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Home-based Care Quality Among Disabled Older Adults in Shanxi Province, China: Status and Influencing Factors

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Abstract

Background

Home-based care represents the predominant care model for disabled older adults in China amid ongoing population ageing. Nevertheless, empirical research on home-based care quality among disabled older adults in Shanxi Province remains scarce. This study assessed the status of home-based care quality among disabled older adults in Shanxi Province and identified its independent influencing factors.

Methods

A cross-sectional mixed-methods approach was adopted. Data were collected through medical record review, structured questionnaire surveys, and semi-structured qualitative interviews.

Results

A total of 227 valid questionnaires were analysed. The overall home-based care quality for disabled older adults in Shanxi Province was moderate, with notable gaps in the family support and caregiver psychological well-being dimensions. Caregiver type, underlying diseases, disability site, residential location, and degree of disability were independent influencing factors of home-based care quality. Current home-based care was characterised by widespread problems including fragmented professional services, heavy caregiving burden, and inadequate support systems.

Conclusions

Home-based care for disabled older adults in Shanxi Province is marked by regional imbalance and insufficient professional support. Optimisation of care resource allocation and improved support systems are essential to enhance home-based care quality and facilitate regional healthy ageing.

Introduction

Population ageing is accelerating in China. By the end of 2024, adults aged 60 years and above accounted for 22.0% of the national population, with more than 45 million older adults living with disability or dementia[1, 2]. Long-term care for older people has therefore become a prominent challenge in the field of eldercare. Responding actively to population ageing is a key national strategy, and China has formed the well-known “90-7-3” eldercare pattern: 90% of older adults receive home-based care, 7% receive community-based care, and 3% reside in institutional care[3]. Home-based care serves as the primary care option for disabled older adults.

Nevertheless, shrinking family size has weakened the traditional family-based care function. Coupled with insufficient professional care capacity and imperfect support systems, the overall quality of home-based care remains sub-optimal. Caregiving families suffer substantial physical, psychological and economic burdens, giving rise to the dilemma described as “one disabled older adult, an entire family in imbalance”[4]. Empirical studies focusing on home-based care quality among disabled older adults in Shanxi Province are scarce. Accordingly, this study aims to explore the current status and influencing factors of home-based care quality for disabled older adults in Shanxi Province, identify existing care-related problems, and provide scientific evidence for improving regional home-care service systems and advancing healthy ageing.

Methods

Study participants

Medical record review

Retrospective analysis was performed on discharge medical records of disabled older inpatients admitted between 2023 and 2025, selected from 15 secondary-level and above general hospitals across Shanxi Province. Participants were enrolled from departments including neurology, cardiology, and orthopaedics. Disabled older adults whose disability resulted from stroke, fracture, heart failure and other illnesses were included.

Questionnaire survey

Stratified sampling was adopted to recruit community-dwelling disabled older adults and their primary caregivers from five geographical regions (eastern, western, southern, northern, and central Shanxi) between August and October 2025. Sampling followed the principle of maximum variation to cover participants with diverse demographic and household characteristics so as to guarantee sample representativeness.

Inclusion criteria for older adults: aged ≥ 60 years; permanent residence in Shanxi Province for at least three years; assessed as disabled according to the Specification for the Ability Assessment of Older Adults[5]; receiving home-based care; and voluntary participation. Inclusion criteria for caregivers: aged ≥ 18 years; providing primary unpaid care; and providing informed consent. Exclusion criteria: severe physical or mental disorders that prevented participation in the investigation.

This study was approved by the Ethics Committee of the Second Hospital of Shanxi Medical University (Approval No. [2024] YX-410). Sample size was estimated according to the number of questionnaire items. The questionnaire contained 21 items. The sample size was set at 10–15 times the number of questionnaire items. Considering a 5% rate of invalid questionnaires, the target sample size ranged from 221 to 330. Finally, 227 participants were included, satisfying the sample-size requirement.

Qualitative interviews

Following questionnaire investigation, stratified sampling was used between November and December 2025 to recruit community-dwelling disabled older adults and their caregivers for semi-structured interviews. The inclusion and exclusion criteria were consistent with those used in the questionnaire survey. Sampling was terminated when data saturation was achieved, i.e., no new themes emerged in subsequent interviews. In total, 9 disabled older adults and 11 caregivers were interviewed (20 participants overall).

Instruments

General information questionnaire

A self-designed general-information questionnaire was used to collect participants' baseline characteristics including sex, age, residential location, marital status, caregiver type, past medical history, and sites of disability.

Specification for the Ability Assessment of Older Adults

This instrument consists of four primary indicators (self-care capacity, basic motor function, mental status, perception and social participation), with 26 secondary indicators for comprehensive evaluation of older adults' functional status[5].

Family Care Quality Scale for Disabled Older Adults

This scale was originally developed by Shyu YI, a scholar from Taiwan, China [6]. The scale contains 21 items across three subscales focusing on disabled older adults, family context, and caregiver status, respectively. The original scale reported item-total correlation coefficients ranging from 0.56 to 0.86, Cronbach's α of 0.83, and test-retest reliability of 0.80, demonstrating good reliability and validity [6]. For the present study, we adopted this published scale; minor wording adaptation was performed to fit the local context of Shanxi Province, while retaining the original item structure and scoring rules. Each item was scored 3, 2, or 1 points, with higher total scores indicating better home-based care quality.

Interview guides

Interview questions for disabled older adults:

- What difficulties do you encounter regarding daily eating, personal hygiene and toileting? What aspects of current care could be improved?
- Do you feel safe when getting up, walking or bathing at home? What safety facilities or assistance do you most need?

- What concerns or difficulties do you have regarding disease management and medical expenditure?
- Do you often feel lonely or depressed? How do you relieve negative emotions?
- Are your personal habits and privacy respected during care-giving? Do you have a voice and the right to make decisions concerning your own affairs?
- Do you take part in favourite activities in daily life? Would you like to engage in activities to make your life more meaningful?
- Is there anything else you would like to share?

Interview questions for caregivers:

- What motivates you to provide care for the older adult?
- Do you have sufficient capacity to carry out daily care-giving? What burdens do you experience in care work?
- Have you received any support from community or governmental institutions?
- Have you known about or attended formal care-giving training? What kind of support do you need most?
- How accessible are community home-based services and pharmacy delivery services?
- Has long-term care-giving affected your social life and mental health? How do you cope?
- Is there anything else you would like to share?

Data collection

Medical record review

Data were extracted from discharge records of disabled older patients hospitalised in 2023–2025, including admission triggers and complications. Information related to home-based care in medical histories was summarised to explore associations between deficiencies in family care and disease deterioration or acute hospital admission.

Questionnaire survey

Paper-based questionnaires were administered face-to-face. Before investigation, participants were informed of study objectives, significance and completion instructions. After collection, data were double-checked and invalid questionnaires were excluded. Invalid questionnaires were defined as those with incomplete baseline information, identical responses across all items, or contradictory answers. In total, 244 questionnaires were distributed and 227 valid responses were obtained, yielding an effective response rate of 93.00%.

Qualitative interviews

Face-to-face semi-structured interviews lasting 20–30 minutes were conducted after obtaining written informed consent. Interviewers avoided leading questions and paid attention to non-verbal behaviours. Verbatim transcripts were produced within 24 hours after each interview and returned to participants for member checking. Two researchers independently checked transcripts and coding to guarantee accuracy.

Statistical analysis

SPSS 26.0 software was used for statistical analysis. Normally-distributed quantitative variables were presented as mean ± standard deviation and compared using independent-samples t-test. Non-normally-distributed quantitative variables were expressed as median with interquartile range and compared by rank-sum test. Categorical variables were described as counts and percentages (%), and analysed using χ^2 test or non-parametric tests.

Results

Findings from medical record review

- Some acute hospital admissions were directly associated with deficiencies in home-based care Many disabled older adults suffered acute exacerbation of underlying diseases or new-onset complications caused by inadequate monitoring of vital signs, lack of professional rehabilitation guidance, and non-standard basic care at home. Main adverse outcomes included hypertensive crisis, fall-related fractures, pressure injuries and aspiration pneumonia, which ultimately required hospital treatment.
- High incidence of care-related complications Long-term bedridden and severely disabled older patients frequently developed multiple complications, predominantly pressure injuries, malnutrition, dehydration and various infections. This finding indicated that family caregivers lacked competence in maintaining physical homeostasis and preventing complications, and the overall standard of family-provided care needed improvement.
- Insufficient supply of home-care support Medical records repeatedly documented inadequate professional knowledge among family caregivers, limited home rehabilitation conditions, poor medication adherence, and delayed medical-seeking behaviours caused by heavy care-giving burden. Clinical evidence suggested that insufficient family care capacity was an important risk factor impairing chronic disease management and rehabilitation outcomes for disabled older adults.
- Distinct care-giving deficiencies across clinical departments Home-care shortcomings showed department-specific characteristics. Patients from the neurology department mainly suffered from insufficient rehabilitation training and inadequate swallowing management. Patients from the cardiology department lacked routine monitoring of blood pressure and cardiac function. Orthopaedic patients commonly had no access to fall-prevention interventions or post-discharge

home rehabilitation guidance. Current family-centred care could not meet individualised and specialised care demands of disabled older adults with different diseases.

Questionnaire-based results

Dimension scores of the home-based care quality questionnaire for Shanxi Province

Total and dimension-specific scores derived from the 227 valid questionnaires are presented in Table 1. The lowest item-level scoring rates for each dimension are shown in Table 2. Scoring rate = (actual dimension score / maximum possible dimension score) × 100%.

Table 1
Total and dimension-specific scores of the home-based care quality questionnaire in Shanxi Province

Dimension	Score	Scoring rate(%)
Disabled older adults	31.00 (29.00, 33.00)	92.27
Family	12.00 (12.00, 18.00)	75.77
Caregiver	11.00 (9.00, 12.00)	86.38

Data are presented as median (P_{25}, P_{75}). Scoring rate (%) was calculated as (actual dimension score / maximum possible dimension score) × 100%. Abbreviations: P_{25}, 25th percentile; P_{75}, 75th percentile; *n*, number of participants. The total sample size was *n* = 227.

Table 2
Lowest item-level scoring rates for each dimension of the home-based care quality questionnaire in Shanxi Province

Dimension	Item	Scoring rate (%)
Disabled older adults	Access to water	87.81
	Provision of required assistive devices (canes, walkers, wheelchairs, back braces, dentures, glasses, hearing aids, air-flotation beds)	82.67
	Required medical interventions (at home, clinic or hospital)	89.87
Family	Social activities of family members	72.69
	Need satisfaction of family members	75.48
	Emotional status of family members	74.74
Caregiver	Provision of emotional comfort for caregivers	88.55
	Quality of relationship between caregivers and disabled older adults	82.53
	Emotional impacts on caregivers	85.76

Scoring rate (%) was calculated as (actual item score / maximum possible item score) × 100%. Abbreviations: *n*, number of participants. The total sample size was *n* = 227.

Univariate analysis of factors associated with home-based care quality scores among disabled older adults in Shanxi Province

Univariate analysis showed that no statistically significant differences were observed in home-based care quality scores across disabled older adults with different sex and age ($P > 0.05$). Sex and age could not be regarded as influencing factors for family home-based care quality scores among disabled older adults in Shanxi Province.Statistically significant differences in home-based care quality scores were found among participants with varying marital status, caregiver type, medical history, site of disability, residential location and degree of disability ($P < 0.05$). Marital status, caregiver type, medical history, site of disability, residential location and degree of disability were therefore considered influencing factors for home-based care quality scores. Detailed results are presented in Table 3.

Multiple linear regression analysis of factors influencing home-based care quality scores among disabled older adults in Shanxi Province

Home-based care quality score was taken as the dependent variable, and variables with statistically significant differences in the univariate analysis were included as independent variables. Multiple-dichotomy method was adopted for multiple-response questions, and dummy variables were set for regression modelling. Spouse (within caregiver types), hypertension (within medical histories), impaired

limb mobility (within disability sites), Eastern Shanxi (within residential locations), and mild disability (within disability severity) were selected as reference categories for multiple linear regression analysis.

The results demonstrated that caregiver type, medical history, site of disability, residential location, and degree of disability were independent influencing factors for home-based care quality scores. Participants cared for by children or other caregivers obtained significantly higher home-based care quality scores compared with those cared for by spouses ($P < 0.05$). Participants with diabetes mellitus, chronic respiratory diseases or tumours had significantly lower home-based care quality scores than those with hypertension ($P < 0.05$). Participants with faecal-urinary incontinence, dysphagia, intellectual impairment or visual impairment showed significantly lower home-based care quality scores relative to those with impaired limb mobility ($P < 0.05$). Participants residing in Southern Shanxi achieved significantly higher scores than those living in Eastern Shanxi ($P < 0.05$). Participants with moderate, severe, or complete disability had significantly lower home-based care quality scores than those with mild disability ($P < 0.05$). See Table 4.

Qualitative interview findings

Theme 1: Care-giving workforce structure and family care-giving models

The interviewed families mainly relied on informal family care at home, with low willingness for institutional elder-care. Four care-giving patterns were identified: rotational care by children, spousal care, primary care provided by a single family member, and family-paid caregiver joint care. Motivated by traditional filial piety, most caregivers voluntarily took over heavy care-giving burdens. Several challenges emerged in some households: primary caregivers worked full-time, older adults were left alone during daytime, and children could not provide long-term care due to long-distance residence or heavy workload.

Theme 2: Physical health status, functional impairment and disease characteristics

The older adults commonly suffered from multimorbidity with prominent functional decline, including cerebrovascular diseases, advanced tumours, Parkinson’s disease, osteoarthropathy, as well as chronic conditions such as hypertension and diabetes. Many presented with hemiplegia, cognitive deterioration and impaired swallowing; some were completely disabled and bed-ridden. High-risk conditions including choking and fall history were also observed. Families coping with severe illness faced substantial medical expenditure and heavy financial burdens.

Theme 3: Home environment, age-adapted facilities and safety risks

Most households enjoyed good ventilation and daylight, with bedrooms facing the sun; some cave-dwelling households featured comfortable indoor temperature all year round. Only fans were available in most homes, and air-conditioners were installed in a minority of households, leading to overheating indoors in summer. A general shortage and inadequate configuration of age-friendly facilities was noted. Safety grab bars in restrooms, anti-slip and alarm devices, and bedside support aids were largely absent. Only a small number of households owned canes, wheelchairs, commode chairs and soft pillows, and very few had air-flotation beds. Household risks were exacerbated by the lack of professional thermometers and fall-alert equipment, whereby water temperature was judged merely by personal sensation. Combined with physical weakness and cognitive deficits among older adults, multiple safety hazards including falls, scalds, pressure injuries, positional damage and asphyxia were prevalent in home settings.

Theme 4: Activities of daily living care, nutrition and wound-tube management

Disabled and semi-disabled older adults fully depended on family members for dressing, toileting, transferring, bathing and feeding. Their diets were dominated by soft porridges and noodles. Although some families attempted to supplement nutrition with eggs, milk, protein powder and meat, overall dietary diversity remained limited, and insufficient water intake occurred among some older people. A considerable proportion of participants had indwelling gastric tubes and were bed-ridden. Family caregivers could perform basic nasogastric feeding and tube flushing, yet most lacked proficiency in standard tube care, first-aid for aspiration and the Heimlich manoeuvre. Skin cleansing and drying were generally performed, but skin protectants were unavailable in a few households and inadequate drying after defecation caused risks of skin maceration. Most families respected patients' privacy and demonstrated satisfactory patience during care-giving.

Theme 5: Healthcare-seeking behaviour, health literacy and care-giving burden

Most families turned to higher-level hospitals for emergency conditions and sought treatment in community clinics for mild illnesses. Some older adults received quarterly or annual physical re-examinations. Caregivers acquired care knowledge mainly through on-site guidance from medical staff, online self-learning and communication with other in-hospital caregivers, without systematic formal training. Substandard practices were frequently observed in patient transfer positioning, turning techniques, chronic disease monitoring, tube maintenance and emergency management. Long-term care-giving contributed to pervasive physical-mental exhaustion, restricted social participation, depression and anxiety among caregivers. Nevertheless, most caregivers regulated their emotions and provided positive reassurance for patients rather than transferring negative feelings onto care-recipients. Chronic disease monitoring was non-standard overall, with inadequate blood pressure and blood glucose documentation and irregular follow-ups.

Theme 6: Social support, demands and directions for improvement

None of the interviewed families obtained regular formal support or special subsidies from government, community or village committees. In-home nursing, rehabilitation guidance, medicine delivery services and subsidies for age-friendly home renovation were largely inaccessible. Core demands from family caregivers included streamlined pathways for medical consultation, improved primary-care capacity, access to professional home-based care and rehabilitation education, as well as financial allowances for vulnerable households. Interventions should prioritise regular training in emergency first-aid and tube care, optimise household age-adapted safety facilities, standardise chronic-disease monitoring and nutritional management, deliver post-discharge continuous health guidance, strengthen primary home-based elder-care and medical support systems, and provide ongoing psychological counselling for caregivers.

Discussion

Moderate overall quality of home-based care with structural imbalance across dimensions

The overall home-based care quality for disabled older adults in Shanxi Province was at a moderate level with marked heterogeneity across dimensions. The highest scores were observed for basic activities-of-daily-living care, indicating the enduring role of traditional family-based elder-care. Informal family care could meet fundamental physiological needs including food intake, daily living and personal hygiene, and home-based care remained the dominant and suitable elder-care model for disabled older adults in this region [7]. Nevertheless, family support and caregiver-related dimensions obtained relatively low scores, which constituted major bottlenecks hindering care quality improvement. Currently, unpaid informal family care serves as the predominant model for home-based care in Shanxi. Long-term heavy care-giving tasks brought social isolation, emotional burnout and high psychological pressure to caregivers whose personal needs were often neglected, creating a structural deficiency that prioritises older adults' care while ignoring caregiver empowerment [8]. Furthermore, caregivers acquired professional knowledge through fragmented online resources, clinical observation and practical experience rather than systematic training. Deficiencies were common in specialised care such as precise chronic-disease monitoring, tube management, pressure injury prevention, aspiration rescue and home-based rehabilitation. Non-standard home-based care contributes to adverse events including fall-related injuries, pressure injuries, aspiration pneumonia, acute exacerbation of chronic diseases and unplanned hospital readmission [9]. Family care could merely satisfy basic daily needs but failed to match demand for specialised, continuous health services among disabled older adults. Additionally, most households had not completed age-friendly renovation, with insufficient anti-slip devices, safety grab bars and mobility aids. Poor home-safety preparedness leaves substantial room for care-quality improvement [10].

Home-based care quality is jointly shaped by individual health characteristics, care-giver profiles and regional resource allocation

Multiple linear regression revealed that underlying disease patterns, disability sites and disability severity constituted independent core predictors of home-based care quality. Individual functional impairment directly determined care complexity and service outcomes. Disabled older adults living with diabetes, chronic respiratory diseases or malignant tumours exhibited significantly poorer care quality. These conditions feature protracted disease courses, volatile clinical status and high complication risks, which demand high-precision, continuous care and timely emergency responses that are difficult for ordinary families to deliver. Compared with patients suffering merely from limb mobility impairment, participants with dysphagia, faecal-urinary incontinence or visual-auditory impairment had lower care quality and higher safety risks. Moreover, disability severity was negatively correlated with care quality, consistent with previous research by Yang Xuexia et al. [11]. Older adults with moderate-to-severe or complete disability suffered severe loss of self-care capacity accompanied by high complication risks, magnifying family--are limitations and resulting in deteriorated home-based care quality. Regarding care-giver characteristics, caregiver type exerted significant influences on care outcomes [12]. Care delivered by children outperformed spousal care. Spousal caregivers tended to be older with limited physical capacity to cope with emergencies. Although child caregivers possessed better learning capacity and physical stamina, their care was frequently interrupted by employment commitments, compromising continuity of care. Regional disparities driven by uneven resource allocation contributed to variations in care quality. Southern Shanxi achieved better home-care outcomes benefiting from accessible primary-care services and relatively complete elder-care infrastructure. By contrast, rural areas faced shortages of continuous services including home-based rehabilitation, post-discharge follow-up and chronic-disease guidance. Uneven distribution of elder-care resources further widened regional gaps in care provision [13, 14].

Deficient hardware facilities and insufficient social support constrain care-giving development

Inadequate age-adapted household hardware and deficient social-support systems represented major barriers for improving home-based care quality for disabled older adults in Shanxi Province. This study demonstrated that most households had not implemented standard age-friendly renovation. Common deficits included missing restroom safety grab bars, lack of anti-slip measures, insufficient mobility aids and shortage of temperature-monitoring tools. Coupled with physical weakness and sensory decline among older adults, persistent household hazards such as falls, scalds, asphyxia and pressure injuries reflected fragile home-safety protection [15]. From the social-support perspective, regular home-care support mechanisms have not been established across communities, townships and government sectors in Shanxi. None of participating families received public services including care-giving subsidies, home-visit nursing, free rehabilitation guidance, age-renovation allowances or convenient medicine delivery. Disconnection between primary healthcare and home-based elder-care compromised implementation of beneficial policies. Families bore the full weight of medical expenditure, intensive care workload and psychological stress, creating an elder-care dilemma characterised by “family-shouldered

burden with absent social support" [16, 17]. Collectively, home-based care for disabled older adults in Shanxi faces four core challenges: fragmented professional care-giving, multifaceted care-giving burdens, insufficient safety hardware and inadequate social support. These factors severely restrict high-quality development of regional home-based elder-care and progress towards healthy ageing [18].

Conclusions

Based on medical record review, questionnaire surveys and qualitative interviews, this study demonstrated that home-based care quality for disabled older adults in Shanxi Province was moderate. Basic daily care demands were generally met, whereas deficits existed in family support, psychological care for caregivers and specialised care provision. Care-giver type, underlying diseases, disability sites, disability severity and residential location were independent influencing factors of home-based care quality. Practical challenges included insufficient professional competence of family caregivers, inadequate age-friendly household facilities, heavy family care-giving burdens, weak primary medical-elder-care integration and unbalanced regional development of elder-care services. Recommendations include implementing regular targeted skill training for caregivers, promoting household age-adapted renovation, improving primary-care continuous health services, constructing multi-dimensional support systems covering financial subsidies, psychological intervention and respite care, alleviating family care-giving pressure, optimising home-based care outcomes and advancing healthy ageing in Shanxi Province.

Table 3
Univariate analysis of home-based care quality scores among disabled older adults in Shanxi Province

Variable	*n*	Score	Z/H value	*p* value
Sex (case (%))			-0.08 (1)	0.937
Male	133 (58.59%)	54.00 (49.50, 62.00)		
Female	94 (41.41%)	54.00 (50.00, 62.25)		
Age (M(P_{25},P_{75}))			3.54 (2)	0.170
60–69 years	103 (45.37%)	55.00 (51.00, 63.00)		
70–79 years	74 (32.60%)	52.50 (50.00, 61.00)		
≥ 80 years	50 (22.03%)	54.00 (49.00, 61.00)		
Marital status (case (%))			-2.26 (1)	0.024
Married	206 (90.75%)	54.50 (50.00, 63.00)		
Unmarried	21 (9.25%)	51.48 ± 6.31		
Caregiver (case (%))			17.46 (2)	< 0.001
Spouse	93 (30.79%)	52.00 (49.00, 56.00)		
Children	195 (64.57%)	56.00 (51.00, 63.00)		
Others	14 (4.64%)	54.92 ± 6.33		
Medical history (case (%))			45.35 (2)	< 0.001
Hypertension	135 (29.67%)	56.00 (50.00, 63.00)		
Diabetes mellitus	65 (14.29%)	51.31 ± 6.17		
Coronary heart disease	79 (17.36%)	55.00 (51.00, 63.00)		
Stroke	34 (7.47%)	50.26 ± 6.91		
Chronic respiratory disease	23 (5.06%)	49.30 ± 5.94		
Rheumatic disease	7 (1.54%)	49.14 ± 3.44		
Tumour	27 (5.93%)	50.56 ± 7.79		
Others	85 (18.68%)	53.00 (49.50, 60.00)		
Site of disability (case (%))			25.61 (2)	< 0.001
Impaired limb mobility	128 (42.52%)	55.00 (50.00, 63.00)		

Variable	*n*	Score	Z/H value	*p* value
Faecal-urinary incontinence	26 (8.64%)	48.77 ± 8.10		
Dysphagia	18 (5.98%)	48.11 ± 7.46		
Dementia	13 (4.32%)	52.69 ± 6.32		
Intellectual impairment	9 (2.99%)	50.89 ± 7.66		
Visual impairment	3 (1.00%)	57.00 ± 8.72		
Other	104 (34.55%)	54.00 (50.00, 59.75)		
Residential location (case (%))			42.75 (2)	< 0.001
Eastern Shanxi	14 (6.16%)	52.29 ± 5.25		
Southern Shanxi	121 (53.30%)	61.00 (52.00, 63.00)		
Western Shanxi	15 (6.61%)	53.00 (51.00, 54.00)		
Northern Shanxi	29 (12.78%)	51.10 ± 5.75		
Central Shanxi	48 (21.15%)	51.50 (48.00, 55.00)		
Degree of disability (case (%))			15.49 (2)	< 0.001
Mild disability	147 (64.76%)	55.00 (51.00, 63.00)		
Moderate disability	34 (14.98%)	50.59 ± 7.20		
Severe disability	19 (8.37%)	49.00 (47.00, 61.00)		
Complete disability	27 (11.89%)	56.00 (47.00, 63.00)		

Data are presented as median (P_{25}, P_{75}) for non-normally distributed variables and mean ± SD for normally distributed variables. Univariate comparisons were performed using the Mann-Whitney U test (*Z* value) for two groups and the Kruskal-Wallis *H* test (*H* value) for three or more groups. For caregiver, medical history and site of disability, participants could report multiple categories; percentages are based on the total number of responses and may not sum to 100%. Abbreviations: P_{25}, 25th percentile; P_{75}, 75th percentile; SD, standard deviation; *n*, number of participants.

Table 4
Multiple-factor linear regression analysis of home-based care quality scores among disabled older adults in Shanxi Province

Variable	*B*	Standard error	Standardised β	*t* value	*p* value
Constant	53.664	2.062		26.027	< 0.001
Unmarried	−2.079	1.264	−0.086	−1.645	0.102
Reference category: Married					
Caregiver					
Children	2.556	1.107	0.127	2.309	0.022
Others	4.493	1.643	0.154	2.734	0.007
Reference category: Spouse					
Medical history					
Diabetes mellitus	−1.890	0.896	−0.122	−2.109	0.036
Coronary heart disease	−0.116	0.846	−0.008	−0.137	0.891
Stroke	−1.692	1.211	−0.086	−1.397	0.164
Chronic respiratory diseases	−4.274	1.260	−0.184	−3.392	< 0.001
Rheumatic disease	−4.330	2.218	−0.107	−1.953	0.052
Tumour	−4.133	1.220	−0.191	−3.387	< 0.001
Other diseases	−0.551	0.850	−0.038	−0.649	0.517
Reference category: Hypertension					
Site of disability					
Faecal-urinary incontinence	-2.730	1.356	-0.122	-2.014	0.045
Dysphagia	-3.351	1.655	-0.129	-2.025	0.044
Dementia	-0.644	1.821	-0.021	-0.353	0.724
Intellectual impairment	-9.171	2.369	-0.256	-3.871	< 0.001
Visual impairment	12.238	4.096	0.200	2.988	0.003
Other disabilities	-1.077	0.820	-0.077	-1.313	0.191

Variable	*B*	Standard error	Standardised β	*t* value	*p* value
Reference category: Impaired limb mobility					
Residential location					
Southern Shanxi	4.994	1.609	0.356	3.105	0.002
Western Shanxi	-0.824	2.071	-0.029	-0.398	0.691
Northern Shanxi	-0.517	1.831	-0.025	-0.283	0.778
Central Shanxi	0.039	1.679	0.002	0.023	0.982
Reference category: Eastern Shanxi					
Degree of disability					
moderate disability	-2.648	1.130	-0.135	-2.343	0.020
Severe disability	-2.946	1.499	-0.117	-1.965	0.051
Complete disability	0.090	1.506	0.004	0.060	0.952
Reference category: Mild disability					

Multiple-factor linear regression model was applied. *B*, unstandardised regression coefficient; β, standardised regression coefficient; *t*, t-test statistic; R^2, coefficient of determination; adjusted R^2, adjusted coefficient of determination; *F*, F-statistic. R^2 = 0.482, adjusted R^2 = 0.424, *F* = 8.22. Abbreviations: *n*, number of participants. The total sample size was *n* = 227.

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of the Second Hospital of Shanxi Medical University (Approval No. [2024] YX-410). All methods were performed in accordance with relevant ethical guidelines. Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

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Author Contribution

Li Xiuxiu and Yan Yali contributed equally to this work. Li Xiuxiu and Yan Yali conceived the study; Li Xiuxiu carried out formal analysis and wrote the original draft of the manuscript; Yan Yali, Fu Xiaohong, Feng Yafang and Si Xia performed investigation; Feng Yafang completed data collection; Hou Linyi undertook data curation; Wang Cailing and Zhang Yinghui provided supervision; Wang Cailing performed manuscript review and editing. All authors read and approved the final manuscript.

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Not applicable.

Data Availability

The datasets used and analysed during the current study are available from the corresponding author on reasonable request.

References

1. National Bureau of Statistics of China. 2024 National Economic and Social Development Statistical Communiqué of the People's Republic of China. 2025-02-28. https://www.stats.gov.cn/sj/zxfb/202502/t20250228_1958817.html. Accessed 16 Jan 2026.
2. Wang Y. Research on the implementation of residential care policy for persons with intellectual disabilities: a survey based on Sunshine Home in District P, Shanghai. [dissertation]. Shanghai: East China University of Science and Technology; 2023.
3. Chen LJ. Research on governance paths of community-based home care services in Zhanjiang city from the supply-demand perspective. [dissertation]. Wuhan: Hubei University of Technology; 2026.
4. Lu CC, Zhang ZF, Yang J. Current situation, problems and reflections on the long-term care insurance pilot in Xuzhou city. Nurs Res. 2026;40(1):146–50.
5. State Administration for Market Regulation. Standardization Administration of China. GB/T 42195 – 2022 Specification for ability assessment of older adults. Beijing: China Standards; 2022.
6. Shyu YI, Lee HC, Chen ML. Development and testing of the Family Caregiving Consequences Inventory for home nursing assessment in Taiwan. J Adv Nurs. 1999;30(4):901–9.

7. Ma F, Li HL, Wu YM. A qualitative study on practical experience of humanistic care among home-based care workers. J Nurs. 2021;28(10):7–10.
8. Jiang BY, Yuan JY, Yang SL, et al. Summary of best evidence for self-care support for family caregivers of people with dementia. Gen Pract Nurs. 2025;23(21):4139–44.
9. Jin L, Zhang YF. Analysis of current status and influencing factors of care competence among family caregivers for elderly ICU survivors. Gen Pract Nurs. 2025;23(22):4394–7.
10. Li SR, Zhu WJ. Research progress on burnout among family caregivers of disabled older adults. Evid Based Nurs. 2026;12(6):1209–13.
11. Yang XX, Deng JQ, Ma XE, et al. Influencing factors of family care quality for disabled elderly based on health ecology model. J Nurses Train. 2024;39(21):2319–24.
12. Fan LD, Du H, Lu XQ, et al. Investigation on post-traumatic growth among primary caregivers of stroke patients. Gen Pract Nurs. 2019;17(12):1518–20.
13. Xu XQ, Wang G, Wu XC. Study on the influence of family care on the matching of community elderly care services from the perspective of health heterogeneity. J Mudanjiang Med Univ. 2026;47(4):85–96.
14. Jin X. Accessibility and spatial differentiation of elderly care service facilities in Dalian. Sci Social Res. 2026;8(6):11–26.
15. Wouters I, Yang LK, Rex S, et al. Prevalence, risk factors, and preventive interventions for delirium in older adults living at home and in residential care: a scoping review. BMC Geriatr. 2026;26(1):371.
16. Carter S, Maag TJ, Gerlach C, et al. Psycho-oncology on wheels-a qualitative feasibility study of implementing home-based psychosocial support within specialist palliative home care (SPHC): a study protocol. Ann Palliat Med. 2026;15(1):8.
17. Zhang JW, Fan H, Xiao SQ, et al. Comparative study on unmet home-based care needs between solitary and non-solitary older adults. Chin J Nurs. 2021;56(9):1293–8.
18. Chen XL, Xiao XY, Sun XN. Meta-synthesis of qualitative studies on restricting factors of informal long-term care service quality for disabled older adults. Mod Clin Nurs. 2026;25(5):85–94.