



Perceived Influencers of Self-management among Chinese Older Adults at Risk for Stroke: A qualitative study

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Abstract

Background: Similar to other part of the world, Stroke is a major global health issue in China due to rapid population ageing and the increasing prevalence of non-communicable diseases. Effective self-management is considered as essential for stroke prevention among high-risk older adults. However, evidence on the barriers and facilitators influencing self-management of Chinese older adults to prevent stroke were limited. **Objective:** This qualitative study aimed to explore multilevel perceived barriers and facilitators of self-management among Chinese community-dwelling older adults at risk of stroke. **Methods:** Purposive sampling was employed to select participants from a community health center in Xinxiang City. Data saturation was reached with a final number of 18 older adults at high-risk for Stroke, 8 family caregivers, and 11 health care professionals. Data were collected by a researcher using a semi-structured interview and a focus group guideline. Themes and sub-themes were extracted by using Braun and Clarke's six-phase thematic analysis. **Results:** Three interconnected perceived influencers of stroke prevention self-management were identified across individual, family, and community-level factors. Individual barriers included limited health literacy, complex risk management, functional decline, financial constraints, and fatalistic beliefs; while self-efficacy and supportive environments facilitated self-management engagement. Family barriers involved fragmented caregiving roles and caregiver burden, whereas family support enhanced self-management. Community barriers included fragmented health services, limited accessibility, and heavy workloads; while integrated care, peer support, and tailored health education

promoted self-management engagement. **Conclusion:** Strengthening multilevel strategies, professional competency, and integrated community health service can enhance sustainable self-management to prevent stroke among high-risk Chinese older adults for strengthening primary stroke prevention within community-based primary health care (CB-PHC) systems.

Keywords: Chinese older adults, High risk stroke, Self-management, Qualitative study

What was Known

- Stroke prevention in high-risk older adults relies on sustained self-management.
- Most older adults struggle to maintain self-management to prevent stroke in Chinese community.

What's New and Next

- Perceived self-management can be influenced by individual, family, community and health service factors.
- Strengthening integrated primary healthcare services, family support, and health literacy can improve self-management among older adults at high-risk for stroke in China.

Introduction

Stroke remains a major global public health challenge, ranking as the second leading cause of death and the leading cause of acquired disability worldwide^(1,2). In 2021, an estimated 11.9 million new stroke cases occurred globally, with persistently high levels of mortality and disability-adjusted life years⁽³⁾. With rapid population ageing, the annual number of incident stroke cases is projected to increase by approximately 81%, reaching 21.43 million by 2050⁽⁴⁾. These trends underscore the urgent need to strengthen primary stroke prevention, particularly among older adults at high risk^(5,6,7).

China bears a disproportionate share of the global stroke burden. In 2021, approximately 4.09 million new stroke cases, 26.34 million prevalent cases, and 2.59 million stroke-related deaths were reported nationwide⁽⁸⁾. Despite the expansion of primary healthcare services, the national stroke burden continues to rise, largely driven by population ageing and the increasing prevalence of modifiable risk factors⁽⁷⁾. Hypertension, diabetes, dyslipidemia, smoking, physical inactivity, and unhealthy dietary patterns remain highly prevalent among older adults, while effective control of these risk factors remains suboptimal^(9,10).

A substantial proportion of strokes can be prevented through effective management of modifiable risk factors⁽¹¹⁾. However, successful primary prevention depends on sustained engagement in stroke prevention self-management behaviors, including regular health monitoring, adherence to preventive measures, healthy lifestyle practices, and appropriate utilization of healthcare services⁽¹²⁾. For older adults, maintaining these behaviors can be particularly challenging. Multimorbidity, age-related cognitive and functional decline, and complex medication regimens often increase treatment burden and hinder the sustainability of preventive behaviors⁽¹³⁾. These challenges may be further exacerbated by fragmented care pathways, limited continuity of health counseling, and insufficiently tailored support within routine community-based primary health care (CB-PHC), particularly for individuals with multiple chronic conditions⁽¹⁴⁾.

Existing research on self-management has largely focused on secondary prevention and post-stroke rehabilitation, while primary prevention among high-risk older adults of stroke has received comparatively limited attention^(15,16,17). In particular, little is known about how high-risk older adults perceive stroke risk, translate prevention knowledge into everyday self-management practices, and experience prevention-related support within CB-PHC prior to the occurrence of a first stroke. This gap is especially important in China, where CB-PHC forms the foundation of chronic disease prevention and long-term risk management.

Guided by the Innovative Care for Chronic Conditions Framework (ICCCF), this qualitative study aimed to explore multilevel barriers and facilitators of self-management perceived by older adults at risk of stroke, family caregivers, and primary care providers within CB-PHC systems. These findings provide context-specific evidence to inform integrated, multilevel strategies for enhancing self-management for stroke prevention within CB-PHC systems.

Materials and Methods

Study Design and Study Setting

This qualitative study was conducted in CB-PHC settings in Xinxiang City, China, using purposive sampling to capture diverse perspectives on stroke prevention self-management among older adults. Xinxiang has a stroke incidence above the national average among adults aged ≥ 60 years. Data were collected at Rongxiao Community Health Service Center, the city's national stroke screening center, which provides routine health examinations, chronic disease management, and stroke risk screening.

Participants and Data Collection

Three stakeholder groups were recruited: older adults at high risk of stroke, family caregivers, and CB-PHC professionals. First, eligible older adults who met the inclusion criteria were recruited in the study. Those criteria were 1) being aged 60-79 years; 2) living in the selected community for at least six months; 3) being high risk for stroke as measured by CVD risk score (having at least three of eight stroke risk factors, including hypertension, dyslipidemia, diabetes mellitus, smoking, physical inactivity, obesity, atrial fibrillation, or having a family history of stroke; 4) being independence (ADL:90-100); and 5) having cognitive intact (MMSE score: 27-30) and no depressive symptoms (GDS-15 score: 0-4). Stroke risk factors were assessed through medical record review and standardized criteria from the National Stroke Prevention and Control Project Database System. Second, family caregivers, who were 18 years and older, cohabiting with and providing regular support to the high risk older adults were interviewed. Last, health care professionals, who had at least one year of work experience in community healthcare services were invited to participate in the study. Recruitment of each group were continued until data saturation was reached, resulting in a final sample of 37 participants.

After IRB approval, data were collected by the researcher through semi-structured interviews and focus group discussions using interview guidelines. The interview guideline was developed by the researcher based on the ICCCF, relevant literature, and expert consultation. Open-ended questions explored stroke prevention self-management across individual, family, and system levels. Individual interviews focused on personal and family experiences, while focus group discussions examined community and organizational factors, including service integration, workforce capacity, and the sustainability of prevention efforts. Data collection continued until data saturation was reached. Eighteen older adults and eight family members participated in individual interviews, and 11 professionals attended two focus group discussions. All interviews were conducted in private, quiet settings and lasted 45-60 minutes. With participants' consent, all sessions were audio-recorded and transcribed verbatim.

Data Analysis

Data were analyzed using Braun and Clarke's six-phase thematic analysis with a primarily inductive approach⁽¹⁹⁾. The ICCCF informed the interpretation of multilevel influences on stroke prevention self-management. All interviews and focus group discussions were audio-recorded,

transcribed verbatim, anonymized, and stored in secure password-protected folders. Transcripts were imported into NVivo 15 (QSR International) to facilitate systematic data management and coding. The analysis followed six stages: data familiarization, initial coding, theme development, theme review, theme definition and naming, and report production. To enhance analytic rigor, 30% of transcripts were independently double-coded by two researchers, with discrepancies resolved through discussion. Transcription accuracy was verified in 10% of transcripts ($K = 0.92$), and intercoder agreement reached an acceptable level ($K = 0.78$). Credibility was strengthened through methodological triangulation (integrating interviews and focus groups), investigator triangulation, and member checking with a subset of participants (approximately 10%)⁽²⁰⁾. Reporting followed the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines⁽²¹⁾.

Reflexivity

The research team comprised public health researchers with experience in CB-PHC and stroke prevention in China. Reflexive practices were maintained throughout data collection and analysis to consider potential influences of researchers' backgrounds and assumptions on data interpretation. Community health workers (CHWs) contributed to the study design, data collection, and interpretation, thereby enhancing contextual relevance and analytic rigor.

Results

1. Participant Characteristics

A total of 37 participants were included, comprising 18 high-risk older adults of stroke, 8 family caregivers, and 11 CB-PHC professionals. Among the high-risk older adults of stroke (aged 60–79 years; 55.6% male), the mean duration of high-risk status was 4.2 years, and multimorbidity was common, particularly hypertension (72.2%) and diabetes (61.1%). Family caregivers (aged 28–60 years) were actively involved in health management. Healthcare professionals included CHWs, managers, specialists, social workers, and volunteers, providing multidisciplinary perspectives (Table 1).

2. Thematic findings based on the ICCCF

Guided by the ICCCF and inductive thematic analysis, perceived influencers of self-management among Chinese older adults at risk of stroke were organized into three levels: individual, family, and community. Codes derived from interview data were iteratively reviewed and refined through team-based analysis to develop these multilevel themes.

Table 1 Participant demographics and characteristics

Participant Group	n	Age Range	Gender Distribution n (%)	Key Characteristics
High-risk older adults of stroke (P)	18	60-79 years	Male: 10 (55.6%) Female: 8 (44.4%)	Multiple risk factors; Risk duration: 1-10 years; Income: 1,800-7,200 yuan
Family caregiver (FC)	8	28-60 years	Male: 4 (50.0%) Female: 4 (50.0%)	Active care involvement; Diverse family structures; Various occupations
Healthcare professionals	11	29-58 years	Male: 5 (45.5%) Female: 6 (54.5%)	CHWs, managers, specialists, social workers, volunteers

2.1 Individual-level barriers and facilitators

At the individual level, perceived influencers of self-management among Chinese older adults at risk of stroke included limited cognitive capacity, complex risk management, functional decline, limited digital literacy, financial constraints, and fatalistic health beliefs. In contrast, simplified regimens, enhanced self-efficacy, and supportive environments were key facilitators of sustained self-management.

2.1.1 Barriers: limited capacity and fatalistic beliefs

Limited cognitive capacity and the complexity of self-management demands emerged as major barriers. Many participants reported difficulties understanding stroke mechanisms, cumulative cardiovascular risk, and the rationale for long-term prevention. Because risk factors were often asymptomatic, their perceived urgency was frequently underestimated.

“Well, I usually feel fine, so I don’t really understand how high blood pressure could lead to a stroke over time, you know.” (P01)

The management of multiple stroke-related risk factors—including blood pressure, blood glucose, lipid levels, medication adherence, diet, and physical activity was commonly perceived as challenging. Participants indicated that the multiplicity and complexity of recommended preventive behaviors imposed considerable self-management demands.

“The doctor talked about blood pressure, blood glucose, cholesterol, and exercise all at once. When I got home, I didn’t know which one to deal with first.” (P03)

Age-related functional decline, limited digital literacy, and financial constraints further restricted engagement in preventive practices. Difficulties using monitoring devices and unfamiliarity with digital technologies reduced participation in both routine self-monitoring and technology-supported services.

“I have trouble seeing the numbers on the blood pressure monitor ... my hands aren't steady enough to use the glucose meter.” (P09)

“I don't really understand how to use these smart devices. I tried a few times, but it was too complicated, I just gave up.” (P11)

Financial limitations also affected adherence to long-term preventive care.

“The medicine costs several hundred a month. Sometimes I take it every other day—I still have to save money for food.” (P06)

Some participants additionally expressed fatalistic beliefs about illness and aging, which weakened motivation to engage in preventive behaviors.

“Ah, illness and how long you live are already decided. At my age, there's really no point worrying too much.” (P05)

2.1.2 Facilitators: self-efficacy and supportive adaptations

Self-management engagement improved when prevention tasks were simplified and incorporated into daily routines. Breaking complex recommendations into manageable steps enhanced participants' confidence and sustained engagement.

“The doctor broke things down into small steps, so I could actually follow them in daily life. Bit by bit, I started to feel more confident.” (P10)

Environmental adaptations and assisted use of monitoring devices also helped compensate for functional limitations and supported continued self-management.

“After we added handrails and improved the lighting at home, things became much easier for me.” (P14)

2.2 Family-level barriers and facilitators

At the family level, perceived influencers of self-management among Chinese older adults at risk of stroke included fragmented caregiving roles, competing responsibilities, caregiver burden, and

intergenerational differences in health beliefs. In contrast, collaborative family engagement and shared decision-making were key facilitators of consistent self-management.

2.2.1 Barriers: fragmented family support

Family support for stroke prevention was often constrained by unclear caregiving roles and competing household responsibilities. When roles were not clearly defined, prevention-related support became fragmented as family members were uncertain about their specific responsibilities.

“Everyone wanted to help, but no one really knew what they were supposed to do.”
(FC01)

In families facing multiple caregiving demands, immediate household needs were often prioritized over long-term prevention activities.

“There are just so many things to take care of at home. When everyone needs help, stroke prevention sometimes ends up being pushed aside.” (FC07)

Prolonged caregiving responsibilities also generated physical and emotional strain, which reduced family members’ capacity to sustain preventive support.

“I’ve been caring for my husband with diabetes for years, and it’s really taken a toll on my health. Most days I’m just too tired to think much about stroke prevention.” (FC01)

Intergenerational differences in health beliefs occasionally created resistance or tension, further complicating prevention management.

“I feel like I know my own body best, so I’m not always comfortable taking advice from the younger ones.” (P02)

2.2.2 Facilitators: collaborative family engagement

Family support was strengthened when caregiving roles were clearly negotiated and health decisions were made collaboratively. Such shared decision-making improved mutual understanding, reduced family conflict, and supported consistent engagement in preventive behaviors.

“We divided tasks according to our strengths and involved my father in decisions.....Now we discuss health instead of arguing” (FC05)

2.3 Community-level barriers and facilitators

At the community level, perceived influencers of self-management among Chinese older adults at risk of stroke included fragmented service delivery, limited access to community-based services, and primary care workload constraints. In contrast, integrated care, peer support, and tailored health education within CB-PHC settings were key facilitators of sustained self-management.

2.3.1 Barriers: fragmented health services and limited access

Fragmented coordination across tertiary hospitals, secondary hospitals, and community healthcare services disrupted continuity of care. Participants reported receiving inconsistent advice from different providers, which created uncertainty regarding prevention strategies.

“When I went to different hospitals, they told me different things, so I didn’t really know which advice to follow.” (P16)

Limited accessibility to community healthcare services further constrained preventive engagement. Geographic distance, transportation barriers, and restricted clinic hours posed challenges for older adults, particularly those with mobility limitations.

“The clinic is quite far from my home, and it’s not easy to get there, so I sometimes miss my follow-up visits.” (P08)

Healthcare providers additionally noted that heavy workloads limited the time available for individualized education and counseling.

“When we see 40 or 50 patients in one morning, there’s really not much time for each consultation.” (CHW)

2.3.2 Facilitators: integrated care and community engagement

Integrated service delivery across prevention, treatment, and follow-up improved continuity of care and strengthened community-based prevention support.

“Older adults can get advice from specialists while continuing their routine care in the community.” (CHW-manager)

Peer interaction and tailored health education also enhanced motivation and understanding of preventive behaviors. Learning alongside peers and receiving clear explanations in everyday language facilitated greater engagement in prevention practices.

“Talking with people my own age really keeps me motivated.” (P17)

“They [CHWs] explain health issues in simple language, and step by step I learned how to use the app.” (P14)

The key barriers and facilitators identified across the individual, family, and community levels are summarized (Table 2).

Table 2 Multilevel barriers and facilitators to stroke prevention self-management

Level	Theme	Subtheme
Individual barriers	Limited capacity and fatalistic beliefs	1. Limited cognitive capacity
		2. The complexity of managing multiple risk factors
		3. Functional decline, limited digital literacy, financial constraints
		4. Fatalistic health beliefs
Individual facilitators	Self-efficacy and supportive adaptations	1. Simplified prevention tasks
		2. Enhanced self-efficacy
		3. Supportive environmental
Family barriers	Fragmented family support	1. Fragmented caregiving roles
		2. Competing family responsibilities
		3. Caregiver burden
		4. Intergenerational differences in health beliefs.
Family facilitators	Collaborative family engagement	1. Collaborative family engagement
		2. Shared decision-making
Community barriers	Fragmented health services and limited access	1. Service fragmentation across healthcare levels
		2. Limited accessibility to community services
		3. Provider workload constraints
Community facilitators	Integrated care and community engagement	1. Integrated care delivery
		2. Peer support
		3. Tailored health education

Discussion

This study examined perceived influencers of self-management among Chinese older adults at risk of stroke within CB-PHC settings. Engagement in self-management was shaped by interacting influences across individual, family, and community levels rather than individual motivation alone. This multilevel pattern aligns with the ICCCF, emphasizing the importance of coordinated support from individuals, families, healthcare providers, and community systems.

At the individual level, limited health literacy, functional decline, and the complexity of managing multiple cardiovascular risk factors emerged as major barriers to sustained preventive behaviors. Participants frequently reported difficulty translating knowledge about cumulative cardiovascular risk and largely asymptomatic disease progression into everyday prevention practices. Because stroke risk often develops without noticeable symptoms, preventive actions may be perceived as less urgent in daily life. Consistent with previous research, limited health literacy and multimorbidity increase treatment complexity and cognitive burden, thereby undermining long-term adherence to preventive care^(22,23). These findings suggest that stroke prevention strategies should extend beyond information provision and prioritize reducing self-management burden. Simplifying preventive tasks, adopting incremental goal-setting, and integrating prevention behaviors into daily routines may strengthen self-efficacy and facilitate sustained engagement.

Family dynamics also substantially influenced preventive behaviors. Although family members often provided emotional encouragement and practical assistance, the effectiveness of such support depended on clear caregiving roles and constructive communication. When responsibilities were poorly defined, support became fragmented or concentrated among a few family members, increasing caregiver burden and limiting the sustainability of prevention efforts. This finding echoes previous evidence that family involvement in chronic disease management may have a “double-edged effect”⁽²⁴⁾. While emotional and instrumental support can improve adherence, excessive supervision or surrogate decision-making may reduce older adults’ autonomy and active participation in self-management. In the Chinese cultural context, where family responsibility for care is strongly emphasized, supportive behaviors may shift toward monitoring or decision substitution⁽²⁵⁻²⁷⁾. Strengthening family-oriented strategies within primary healthcare, such as clarifying caregiving roles and promoting shared decision-making, may enhance both patient engagement and family well-being.

Community-level conditions within CB-PHC further shaped opportunities for preventive self-management. Fragmented coordination across healthcare levels and inconsistent advice from different providers disrupted continuity of care and created uncertainty regarding prevention strategies. Limited access to community health services and heavy workloads among primary healthcare providers further constrained individualized counseling and follow-up support. Strengthening CB-PHC systems through improved service integration⁽²⁸⁾, enhanced continuity of

care^(29,30), and age-friendly health education and digital support^(31,32) may therefore help create a more enabling environment for stroke prevention self-management among high-risk older adults.

Taken together, these findings suggest that self-management among older adults at high risk of stroke is shaped by interacting influences at the individual, family, and community levels. Consistent with the ICCCF and previous evidence on chronic disease self-management, our findings indicate that self-management is influenced not only by individual capacity and health literacy, but also by family support and community healthcare environments. Within CB-PHC settings in China, these interconnected factors jointly influence stroke prevention behaviors. Therefore, strengthening stroke prevention requires multilevel, context-sensitive strategies that reduce self-management burden, promote family engagement, and enhance the coordination and accessibility of CB-PHC services. Addressing these factors may support sustained preventive behaviors and improve patient-centered stroke prevention among high-risk older adults.

Strengths and Limitations

This study provides context-specific insights into perceived influencers of self-management among Chinese older adults at risk of stroke within CB-PHC settings, integrating perspectives from older adults, family caregivers, and community healthcare providers through a multilevel qualitative approach.

Several limitations should be noted. The single-city design may limit transferability, and recruitment through community healthcare services may underrepresent individuals with limited access to care. Future research should include multiple regions and adopt mixed-methods designs to validate and extend these findings, informing the development of contextually appropriate, multilevel strategies to strengthen self-management and primary stroke prevention within CB-PHC systems in China.

Conclusion

Self-management among older adults at risk of stroke was shaped by interacting influences at the individual, family, and community levels within CB-PHC settings. Participants reported both barriers-including limited health literacy, high self-management burden, fragmented family support, and constrained primary care capacity-and facilitators such as coordinated care, family involvement, and continuity-oriented primary healthcare, which jointly influenced stroke prevention self-management.

These findings highlight the importance of strengthening CB-PH programs, with potential benefits for stroke prevention, self-management support, and integrated community health service delivery. Enhancing such systems may reduce risk for stroke by improving health literacy and family engagement to support sustained self-management. Implementation research should be conducted to assess the effectiveness and feasibility of the CB-PHC based interventions, focusing on multilevel, context-sensitive strategies to improve self-management and stroke prevention for older adults in other communities.

Ethical Approval Statement

Ethical approval was obtained from the Ethical Review Committee for Human Research, Mahidol University (MUPH 2025-064) and the Xinxiang Medical University Ethics Committee (XYLL-20250010). All participants were informed that their data would be kept confidential, and they agreed to the audio recording of their responses.

Author Contributions

MG conceived and designed the study, conducted data collection and analysis, and drafted the manuscript. KA, PK, NC, and AB contributed to the study design and provided critical revisions to the manuscript for important intellectual content. All authors reviewed and approved the final manuscript and agreed to be accountable for all aspects of the work.

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Conflicts of Interest

All authors declare that they have no conflicts of interest.

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