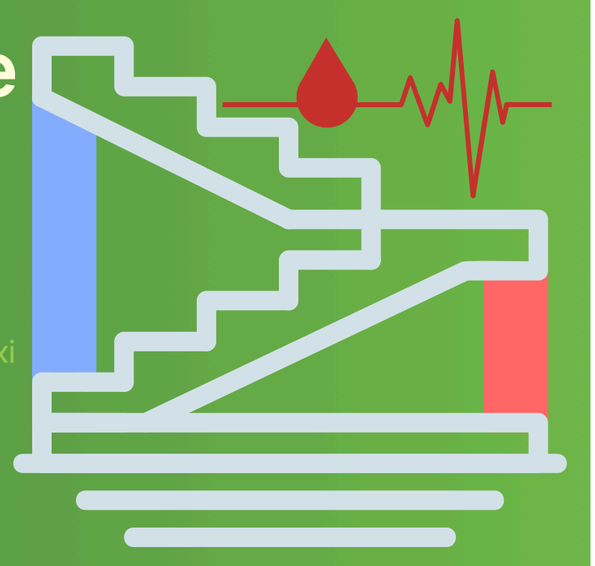
Bridging the Hypertension and Diabetes Care Cascade in Rural China: Development and Evaluation of Complex Interventions

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01 Introduction

The management of hypertension and diabetes presents substantial challenges to China's healthcare system, requiring patients to successfully navigate the care cascade-from screening and diagnosis through to treatment, ongoing management, and disease control. The China Hypertension and Diabetes Care Cascade Study (CHICCs) aims to systematically identify patient drop-offs across each stage of this cascade and to develop targeted strategies to address critical bottlenecks in hypertension and diabetes care delivery in rural China.

02 Methods

Phase 1 Context analysis and need assessment

- Qualitative interviews
- Identify multilevel barriers influencing patient progressi- on along the hypertension and diabetes care cascade (guided by CFIR framework)

Phase 2 Intervention development

- Intervention Mapping
- Develop both the complex interventio by stakeholder co-design (guided by COM-Bmodel, BCW, and BCTs)

Phase 3 Implementation and evaluation

- Hybrid type II implementation-effectiveness cluster randomized controlled trial (cRCT)
- Enroll 48 villages across three counties (total N = 7,200), randomized to intervention or usual care, with a 12-month intervention
- Evaluate the effectiveness and implementation of evidence-informed intervention

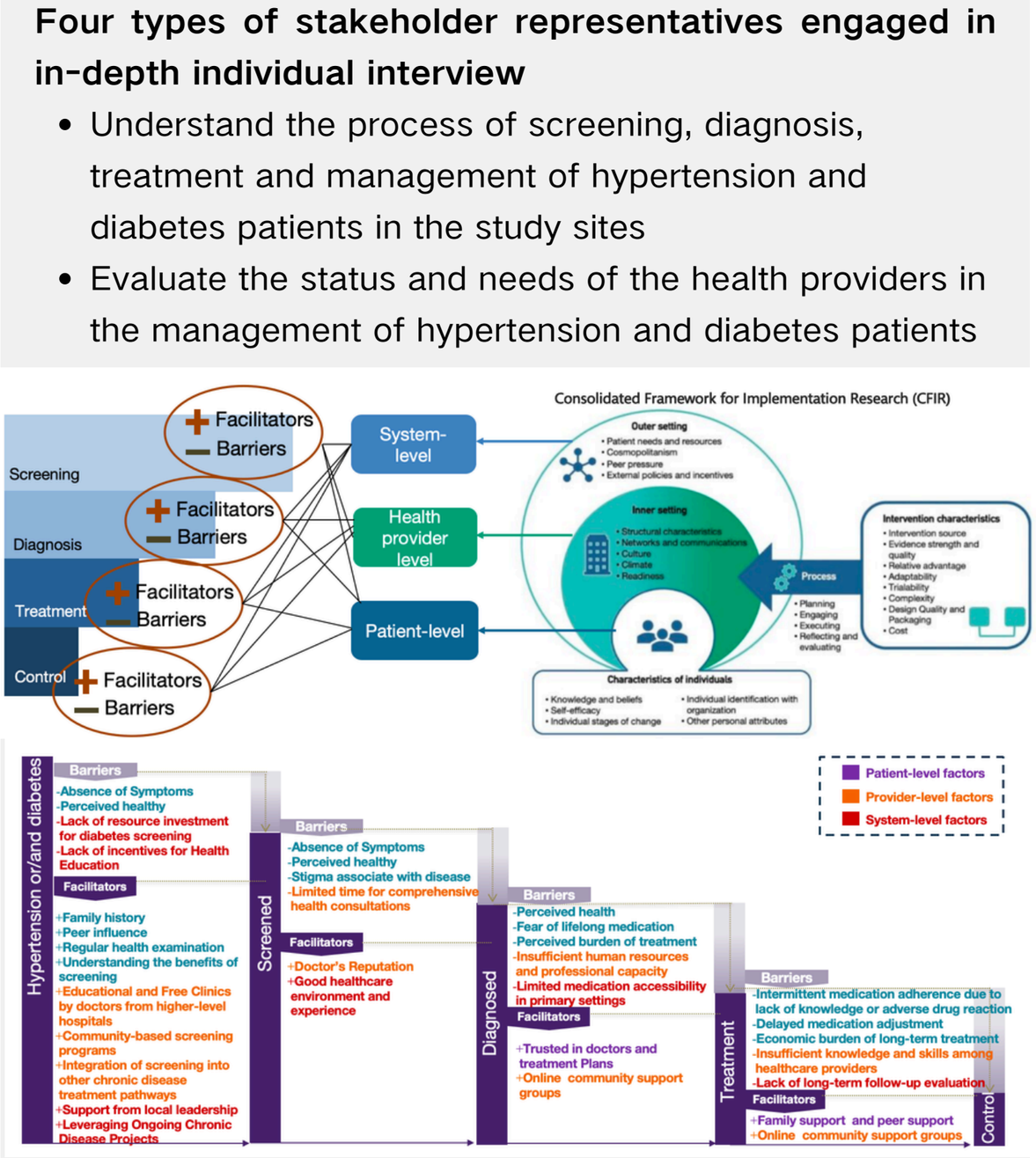
03 Results and Discussion

Phase 1 Qualitative interviews with 82 stakeholders

Four types of stakeholder representatives engaged in in-depth individual interview

- Understand the process of screening, diagnosis, treatment and management of hypertension and diabetes patients in the study sites
- Evaluate the status and needs of the health providers in the management of hypertension and diabetes patients





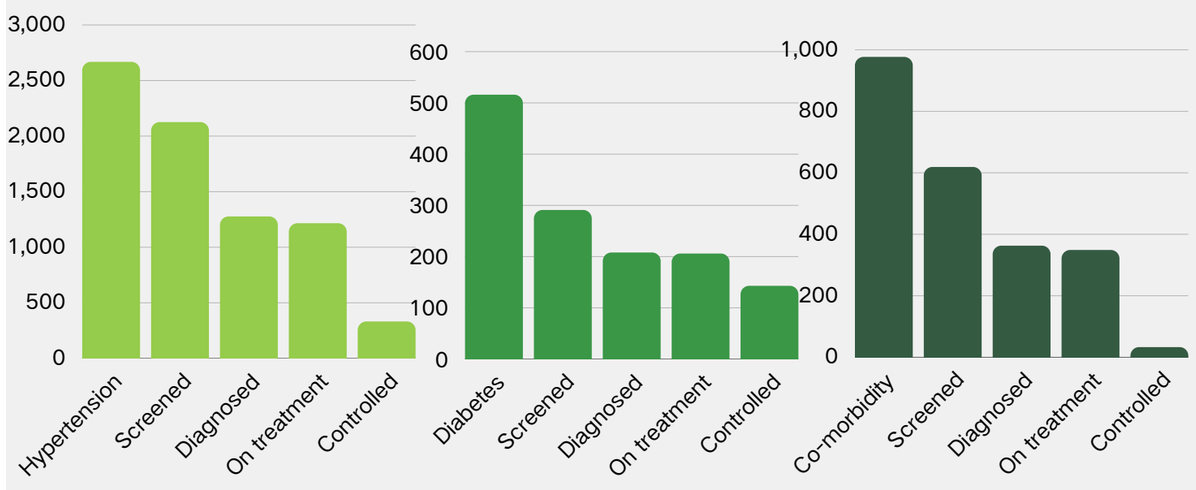
Phase 2 Intervention development

- Whole-population strategies, including health communication campaigns and active screening
- High-risk individual strategies, encompassing two-way referral and village-doctor-led follow-up, all supported by an electronic information system. Implementation was reinforced by contextual adaptation, a tiered consultation network, and a structured quality monitoring system.

Phase 3 Implemention and evalation (ongoing)

Baseline survey

- 7,488 residents aged 35-74 years quantified the care gaps: 2,668 (35.6%) had hypertension alone, 516 (6.9%) diabetes alone, and 977 (13.0%) both conditions
- Uncontrolled rates were strikingly high-87.6% for hypertension, 72.3% for diabetes, and 96.6% for comorbid



The qualitative barriers and quantitative gaps converge: patient-level fears and provider-level fragmentation mutually reinforce each other, perpetuating a cycle of low engagement and poor control, particularly among comorbid individuals. This convergence underscores that single-level fixes are unlikely to suffice; rather, the dual evidence base provides strong justification for the integrated, multi-level intervention now under evaluation.

04 Conclusion

This pragmatic cRCT will provide systematic evidence on the development and evaluation of complex interventions for chronic disease management in resource-constrained primary care settings. By generating robust data on both implementation processes and clinical effectiveness, the study will inform future scale-up of integrated hypertension and diabetes care across rural China.

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