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Determinants influencing the implementation of community health management for cognitive impairment: a qualitative study

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Abstract

Background Cognitive impairment constitutes a significant global public health challenge, particularly for countries or regions experiencing the largest increases in aging populations. Most countries have reached a consensus that cognitive impairment screening, care, and intervention should be conducted within community settings.

Objective To identify multilevel barriers and facilitators for community health management for cognitive impairment, this study utilized the Consolidated Framework for Implementation Research (CFIR) to systematically evaluate the implementation of strategies for managing cognitive impairment in Shanghai, China.

Methods A semi-structured interview guide was developed based on the CFIR. Purposeful sampling was used to select 14 stakeholders from diverse sectors, including public health authorities, community health service centers, and experts in health management related to cognitive impairment, for semi-structured interviews. CFIR served as the coding framework for inductive analysis to identify and clarify the facilitators and barriers to cognitive impairment health management within the existing policy environment.

Results Qualitative interviews with stakeholders in community-based cognitive impairment health management revealed eight facilitators and ten barriers. The facilitators included enhanced social engagement for older adults, efficient digital tools, a supportive policy environment, adequate funding, integration into basic public health services, sufficient community human resources, supportive internal and external teams, and health education. Collectively, these factors fostered a conducive environment for effective cognitive impairment health management. In contrast, the identified barriers comprised a lack of validation for smart tools, absence of collaborative mechanisms, insufficient incentives for primary care physicians (PCPs), a lack of long-term mechanisms, inadequate professional expertise, low

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energy levels, limited training channels, insufficient disease awareness among older adults, absence of standardized implementation plans, and superficial work practices. These barriers hindered the effective execution of community-based cognitive impairment health management strategies.

Conclusion This study identified the primary facilitators and barriers to community-based cognitive impairment management within the context of current policies. To enhance the effectiveness of interventions, policymakers, health departments, and community organizations should actively address the identified barriers and leverage the facilitators. Additionally, the findings provide valuable insights for other countries facing similar challenges in cognitive impairment management. Future research should focus on integrating these factors into practical applications and evaluating the effectiveness of such interventions.

Clinical trial number Not applicable.

Keywords CFIR, Cognitive impairment, Community, Older adults, Qualitative study

Introduction

Cognitive impairment is a syndrome characterized by acquired cognitive dysfunction, leading to a decline in daily life and work capabilities, with or without accompanying behavioral and psychiatric abnormalities. Depending on the severity, it is classified into subjective cognitive decline (SCD), mild cognitive impairment (MCI), and dementia [1]. As the global prevalence of cognitive impairment continues to rise, especially dementia, it poses a significant challenge to public health systems worldwide [2]. In response to this growing concern, the World Health Organization (WHO) issued the 'Global Action Plan' in May 2017, urging countries to prioritize dementia as a public health issue [3, 4]. The plan emphasizes the need for increased investment in dementia prevention and treatment and aims to raise public awareness about the significance of the condition. Consequently, countries and regions without established dementia action plans are encouraged to adopt appropriate response strategies. More than 25 countries and regions, including the United States, the United Kingdom, and the Netherlands, have publicly released their latest national (or regional) dementia action plans [5].

At the governmental level, many developed countries that are entering the early stages of population aging have integrated dementia risk reduction into their long-term national development plans [6, 7]. Examples include the "Prime Minister's Challenge on Dementia 2020 Implementation Plan (UK)" and the "National Plan to Address Alzheimer's Disease (US)." They have established national-level strategic leadership teams and, from a legal perspective, safeguarding the rights of individuals with cognitive impairment and their caregivers.

At the societal level, it is essential to advocate for the development of "dementia-friendly communities", which are designed and organized to support individuals living with dementia, enabling them to remain active, engaged, and included in society, implement community-based prevention and management strategies, and foster a supportive and inclusive social environment. These communities enable individuals to remain active, engaged, and integrated into society, implement community-based prevention and management strategies, and foster a supportive and inclusive social environment [8, 9]. At the healthcare institution level, clinical standards for the diagnosis, treatment, and care of cognitive impairment are being improved alongside efforts to increase the engagement and motivation of primary healthcare providers [10, 11]. At the family level, attention should be given to caregiving for individuals with cognitive impairment, aiming to alleviate their caregivers' physical and psychological burden while ensuring respectful and compassionate care. At the individual level, adopting a healthy lifestyle is essential to promoting brain health, enhancing well-being, and improving quality of life.

For developing countries facing the growing challenge of population aging, addressing the impacts of dementia is particularly pressing. Research indicates that approximately 15.07 million older adults in China live with dementia, while 38.77 million have MCI [12]. The cost of dementia care in China has consistently been underestimated. It is reported that the annual socioeconomic cost per patient was US $19,144.36 [13], and cognitive impairment imposes a dual burden. This highlights that cognitive impairment, predominantly affecting older adults, has emerged as a critical public health challenge in China. While developed countries have established detailed frameworks, developing countries face unique challenges in implementing similar policies. For example, the National Health Commission of China has introduced various strategies and policy documents to address the societal challenges posed by cognitive impairment in 2020 [14]; this plan includes key actions such as health education training and counseling, risk screening services, targeted intervention services for different risk groups, and humanistic care on cognitive impairment. However, the content issued is still in the process of exploration and adjustment compared to the more established frameworks in developed countries, such as the comprehensive frameworks established in the United

Kingdom and the United States, which include specific guidelines for early diagnosis, treatment, and community engagement initiatives. This lack of detail poses challenges for implementation. Moreover, unlike hypertension and diabetes management, which are included in the country's Basic Public Health Service Standards, the screening and health management of individuals with cognitive impairment have not yet been incorporated into these basic public health services. As a result, a comprehensive health management system for cognitive impairment has not been established, and the practical implementation of cognitive impairment health management for older adults in the community still faces significant challenges.

Additionally, some cities in China, such as Shanghai, have established "Dementia-Friendly Communities" as an integral part of basic older adult care services by drawing on the models of developed countries. However, these initiatives are issued by the civil affairs department [15]. Thus, the screening and management of cognitive impairment require the collaborative involvement of multiple departments. The interaction within and between organizations, the degree of supply-demand matching, and the external and internal environments all significantly impact the effectiveness of health management.

Similarly, regardless of whether in developed or developing countries, most research focuses on top-level design and outcome evaluation while neglecting the critical factors at the meso level that influence the implementation and promotion of strategies. Implementation science is an evolving field that seeks to understand the factors influencing the adoption, integration, and sustainment of evidence-based interventions in real-world settings [16]. Unlike traditional clinical or public health research, implementation science explicitly examines the contextual and structural determinants that affect intervention outcomes, recognizing that even well-designed interventions may fail due to organizational barriers, policy constraints, or stakeholder engagement issues. The Consolidated Framework for Implementation Research (CFIR) is a commonly utilized scientific framework that serves as a guiding tool for conducting multilevel assessments of implementation environments, aiming to identify factors that facilitate or hinder the successful execution of interventions [17, 18]. It can be applied to various aspects of policy implementation, including the optimization of policy option selection, external conditions for implementation, the scope of implementation, methods, and outcomes of implementation, along with the supervision and evaluation of implementation.

Compared to other implementation frameworks, CFIR offers a comprehensive determinant-based structure that allows for a systematic assessment of implementation factors. For example, RE-AIM is primarily designed to evaluate the reach, effectiveness, adoption, implementation fidelity, and sustainability of interventions [19]. While it assesses implementation processes, its primary focus is on intervention outcomes and scalability rather than on identifying or analyzing contextual barriers. Similarly, the PARIHS framework emphasizes evidence, context, and facilitation as key elements for successful implementation in clinical settings, positing that these components must align to achieve change [20]. In contrast, CFIR provides a structured yet flexible framework for analyzing implementation determinants across multiple organizational levels (e.g., individual, team, system). It is particularly suited for identifying and addressing contextual and systemic barriers to intervention success.

CFIR has been applied in dementia-related interventions, particularly in examining the implementation of non-pharmacological interventions and caregiver support programs from both the provider and recipient perspectives [21]. However, its application in government-led, community-based cognitive impairment health management strategies remains limited, especially in systematically assessing the interplay between healthcare service provision, policy implementation, and community engagement. This gap underscores the need for further research to explore how multilevel implementation determinants shape the effectiveness of dementia prevention and management efforts. While much of the existing research, both in developed and developing countries, focuses primarily on high-level policy design and outcome evaluation, there remains a significant gap in understanding how these policies are effectively translated into actionable strategies at the community level, especially in developing countries such as China, which are facing rapid population aging and inadequate cognitive impairment management policies. The implementation of cognitive impairment health management at the community level is influenced by various meso level factors that have not been adequately explored. This study seeks to address this gap by identifying and analyzing the barriers and facilitators in the implementation process at the community level in China, utilizing the CFIR. China exhibits substantial regional disparities in economic development and healthcare infrastructure. While the country as a whole is classified as developing, major metropolitan areas like Shanghai benefit from well-established healthcare systems and resources comparable to those in high-income nations.

In contrast, rural regions often contend with significant constraints, including limited medical resources and infrastructure. Against this backdrop, this study examines the implementation of cognitive impairment health management in Shanghai, a city with advanced healthcare policies and infrastructure. As a highly urbanized setting, Shanghai offers a valuable case for understanding

how such programs operate in resource-rich environments, providing insights that may inform similar initiatives in other metropolitan areas. However, given the considerable differences between urban and rural settings, these findings may not fully capture the challenges faced in less-developed regions, where implementation barriers are likely to be more pronounced. Through the application of this framework, the study aims to provide valuable insights into improving the execution of cognitive impairment management strategies.

Design and methods

Study setting and participants

Stakeholders were selected using purposeful sampling for interviews on community-based cognitive impairment health management services in Shanghai. The participants were chosen from diverse sectors, including the Shanghai Municipal Health Commission, community health service centers, social organizations, and experts in health management research. The inclusion criteria for interview participants were: (1) having at least one year of experience in community-based cognitive impairment health management services; (2) willingness to voluntarily participate in the study; and (3) having a professional background in healthcare, public health, or a related field.

The sample size was determined based on the principle of data saturation, meaning that data collection ceased once no new concepts or categories emerged and information became repetitive. In this study, 14 participants agreed to join and completed the interviews. None of the participants declined or withdrew from the study. Interviews ceased when the data saturation point was reached, and no further new insights or categories were generated [22]. The participants included two experts from the Shanghai Municipal Health Commission, three deputy directors or primary care physicians (PCPs) from community health service centers chosen based on the geographic location and economic development of their respective districts, three Community practitioners, three leaders of social organizations, and three experts in health management research with cognitive impairment. Among the participants, the experts from the Shanghai Municipal Health Commission and the deputy directors or PCPs from community health service centers were part of the health system. At the same time, the Community practitioners and leaders of social organizations were part of the civil affairs system. This study received approval from the Human Ethics Research Committee of the School of Public Health at Shanghai Jiao Tong University School of Medicine (Approval No. SJUPN202008). Written informed consent was obtained from all participants prior to their involvement in the study, with each participant signing the consent form before any examinations were conducted.

Qualitative interview guide

CFIR was selected as the guiding framework for this study due to its structured yet flexible approach to analyzing implementation determinants at multiple levels. As discussed in the introduction, CFIR provides a comprehensive determinant-based structure. It is particularly well-suited for investigating the complex interplay between external policies, organizational structures, and individual behaviors that influence the implementation of dementia prevention and management programs. Unlike other implementation science frameworks that focus on specific aspects of intervention scalability or clinical applicability, CFIR enables a multilevel exploration of barriers and facilitators, ensuring that implementation determinants are examined in relation to each other rather than in isolation [17]. Given these strengths, CFIR was used not only as a categorization tool but also as an analytical framework to assess cross-level interactions between different implementation domains.

The semi-structured interview guide was developed using the CFIR as a guiding framework to ensure a systematic exploration of implementation determinants in cognitive impairment health management, including innovation, outer setting, inner setting, individuals, and the implementation process. Each of the five CFIR domains was mapped to key themes and interview questions, allowing for a structured yet flexible approach to data collection:

The innovation domain meant the "thing" being implemented, including the boundary between the innovation and implementation strategies. Example question: "How is the intervention plan for cognitive impairment developed within your organization? How are needs assessed, and how is the intervention adapted over time?"

The outer setting domain consists of multiple external factors or hierarchical levels of factors, such as community, system, and status. Example question: "Is there adequate support for the screening and management of cognitive impairment, such as policies, local conditions, funding, or expert recommendations?"

The inner setting domain refers to the setting in which innovations are implemented, such as hospitals, schools, and cities. An example question is: "What organizational factors, such as leadership support or institutional culture, affect the implementation process?"

Individual domain means the roles and characteristics of individuals. An example question would be, "Do you agree that family physicians play a crucial role in the screening, diagnosis, and intervention of cognitive impairment in the elderly? Why?"

The implementation process domain was the activities and strategies used to implement the innovation [17]. An example question would be: "What facilitators or barriers have been encountered in the advancement and implementation of cognitive impairment health management?"

The interview protocol was structured to begin with broad, open-ended questions to elicit participants' general perspectives, followed by probing questions to explore key implementation determinants further. Interviewees were encouraged to provide detailed responses based on their experiences. The interview guide is included in Supplementary 1.

Data collection

The study utilized one-on-one semi-structured interviews, allowing participants to fully express their views in a relatively open and free environment. The research team contacted participants in advance to introduce the study's background, objectives, and content, inquired about the hospital where they would participate in the interview, and mutually agreed on a time for the interview [23].

Before the formal interview began, the researcher provided the interviewee with a thorough and complete introduction to the research background of the project, the purpose of the interview, and the expected duration. The researcher also assured the interviewee that they might withdraw from the study at any time, that the interview content would be kept confidential, and that the participant's identity would not be disclosed in the reporting of the results. The interviewee was informed about the recording of the session and the necessity of recording, and the interview started only after obtaining verbal or written informed consent. Each interview was conducted by the same researcher following the interview guide, and non-verbal information relevant to data analysis was recorded. During the interview, the researcher encouraged the interviewee to express their genuine opinions fully and maintain a neutral stance towards the content of the interview. Each interview lasted between 40 and 60 min.

Data analysis

D.B. and V.Z. conducted the interviews in this study, each bringing unique expertise to the research process. D.B. is a medical doctor with a PhD and extensive experience in cognitive impairment management and research. V.Z. holds a Master's degree in Public Health and has significant experience in qualitative research. Her expertise in qualitative interviewing methods ensured the interviews were conducted systematically and rigorously. Both interviewers received professional training in qualitative research techniques, ensuring the quality of the interviews and the protection of participants' privacy. Each interview was conducted independently by D.B. and V.Z. to maintain objectivity and neutrality in data collection.

After the interviews, the transcripts were independently coded and cross-checked twice by two researchers, B.Z. and P.A., to ensure neutrality in the transcription of the interview content. When necessary, follow-up interviews were conducted to gather additional information, and the transcripts were returned to the participants for verification to ensure the accuracy of the information [24]. Data were analyzed using directed content analysis, with deductive thematic analysis applied to systematically explore implementation determinants. CFIR served as the primary coding framework, ensuring a structured categorization of implementation factors while allowing for the identification of additional themes that extended beyond the CFIR constructs. Initial coding was performed using CFIR's five domains as primary coding categories, ensuring a structured approach to data interpretation. Such statements referring to external policies, financial incentives, or regulatory influences were coded under an outer setting domain. If participant responses did not fit pre-defined CFIR constructs, additional subthemes were developed inductively, allowing flexibility in capturing context-specific insights. The coding process also incorporated an interactive cross-domain analysis to explore relationships among CFIR constructs. This approach facilitated a deeper understanding of how different implementation factors interacted at multiple levels. Coding discrepancies were discussed and resolved through consensus meetings, ensuring alignment with CFIR's conceptual framework. The final coding structure was refined iteratively and validated through continuous discussions among the research team [25, 26]. A summary of the final coding framework is presented in Table 2. All coding and analysis were conducted using NVivo 12 software, which facilitated systematic organization and retrieval of qualitative data.

Reflexivity

Reflexivity is a critical process in qualitative research that involves reflecting on the researcher's role, potential biases, and influence throughout the stages of data collection, analysis, and interpretation. The interviews were conducted by D.B. and V.Z., both of whom have substantial experience in public health and cognitive impairment management. Although their expertise facilitated a deeper understanding of the subject matter, it is acknowledged that their professional background may have introduced biases, such as a tendency to emphasize certain aspects of health management. To minimize these biases, the interviewers consciously maintained neutrality, employed open-ended questions, and refrained from asking leading questions.

Table 1 Demographic characteristics of the participants ($N=14$)

	Gender	Age	Work background	Education	Years of work
1	Female	50	PCPs	Master	25
2	Male	47	Health management research with cognitive impairment	Ph.D	17
3	Female	47	PCPs	Master	22
4	Female	44	PCPs	Master	20
5	Female	60	Experts from the Shanghai Municipal Health Commission	Bachelor	31
6	Female	36	Health management research with cognitive impairment	Ph.D	5
7	Female	52	Health management research with cognitive impairment	Ph.D	28
8	Female	44	Community practitioners	Bachelor	22
9	Female	46	Experts from the Shanghai Municipal Health Commission	Ph.D	18
10	Male	38	Community practitioners	Bachelor	16
11	Male	47	Director of a Social Organization	Bachelor	25
12	Male	34	Community practitioners	Bachelor	9
13	Male	42	Director of a Social Organization	Bachelor	20
14	Male	40	Director of a Social Organization	Bachelor	15

The research team also acknowledged the power dynamics between the interviewers and participants, particularly since many participants were experts in the field. To mitigate this, the researchers emphasized the voluntary nature of participation and assured participants that their responses would remain confidential. Furthermore, to avoid potential distractions or biases, no other individuals were present during the interviews.

Throughout the data collection and analysis phases, the researchers engaged in continuous reflection and conducted team discussions to ensure the accuracy and integrity of the analysis. This ongoing reflexive process ensured that participants' perspectives were accurately captured and interpreted, thereby increasing the credibility and validity of the findings.

Results

Participant characteristics

The average age of the interview participants in this study was 44.79 ± 6.78 years. Six were male (42.86%), and eight were female (57.14%), all of whom had at least a bachelor's degree (See Table 1).

Table 2 Barriers and facilitators in implementing cognitive impairment health management

CFIR domains	Constructs	Statement theme
Innovation		
Facilitating factors		
	Innovation Relative Advantage	Digital tools enhanced efficiency
	Trialability	Digital tools enhanced social participation among older adults
Barrier factors		
	Innovation source	Inadequate validation of digital tool effectiveness
Outer setting		
Facilitating factors		
	Policies and Laws	Supportive policy environment
	Financing	Adequate financial support
Barrier factors		
	Partnerships and Connections	Unclear responsibility division mechanisms
Inner setting		
Facilitating factors	Compatibility	Encouraged incorporation into basic public health services
	Structural Characteristics	Adequate human resources among community practitioner
Barrier factors	Incentive Systems	Inadequate incentive mechanisms for PCPs
	Tension for Change	Lack of long-term mechanisms for sustainability
	Access to Knowledge and Information	Insufficient training opportunities for PCPs and community practitioner
Individuals		
Facilitating factors	Innovation Delivers	Support teams transitioning from external to internal
Barrier factors	Capability	Insufficient professional competence of service providers
	Motivation	Insufficient capacity among PCPs
	Need	Insufficient disease awareness among older adults and their families
Implementation process		
Facilitating factors	Engaging	Conduct health education
Barrier factors	Doing	Lack of standardized implementation processes
	Doing	Misreporting to fulfill obligations

Directed content analysis

In this study, CFIR was used as the coding template, and the data analysis was ultimately summarized into 17 constructs and 18 subcategories (Table 2). Eight facilitators and 10 barriers were identified (Fig. 1).

Innovation domain

Two facilitators and one barrier were identified in the innovation domain.

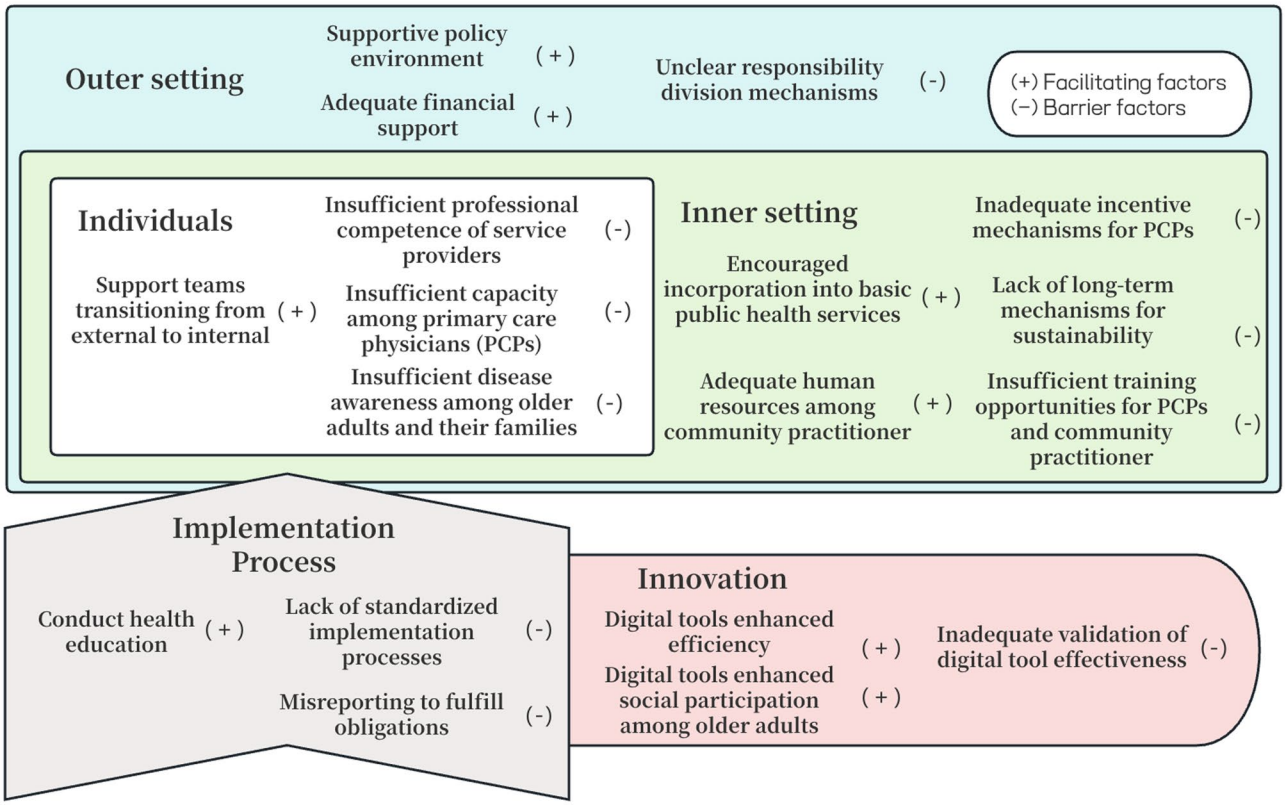

Fig. 1 Facilitators and barriers to health management for community-dwelling older adults with cognitive impairment

Facilitators

Neuropsychological tests were the primary tools for cognitive function screening; however, they required administration by physicians or trained personnel, making the process time-consuming and labor-intensive. With the continuous development of digital healthcare, digital-based cognitive function screening tools emerged. Most respondents ($n = 10$) believed that these tools could save human and material resources, improve screening efficiency, and facilitate standardized diagnosis. Respondent 6 stated, *'Digital tools were highly necessary as they can assist in managing patient care, reduce doctors' workload, and minimize subjectivity in disease diagnosis.'*

Community practitioners aimed to develop innovative services tailored to the unique characteristics of their communities, with the objective of promoting social participation among older adults. Examples included '*Memory Cafés (N9)', 'Mind and Body Activation Groups (N8),' Art Therapy (N13),'* and *'Handicraft Group Activities (N13).'* However, it remained unclear whether these methods can effectively improve the cognitive function of individuals with cognitive impairment.

Barrier

Some respondents ($n = 4$) reported that most digital tools were still in the validation stage, and their diagnostic efficacy for cognitive impairment, as well as the reliability and validity of these tools, still needed to be validated in large-scale populations. Respondent 7 stated, *'The application of digital tools requires an evidence-based approach and a comparison with domestic and international standards to assess their effectiveness. Although some researchers have developed digital screening tools, these tools have not been validated in large-scale populations, which limits their applicability for widespread use. '*

Outer setting domain

The outer setting domain included two facilitators and one barrier.

Facilitators

All respondents (n = 14) considered sufficient funding and positive policy to be crucial for facilitating the implementation of cognitive function screening and health management within the community. Respondent 8 stated, *'The government is dedicated to resolving this issue, and the funding allocation is highly adequate.'* Hence, all financial support is currently provided by the government. Respondent 5 reported, *'We have issued the 'Shanghai Mental Health System Development Plan (2020–2030)' and the 'Notice on the Implementation of the Shanghai Cognitive Impairment Prevention and*

Treatment Promotion Initiative.' These policies have facilitated the advancement of cognitive impairment prevention and treatment.'.

Barriers

Cognitive impairment health management requires the coordinated efforts of multiple departments. Current policies were derived from the health and civil affairs departments. All respondents ($n = 14$) consistently highlighted that the civil affairs department has *'ample community resources,'* while the health department possesses *'rich professional resources.'* In theory, these departments should have collaborated seamlessly and continuously. However, there are currently issues such as *'unclear division of responsibilities (N1),' 'ineffective communication channels (N5),'* and *'lack of a stable and effective cooperation mechanism (N11)'* between the civil affairs and health departments. These challenges obstructed the systematic progress of community-level cognitive function screening and health management.

Inner setting domain

Two facilitators and three barriers were identified in the inner setting domain.

Facilitators

Multiple respondents ($n = 6$) from community health service centers reported that, due to the country's growing emphasis on the prevention and treatment of cognitive impairment, its health management should be integrated into basic public health service programs. For example, respondent 3 reported, *'integrating cognitive function screening with physical examinations for older adults could enhance the efficiency and coverage of screening efforts'*. Additionally, respondent 2 said, *'incorporating cognitive impairment health management into the PCPs evaluation criteria, similar to the management of chronic diseases like hypertension and diabetes, could strengthen the intrinsic motivation of PCPs.'*

This research found that the civil affairs system had established a comprehensive community-based care service network for older adults, which included a high-quality team of community practitioners and a well-integrated care service infrastructure. Community practitioners, who directly interacted with the community-dwelling older adults, facilitated communication with this demographic, thereby improving the efficiency of the process. Respondent 11 reported, *'Community committees have access to fundamental information about the older adults. Effective communication with these committees can significantly enhance the efficiency of the screening process.'* Additionally, the civil affairs system benefited from a substantial group of older volunteers who were compassionate, proactive and possessed a strong sense of ownership, leveraging peer effects to help a larger number of older adults.

Barriers

Some respondents ($n = 3$) believed that PCPs were overburdened with their existing tasks. *'The absence of stringent evaluation criteria from the government meant they were unlikely to invest additional effort (N1).'* Moreover, the lack of performance-based incentives for participating in screening and management activities resulted in *'providing free services without adequate motivation, leading to insufficient enthusiasm among family physicians and hindering the effective implementation of health management for cognitive impairment (N2).'*

Some respondents ($n = 4$) raised concerns about the sustainability of cognitive impairment prevention and management programs, viewing them as long-term and challenging. Respondent 9 reported, *'The development of dementia-friendly communities was planned to span three years, with services funded by the government. However, how these programs would continue and be implemented after the three-year period remained uncertain, which was a significant concern for Community practitioners. '.*

Four community practitioners and two PCPs expressed a strong need for professional guidance and training. However, there was insufficient training opportunities and communication channels to meet these needs. As Respondent 8 said, *'We need experts from the hospital to develop a set of standards for screening, diagnosis, or intervention protocols to guide our work. Additionally, we require professionals to guide us in implementing interventions and conducting intervention programs.'*

Individuals domain

This domain contained one facilitator and three barriers.

Facilitator

Eight respondents indicated that support from external to internal teams served as a facilitating factor. The effective implementation of health management for cognitive impairment required the establishment of a robust support network. Respondent 12 said, *'Support from family and peers not only enhanced awareness of cognitive impairment-related diseases but also aided in disease management by providing supervision and encouragement.'* Respondent 14 said, *'Older volunteers, who were compassionate and possessed a sense of ownership, found it easier to communicate with community seniors and were more persuasive in promoting health management efforts.'* Similarly, Respondent 11 said, *'Community leaders, as key organizers and conveners, prioritized health management projects when they recognized their*

importance, thereby facilitating the effective implementation of these initiatives.'.

Barriers

Cognitive impairment screening, diagnosis, and subsequent health management require extensive experience and solid medical knowledge. However, some respondents ($n = 5$) said that many PCPs and community practitioners felt they lacked the necessary experience and expertise, expressing concerns about health management for cognitive impairment. Respondent 4 reported, *'Most PCPs did not utilize assessment tools such as MoCA and are not trained to interpret the results.'*

In addition, some respondents ($n = 3$) reported that PCPs felt their work was very busy and that screening and managing cognitive impairment required substantial time, which left them with limited capacity. Respondent 1 reported, *'PCPs face a heavy workload and are involved in various public health service projects, which leads to reluctance in managing high-risk patients due to the perceived increase in workload.'*

Five respondents expressed that the most critical issue is that many older adults have insufficient disease awareness, which can increase the stigma associated with cognitive impairment, leading to resistance to screening and reduced adherence to health management. Respondent 4 reported, *'Older adults may not recognize memory decline as a clinical condition and might be reluctant to undergo cognitive function screening.'* Furthermore, some family members, due to their limited understanding of the disease, may discourage older adults from undergoing cognitive function screening. Respondent 7 reported, *'Sometimes, older adults may be willing to undergo screening, but their children, assuming there is no illness, may dissuade them from proceeding.'*

Implementation process domain

One facilitator and two barriers were identified in the implementation process.

Facilitator

Three respondents believed that health education not only enhances older adults' awareness of diseases but also attracts and encourages more community-dwelling older adults to participate in cognitive function screening and subsequent intervention programs. Respondent 12 reported, '*Continuous health education efforts can increase older adults' awareness of diseases, thereby improving their adherence to medical recommendations.'*

Barriers

All respondents ($n = 14$) agreed that civil affairs and health departments' programs currently lack a standardized implementation process for cognitive impairment health management, making it difficult to ensure the programs' proper execution. Respondent 10 mentioned, '*In terms of the current project's effectiveness and execution, the entire process was somewhat disorganized, highlighting the need for the establishment of unified standards and systems.'* Respondent 11 reported, '*Currently, these projects lacked detailed processes and expert support, relying solely on third-party organizations to explore on their own, and are deficient in specific implementation and execution guidelines.'* Additionally, some respondents ($n = 5$) reported that there was still a lack of standardized and unified screening scales suitable for community settings, which presents ongoing challenges for cognitive function screening in communities. Respondent 3 reported, *'Some Chinese-translated neuropsychological scales may not be well-suited to the cultural background of older adults in China.'* Respondent 10 said, '*Traditional scales, such as MoCA, had shown issues during community screening processes, including excessive time consumption and limited suitability for widespread use in community settings.'*

Three respondents argued that certain implementers, in an attempt to fulfill their obligations, had provided false data and had not adequately assisted older adults with cognitive impairment. Respondent 10 reported, *'I know that some suburban districts in Shanghai provided false data.'* Respondent 7 stated, *'The older adults who attended the health management sites were mostly active individuals, while those who truly needed assistance did not attend, resulting in ineffective efforts.'*

Discussion

This study employed the CFIR framework to identify barriers and facilitators in the health management of older adults with cognitive impairment in the community. It used a sample of 14 individuals from relevant fields in Shanghai.

Innovation

In this domain, the study found that community practitioners designed context-specific activities to enhance older adults' sense of participation and benefit, such as "Memory Cafés." These initiatives could improve adherence among older adults. Cohort studies conducted in multiple countries globally have confirmed that social participation improved older adults' cognitive function by enhancing their knowledge and skills and by improving their psychological state [27, 28]. A study based on CHARLS data found that both social activity participation and activity frequency were correlated with cognitive function. Social engagement and intellectually stimulating activities improved cognitive function in older adults [29]. The community is the main platform for older adults' social activities. Tailoring community

cultural activities to local needs is the most cost-effective way to reduce isolation, enhance interaction, facilitate "re-socialization," and improve cognitive function.

The results of this study indicated that intelligent tools are a "double-edged sword." These digital cognitive screening tools overcame the limitations of traditional paper-based assessments, such as low efficiency and high resource consumption. They were also conducive to big data analysis and management [30]. Cubillos et al. summarized the application of digital cognitive screening tools since 2015 [31]. While these tools have been validated against traditional neuropsychological scales, most studies have limitations, including small sample sizes and a lack of consideration for education level, gender, and cultural differences. Thus, while digital cognitive screening tools have great potential, their application in communities requires validation within the Chinese older adult population.

Outer setting domain

This study found that a supportive policy environment and adequate financial support were facilitators. To validate these perspectives, data triangulation was performed by cross-referencing interview data with official government documents and existing literature. The "Shanghai Pilot Program for the Development of Dementia-Friendly Communities" and "Notice on the Implementation of the Shanghai Dementia Prevention and Treatment Promotion Initiative" confirmed that community-based cognitive impairment screening and management are prioritized in public health policy. While comprehensive financial data on government funding trends remain limited, these policy documents underscore the increasing policy attention to cognitive impairment prevention and treatment. In many low- and middle-income countries, dementia prevention and intervention programs are often supported through fiscal levers, such as government subsidies and public health initiatives, to mitigate financial barriers to care [32]. Meanwhile, increasing scholarly attention has been drawn to the urgent need for sustained funding in dementia prevention globally [33]. In contrast, Shanghai's model ensures universal access by fully subsidizing community-based screening and intervention programs through municipal government funding, reducing the financial burden on individuals and families.

However, the implementation of the policy requires coordination and cooperation across multiple departments. This study found that the lack of a collaboration mechanism between the health and civil affairs departments is a significant barrier. The absence of a well-integrated collaboration mechanism across agencies poses a considerable challenge to the effective implementation of cognitive impairment prevention and management strategies. While interagency collaboration challenges have been widely discussed in public management literature, particularly regarding collaborative inertia [34] and fragmented governance structures [35], the present study extends this discussion by examining the unique structural and policy-related barriers in China's context.

Similar collaboration gaps have been identified in international contexts. Exley et al. [36] found that in Italy, the Netherlands, and Scotland, national policies often lack coordination between healthcare and social service sectors, leading to duplicated efforts, service gaps, and inefficiencies in resource allocation. Their research highlights how, despite top-down integration policies (e.g., Scotland's Public Bodies Act), local-level implementation remains fragmented due to misaligned priorities and complex governance structures. China's case presents both similarities and unique challenges. The country's cognitive impairment care system involves multiple independent governmental bodies, including the National Health Commission, the Ministry of Civil Affairs, and local community-based service organizations. While these agencies oversee different aspects of dementia care—ranging from clinical diagnosis and treatment to elderly care services and social support—there is no standardized framework for cross-sector collaboration. As a result, service provision remains fragmented, leading to inefficiencies in resource allocation and delivery [37]. At the community level, both the health and civil affairs departments target older adults through initiatives such as health education, cognitive screening, and early intervention. However, the lack of an institutionalized coordination mechanism results in overlapping responsibilities, redundant screenings, inadequate information sharing, and inconsistent service standards. This fragmented approach creates confusion and inefficiencies, often described by respondents as a situation where "too many authorities create confusion."

This fragmentation is consistent with findings from other studies, which highlight similar challenges in the coordination of health and social services for older adults in many countries. For instance, many governments have institutionalized healthcare networks to facilitate integration and efficient healthcare delivery. Implementing healthcare networks often requires a balance between top-down policies, which include a general legal policy framework institutionalizing comprehensive healthcare reform, and bottom-up initiatives that combine adaptive leadership, community participation, and transformative learning processes. This approach has been critical in enhancing the efficiency and coordination of healthcare services, including dementia care, in various countries [38]. Therefore, to ensure effective support, the government should consolidate resources from social policies, older adult care systems, and health regulations while

coordinating efforts between civil affairs and health departments. This would increase financial backing, clearly define responsibilities, avoid redundancies, and develop a streamlined community network for the prevention and treatment of cognitive impairment, with a focus on active implementation and enhanced oversight.

Inner setting domain

In this part, this study identified several complex influencing factors. Global research indicated that the implementation of performance-based incentive schemes for PCPs significantly enhanced their motivation, improved job satisfaction, and reduced turnover rates [39]. This study found that incorporating cognitive screening and health management into basic public health services and including them in PCPs' evaluations can improve efficiency and coverage, serving as an incentive. However, the lack of an incentive mechanism for PCPs was identified as a barrier, primarily due to the absence of performance-based rewards and binding indicators, which leads to lower initiative and engagement among PCPs. During the past decade of healthcare reform, China has made building its primary healthcare system a priority which was to provide its citizens with universal and equitable access to high-quality healthcare [40]. Of course, this is also a primary source of income for PCPs. Therefore, future efforts could include integrating cognitive screening and health management into basic public health services as part of a "value-added service package" for PCPs. Effectively utilizing basic public health funds and optimizing incentive mechanisms for PCPs would enhance the enthusiasm for health management services and achieve a win-win outcome. This aligns with China's "National Action Plan for Coping with Dementia in Later Life (2024–2030)", which encourages the incorporation of cognitive screening and non-pharmacological interventions into basic public health services for older adults. As efforts to strengthen cognitive impairment prevention continue, further integration of cognitive screening into primary care could help improve early detection and intervention, contributing to a more proactive public health strategy.

The efficient operation of the project requires substantial financial support. The development of dementia-friendly communities or initiatives to promote dementia prevention and treatment relied on government-funded service models. The limited sources of funding can restrict the autonomy of project operations. The study found that respondents were concerned about the sustainability of the project after its completion, with uncertainty surrounding future funding sources and the project's lifecycle. This is a challenge observed globally, including in the UK [41]; dementia prevention and treatment programs benefit from diverse funding sources, including trust foundations, local governments, churches, and volunteer contributions, which provide a degree of security for project development. A study on dementia-friendly communities in the United States found that organizations with more diverse funding sources and stronger social capital were more likely to sustain long-term engagement in DFC initiatives. This suggests that beyond government funding, establishing partnerships with private organizations, leveraging social capital, and diversifying financial streams could strengthen the sustainability of dementia-related community projects [42]. Therefore, it is crucial for future implementing bodies to actively collaborate with foundations, volunteers, and businesses to establish a multi-source funding system, ensuring the project's sustainable development and effectively serving community-dwelling older adults.

Individuals domain

The individuals domain in CFIR highlights how implementers' knowledge, attitudes, and engagement affect the success of an intervention. The policy decision-makers play a crucial role in shaping how cognitive impairment screening and management are prioritized within healthcare services. While PCPs are responsible for direct implementation, the level of attention and resource allocation given to cognitive impairment at the policy level directly influences the engagement of frontline healthcare providers. The findings suggest that when decision-makers emphasize dementia care as part of allocating appropriate resources, implementation becomes significantly smoother and more efficient. Besides, policy decisions can also influence workforce development and capacity building. When policymakers recognize cognitive impairment management as an essential public health service, they can lead to a more structured and motivated implementation team, ensuring that PCPs and community health workers have both the competence and confidence to carry out cognitive impairment screening and health management [43].

Besides, the study found that most PCPs and community practitioners felt they lacked relevant experience and knowledge, which raised concerns about their ability to manage cognitive impairment effectively. Similarly, a study involving 1,253 PCPs in Shanghai revealed that over 12% of them scored zero on their knowledge of cognitive impairment [44]. Additionally, 28.4% did not consider cognitive impairment to be a disease, and insufficient information affected their attitudes toward the management of cognitive impairment. The study also found that primary healthcare workers needed support and training from specialist physicians, but there was currently a lack of training programs and communication channels. Therefore, future efforts should include collaboration between health and civil affairs departments to

provide training on education, screening, and non-pharmacological interventions for cognitive impairment. A combination of theoretical and practical training through both online and offline continuing education, network courses, and practical exercises should be established to enhance the skills of primary healthcare workers.

Consistent with the conclusions from several researchers, this study found that insufficient awareness of cognitive impairment and related conditions among community-dwelling older adults increases stigma and leads to resistance to screening and management [27, 28]. This is a common challenge observed globally; the WHO report states that individuals with dementia, their caregivers, and families around the world continue to suffer from stigma, discrimination, and human rights violations. Additionally, dementia is often misunderstood as an inevitable part of natural aging [45]. Therefore, due to insufficient awareness and the subtle influence of the traditional belief that "family matters should not be disclosed," the target population often conceals the condition of patients and their families. This not only reduces their active social participation but also creates resistance to external help. In China, most cognitive impairment patients do not seek medical care or undergo screening proactively, with a consultation rate below 4% and a detection rate under 20% [29]. This study also found that before the implementation of the project, most implementers conducted health promotion activities, which could increase older adults' willingness to undergo screening and management.

Many high-income countries, such as Austria and Wales, have prioritized dementia awareness and risk reduction as key components of their prevention strategies, and the extent of policy implementation varies widely across different regions. Austria promotes the dissemination of cognitive impairment knowledge and information to the public through community-based education campaigns, aiming to cultivate a social atmosphere of understanding, respect, and support for patients [8]. Wales enhances awareness and understanding of dementia through continuous public education initiatives and training programs, targeting individuals, communities, businesses, and public authorities [9]. Therefore, creating a supportive social environment, raising public awareness of cognitive impairment, and reducing stigma and prejudice are among the shared global goals. Health promotion efforts should highlight the risks and high prevalence of cognitive impairment, as well as the critical importance of early screening and intervention, to increase public attention and compliance with health management for cognitive impairment. However, many low- and middle-income countries lack comprehensive national dementia strategies, and even among countries with established policies, implementation effectiveness differs due to variations in healthcare infrastructure, economic resources, and sociocultural factors [2]. Given these contextual differences, strategies developed in high-income countries may provide valuable insights but cannot be directly replicated in China without adaptation to local conditions.

Implementation process domain

Both health and civil affairs system implementers regarded the lack of standardized implementation plans and processes as a significant barrier. Cognitive screening is a primary component of health management for cognitive impairment. This study found that there is a lack of standardized screening tools suitable for community environments. Both the civil affairs and health systems have their screening protocols, and some internationally used neuropsychological scales may not be well-matched with China's social and cultural context, potentially leading to heterogeneous screening results.

Additionally, the lack of standardized intervention execution processes has led to difficulties in implementation by primary healthcare workers, creating obstacles to the effective execution of the project. The UK government, in collaboration with the Alzheimer's Society and research institutions, established a series of dementia-friendly community assessment systems and developed nationwide, clear, and actionable construction standards [46]. This has positioned the UK as a model country for building dementia-friendly communities.

At the same time, the principle that "one size does not fit all" is increasingly recognized in dementia prevention and management [47]. This has prompted global efforts to develop risk-adapted, culturally appropriate screening and intervention protocols. Ongoing multidomain trials in Asia, South America, and several low- and middle-income countries are exploring precision prevention strategies, optimizing interventions based on specific risk profiles and local conditions [5, 48]. These studies highlight that effective cognitive impairment screening and prevention should be tailored to different geographic, cultural, and economic populations. Therefore, the government should collaborate with professional associations or research institutions to develop standardized cognitive screening protocols tailored to Chinese older adults.

This should include culturally adapted screening tools and health management interventions suited to diverse community environments. For example, screening tools should be validated across different linguistic and cultural backgrounds to ensure applicability across urban and rural populations. In addition, health management strategies should incorporate locally relevant interventions, such as Tai Chi and square dancing, which are widely practiced among older adults in China and have

shown potential cognitive and physical health benefits [49, 50].

Furthermore, clear service standards and management regulations should be established, defining practitioner qualifications, intervention processes, and quality assurance measures. A strict oversight system with an exit mechanism should be implemented to ensure service consistency and effectiveness. This approach should specify the roles and responsibilities of all parties involved—individuals, communities, social organizations, community health service centers, and tertiary hospitals—at each stage of the project, such as early screening, intervention, and support, to ensure effective and efficient operation.

Additionally, the study found that most respondents spent considerable time discussing the specifics of screening implementation. However, interventions primarily focused on social participation activities for older adults (such as handicrafts and memory cafes) [38], with no established training programs or plans. There was also a lack of evidence-based non-pharmacological interventions, such as cognitive training, exercise programs, and dietary interventions. Similar challenges have been highlighted in previous research. Zhu et al. reviewed the implementation and dissemination of home- and community-based interventions for dementia care. They identified several key barriers, including a lack of standardized training, unclear implementation pathways, and insufficient coordination among stakeholders. These findings align with this study, where respondents reported uncertainty regarding post-screening care, distrust in PCPs, and stigma as major obstacles to effective engagement in non-pharmacological interventions [21].

Limitations

This study has several limitations. First, as a qualitative investigation conducted in Shanghai, its findings may not be directly applicable to other regions in China, particularly rural areas where healthcare infrastructure, resource allocation, and policy implementation mechanisms differ significantly. While Shanghai benefits from a well-established healthcare system and strong government support for cognitive impairment management, other regions—especially those with limited healthcare accessibility—may face greater implementation challenges. Thus, caution is needed when extrapolating these results beyond urban settings.

Second, the relatively small sample size may affect the robustness and external validity of the findings. Although data saturation was achieved, a broader sample, including stakeholders from diverse geographic and socioeconomic backgrounds, would enhance the generalizability of the results. Future studies should consider expanding the sample to include rural and less-developed areas to capture a more comprehensive picture of the implementation landscape across China.

Despite these limitations, this study provides valuable insights into the structural and policy-level facilitators and barriers influencing the implementation of cognitive impairment health management in a highly urbanized context. While these findings may be more applicable to similar metropolitan environments, they also offer foundational knowledge that can inform the adaptation of dementia-related health strategies in other settings. Future research should explore how these implementation strategies can be tailored to address the unique constraints of rural and resource-limited areas, ensuring equitable access to cognitive impairment management services nationwide [51].

Conclusion

This study identified key barriers and facilitators in the management of cognitive impairment among community-dwelling older adults. Facilitators included the improved efficiency and social engagement enabled by digital tools, a supportive policy environment with adequate financial backing, and the integration of cognitive screening and health management into basic public health services. Additionally, health education was found to be essential in raising awareness and reducing stigma associated with cognitive impairment. However, several barriers remained, including the insufficient validation of digital tools, unclear interdepartmental collaboration mechanisms, inadequate incentive systems, and limited training opportunities for healthcare providers. Strengthening intersectoral coordination, optimizing incentive structures, expanding training programs, and advancing health education initiatives may have contributed to a more effective and sustainable approach to cognitive impairment prevention and management.

Supplementary Information

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Supplementary Material 1

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Author contributions

Conceptualization, D.B., G.L.; methodology, D.B., Y.W., W.Z. and C.S.; investigation, D.B., P.A., C.Y., X.H. and B.Z.; Data curation, P.A., C.Y., X.H. and B.Z.; writing-original draft preparation, D.B. and W.Z.; writing-review and editing, G.L., Y.W. and C.S.; Funding acquistion, G.L., All authors have read and agreed to the published version of the manuscript.

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Data availability
All data generated or analysed during this study are included in this published article. Any additional data are avail able from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study was approved by the Human Ethics Research Committee of School of Public Health, Shanghai Jiao Tong University School of Medicine (No. SJUPN202008) and was conducted in accordance with the Declaration of Helsinki. All participants read and signed written informed consent forms.

Consent for publication
Not Applicable.

Human ethics and consent to participate
Not Applicable.

Competing interests
The authors declare no competing interests.

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