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National and province-level primary health care policies for the prevention and control of non-communicable diseases in China from 2009 to 2023: a scoping review

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ABSTRACT

Objectives This study systematically characterises policies related to the prevention and control of non-communicable diseases (NCDs) at the provincial primary healthcare (PHC) level, identifying key characteristics and potential gaps compared with national policies.

Study design Policy review and thematic content analysis.

Methods Policy documents from Guangdong and Heilongjiang provinces (2009–2023) were analysed using the WHO's six building blocks framework. A total of 135 eligible documents were included, with thematic analysis conducted to categorise policies as 'extension' or 'reduction' based on their alignment with national directives.

Results 12 major policy initiatives were identified, with most themes reflecting provincial adaptations ('extension') of national strategies. Leadership and governance, medicines and technologies and service delivery received robust policy support, while health information systems lagged. Provincial policies demonstrated significant multisectoral collaboration, though gaps in health financing and workforce capacity persisted.

Conclusions To strengthen PHC-based NCD control, future reforms must prioritise multisectoral collaboration, interoperable digital health systems and tailored health education. Addressing regional disparities in policy implementation is critical for equitable outcomes.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This study used a scoping review and qualitative policy analysis to interpretively assess policy content, structure and provincial adaptations.
⇒ Thematic data analysis applied the WHO's six building blocks framework through deductive and inductive cycles.
⇒ The study focused on policy document analysis in Heilongjiang and Guangdong provinces to reflect regional economic and health resource disparities.
⇒ The study is limited to two provinces, restricting broader geographic or contextual generalisability.
⇒ This study relied solely on formal policy documents, potentially omitting informal policies or implementation dynamics.

INTRODUCTION

The growing burden of non-communicable diseases (NCDs), driven by urbanisation, population ageing and lifestyle changes, imposes significant health and economic challenges globally.[1] NCDs like hypertension and diabetes account for 68% of global deaths, reducing workforce productivity, lowering quality of life and increasing healthcare costs.[2] Primary healthcare (PHC) is critical for addressing population health needs, with evidence highlighting its positive effects on health outcomes and overall system efficiency. [3–5]In China, various policies have been implemented to establish an integrated PHC-based system to prevent and manage NCDs, ensuring equitable access to quality healthcare.[4 6]

Since the 1950s, China's PHC system has undergone three phases: the 'barefoot doctors' era (1949–1978), characterised by rural non-formal medical personnel; marketisation and hospital privatisation with diminished PHC investment (1978–2008); the current reform period since 2009, which prioritises PHC to achieve an efficient and equitable health system.[7] This political commitment aimed to establish an accessible, equitable, affordable and efficient health system to cover all people by 2020.[8] A high-quality and efficient health system is crucial for China's goal of prioritising population health and shifting to a new development model.[9 10] Despite reforms, challenges persist—almost half of Chinese adults aged 35–75 have hypertension, yet, awareness, treatment and control rates remain low.[11]

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Gaps in PHC-based NCD prevention and control include insufficient multisectoral collaboration, underutilisation of non-health professionals and a lack of quality-oriented service evaluation.[12] NCD prevalence continues to rise without significant improvement in treatment adequacy.[13] To guide the analysis of PHC policies for NCD prevention and control in China, this study applies the WHO health system framework, which provides a structured approach to assessing health policies based on six building blocks.[14] The framework provides a structured approach to assessing key policy dimensions, identifying gaps in implementation and evaluating the alignment of China's PHC policies with global best practices.

Therefore, the primary goal of this study is to systematically map out the policy landscape of the local implementation and translation of NCD prevention and control. Key factors influencing the implementation and adaptation of national policies at the local level are regional economic differences, low financial resources, lack of tailored policy design and absence of prioritisation. The implementation and translation of policies at the province level have presented central issues and difficulties. As yet, there is limited literature examining policy gaps from national to province levels, making it unclear what progress and potential gaps remain. This study has three specific objectives: first, to map the volume and variety of policies in preventing NCDs since 2009 in selected provinces; second, to identify key policy areas, themes, strengths and potential gaps in these policies using the WHO framework; third, to demonstrate the evolution of national-to-provincial policies to provide tailored recommendations for implementation.

METHODS

Study design

This study reviewed province-level policy documents related to NCD prevention and control since 2009, aiming to assess their role in advancing China's health system reform. The protocol adheres to the Preferred Reporting Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRSIMA-ScR) Checklist.[15] The PRISMA-ScR checklist is provided in the supplementary material (online supplemental file 1). The study protocol has been registered on the Open Science Framework platform (https://osf.io/jh3gn).

Analytical framework

The analysis employed the WHO's six building blocks framework: service delivery, health workforce, health information, health financing, medicines and technologies and leadership and governance.[14] This framework provides a systematic approach to evaluating health systems and is widely used for international research.

Data sources and selection

The development and outcomes of NCDs are closely tied to health systems, policies and socioeconomic conditions.[16] Provinces in China have imbalanced progress in socioeconomic and health development, such as the basic healthcare and urbanisation ratio among regions. To analyse regional variations, the study focused on two provinces with contrasting economic conditions: Heilongjiang (northern, less developed) and Guangdong (southern, economically advanced). Heilongjiang, China's northernmost province, has 30.99 million residents, spans 473 000 km^2 and has a GDP per capita of ¥15 901. Guangdong, the most populous province, has over 100 million residents, covers 179 800 km^2 and boasts a GDP per capita of ¥129 118. Following search strategies from prior policy reviews,[12 17] we retrieved relevant policy documents from the official websites of provincial governments and affiliated ministries (eg, Provincial Health Commission, Provincial Medical Security Bureau) from 17 March 2009 to 17 April 2023. The search also included ministries influencing health-related issues, such as the Provincial Department of Education (online supplemental file 2).

Search strategy and selection criteria

Due to limitations in the search functionality of provincial government websites, we used Chinese-character keywords such as 'Man Xing Bing' (chronic disease) and 'Man Bing' (an abbreviation for NCDs) to retrieve documents, as detailed in online supplemental file 3. Searching for 'primary healthcare' (Ji Ceng Wei Sheng Bao Jian/Ji Ceng Yi Liao) was restricted by its length, so PHC was instead prioritised during screening and data extraction. Boolean operators (eg, AND, OR) were not permitted, so keywords were used individually. The snowball method was employed to identify additional relevant policies by reviewing references within retrieved records. Input from policy experts at the Chinese Center for Disease Control and Prevention and academic specialists further ensured no significant omissions.

Two authors (RJ, PY) independently reviewed the titles and full text of identified records. Disagreements were resolved by consensus or with input from a third reviewer (LX). The inclusion criteria required documents to: (1) focus on NCD prevention and management through a PHC approach and (2) be issued by designated provincial ministries since the 2009 health reform.[7] The review began with the release of the 'Recommendations by the Chinese Communist Party Central Committee and the State Council on Deepening the Healthcare System Reform', on 17 March 2009, and concluded on 17 April 2023 (the selected timeframe spans China's healthcare reform trajectory, from its national systemic restructuring launch to the completion of provincial adaptations of subsequent strategies. This 14-year scope accommodates policy diffusion delays while tracking phased adjustments between central mandates and regional execution, systematically revealing central-local dynamics).

The exclusion criteria comprised: (1) national-level policies, (2) program-specific or campaign-specific documents (eg, announcements, activity reports), (3)

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government responses or interpretations of previous regulations and (4) clinical or pharmaceutical guidelines. A comprehensive outline of the policy exclusion criteria, including specific document types and their rationale for exclusion, can be found in online supplemental file 4.

Data extraction

For each policy document analysed, we extracted the title, ministry and release date, grouping them into the corresponding 5-year plan of the Chinese central government (online supplemental file 5). Policy papers were categorised as individual or joint releases (issued by one or multiple provincial government departments), and the frequency of joint releases was used to assess multisectoral collaboration in policy development.

In China's policy-making context, national policies for PHC-focused NCD management are prospectively formulated by the State Council and its affiliated ministries.[17] These policies are disseminated to provincial governments, which adapt and issue relevant documents based on local conditions. Building on prior research on PHC system responses to national NCD prevention and control policies in Mainland China, this study extends the analysis to the provincial level.[12] National-level documents referenced in provincial policies were also obtained to facilitate a comparative analysis of their alignment and adaptation.

Policy content analysis

After policy screening, three researchers (RJ, YP and LX) applied the WHO's six building blocks framework to extract concrete policy themes and understand strategies for PHC-focused NCD prevention and control, using both deductive and inductive coding methods.

Data synthesis involved four steps. First, the cited national-level documents in the provincial policies were extracted, tabulated and summarised. Provincial documents were categorised into four periods based on China's 5-year plans. Second, we examined how each policy addressed the key components of the PHC system in NCD prevention and control. Policies were categorised as 'extension' or 'reduction' based on their alignment with national policy, indicating how local governments adapted national strategies. Although 'equivalence' was noted, it was not the primary focus of this study. Third, using a deductive coding approach, each policy was assigned to one of the WHO's six building blocks to assess how it addressed critical PHC components related to NCD prevention and control at both provincial and national levels. Finally, to identify key planning and implementation strategies, we first extracted specific strategies or action items from the policy documents (eg, 'improve the standardised training system for resident doctors' or 'attract medical technology talent to primary care'). These were coded as 'subthemes'. We then synthesised these subthemes into higher-level 'major themes' (eg, 'strengthening PHC personnel'), which represented the core strategies for strengthening PHC in NCD prevention and control. Each major policy initiative consisted of various related sub-themes. All coding was performed using NVivo V.12 (QSR International) software. The analysis framework of methodology is in figure 1.

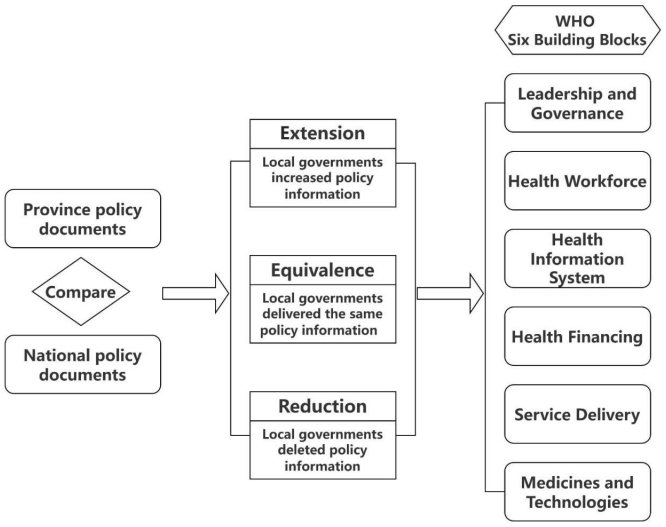

Figure 1 The analysis framework of methodology.

RESULTS

Policy document retrieval

The initial search yielded 13 645 records from Heilongjiang and Guangdong provincial governments and their 22 affiliated ministries. After applying inclusion criteria, 4714 records remained with 135 eligible policy documents (63 from Heilongjiang and 72 from Guangdong) ultimately included in the final analysis (figure 2). These documents were analysed to understand the ongoing provincial-level policies related to PHC-focused NCD prevention and control since March 2009.

Policy promulgation by government departments

Between March 2009 and April 2023, provincial governments and their affiliated ministries issued continuous policies related to PHC-focused NCD prevention and control. Heilongjiang issued 36 independent documents and 41 jointly with other ministries, while Guangdong issued 38 independent documents and 35 jointly. The most active departments were the People's Government of the Province (34 documents in both provinces), followed by the Provincial Health Commission (Heilongjiang n=17; Guangdong n=24) and the Traditional Chinese Medicine Bureau of Guangdong (n=15). Figure 3 presents the inter-relationships of the provincial governments and their affiliated ministries. 18 policy documents in Heilongjiang (28.12%) and 22 in Guangdong (30.56%) were developed by multiple ministries, with the maximum number of ministries involved being 17 in Heilongjiang and 16 in Guangdong. The majority of policy documents (Heilongjiang n=37; Guangdong n=41) were issued during the 13th Five-Year Plan period.

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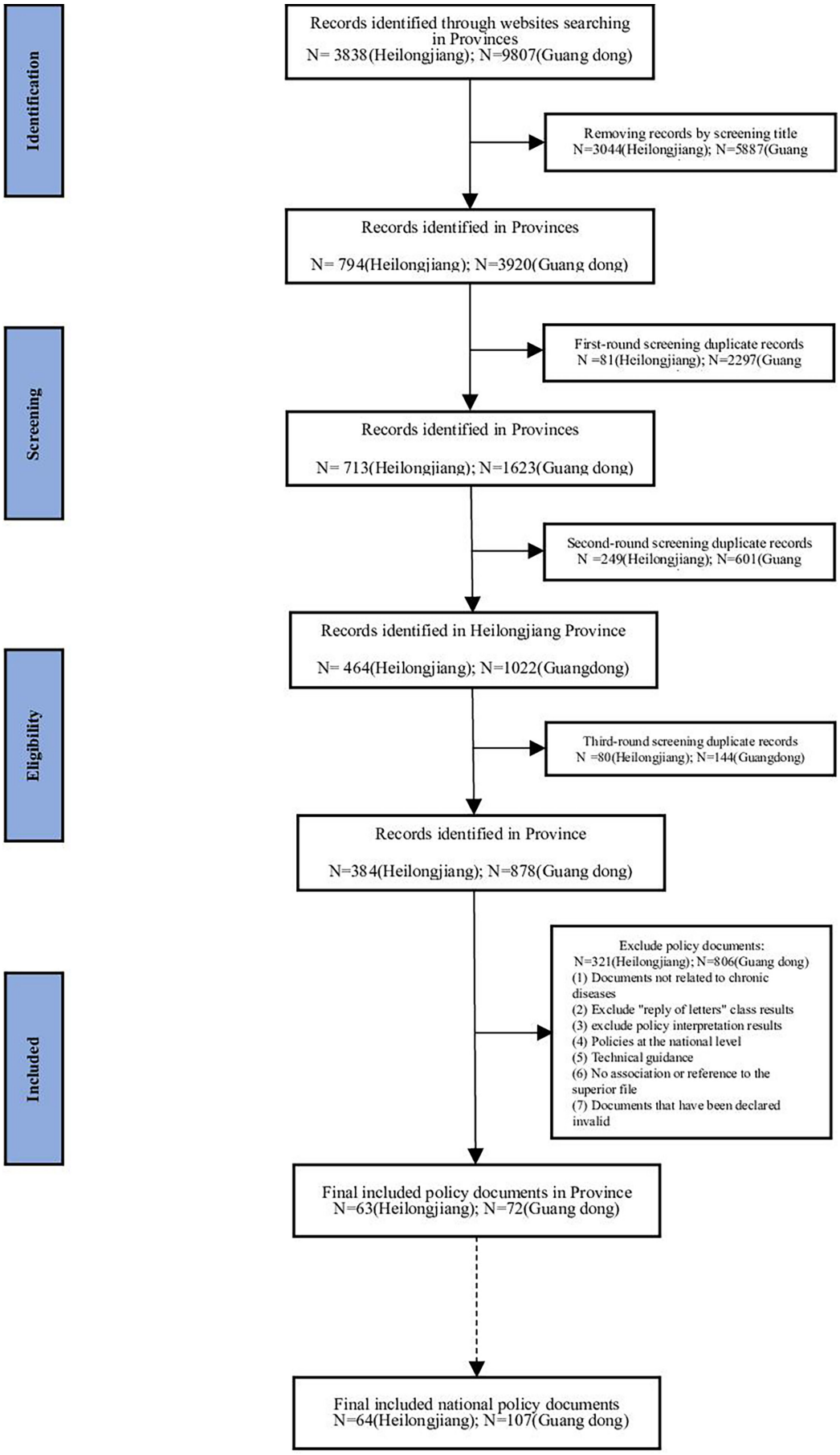

Figure 2 The flow chart of policy identification and search.

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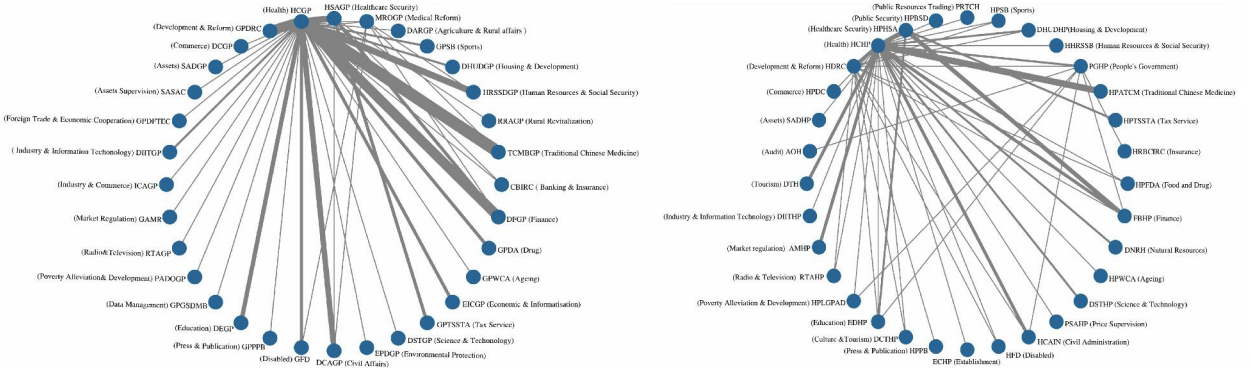

Figure 3 The network plot of ministries that collaborated to develop policies from 2009 to 2023. CBIRC, Guangdong Provincial Regulatory Bureau of China Banking and Insurance Regulatory Commission; DARGP, Department of Agriculture and Rural Affairs of Guangdong Province; DCAGP, Department of Civil Affairs of Guangdong Province; DCGP, Department of Commerce of Guangdong Province; DCTHP, Department of Culture and Tourism of Heilongjiang Province; DEGP, Department of Education of Guangdong Province; DFGP, Department of Finance of Guangdong Province; DHUDGP, Department of Housing and Urban-rural Development of Guangdong Province; DHUDHP, Department of Housing and Urban-rural Development of Heilongjiang Province; DIITGP, Department of Industry and Information Technology of Guangdong Province; DNRH, Department of Natural Resources of Heilongjiang; DSTGP, Department of Science and Technology of Guangdong Province; DSTHP, Department of Science and Technology of Heilongjiang Province; ECHP, Establishment Committee of Heilongjiang Province; EDHP, Education Department of Heilongjiang Province; EICGP, Economic and Information Commission of Guangdong Province; EPDGP, Environmental Protection Department of Guangdong Province; FBHP, Finance Bureau of Heilongjiang Province; GAMR, Guangdong Administration for Market Regulation; GFD, Guangdong Federation of the Disabled; GPDA, Guangdong Provincial Drug Administration; GPDFTEC, Guangdong Provincial Department of Foreign Trade and Economic Cooperation; GPDRC, Guangdong Provincial Development and Reform Commission; GPGSDMB, Guangdong Provincial Government Services Data Management Bureau; GPPPB, Guangdong Provincial Press and Publication Bureau; GPSB, Guangdong Provincial Sports Bureau; GPTSSTA, Guangdong Provincial Tax Service, State Taxation Administration; GPWCA, Guangdong Provincial Working Committee on Aging; HCAIN, Heilongjiang Civil Administration Information Net; HCGP, Health Commission of Guangdong Province; HFD, Heilongjiang Federation of the Disabled; HHRSSB, Heilongjiang Human Resources and Social Security Bureau; HPATCM, Heilongjiang Provincial Administration of Traditional Chinese Medicine; HPFDA, Heilongjiang Provincial Food and Drug Administration; HPLGPAD, Heilongjiang; HPPB, Heilongjiang Press and Publication Bureau; HPSB, Heilongjiang Provincial Sports Bureau; HPTSSTA, Heilongjiang Provincial Tax Service, State Taxation Administration; HPWCA, Heilongjiang Provincial Working Committee on Aging; HRBCIRC, Heilongjiang Regulatory Bureau of China Insurance Regulatory Commission; HRSSDGP, Human Resources and Social Security Department of Guangdong Province; HSAGP, Healthcare Security Administration of Guangdong Province; ICAGP, Industry and Commerce Administration of Guangdong Province; MROGP, Medical Reform Office of Guangdong Province; PADOGP, Poverty Alleviation and Development Office of Guangdong Province; PGHP, People's Government of Heilongjiang Province; PRCTH, Public Resources Trading Center of Heilongjiang; PSAHP, Price Supervision and Administration of Heilongjiang Province; RRAGP, Rural Revitalization Administration of Guangdong Province; RTAGP, Radio and Television Administration of Guangdong Province; SADGP, State-owned Assets Department of Guangdong Province; SASAC, State-owned Assets Supervision and Administration Commission; TCMBGP, Traditional Chinese Medicine Bureau of Guangdong Province.

Thematic framework of policy strategies

Using the WHO's six building blocks framework, we identified 12 major policy themes (figure 4), with detailed policy strategies provided in online supplemental file 6. In both provinces, the majority of policies represented adaptations ('extensions') of national strategies, with Guangdong exhibiting a higher proportion of such extensions (67.9%) compared with Heilongjiang (61.1%). The most emphasised theme in both Guangdong and Heilongjiang was basic medical insurance schemes, with Guangdong focusing on the medical alliance system (n=192, 17.88%) and strengthening PHC personnel (n=115, 10.71%), while Heilongjiang prioritised traditional Chinese medicine medical service systems (n=134, 16.81%) and the digitalisation of health systems (n=70, 8.78%).

Concepts of extension and reduction

To understand how local governments implement and transform national-level policies, we defined three concepts: extension, reduction and equivalence. In this study, "extension" refers to provincial governments adapting and expanding national policy strategies and action items tailored to local conditions (eg, *'Health management departments should support qualified old-age institutions in setting up medical institutions'* in the national-level policy has been extended to, '*Actively promote the combination of medical and health care and elderly care services and promote the entry of medical and health resources into elderly care institutions, communities, and residents' families. Encourage and support social forces to focus on integrating medical and elderly care, mainly adopting disabled, semi-disabled, and dementia elderly people and providing long-term care services*"

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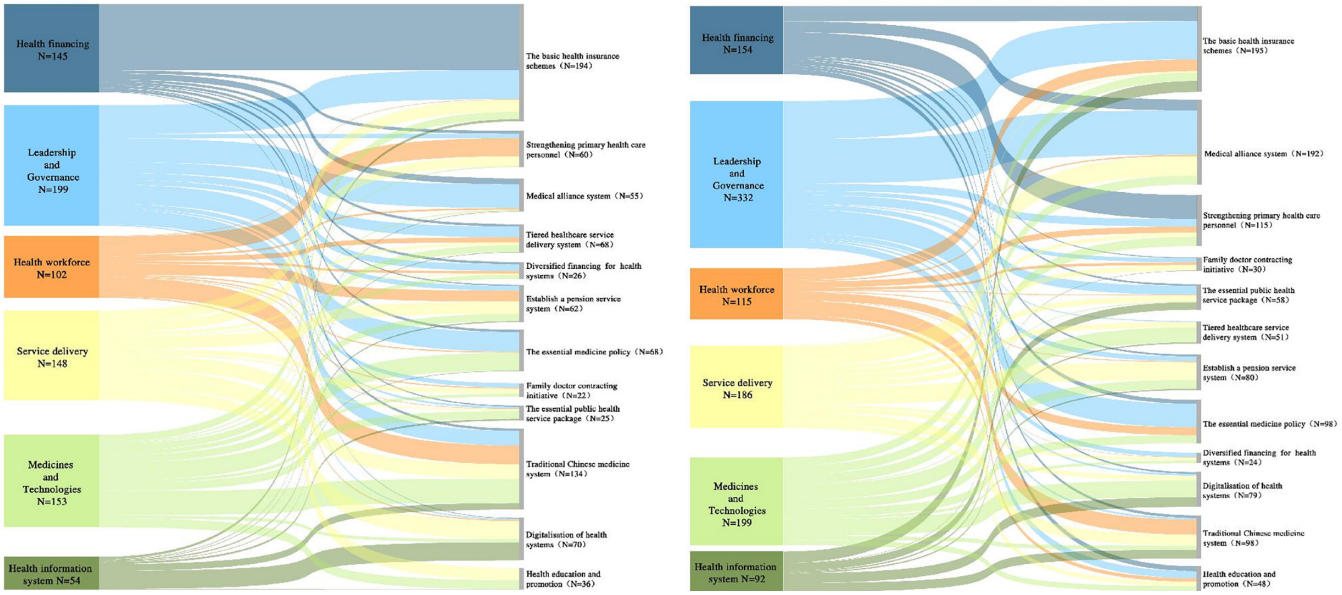

Figure 4 Major Policy Initiatives have been focused on PHC-focused NCD Control during both provinces.

in the province-level policy). 'Reduction' refers to the adapting national policy strategies to local contexts by streamlining certain aspects (eg, '*Further extension the scope of designated production of drugs in short supply, and support the construction of centralized production bases for small varieties of drugs. Establish and complete systems for monitoring, early warning, and tiered response to drug shortages'* in the national-level policy has been reduced to '*Establish and complete systems for monitoring, early warning, and tiered response to drug shortages'* in the province-level policy). Equivalence refers to the direct adoption of national-level policy strategies by local governments.

Volume and variety of extension and reduction of include policies

In Heilongjiang, the top three themes with the highest proportion of expansion were *the essential public health service package* (100%), *tiered healthcare service delivery system* (80.0%) and *family doctor contracting initiative* (77.3%). In Guangdong, the top themes were *tiered healthcare service delivery system* (84.3%), *health education and promotion* (81.3%) and *strengthening PHC personnel* (79.1%). Figure 5 shows that most policy themes were extended in both provinces, with all major themes extended in Guangdong province by more than 50%. The only theme with less than 50% expansion in Heilongjiang province was *health education and promotion* (47.2%).

Categories and justification of policy adaptation

Policy extension and reduction are key adaptation mechanisms that allow provincial governments to adjust national policies to local healthcare realities. These adaptations are influenced by economic conditions, healthcare infrastructure, disease burden and local governance capacity. A total of 1216 extension policies (487 in Heilongjiang; 729 in Guangdong) were identified in policies related to PHC-focused NCD prevention and control, comprising four main categories: (1) increasing scope (*eg, expanding family doctor contract services to rural populations in Guangdong*); (2) concretise goals (*eg, Guangdong set explicit digital health targets in its PHC strategy, aligning with national smart healthcare goals*); (3) refining implementation (*eg, enhancing PHC workforce training programmes to meet local healthcare demands*); (4) strengthening enforcement (*eg, establishing incentive structures for PHC providers to enhance service delivery*). Similarly, 655 reduction policies (310 in Heilongjiang; 345 in Guangdong) mainly included three categories: (1) limiting application (*eg, reducing subsidy coverage for specific treatments in Heilongjiang due to fiscal limitations*); (2) streamlining content (*eg, Heilongjiang removing secondary-tier referral requirements in rural PHC models*); (3) lowering implementation thresholds (*eg, simplifying provider accreditation criteria in Heilongjiang to address workforce shortages*). This context-driven policy adaptation framework ensures that provinces maintain policy relevance and feasibility while balancing financial sustainability and healthcare priorities. These variations highlight the need for flexible national policy frameworks that allow for evidence-based local modifications. The pattern and content of extension and reduction of include policies are described in online supplemental file 7.

Distribution of key policy areas in six building blocks

Using WHO's six building blocks framework, we categorised policy measures into six components.[18] Leadership and governance received the most policy attention (Heilongjiang n=199; Guangdong n=332), followed by medicines and technologies (Heilongjiang n=153; Guangdong n=199) and service delivery (Heilongjiang n=148; Guangdong n=186). Health information systems were least addressed, with only 54 policy initiatives on digitalisation in Heilongjiang and 92 in Guangdong. In

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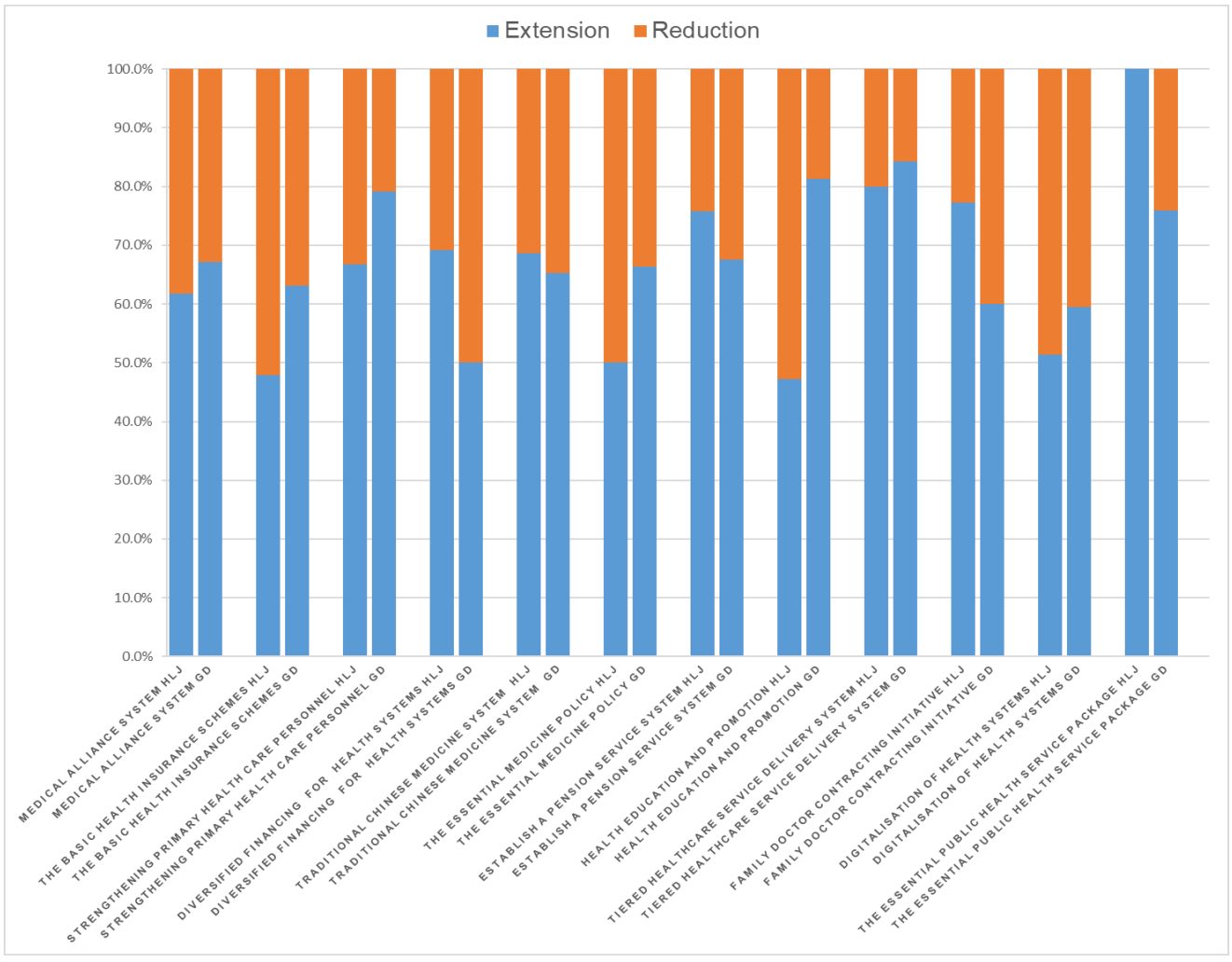

Figure 5 Stacked diagram of extension and reduction in the thematic framework. GD, Guangdong; HLJ, Heilongjiang.

Guangdong, different key policy areas were more evenly addressed.

DISCUSSION

This study thoroughly examined the implementation and translation of national policies related to PHC-focused NCD prevention and control at the provincial level since China's 2009 health reform. The reform, in line with the 2009 State Council's roadmap, established a framework for an integrated PHC-based delivery system aimed at preventing and managing NCDs.[19] Significant public funding has made PHC central to rebuilding China's public health system, and the Healthy China 2030 plan underscores PHC's role in strengthening healthcare infrastructure. [8]However, the top-down policy approach, while providing structure, has also created challenges in translating national directives into effective, localised actions. There is a need to reassess PHC reform priorities to empower local implementation and address these systemic challenges.

Our findings reveal substantial multisectoral collaboration in policy development, with approximately half of the policy documents (48.44% in Heilongjiang, 47.22% in Guangdong) co-released by multiple ministries. Consistent with the previous national policy review on PHC for NCD prevention and management in China, one-quarter of the included policy documents were jointly released through multisectoral collaborations.[12] This collaboration reflects the cross-cutting nature of NCD prevention and control. The Chinese State Council's emphasis on coordinated efforts across sectors in its 2017–2025 NCD prevention plan aligns with this trend,[20] emphasising coordinated efforts across all sectors, health education and promotion and effective prevention and control. Similar circulars for 2012–2015 were issued by 15 government ministries and commissions.[1 21] These policy documents have been implemented in Heilongjiang and Guangdong provinces according to their respective local conditions. However, despite the increased collaboration, there remain significant gaps, especially in health insurance coverage, where limited reimbursement caps still hinder PHC institutions from acting as effective gatekeepers, forcing patients towards higher-cost hospital services.[22 23] Strengthening

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cross-ministry cooperation, particularly between health, finance and civil affairs, could address these limitations more effectively.

The WHO's six building blocks of health systems, particularly leadership and governance, were pivotal in shaping policy directions.[14] From a health system perspective, a significant advantage of China's national policies related to PHC-focused NCD prevention and control is the great importance attached to leadership and governance. These policies hinge on a clear and common 'top-down' policy formulation pathway from the State Council to the ministries in China. This can be explained by China's political system, where the central government has the power to set goals and directions through a top-down approach. Like previous policy reviews on PHC and healthy ageing in China,[12 17] our study found dispersed and least-addressed policies and key strategies related to health information systems. For instance, no information system is yet available to systematically integrate multidimensional data in governing residents' medical and medical insurance information and health services information. Health information systems, addressed gradually during the 13th Five-Year Plan, need further attention to enable better service delivery and policy impact.[5 24] Despite improvements in health financing, challenges such as workforce shortages and limited health financing persist, which current policies fail to fully address.

The Chinese government implemented the zero-markup policy for essential drugs in 2009, eliminating markup retention from medication bills and replacing the original 15% markup with a 10% fiscal allowance.[25] Behavioural economic studies suggest that increasing medical service prices may compensate for revenue losses in most public hospitals, impacting PHC in China.[26] Despite reducing care costs for patients through the essential drug system, the reform of inpatient and outpatient structures revealed limitations in current policies and technology systems. Consequently, the implementation of medicines and technology in the provinces is being extended and strengthened according to local conditions.

Since 2009, China has issued numerous PHC-focused NCD prevention and control policies, but there is an imbalance in the distribution of the 12 major strategies identified in the review. Regarding health financing, the central government has long worked on establishing basic health insurance schemes, with consistent implementation in Heilongjiang and Guangdong. The basic health insurance influences income by improving health status and reducing the unpredictability of healthcare expenditure. Recent studies show health insurance has been a primary focus of efforts to provide financial protection from illness-related costs for the Chinese population.[27 28] For instance, in 2008, the government provided ¥80/person/year to each participant in Urban Employees Basic Medical Insurance, which rose to ¥520/person/year in 2019.[29] Accordingly, benefits under the insurance schemes were significantly increased.

The findings highlight how regional economic conditions, demographic profiles and healthcare system capacities shape distinct strategies for PHC-based NCD prevention and control. Guangdong and Heilongjiang's policy adaptations are driven by differing fiscal capacities, population health needs and institutional strengths, resulting in variations in policy priorities and implementation approaches. China's large economy exhibits notable regional development imbalances, leading to significant disparities in healthcare resource distribution. Some provinces face scarcity of medical resources, while others experience overconcentration, creating challenges in achieving equitable healthcare access.[30] Despite these regional disparities, effective national leadership and coordinated governance have allowed provinces to adapt and implement national policies based on local conditions, shaping distinct approaches to PHC-centred NCD prevention and control. Guangdong, with its rapidly growing economy and robust primary care infrastructure, has leveraged its financial strength to develop innovative healthcare policies.[29 31] The province benefits from a decentralised budget allocation, allowing wealthier regions to invest more in PHC service expansion, workforce development and digital health integration. Guangdong's emphasis on tiered healthcare delivery and medical alliances has facilitated better service coordination, improved NCD management and enhanced patient outcomes, while its higher population density and larger healthcare workforce contribute to relatively lower per capita PHC costs. Additionally, the province has prioritised health education policies and the expansion of PHC personnel, further integrating preventive and curative services. These strategic investments make Guangdong an ideal case study for tiered healthcare delivery and service integration.

In contrast, Heilongjiang, with a less developed economy and a net outflow of population, faces persistent challenges in healthcare accessibility due to uneven resource distribution. The province experiences a higher burden of ageing-related diseases and chronic conditions, necessitating stronger financial protection mechanisms through basic public health service expansion and family doctor contracting initiatives. Unlike Guangdong's infrastructure-driven approach, Heilongjiang has relied on cost-effective policy adaptations, such as strengthening basic health insurance coverage and integrating Traditional Chinese Medicine (TCM) into PHC to address population health needs within financial constraints. These contrasting regional approaches underscore the importance of tailoring national policies to local realities. While Guangdong exemplifies a high-investment, system-integration model, Heilongjiang demonstrates a resource-efficient, insurance-supported strategy to ensure basic healthcare accessibility for vulnerable populations. These economic and systemic differences create distinct implementation capacities, with Guangdong's model reflecting a resource-intensive, infrastructure-driven approach, while Heilongjiang's strategy emphasises

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financial protection and alternative care models. While both approaches address local needs, they also highlight broader challenges in achieving equitable PHC access nationwide. Addressing these disparities requires a more flexible policy framework, increased financial support for underdeveloped regions and strengthened cross-provincial collaboration to ensure equitable health outcomes. Both provinces, however, face common challenges, including workforce shortages, sustainable financing and digital health system integration, which require enhanced multisectoral collaboration and flexible policy implementation frameworks to strengthen PHC-centred NCD prevention and control.

Local governments can tailor strategies to their unique conditions and strengths, aligning policies with regional needs to enhance relevance and effectiveness. This approach fosters local economic and social development, increases employment opportunities and improves public welfare. Tailored policies, better suited to local realities, can also reduce administrative burdens, stimulate innovation and allow for more agile responses to challenges. However, there are potential drawbacks to these policy adaptations. Expanding policies may require significant financial investment, which could burden provincial governments. Overly broad or complex policies may encounter implementation difficulties, diminishing their impact. A 'one-size-fits-all' approach risks ignoring regional differences and may undermine long-term planning. On the other hand, reducing policies can weaken their effectiveness, particularly when key components are scaled back, potentially undermining national policy consistency and causing confusion during implementation. Reducing resources for specific regions could lead to public distrust, and even when policies are scaled back, provincial governments may struggle with aligning them to local realities.

Strengths and limitations

In contrast to previous studies, which often focus on health system readiness across both primary and secondary healthcare levels,[31] our study specifically emphasises the content related to PHC services as outlined in policy documents. By focusing on the policy frameworks that govern PHC delivery, this research offers a unique perspective on how policy decisions shape the readiness and effectiveness of PHC systems in managing chronic diseases. This focus on policy provides valuable insights into the influence of policy on the functioning of PHC services and identifies critical areas for targeted improvement. The document search on government websites had some limitations, such as the inability to use Boolean operators and restrictions on keywords to three Chinese characters. Despite these challenges, this study represents the first comprehensive analysis of how national policies are translated into local contexts across different jurisdictional levels and explores local government innovations in policy-making. A major strength of this study is the qualitative methodology used to guide the content analysis of policy documents, providing a deep and nuanced understanding of the policies analysed. Furthermore, the study offers valuable insights into the implementation and transformation of national policies on PHC responses to NCD prevention and control at the provincial level since the commencement of the current health reform phase.

However, there are several limitations. The study was focused on two regions: Heilongjiang and Guangdong, which may limit the generalisability of the findings to other Chinese provinces. Future studies should incorporate primary quantitative and qualitative data collection to better understand how the implementation and translation of national policies on PHC-focused NCD prevention and control vary across different local contexts. The methodology developed in this study could be applied to future policy reviews in other regions of China. Additionally, data collection was restricted to publicly available documents, meaning that unpublished policies were not included in the analysis. The screening process was also constrained by the limitations of government search engines, such as the restriction on the length of Chinese characters. To address these issues, future research could include qualitative interviews with stakeholders, such as PHC facility surveys and discussions with health administrators and PHC providers.

Recommendations and conclusions

Since 2009, China has implemented PHC reforms to increase primary care utilisation and improve the health of individuals with NCDs. Although progress has been made, several barriers prevent optimal PHC system responses to NCD prevention and control. Our research identified three key areas for further investigation and potential interventions. First, we recommend encouraging and supporting collaboration among provincial government ministries for effective policy-making and execution. Second, we recommend harmonising digital health information systems to establish interprovincial compatibility. This can be achieved by developing unified national standards for data collection and exchange, adopting interoperable technical frameworks and integrating standardised patient identifiers. A central coordinating body could oversee these efforts, with pilot programmes used to refine systems before nationwide implementation. Regular evaluations will ensure the effectiveness and sustainability of these systems. Third, we will explore mechanisms for monitoring and incentivising multisectoral collaboration, such as performance evaluation frameworks, outcome-based incentives and the integration of shared accountability mechanisms. In summary, policymakers and stakeholders in low- and middle-income countries should focus improvement efforts on PHC.

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