

A Study on the Matching of Community Service Supply with the Needs of Family Carers for Elderly People with Dementia in a Subdistrict of Y City

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Abstract

To investigate the alignment between community services and the needs of family carers for elderly individuals with dementia, this study employed Coupling Theory. A questionnaire survey was conducted among 514 households across 32 communities in a sub-district of Y City. An independent samples t-test was used to quantitatively analyse the coupling degree between the two systems. Statistical analysis revealed significant discrepancies between community service provision and family care needs ($t=-2.256$, $p=0.036$), indicating low current coupling between the two systems and a mismatch characterised by "high demand, low supply". Specifically, the core contradictions, ranked by urgency, are: widespread lack of financial support (demand: 78.2%, coverage: only 13.1%), policy implementation bottlenecks (awareness rate: 17.3%, 38.8% perceive cumbersome procedures), shortage of professional care services (e.g., skills guidance coverage at 14.0%), and mismatch between infrastructure supply and demand (age-friendly renovation demand at 57.3%, supply at 28.5%). Findings indicate loose coupling between community support systems and family care systems, with ineffective coordination persisting. Consequently, efforts must focus on enhancing systemic integration by establishing a "co-construction and shared-benefit" network involving multi-stakeholder collaboration among government, communities, medical-care institutions, and social forces. This requires strengthening financial support, streamlining policy procedures, expanding professional services, and advancing facility ageing-friendly modifications to improve service precision and systemic integration, thereby solidifying the foundation for home-based care.

Keywords: Dementia Patients; Family Carers; Community Services; Supply-Demand Matching

1. Introduction

As China's population continues to age, elderly care has increasingly become a major social issue affecting national development and people's livelihoods. Policy documents such as the "14th Five-Year Plan for the Development of the National Ageing Sector and the Elderly Care Service System" have been successively introduced, elevating proactive responses to population ageing to a national strategic level. These aim to systematically safeguard the basic living standards and well-being of the elderly.

Firstly, family carers responsible for supporting individuals with dementia face multiple pressures — physical, psychological, and financial (Alzheimer's Disease International, 2009) — whose plight demands urgent attention. Family carers for elderly individuals with dementia (Wang, 2014) refer to family members and close relatives providing long-term, ongoing informal care for those experiencing cognitive impairment, diminished activities of daily living, and associated psycho-behavioural symptoms. They constitute the primary bearers of care within China's current dementia support system. The state has explicitly advocated supporting families in fulfilling elderly care functions within the "Opinions on Deepening the Reform and Development of Elderly Care Services," backed by policies such as long-term care insurance pilot schemes (Liu, 2025). This renders research focusing on family carers of dementia patients — who bear the heaviest caregiving burden — particularly crucial and urgent.

Secondly, influenced by traditional attitudes and practical constraints, the vast majority of elderly individuals with dementia currently opt for home-based care (Tan, 2025). National policy has explicitly established a service framework centred on home-based care (Liu, 2026). Consequently, developing and refining the support system for home-based elderly care represents an inevitable direction for the advancement of elderly care services (Liu, 2026). As the "last mile" of home-based care services, the community plays a pivotal role in safeguarding the wellbeing of family carers (Tan, 2025).

However, there may be a disconnect between the services currently provided by many communities and the genuine needs of family carers. To precisely identify this issue, this study focuses on carers from 432 households with dementia patients across 32 communities in a sub-district of Y City. This sub-district serves as an urban grassroots governance unit with a substantial elderly population and widespread distribution of dementia households. Against this backdrop, a questionnaire survey method was employed to empirically examine the alignment between community service provision and family needs, revealing service gaps and core pain points. This provides empirical evidence and strategies for enhancing the precision and effectiveness of community support services.

Current international research has established a systemic model centred on community care with institutional care as a supplement (Long, 2025), featuring standardised needs assessment, personalised service customisation, and continuous dynamic monitoring. In contrast, domestic studies predominantly focus on carers' burden experiences (Li, 2013; Sun, 2019), supply-demand analyses for professional community care services to support network development (Yang, 2019; Dong, 2018), and macro-level policy system evaluations (Yang, 2024). However, empirical

research examining the alignment between "small-scale, precision-oriented" community service provision and actual family needs at the grassroots sub-district level — from a more diversified perspective encompassing infrastructure, economics, policy, and community services — remains relatively scarce. Consequently, this research holds significant practical relevance for optimising grassroots elderly care services and precisely addressing the needs of families affected by dementia.

2. Theoretical Foundation

Originating from physics, this theory examines the relationships between interacting systems and components. Grounded in systems science, it constitutes a theoretical framework for studying the coupling relationships, mechanisms, intensity, coordination levels, and evolutionary patterns among multiple systems or subsystems. Its core lies in revealing the intrinsic logic of systems transitioning from independence to interconnection, synergy, and ultimately integration. Within the social sciences, coupling denotes the coexistence of multiple units or subsystems within a system, characterised by mutual dependence, influence, and adaptation. Through interactive adjustment, this process achieves optimisation of the system's structure and function. The concept is frequently applied in the context of economic system reform.

Domestically, an increasing number of scholars are applying this theoretical perspective to collaborative research on elderly care models. Zhang (2013) posits the existence of a bidirectional coupling mechanism within rural home-based elderly care services, noting that such mechanisms can generate economies of scale and synergistic effects. Zhang (2024) applied coupling theory to the elderly care service system and silver economy, targeting high-quality service provision. This approach is deemed crucial for implementing proactive strategies against population ageing, upholding new development concepts, and vigorously advancing common prosperity for the elderly population. Gu et al. (2024), using Hefei as a case study and integrating artificial intelligence with holistic governance theory, explored a smart health care governance model for elderly care based on the "four-force coupling" approach. However, coupling theory faces practical challenges. Zhou (2024) notes that home-based elderly care volunteering struggles to meet diverse service demands across quantity, quality, and sustainability, resulting in a coupling imbalance between accessibility and supply. Given this and the future trend of home-based care, where institutional care's comprehensive dominance diminishes and dispersed care resources increasingly converge within communities and elderly households, the rational allocation and integration of resources becomes paramount. Coupling theory can precisely guide various social actors in linking resources to maximise their respective functions.

This study applies coupling theory to examine the degree of dependency between the family care system and the community service system – specifically, the closeness of their connection, whether the community is suited to family care needs, and whether family care adapts to the community environment. The degree of coupling is reflected through mean differences assessed by independent samples t-tests. A statistically significant difference in means indicates low coupling between the family care system and the community service system, suggesting that

community services fail to meet family care needs, and vice versa. This approach is extended to explore how coupling can drive multi-stakeholder coordination, thereby proposing countermeasures to construct a supportive network that unites the care efforts of multiple systems—including government, community, professional institutions, and social forces.

3. Research Methodology

3.1. Questionnaire Design and Data Collection

This study employed a questionnaire survey for data collection. Questionnaire design strictly adhered to the analytical framework examining significant disparities between supply and demand. It was developed based on a review of policy documents such as the "14th Five-Year Plan for National Ageing Development and Elderly Care Service System" and existing literature.

The questionnaire comprised three sections: Part One gathered basic socio-demographic characteristics of respondents and the elderly with dementia under their care; Part Two assessed the "Current State of Community Service Provision"; and Part Three evaluated "Family Caregiver Needs". The overall structure employed a combination of single-choice and multiple-choice questions, with a dual-sided comparison of current status and needs. The survey primarily explored four core dimensions: infrastructure support, economic support, policy support, and service support. The current status section mainly inquired about carers' perceptions of the actual provision of existing community facilities, public spaces, accessibility modifications, financial subsidies, awareness of policies, professional organisations, respite services, health guidance, and psychological counselling. The needs section focuses on understanding caregivers' genuine demands and prioritisation regarding community medical facilities, recreational environments, professional support spaces, temporary respite services, age-friendly modifications, subsidy levels, optimisation of policy implementation processes, and enhancement of service types. This comprehensively reflects the community service supply landscape and the structure of family caregivers' demands, providing data support for subsequent supply-demand coupling analysis and statistical verification.

Ultimately, the study employed a stratified random sampling method to survey 500 registered carers of elderly individuals with dementia across 32 communities in a designated sub-district of City Y between March and June 2025. Questionnaires were distributed and completed under the guidance of uniformly trained interviewers during home visits. A total of 432 questionnaires were distributed and 432 were returned. After verification, removal of missing values, and exclusion of invalid responses, 330 valid questionnaires were ultimately obtained. The effective recovery rate was 76.38%. Detailed demographic statistics for the valid questionnaires are presented in (Table 1 and Table 2).

Table 1. Cross-tabulation of demographic characteristics for elderly individuals with dementia

Indicator Type	Specific Classification	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Gender	Male	180	13.6	13.6	13.6
	Female	150	11.4	11.4	25
Household Registration Type	Urban Household Registration	183	13.9	13.9	38.9
	Rural household registration	147	11.1	11.1	50
Marital Status	Married and living with spouse	202	15.3	15.3	65.3
	Divorced	7	0.5	0.5	65.8
	Widowed	111	8.4	8.4	74.2
	Unmarried	11	0.8	0.8	75
Highest level of education attained	No schooling	98	7.4	7.4	82.4
	Primary school	110	8.3	8.3	90.7
	Junior High School	62	4.7	4.7	95.4
	Senior Secondary/Vocational School	41	3.1	3.1	98.5
	College and above	19	1.5	1.5	100

Table 2. Cross-tabulation of Demographic Characteristics of Family Carers

Indicator Type	Specific Classification	Frequency	Percentage	Valid Percentage	Cumulative percentage
Gender	Male	132	10	10	10
	Female	198	15	15	25
Household Registration Type	Urban Household Registration	191	14.5	14.5	39.5
	Rural household registration	139	10.5	10.5	50
Marital Status	Married and living with spouse	288	21.8	21.8	71.8
	Divorced	2	0.1	0.1	72
	Widowed	19	1.5	1.5	73.5
	Unmarried	12	0.9	0.9	74.3
Highest level of education attained	No schooling	9	0.7	0.7	75
	Primary school	42	3.1	3.1	78.2
	Secondary School	60	4.6	4.6	82.7
	Senior Secondary/Vocational School	99	7.5	7.5	90.2
	College and above	83	6.3	6.3	96.5

3.2. Data analysis methods

The data were processed and analysed using SPSS 26.0 software. Firstly, descriptive statistical analysis was employed to present the demographic characteristics of the 330 respondents, the current distribution of community service provision, and the concentration of demand among family carers. This provided an intuitive overview of supply and demand patterns. All percentage statistics were calculated based on the total number of valid questionnaires (N=330). For multiple-choice questions, valid percentages were used (i.e., only the proportion of respondents selecting that option among all respondents was counted).

Secondly, to examine whether statistically significant disparities existed between supply and demand at the aggregate level, this study employed an independent samples t-test using a dimensional indicator aggregation approach: The four dimensions — infrastructure support, financial support, policy support, and service support — were first decomposed into 10 supply observation indicators (current status) and 11 demand observation indicators (demand). Individual-level mean calculations were performed for each indicator score across all 330 respondents. Statistical analysis was then conducted using indicator type as the unit (N status = 10, N demand = 11). The aggregated data comprising the individual means for each indicator across all 330 respondents was subjected to t-testing to validate the research hypothesis that ‘demand exceeds supply’. This methodology is grounded in the following rationale: the core analysis of this study examines the overall supply-demand coupling characteristics across the four major dimensions, rather than individual-level supply-demand discrepancies. Employing aggregated mean data effectively mitigates random errors inherent in individual responses, thereby more accurately reflecting the overall matching relationship between the community service supply system and the family care demand system. Furthermore, this approach is widely adopted in similar system coupling studies (Zhang, 2024; Gu, 2024).

Finally, demand priorities across the four dimensions are ranked using effective percentage ratios of demand versus current status. Visualisations such as the ‘Four-Dimensional Supply-Demand Comparison Bar Chart’ and ‘Demand Priority Distribution Pie Chart’ provide intuitive insights into the most pressing pain points requiring immediate change among family carers. This lays the groundwork for subsequently proposing corresponding countermeasures and recommendations.

Prior to conducting descriptive statistics and hypothesis testing, this study assessed the reliability and validity of the Community Service Supply Scale and the Family Caregiver Demand Scale to verify the robustness of the measurement results. Reliability was assessed using Cronbach's α coefficient to evaluate internal consistency. Results indicated an α coefficient of 0.827 for the Community Service Supply Scale (10 items) and 0.864 for the Family Caregiver Demand Scale (11 items), both exceeding the recommended threshold of 0.8. This demonstrates excellent internal consistency reliability for both scales.

Validity assessment employed exploratory factor analysis (EFA) to evaluate the scales' construct validity. Initially, the KMO sampling adequacy measure was 0.812 for the supply scale and 0.845 for the demand scale, with Bartlett's sphericity test yielding p-values below 0.001 for

both, confirming data suitability for factor analysis. Subsequently, principal component analysis with maximum variance orthogonal rotation was employed for factor extraction. Results revealed four common factors with eigenvalues exceeding 1 for the supply scale, accounting for 78.36% of cumulative variance. Similarly, four common factors were extracted for the demand scale, explaining 82.54% of cumulative variance. All item loadings on their respective common factors exceeded 0.6, with no significant cross-factor loadings, indicating clear dimensionality. The extracted common factors corresponded precisely to the predefined dimensions of infrastructure support, economic support, policy support, and service support, demonstrating strong alignment with theoretical constructs. Consequently, both scales exhibited robust construct validity.

4. Analysis of the Alignment Between Community Service Provision and Family Demand

4.1. Descriptive Statistical Analysis

4.1.1. Demand from Carers of Dementia Patients

Regarding infrastructure requirements, 76.0% of carers expressed a desire for improved community recreational environments, 64.5% emphasised the need for more accessible healthcare facilities, 51.1% required cultural and entertainment facilities, 19.8% mentioned educational and training institutions, while 9.2% indicated no such needs. Regarding priority development areas, the most urgent demand is for age-friendly renovation facilities (57.3%); temporary respite care facilities (50.8%); professional nursing equipment support (48.9%); communication/training spaces (37.2%); and information service systems (29.3%). 15.4% of carers indicated no priority facility needs.

Regarding financial support, 78.2% of carers most urgently require increased subsidy levels and broader coverage. Additionally, 26.5%, 24.9%, 21.5%, 20.7% and 22.1% respectively sought innovative assistance models, refined targeted subsidy mechanisms, improved digital application processes, sustainable funding mechanisms, and enhanced service resource coordination. Notably, this survey recorded zero respondents indicating no financial support requirements.

Regarding policy implementation needs, 38.8% of carers deemed process design unreasonable; 34.4% highlighted imbalanced resource allocation; 22.1% deemed policies poorly adapted to grassroots implementation; 15.4% and 15.1% respectively highlighted inefficient inter-departmental coordination and inadequate capacity among implementing bodies; while 12.3% cited a lack of oversight and feedback mechanisms. Concurrently, 28.8% of carers perceived no significant issues with policy implementation.

Regarding community service demand, 68.7% highlighted insufficient service variety. Concerns over poor service quality and excessive fees were raised by 14.8% and 12.3% respectively, while 21.8% cited other comprehensive issues.

4.1.2. Current State of Community Service Provision

In terms of infrastructure support, 38.5% of carers were aware that their community provided basic facilities such as accessible pathways and rest areas, while a significant 61.5% were

unaware of such provisions. Community public activity spaces were predominantly open-air squares and green spaces, covering 77.9% of areas; however, dedicated activity zones for the elderly and indoor cultural venues were both under-equipped, with provision rates below 50% at 45.8% and 45.0% respectively. The coverage rate for sports and fitness facilities stands at 39.1%, while commercial support spaces account for only 16.8%. Furthermore, 9.2% of carers reported their communities lacked relevant public activity spaces. Home accessibility modification services, directly impacting domestic safety, have a coverage rate of merely 28.5%, with 71.5% of households failing to receive this support.

Regarding financial and policy support, only 13.1% of carers received community-level financial subsidies, with 86.9% having never accessed any assistance. Awareness of specialised support policies for caring for individuals with cognitive impairment was similarly low, at just 17.3%, while 82.7% of carers were unaware of relevant policy content.

Regarding service support, only 10.9% of carers indicated their community had established specialist support organisations for cognitive impairment, with 89.1% of communities lacking such facilities. The coverage rates for respite care and psychological counselling services stood at 30.2% and 27.4% respectively, yet 69.8% and 72.6% of carers remained without access to these services. The most critical areas of health education and caregiving skills guidance showed the lowest implementation rate at merely 14.0%, with 86.0% of carers having received no such guidance.

4.2. Statistical Testing and Analysis of Supply-Demand Status

To rigorously test whether a genuine, systematic gap exists between community service provision and the needs of family carers for individuals with dementia, this study employed an independent samples t-test. Analysis revealed that the mean for community service provision was 32.540, while the mean for carer needs was 51.627, indicating a significant mean difference of 19.087 (Table 3). Statistical testing indicates this difference is statistically significant at the 0.05 level ($t=-2.256$, $df=19$, $p=0.036$) as shown in (Table 4). This finding confirms through quantitative analysis and supply-demand comparison that the significance level falls below 0.05, indicating a significant disparity between current community services and the actual needs of family caregivers, with low coupling. A systemic mismatch characterised by "high demand and low supply" exists across the board, with the objective reality of a systemic supply-demand disconnect established (Figure 1). Accordingly, demand prioritisation across the four dimensions analysed — infrastructure support, economic support, policy support, and service support — is presented (Figure 2).

Table 3. Intergroup Basic Statistics Table

Indicator Type	N	Mean	Standard Deviation	Standard Error Mean
Current Status	10	32.54	21.3815	6.7614
Demand	11	51.627	17.3561	5.2331

*Note: N denotes the number of indicator types

Table 4. Independent Samples T-Test Results Table

Item	t	Degrees of Freedom	Two-tailed P (Significance)	Mean difference	95% confidence interval for the difference (Lower Bound)	95% confidence interval for the difference (Upper Bound)
Assuming equal variance	-2.256	19	0.036	-19.0873	-36.799	-1.3756
No assumption of homogeneity of variance	-2.232	17.394	0.039	-19.0873	-37.095	-1.0795

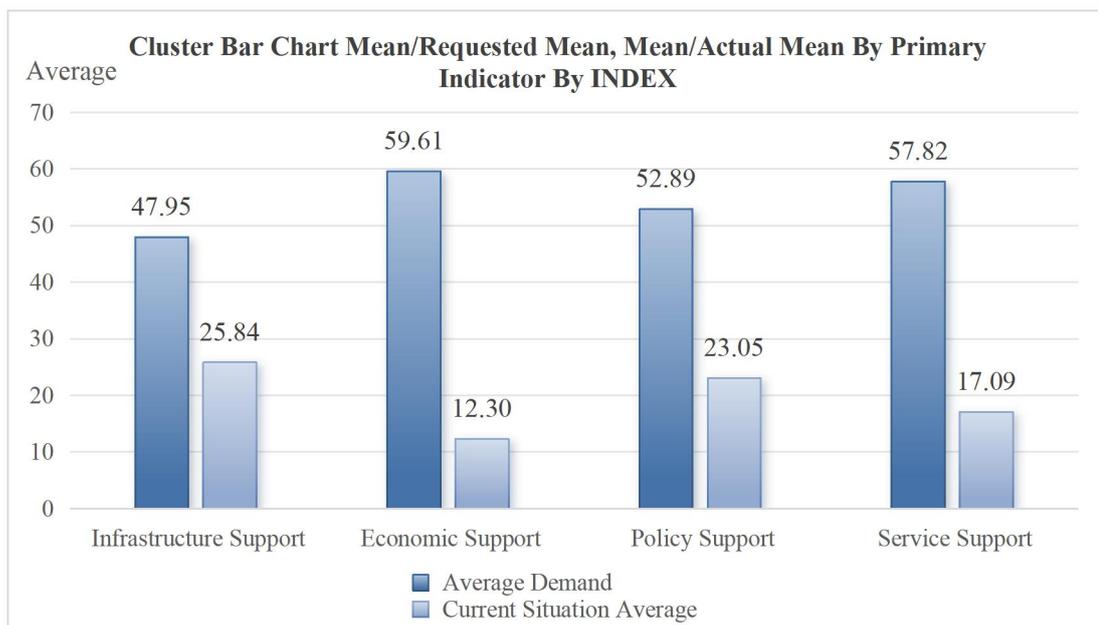


Figure 1. Independent Samples T-Test Results Table

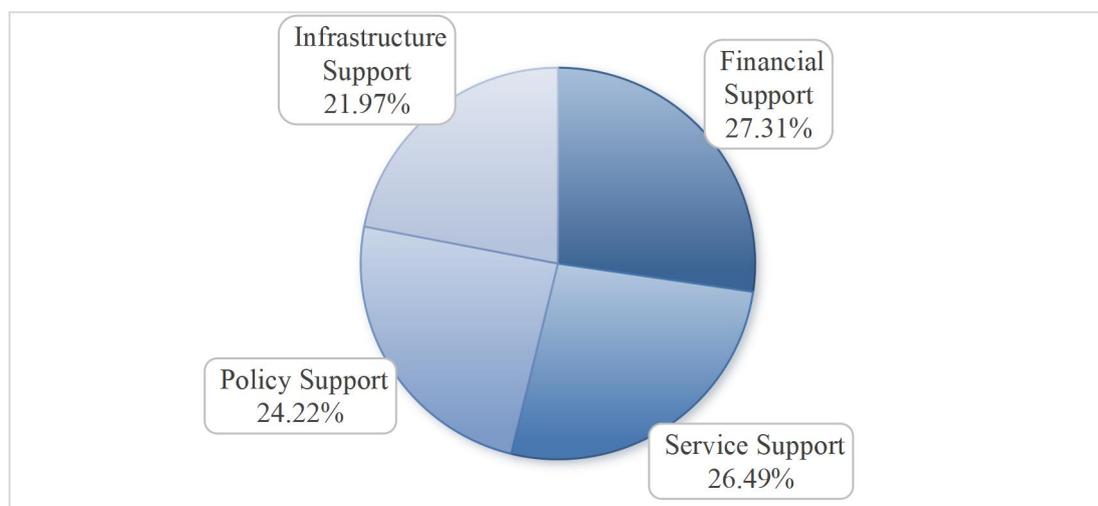


Figure 2. Demand Priority Distribution Pie Chart

The primary contradiction lies in the significant gap between the widespread lack of financial support and the high-intensity demands placed upon carers. Financial pressure constitutes the most immediate and burdensome challenge for carers. A substantial 78.2% of carers prioritise increasing cash subsidy levels and expanding coverage as their foremost requirement, with this need far outstripping other options in urgency. Current financial support is virtually non-existent, with only 13.1% of carers reporting having received subsidies, while a staggering 86.9% have never benefited from such support. This vast gap between demand and supply renders financial support the most pressing and critical pain point requiring immediate attention.

Secondly, specialised care support services are either scarce or entirely unavailable, failing to meet carers' fundamental needs for enhancing caregiving capabilities and alleviating burdens. Notably, 68.7% of respondents highlighted the overall inadequacy of service variety. Regarding specific service items, the most concentrated demand is for home-based ageing-friendly modifications, such as barrier-free access and smart home experiences (57.3%); followed by temporary respite care services (50.8%); and professional support facilities like nursing equipment rental stations and rehabilitation aid sharing points (Qiu, 2017) (48.9%). In contrast, the coverage rate of professional community support services stood at a mere 10.9%. The implementation rate for caregiving skills and health education guidance was a low 14.0%, while psychological counselling and respite services covered only 27.4% and 30.2% respectively. This comprehensive lack of professional services leaves carers perpetually isolated in their caregiving responsibilities.

Thirdly, the policy system suffers from severe bottlenecks in the "last mile" of implementation, primarily due to complex execution procedures and information transmission failures. Despite existing macro-level policies, their effectiveness is undermined by inefficiencies at the grassroots implementation level. The most prominent issue is the unreasonable design of policy execution processes, with 38.8% of carers citing cumbersome procedures and ambiguous standards. Secondly, 34.4% of carers perceive insufficient funding and misallocation of resources. More fundamentally, policy information fails to reach target groups effectively. A staggering 82.7% of carers are entirely unaware of relevant policies, with awareness rates standing at a mere 17.3%. Combined, procedural bottlenecks and information barriers trap policy benefits within the "last mile".

Finally, infrastructure provision exhibits structural imbalances characterised by "presence without impact" and "availability without specialisation," resulting in poor alignment with precise needs. 76.0% of carers require improvements to recreational environments such as public footpaths, fitness equipment, and park green spaces, while 64.5% seek local access to medical facilities like community health stations and elderly care centres. However, two key issues emerge: firstly, the coverage rate for home accessibility modifications—the most urgently needed support for families caring for dementia patients—stands at a mere 28.5%. Secondly, even where communities provide some public infrastructure, such as accessible pathways and rest areas, 61.5% of carers report being unaware of these facilities due to inadequate publicity or accessibility issues. This highlights deficiencies in both the precision and awareness of infrastructure provision.

In summary, this study reveals a significant overall disparity between community service provision and the needs of carers in families with dementia patients. The most fundamental driver is the severe lack of financial support; the most detrimental factor to care quality is the systemic shortage of professional services; the most immediate obstacle is the complexity of policy implementation processes and poor information flow; and the most fundamental issue is the structural mismatch between infrastructure supply and demand. This prioritisation of contradictions precisely pinpoints the critical junctures where the current community support system fails to effectively align with the genuine needs of family carers, providing clear empirical evidence for formulating targeted countermeasures.

5. Analysis of Causes and Multi-stakeholder Collaborative Countermeasures for Supply Demand Discrepancies

5.1. Root Causes and Countermeasures for Economic Support Deficiencies

The primary reasons for inadequate financial support stem from a single source of funding, communities lacking authority to allocate resources, and inflexible subsidy mechanisms. Specifically, communities lack dedicated funding, relying instead on limited ad hoc allocations from higher authorities, which fails to establish stable support. Funding procurement relies almost entirely on public finances, failing to effectively engage social forces. Concurrently, high application thresholds and rigid standards for subsidies prevent differentiation based on actual household economic circumstances and care intensity (Xu, 2026), resulting in the most needy families struggling to access assistance.

To address these issues of single funding sources and inflexible subsidy methods, it is necessary to broaden funding channels and optimise distribution mechanisms. Firstly, concerning the narrow funding channels, a diversified funding pool must be established. Communities should actively seek specialised subsidies from higher authorities while collaborating with local enterprises and foundations to mobilise social donations. Additionally, they can repurpose idle community resources to establish mutual aid funds, creating a framework where public finances provide a safety net and social resources offer supplementary support. Secondly, to counter the drawbacks of uniform subsidy standards, tiered and categorised subsidies should be implemented. Application materials should be simplified, with community grid workers verifying household circumstances. Higher cash subsidies should be allocated to families bearing longer care periods and greater economic burdens, ensuring targeted assistance. Finally, to alleviate inflexible subsidy usage, service voucher deduction models should be explored. Converting portions of cash subsidies into vouchers redeemable at contracted pharmacies and supermarkets would directly reduce daily expenditure burdens for caregiving households.

5.2. The Conundrum of Professional Service Shortages and Network Cultivation

The severe shortage of professional services stems from communities' inability to retain skilled personnel, inadequate resource integration, and caregivers' trust concerns. Communities struggle to offer competitive remuneration and career progression opportunities, failing to attract or retain certified carers and social workers. Furthermore, communities have not established robust

partnerships with local hospitals and care homes, hindering the decentralisation of professional resources. Some carers express unease about external personnel providing home visits and lack scientific caregiving knowledge (Lin, 2025), resulting in untapped demand.

To address the current shortfall in professional capacity and trust deficits, external professional resources must be introduced while internal community capabilities are cultivated. On one hand, to alleviate the challenge of professional resources reaching households, collaboration between medical, social, and care sectors should be promoted. This includes inviting hospital doctors and nurses to conduct free clinics and rehabilitation guidance within communities (Xiao, 2025), partnering with care homes to offer day care or respite services (Zhang, 2025), and introducing their professional carers for skills training. Concurrently, to address the community's own talent shortage, local support teams must be cultivated. Engage nursing and social work students from universities in volunteer services, while identifying retired healthcare professionals and enthusiastic residents within the community. Following training, these individuals can become community care volunteers or 'mutual aid leaders'. Furthermore, to address carers' trust concerns and information gaps, build confidence through publicising qualifications, offering free trials, and establishing service evaluation mechanisms (Ning, 2026). Pay particular attention to carers' psychological pressures by organising regular 'mutual support group' activities for families with dementia members to provide emotional support (Lin, 2025).

5.3. Bottlenecks and Solutions in Policy Implementation

Low awareness and implementation difficulties stem from inadequate publicity, overly complex procedures, and insufficient feedback channels. Current policy dissemination relies heavily on one-way methods like posting notices or sending WeChat messages, which fail to align with the information-receiving habits of many middle-aged and elderly carers, leaving them unaware. Policy application procedures are often unnecessarily complex, requiring multiple supporting documents (Chen, 2016), while community staff lack adequate training to offer effective guidance. Furthermore, the absence of feedback mechanisms from carers prevents timely identification and rectification of implementation issues.

To ensure policies address these implementation challenges, they must be visible, accessible, and optimisable. Firstly, to tackle low outreach rates, targeted proactive communication is essential. Regular community policy briefings should be held, accompanied by large-print explanatory leaflets. Grid officers should visit mobility-impaired carers to provide interpretations and proxy services, guaranteeing effective information delivery. Secondly, to resolve procedural complexity, administrative processes must be significantly streamlined. Non-essential documentation should be eliminated, implementing a 'single-window service' (Yuan, 2023) with guaranteed processing timelines, alongside offering full-process agency services for elderly individuals and their carers who require assistance. Thirdly, to establish a feedback loop for policy refinement, a regular feedback mechanism should be instituted. This involves proactively gathering carers' opinions through periodic forums and public disclosure of subsidy disbursements, with common issues escalated to drive continuous policy optimisation.

5.4. Causes of Infrastructure Mismatch and Renovation Strategies

The mismatch between supply and demand for facilities stems from inadequate consideration of the specific needs of dementia patients during planning, insufficient post-construction maintenance, and constraints in funding and public awareness. Existing public facilities in older communities predominantly feature universal design, lacking specialised considerations for accessibility and safety. Many facilities remain unrepaired after deterioration, while in-home ageing-friendly modifications face implementation hurdles due to cost and coordination challenges. Crucially, many middle-aged and elderly carers experience a digital divide, often unaware of available community facilities (Dai, 2025).

To address facility shortages, deterioration, and information asymmetry, improvements must focus on optimising existing infrastructure and enhancing information dissemination. Addressing inadequate ageing-friendly design and maintenance deficits in public facilities requires prioritising retrofitting of communal areas in older neighbourhoods. This includes installing handrails, providing seating for rest, and establishing regular inspection and maintenance protocols (Zhao, 2023). To overcome carers' challenges of 'unaware and unable to use' facilities, clear digital maps and user guides must be developed. Community grid workers should proactively inform and instruct carers to ensure they 'know how and can use' these resources. Secondly, to compensate for the shortage of specialised facilities, existing spaces should be repurposed. Idle rooms within communities can be converted into rest areas for carers, while partnerships with nearby pharmacies can establish convenient medical access points. Finally, to overcome the high barriers and implementation difficulties of home environment modifications, measures such as applying for specialised subsidies, promoting cost-effective "micro-renovation" projects, and organising sharing sessions of successful case studies (Gong, 2025) should be employed to assist more households in completing essential home adaptations.

6. Research Limitations and Future Directions

Although this study empirically reveals the core contradiction between community service provision and the needs of family carers for dementia patients, certain limitations exist due to research conditions and methodology that warrant refinement in future investigations.

Firstly, the representativeness of the sample is somewhat limited. The data originates from 514 households within a single sub-district community in City Y. While this ensures in-depth analysis within a defined scope, it may not fully reflect variations in supply-demand discrepancies across other regions—particularly rural areas, cities with differing economic development levels, or communities operating under distinct governance models. The single-area sample constrains the generalisability of findings. Secondly, data collection methods may introduce response bias. The study primarily relied on self-reported questionnaires completed by caregivers. On one hand, perceptions of service provision may be coloured by individual subjective experiences; on the other, when addressing demand-related questions, caregivers might be constrained by social expectations or incomplete understanding of policies, potentially hindering the accurate

articulation of latent or unrecognised deeper needs. This could introduce a degree of error in measuring the supply-demand gap.

In summary, alleviating the burden on family carers of dementia patients constitutes a public welfare initiative requiring meticulous design and systematic responses. Consequently, establishing a multi-stakeholder support network characterised by complementary functions and shared responsibilities is essential. The government must provide stable policy and financial guidance; communities must serve as core hubs for resource integration and service delivery; healthcare institutions and care homes should open their professional resources to empower communities ; while universities and other entities can inject volunteer energy and intellectual support. Only through concerted collaboration can fragmented efforts coalesce into cohesive momentum, ensuring carers no longer face isolation. By solidifying community-level "last-mile" work, the warmth of national policies and societal compassion can tangibly reach every family bearing the burden of care, collectively fostering a more inclusive and compassionate age-friendly society.

Author Contributions:

Conceptualization, Y. H., and Z. W; methodology, Y. H; software, Y. H; validation, Y. H., and Z. W; formal analysis, Y. H; investigation, Y. H; resources, Y. H; data curation, Y. H; writing—original draft preparation, Y. H; writing — review and editing, Y. H; visualization, Y. H; supervision, Y. H; project administration, Y. H; funding acquisition, Z. W. All authors have read and agreed to the published version of the manuscript.

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The raw data supporting the conclusions of this article will be made available by the authors on request.

Conflict of Interest:

The authors declare no conflict of interest.

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