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Current Status of Primary Healthcare in China and Challenges in Collaborating with Tertiary Hospitals

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Abstract. As healthcare system reform advances, tiered healthcare (a key measure to optimize resources and alleviate "difficulty in accessing medical care and high medical costs") is hindered by primary healthcare's human resource/equipment shortages and tertiary hospitals' functional overload/insufficient outreach, requiring improved collaboration. This study focuses on the functional positioning and collaborative interactions between primary healthcare and tertiary hospitals, taking such institutions in selected Chinese provinces as research subjects to provide references for optimizing the healthcare service system. Through qualitative analysis and cross-regional practice comparisons, it dissects deep-seated issues and characteristics of their collaboration. Results show primary healthcare has human resource structural imbalances, insufficient equipment/tech support, and service-demand mismatches. Tertiary hospitals act as quality service cores, primary support providers, and tiered collaboration hubs but face barriers like "easy upward but difficult downward referrals," loose medical alliances, and inadequate pharmaceutical service homogenization. Future efforts should strengthen primary resources, clarify tertiary outreach functions, and improve collaborative support systems to advance tiered healthcare.

Keywords: tiered healthcare, primary healthcare, tertiary hospitals, collaborative mechanisms, medical alliances

1. Introduction

With China's healthcare reform deepening, tiered healthcare has become a core measure to optimize medical resources and ease "difficulty in accessing medical care and high medical costs" [1]. Primary healthcare institutions, as the service network's "foundation," handle common disease diagnosis and chronic disease management but face human resource shortages, outdated equipment, and insufficient services, hindering tiered healthcare. Tertiary hospitals, the medical service core, confront non-emergency patient concentration, resource wastage, and weak downward outreach.

In recent years, the state has promoted medical alliances, resource decentralization, and bidirectional referrals to build the "primary initial diagnosis, bidirectional referrals, acute-chronic separation, vertical integration" pattern. Thus, examining primary healthcare status, clarifying tertiary hospitals' positioning, and analyzing collaboration bottlenecks is significant.

This study aims to: 1) grasp primary institutions' status/shortcomings in human resources, equipment, and services; 2) clarify tertiary hospitals' roles in service provision, talent cultivation,

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and tech outreach; 3) analyze collaboration barriers; 4) propose feasible collaboration pathways via typical cases. This study primarily uses qualitative analysis. This study selected primary healthcare institutions and tertiary hospitals in provinces with different economic levels and regional characteristics (where medical collaboration models have been implemented) as case studies to ensure representativeness of the conclusions. The literature and data sources are primarily three-fold: national/local policy documents (e.g., [1-3]), public institution data, and typical case studies (e.g., [4,5]). It explores deep-seated contradictions through qualitative analysis and cross-regional comparisons, providing references for optimizing resource allocation and advancing tiered healthcare.

2. Analysis of the current status of collaboration between primary healthcare and tertiary hospitals

2.1. Current status of primary healthcare

2.1.1. Shortages and structural imbalances in human resources

Primary healthcare institutions generally suffer from insufficient human resources. In quantity, health technical personnel make up a low proportion, with some township health centers and village health clinics seeing "one person taking multiple roles," failing to meet daily diagnosis and treatment needs. In structure, primary medical staff have relatively low education and professional titles—fewer hold bachelor's degrees or above (most have associate degrees or below) and senior titles are scarce, unable to meet complex diagnosis and tech advancement needs. Meanwhile, staff loss is severe: young, capable personnel often move to urban tertiary hospitals due to low pay and limited career prospects, worsening the talent shortage.

2.1.2. Insufficient equipment and technological support

Primary healthcare institutions have low equipment allocation: basic diagnostic equipment (e.g., blood routine analyzers, ultrasound machines) is incomplete, and emergency equipment (e.g., negative pressure ambulances, mobile CT scanners) is severely lacking, failing to meet needs for precise diagnosis of common diseases and preliminary treatment of critical cases. Their information systems are fragmented, with non-interoperable clinical and public health systems and repetitive data entry, reducing efficiency and hindering information sharing. Technologically, they only handle basic common diseases, lacking capabilities in chronic disease management and specialized treatments, with issues like antibiotic overuse. This lowers patient trust, leading them to seek tertiary hospitals directly [6].

2.1.3. Mismatch between service delivery and patient requirements

Primary healthcare institutions lack comprehensive core service coverage. In basic medical services, they mainly provide common disease diagnosis, treatment and vaccinations, while advanced services like pharmaceutical outpatient care and multidisciplinary consultations are only available in better-equipped ones, with insufficient overall capacity [2]. In public health services, chronic disease management and elderly health checkups are widespread but of uneven quality, with "form-over-substance" issues such as delayed health record updates.

Population aging has surged demand for chronic disease management, rehabilitation and palliative care, which primary institutions can't satisfy due to resource shortages. Most lack

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palliative care, pushing late-stage patients to tertiary hospitals and increasing costs [7]; gaps in medication consultation also reduce patient adherence and disease control.

2.2. Roles and functions of tertiary hospitals

Tertiary hospitals are irreplaceable in diagnosing/treating complex critical conditions: in specialized diagnostics (e.g., oncology), they have professional teams and comprehensive systems for full-process precise services—oncology pharmacists conduct prescription reviews, medication monitoring, and adverse reaction surveillance (especially for novel anticancer drugs) with refined management, outperforming primary institutions [2]. They also lead critical/emergency care via platforms like chest pain/stroke centers, forming rapid response mechanisms for acute conditions (e.g., myocardial infarction, stroke). They support primary institutions in three ways: on-site assistance (e.g., a Beijing tertiary hospital's nursing experts helped a county hospital raise adverse event reporting rates to 100% and patient satisfaction to 99.8% [4]), medical alliances (a Jiangsu hospital's "1+1+X" model boosted outpatient visits by 20.14%, surgeries by 55.28%, and level-three/four surgeries by 147.12% [5]), and tech training (online-offline sessions for primary staff [7]). As bidirectional referral "bridges," they handle complex cases from primary institutions and transfer stabilized patients downward (a Sichuan hospital raised this proportion from 2.74% to 8.73% [8]), while offering remote consultation/imaging to primary institutions via telemedicine.

2.3. Barriers to collaboration between primary healthcare and tertiary hospitals

2.3.1. Inefficiencies in bidirectional referral mechanisms

The "easy upward referrals but difficult downward referrals" phenomenon is widespread in bidirectional referrals. For upward referrals, primary healthcare institutions, limited by technological capabilities, can promptly refer complex and critical cases to tertiary hospitals. However, incomplete transfer of referral information often forces tertiary hospitals to conduct repeated examinations, adding burdens on patients. For downward referrals, due to primary institutions' insufficient service capabilities and low patient trust [6], the rate of transferring stabilized patients from tertiary hospitals to primary ones remains generally low—most patients choose to continue treatment at tertiary hospitals, making downward referrals hard to implement. A survey from a Sichuan tertiary hospital showed some stable patients refused downward referrals over concerns about primary institutions' capabilities, while primary institutions were reluctant to accept such patients for fear of risks [8].

Additionally, medical insurance policies offer insufficient guidance for bidirectional referrals. Current reimbursement rate differences are minimal, with no prominent incentives for primary-level initial diagnosis. Some regions even cut reimbursement rates for patients not referred to tertiary hospitals, but inadequate primary services still made patients prefer direct treatment there, leaving policies ineffective [9].

2.3.2. Medical alliance construction lacking integration

Although medical alliance construction has been widely implemented across regions, most alliances remain in a "loose" stage, with limited collaborative effects [10]. First, resource decentralization is not thorough, with tertiary hospital experts primarily engaging in short-term consultations rather than long-term on-site support, and decentralized experts often focusing on common specialties like internal medicine and surgery, with insufficient involvement of specialized experts (such as

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oncology pharmacists and rehabilitation physicians); second, the absence of interest coordination mechanisms means that medical alliances lack unified interest distribution and performance evaluation systems, resulting in tertiary hospitals lacking motivation for resource decentralization and primary healthcare institutions lacking initiative for active collaboration; third, information sharing is hindered, as electronic medical records and test results are not interoperable within alliances, requiring patients to resubmit documents during referrals, which affects collaboration efficiency.

2.3.3. Insufficient homogenization of pharmaceutical services

In pharmaceutical management, primary healthcare institutions and tertiary hospitals have a significant gap. Primary institutions have limited drug varieties, incomplete specifications, and misaligned catalogs with tertiary ones, making patients unable to get consistent medications after downward referrals—e.g., a Xinjiang medical alliance survey showed four primary entities' catalogs scored 60-84 (satisfactory) but lacked key monitored drug management, failing homogenized medication needs [11].

Primary institutions also have weak pharmaceutical service capabilities, only offering basic services like drug dispensing; advanced services have low implementation rates [2]. Tertiary hospitals provide comprehensive services, but no systematic training for primary institutions hinders standard decentralization, leading to low service homogenization.

3. Analysis of the root causes of collaborative challenges

3.1. Core bottlenecks in primary healthcare development

The fundamental issue facing primary healthcare is the contradiction between "insufficient resource supply" and "growing service requirements." From the supply side, inadequate government investment in primary healthcare leads to shortcomings in human resources, equipment allocation, and technological support [3]; from the demand side, trends such as population aging and the high prevalence of chronic diseases have driven continuous growth in primary healthcare requirements, further exacerbating the supply-demand imbalance. Additionally, low remuneration and limited career development opportunities for primary medical personnel result in severe talent loss, forming a vicious cycle of "insufficient resources---weak service capabilities---low patient trust---further resource shortages."

3.2. Misalignment in the role positioning of tertiary hospitals

Tertiary hospitals currently face the dual challenges of "functional overload" and "insufficient outreach." On one hand, due to inadequate primary service capabilities, a large number of non-emergency patients (such as those requiring chronic disease follow-ups or common disease treatments) flood tertiary hospitals, occupying their resources and limiting their ability to fully focus on complex and critical case diagnostics [9]; on the other hand, tertiary hospital outreach to primary institutions is often limited to "short-term assistance" or "equipment donations," lacking long-term support for talent cultivation and system construction at the primary level [9], thereby failing to fundamentally enhance primary service capabilities and hindering the implementation of tiered healthcare.

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3.3. Systemic barriers in collaborative mechanisms

The core reason for the lack of smooth collaboration between primary healthcare and tertiary hospitals lies in a flawed system design. First, there is insufficient policy coordination, with policies on tiered healthcare, medical alliance construction, and medical insurance payments lacking integration, such as medical insurance payments not being deeply linked to initial diagnosis at the primary level or bidirectional referrals, failing to effectively guide patient flows [1]; second, the absence of interest mechanisms means that medical alliances lack a system for "shared risks and interests," resulting in a lack of motivation for collaboration between tertiary hospitals and primary healthcare institutions [10]; third, a lack of unified standards in medical quality, pharmaceutical services, and information sharing prevents collaborative services from being conducted in a consistent manner [2, 11].

4. Countermeasure suggestions

4.1. Strengthening resource provision for primary healthcare

To enhance primary healthcare, strengthen human resource support by training personnel via "targeted training" and "commissioned training" for needed talent (e.g., general practitioners), setting up a performance-seniority salary mechanism to narrow income gaps with tertiary hospitals, and enabling title advancement while encouraging tertiary experts to join primary institutions [8]; improve equipment and info support by increasing investment in basic diagnostic/emergency equipment with regular updates, integrating primary info systems for clinical-public health interoperability and linking to tertiary platforms [3], and advancing "Internet + primary healthcare" via remote services to make up for tech deficiencies.

4.2. Clarifying the outreach functions of tertiary hospitals

To clarify tertiary hospitals' outreach functions, establish long-term assistance mechanisms: adopt an "on-site assistance + remote guidance" model by sending medical, nursing, and pharmacy professionals to support primary institutions in building management systems [4], include primary assistance in tertiary hospitals' performance evaluations, and set up a "bidirectional talent exchange" mechanism. Also, promote medical alliance quality by constructing tertiary-led "compact" alliances for unified personnel/finance/operation management [5], establishing an interest distribution mechanism tied to performance [10], and standardizing services to boost homogenization (e.g., unified drug catalogs [11], pharmaceutical standards [2]).

4.3. Optimizing collaborative support systems

Enhance medical insurance support for primary healthcare by boosting reimbursement rates for initial diagnoses and chronic disease management at this level, lowering the cost threshold for primary care visits, establishing an insurance payment mechanism tied to bidirectional referrals (increasing rates for standardized referrals and cutting them for non-emergency tertiary hospital visits without referrals [9]), and exploring "capitation" and "diagnosis-related group (DRG) payments" to push medical alliances to control costs and improve service efficiency. Additionally, develop collaborative service standards for primary and tertiary hospitals (specifying bidirectional referral and pharmaceutical service criteria/processes [2]), promote medical information interoperability via standardized electronic medical record, test result and health archive data

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formats for real-time alliance sharing [3], and set up a collaborative service quality evaluation system to regularly assess primary-tertiary collaboration and adjust policies dynamically.

5. Conclusion

This study explores the current status of China's primary healthcare and its collaboration challenges with tertiary hospitals amid tiered healthcare promotion. Results show primary healthcare faces human resource shortages/structural imbalances, insufficient equipment/tech support, and service-demand mismatches. Tertiary hospitals act as high-quality medical service providers, primary support pillars, and tiered healthcare hubs but face collaboration barriers: inefficient bidirectional referrals ("easy upward, difficult downward"), loose "linked but not integrated" medical alliances, and inadequate pharmaceutical service homogenization. Root causes include primary healthcare's resource supply-demand imbalance, tertiary hospitals' role mispositioning (functional overload vs. insufficient outreach), and systemic flaws (poor policy coordination, lack of interest mechanisms, non-unified standards). Corresponding countermeasures involve strengthening primary resources, clarifying tertiary outreach functions, and optimizing collaborative support systems. This study has limitations: it relies on qualitative analysis and selected provincial cases, lacking nationwide quantitative data. Future research could expand sample scope, combine quantitative methods to verify findings, and explore digital tools' role in enhancing primary-tertiary collaboration efficiency.

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