wenhua Zhao

Summary

What is already known about this topic?
Noncommunicable diseases (NCDs) are a major public health problem in the world. NCDs are the leading cause of premature deaths and disabilities among Chinese residents, resulting in heavy economic and health burdens.

What is added by this report?
This study conducted a quantitative analysis of the policy texts on NCDs prevention and control in China from 1990 to 2020, based on the perspective of policy instruments. It was discovered that China’s NCDs prevention and control policies developed rapidly from the ground up over the 30 years from 1990 to 2020 and that the majority of China’s NCDs prevention and control policies were environment-oriented, while supply-oriented and demand-oriented policies were insufficient.

What are the implications for public health practice?
The findings of this study suggested that increasing supply-oriented and demand-oriented strategies should be prioritized in the future formulation and revision of NCDs prevention and control policies.

Noncommunicable diseases (NCDs) are responsible for almost 71% of all deaths globally (1). The number of deaths due to NCDs in China accounted for 86.6% of total deaths in 2012 (2). However, the unhealthy lifestyle of Chinese residents is still prevalent, such as excessive intake of salt and edible oil, sugary beverage consumption among children and adolescents, smoking, alcohol consumption, and lack of physical activity (2). In order to maintain the people’s health, China has issued a number of policies, plans, and national actions for the prevention and control of NCDs. In particular, the Medium- and Long-Term Plan for the Prevention and Treatment of NCDs (2017–2025), the Outline of the Plan for “Healthy China 2030”, and the Healthy China Action (2019–2030) promulgated by the Chinese State Council put forward a series of indicators for NCDs control. It is necessary to systematically review the strategies for NCDs prevention and control in China so as to achieve the goal of healthy China. Based on the theory of policy instruments, we conducted a textual content analysis and a quantitative analysis of the policies on NCDs and their behavioral risk factors that were issued by the State Council and relevant national ministries and commissions from 1990 to 2020. It was found that China’s NCDs prevention and control policies experienced rapid development during the 30 years from 1990 to 2020 and that the majority of China’s NCDs prevention and control policies were environment-oriented, while supply-oriented and demand-oriented policies were insufficient. These findings suggested that attention should be paid to increasing supply-oriented and demand-oriented strategies during the formulation and revision of NCDs prevention and control policies in the future.

The methods of policy document system retrieval and policy text research were conducted in this study. The national health-related policy documents were searched in the portals of the Central Government and national ministries and commissions with the keywords of NCDs and their behavioral risk factors. The inclusion criteria of the policy documents included the following: 1) the release date should be between 1990 and 2020; 2) the departments releasing policy documents were the State Council and relevant national ministries and commissions; 3) the forms of policy documents included laws and regulations, planning, circulars, opinions, measures, announcements, health industry standards and guidelines (issued or guided and supported by health administrative departments), programs (policies); 4) the public form of the policy documents was published online on the official website; and 5) the content of policy documents was closely related to the
prevention and control of NCDs or 4 behavioral risk factors (unhealthy diet, use of tobacco, harmful use of alcohol, and physical inactivity). The exclusion criteria included the following: 1) news reports, conference speeches, work reports and interpretation of policy documents related to the prevention and control of NCDs or their behavioral risk factors; 2) only keywords of NCDs or their behavioral risk factors, no substantive content; and 3) documents included in the policy text pool.

The main information elements of the policy document texts were extracted to form an analysis database, including the name of the policy document, the release unit, the release time, the document number, the file type, and the text items. The material was classified using the policy instrument theory, which divided policy instruments into three categories: supply-oriented, environment-oriented, and demand-oriented (3). Figure 1 shows the categories and mechanisms of policy instruments for NCDs prevention and control. Based on the perspective of policy instruments, a textual content analysis and a quantitative analysis were conducted with policy documents on NCDs and related behavioral risk factors in China that were issued between 1990 and 2020. Both analyses were carried out using SPSS software (version 16.0, SPSS Inc., USA).

This study retrieved 645 documents publicly available on national-level networks, excluded 233 according to the inclusion and exclusion criteria, and finally included 412 policy documents in the analysis. Among the 412 policy documents, 39 policy documents on NCDs prevention and control were released from 1990 to 2005, accounting for 9.5% of the total number of documents; 149 were released from 2006 to 2015, accounting for 36.2% of the total, and 224 were released from 2016 to 2020, accounting for 54.4% of the total (Figure 2).

Among the NCDs policies released in 1990–2020, on a type basis, 59 policy documents were supply-oriented, accounting for 14.3% of the total number of documents; 340 were environment-oriented, accounting for 82.5% of the total; and 13 were demand-oriented, accounting for 3.2% of the total. Supply-oriented, environment-oriented, and demand-oriented policies all showed an increasing trend, and environment-oriented policies were significantly higher than supply-oriented and demand-oriented policies. After 2011, supply-oriented and demand-oriented policies gradually increased, but their proportions were still low (Figure 3).

Among the 4,455 pieces of policy instruments for NCDs prevention and control, on a content basis, 78.2% were environment-oriented, and 18.0% and 3.9% were supply-oriented and demand-oriented, respectively. In all the policy instruments, strategy-based measures accounted for 46.1% of the total policy instruments, followed by goals and planning, which

![FIGURE 1. Categories and mechanisms of policy instruments for noncommunicable diseases (NCDs) prevention and control.](image-url)
accounted for 14.5%; capital investment, talents building, and information support accounted for 1.5%, 3.0%, and 3.8% of the total policy instruments, respectively; finance, taxation, and laws and regulations accounted for 0.1%, 0.2%, and 1.8% of the total policy instruments, respectively. In the supply-oriented policy instruments, public service investment accounted for 31.6%, information support 21.0%, and talent building and capital investment, respectively, 16.5% and 8.3%. In the environment-oriented policy instruments, strategic measures accounted for 59.0%, and laws and regulations, taxation, and financial instruments accounted for 2.3%, 0.3%, and 0.2%, respectively. In the demand-oriented policy instruments, cooperation models accounted for 30.1%, and government service procurement and government service outsourcing accounted for 2.9% and 1.7%, respectively (Table 1).

DISCUSSION

China’s NCDs prevention and control policies have grown rapidly out of nothing over the 30 years from 1990 to 2020, especially after 2016, when such policy documents reached a peak. This is mainly related to factors such as rapid social and economic development, the shift of residents’ disease and death spectra to NCDs, the increasing importance attached by the Party and the government to NCDs prevention and control, and the fulfillment of international commitments in China (4–6). In 2016, China made clear the guiding principle of integrating health into all policies, and issued programmatic policy documents such as the Outline of the Plan for “Healthy China 2030”, the Medium-and Long-Term Plan for the Prevention and treatment of NCDs (2017–2025), and the Healthy China Action (2019–2030). A series of
supporting policy documents for the implementation of these programmatic documents was also introduced by the involved ministries, resulting in a large increase in the number of documents released. “Healthy China” was elevated to a national policy, highly placed on the development agenda, with NCDs prevention and control policies gradually changing from “disease-centered” to “health-centered.”

Policy instruments are the means and measures to achieve policy goals. Different types of policy instruments have different roles and mechanisms. This study showed that national NCDs prevention and control policies used a combination of three types of policy instruments, namely supply-oriented, environment-oriented, and demand-oriented policy instruments, with the amount to which they were used varying substantially. Environment-oriented policy instruments accounted for 78.2%, while supply-oriented and demand-oriented instruments occupied 18.0% and 3.9%, respectively. Giving full play to the complementarity of different policy instruments was the key to the rational allocation of policy instruments (7). In this sense, environment-oriented policy instruments were overrepresented in China’s NCDs prevention and control policies, while supply- and demand-oriented instruments were underused, which was consistent with the results of similar studies in the fields of pension services, healthy city construction, and so on (8–9). On the one hand, it reflected that decisionmakers were expected to support NCDs prevention and control by creating a favorable policy environment. On the other hand, it also suggested that decisionmakers should consider the rational distribution of various policy instruments as NCDs prevention and control was a complex and systematic project, so as to give full play to the “impetus”, “pull” and “influence” of supply-, environment-, and demand-oriented instruments (9).

**TABLE 1. The Distribution of various policy instruments for noncommunicable diseases prevention and control.**

| Type of policy instrument | Sub-item                  | Number | Type-based proportion (%) | Total-based proportion (%) |
|---------------------------|---------------------------|--------|---------------------------|---------------------------|
| Supply-oriented           | Capital investment        | 66     | 8.3                       | 1.5                       |
|                           | Talent building           | 132    | 16.5                      | 3.0                       |
|                           | Public service investment | 253    | 31.6                      | 5.7                       |
|                           | Information support       | 168    | 21.0                      | 3.8                       |
|                           | Institution/facility construction | 181 | 22.6 | 4.1                       |
|                           | Subtotal                  | 800    | 100.0                     | 18.0                      |
| Environment-oriented      | Goals and planning        | 648    | 18.6                      | 14.5                      |
|                           | Strategic measures        | 2,054  | 59.0                      | 46.1                      |
|                           | Finance                   | 6      | 0.2                       | 0.1                       |
|                           | Taxation policy           | 11     | 0.3                       | 0.2                       |
|                           | Medicare support          | 113    | 3.2                       | 2.5                       |
|                           | Standards and guidelines  | 215    | 6.2                       | 4.8                       |
|                           | Laws and regulations      | 80     | 2.3                       | 1.8                       |
|                           | Social promotion          | 275    | 7.9                       | 6.2                       |
|                           | Organizational safeguard  | 80     | 2.3                       | 1.8                       |
|                           | Subtotal                  | 3,482  | 100.0                     | 78.2                      |
| Demand-oriented           | Government procurement    | 5      | 2.9                       | 0.1                       |
|                           | Pilot projects            | 36     | 20.8                      | 0.8                       |
|                           | Government service outsourcing | 3 | 1.7 | 0.1                       |
|                           | Price regulation          | 21     | 12.1                      | 0.5                       |
|                           | Experience demonstrations  | 47     | 27.2                      | 1.1                       |
|                           | International communication| 9     | 5.2                       | 0.2                       |
|                           | Cooperation models        | 52     | 30.1                      | 1.2                       |
|                           | Subtotal                  | 173    | 100.0                     | 3.9                       |
| Total                     |                           | 4,455  | 100.0                     | 100.0                     |
The study implied an unbalanced internal composition of each type of policy instruments. In supply-oriented policy instruments, public service investment accounted for one-third, while talent building and capital investment were inadequately designed. At present, the situation of NCDs prevention and control is severe, while understaffing and insufficient capacity and funding are common problems facing NCDs prevention and control nationwide. In the national disease control system, full-time personnel for NCDs prevention and control accounted for only 3.2% of in-service staff, with a wide gap in western regions, especially in primary medical institutions (10–11). China’s NCDs prevention and control is mainly financed by central and local governments, but the funding is inadequately guaranteed in some underdeveloped regions, so local governments need to explore a variety of sound funding models and sustainable funding guarantee mechanisms (12). The environment-oriented policy instruments were dominated by strategic measures and goals and planning, with laws and regulations, taxation and finance accounting for a small proportion (less than 3%), suggesting that decisionmakers tended to create a favorable policy and social environment and facilitate consensus on enhanced NCDs prevention and control through moderate instruments such as formulating strategies, planning and goals. However, as NCDs prevention and control involves economic, cultural, environmental, and other factors, the most cost-effective method is mandatory control through laws and regulations, as well as economic regulation through taxation and finance (13). The Basic Health Care and Health Promotion Law, released on December 28, 2019, is China’s first basic and comprehensive law on health, which would drive the rule-of-law process of NCDs prevention and control (14). In the demand-oriented policy instruments, government procurement and government service outsourcing accounted for less than 3%. These instruments can motivate and attract stakeholders such as social organizations and enterprises to be actively engaged in NCDs prevention and control, thus effectively reducing government investment in talent building, capital and technology, and forming an effective pull for NCDs prevention and control (15). To meet people’s health needs, it is critical to strengthen the development of demand-oriented policies, promote government procurement, pilot projects for NCDs prevention and control, experience summary, demonstration, and promotion (16), and provide a variety of multi-level, effective, and convenient NCDs prevention and control services.

This study is subject to certain limitations, which might cause some biases in the results. First, as policy texts were obtained through an online search, policy documents that had not been made public could not be included. Second, given the rich connotations of policy instruments themselves, different types of instruments may have intersected attributes and blurred boundaries, and the coding of instrument categories may be somewhat subjective.

Acknowledgments: Experts who contributed to the project and the Office of China Healthy Lifestyles for All.

Conflicts of interest: No conflicts of interest reported.

Funding: Supported by the World Health Organization (WHO) “National Action Strategies for Promoting Population-Based Prevention and Control of Behavioral Risk Factors for NCDs” (CPMA-831).

doi: 10.46234/ccdcw2022.090

* Corresponding authors: Zhuoqun Wang, wanghaiuoqun@chinacdc.cn; Wenhua Zhao, zhaozh@chinacdc.cn.

1 National Center for Chronic and Noncommunicable Disease Control and Prevention, Chinese Center for Disease Control and Prevention, Beijing, China; 2 Department of Epidemiology and Statistic, Hebei Medical University, Shijiazhuang City, Hebei Province, China; 3 Department of Public Health and Preventive Medicine, School of Medicine, Jinan University, Guangzhou City, Guangdong Province, China; 4 College of Health and Environment, Beijing Union University, Beijing, China; 5 NCDs Control and Prevention Society, Chinese Preventive Medicine Association, Beijing, China; 6 National Institute for Nutrition and Health, Chinese Center for Disease Control and Prevention, Beijing, China.

Submitted: April 06, 2022; Accepted: April 26, 2022

REFERENCES

1. World Health Organization. Noncommunicable diseases: key facts. 2021. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases. [2022-3-15].

2. Disease Prevention and Control Bureau of the National Health and Family Planning Commission. Report on Chinese residents’ chronic diseases and nutrition (2015) . Beijing: People’s Medical Publishing House, 2015.

3. Rothwell R, Zegveld W. Reindustrialization and technology. London: Longman Group Limited. 1985. http://kjbjhs.tsinhua.journals.com/article/2020/1005-0590/113209G3-2020-10-128.shtml.

4. Zhang X, Zhou XP, Huang XY, Miao SM, Shan HW, Jing SQ, et al. The analysis of the disease spectrum in China. Biomed Res Int 2014:2014/601869. http://dx.doi.org/10.1155/2014/601869.

5. Alwan A. The United Nations political declaration on noncommunicable diseases: are countries of the Eastern Mediterranean Region ready to respond? East Mediterr Health J 2013;19(9):757 – 8.

6. World Health Organization. Global action plan for the prevention and control of NCDs 2013-2020. 2015. https://www.who.int/nmh/publications/10-05-2015-global-action-plan-for-the-prevention-and-control-of-ncds-
7. Yan YY. Research on application and optimization of comprehensive reform policy tools for public hospitals [dissertation]. Chongqing: Chongqing Medical University; 2020. http://dx.doi.org/10.27674/d.cnki.gcyku.2020.000919. (In Chinese).

8. Liu JS, Wang HD, Zha ZQ, Zhang T, Chai J, Zhang XZ, et al. Analysis of China’s medical-prevention integration policy for chronic diseases from the perspective of policy tools. Anhui J Prev Med 2021;27(6):501 – 6. http://dx.doi.org/10.19837/j.cnki.ahyf.2021.06.020. (In Chinese).

9. Zheng WJ, Yao HY, Liu JJ, Yu SC, Li YQ. Quantitative analysis of national hygienic city policies in China from the perspective of policy tools. Chin J Prev Med 2020;54(9):988 – 92. http://dx.doi.org/10.3760/cma.j.cn112150-20200629-00946. (In Chinese).

10. Si X, Zhai Y, Zhu XL, Ma JX. Human resources for chronic disease prevention and control in disease control and prevention institutions in China. Chin J Public Health 2019;35(5):525 – 8. http://dx.doi.org/10.11847/zgggws1122977. (In Chinese).

11. Xiao NZ, Long Q, Tang XJ, Tang SL. A community-based approach to non-communicable chronic disease management within a context of advancing universal health coverage in China: progress and challenges. BMC Public Health 2014;14(Suppl 2):S2. http://dx.doi.org/10.1186/1471-2458-14-S2-S2.

12. Liu QM, Xiang HQ, Jin DF, Li L, Qiu X. Discussion on financing mode for continual development of NCD control and prevention. Chin Health Econom 2007;26(6):45 – 7. http://dx.doi.org/10.3969/j.issn.1003-0743.2007.06.014. (In Chinese).

13. World Health Organization. Tackling NCDs: ‘best buys’ and other recommended interventions for the prevention and control of noncommunicable diseases. 2017. https://www.who.int/publications/iitem/WHO-NMH-NVI-17.9. [2022-3-15].

14. Liu XQ, Li YY. Thoughts on the legislation of the basic health care and health promotion law-from the perspective of citizen’s health right. China Health Law 2021;29(1):27 – 30,87. http://dx.doi.org/10.19752/j.cnki.1004-6607.2021.01.006. (In Chinese).

15. Chen JS, Zhu DZ, Lv H. Text analysis on policies of chronic disease prevention and control from the perspective of policy instruments. Soft Sci Health 2021;35(10):43 – 7. http://dx.doi.org/10.3969/j.issn.1003-2800.2021.10.009. (In Chinese).

16. Liu XH, Sun DP. Quantitative research on urbanization policy documents in China from the perspective of policy tools: base on national policy documents from 2014 to 2020. Jilin Univ J Soc Sci Ed 2022;62(2):211 – 22,240. http://dx.doi.org/10.15939/j.jujse.2022.02.zz1. (In Chinese).