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Daily Functional Assistance and Differential Social Support Correlates with Life Satisfaction among Widowed Solitary Older Adults in China

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Research Article

Keywords: Widowed solitary elders, ADL/IADL assistance, Life satisfaction, Home- and community-based care, CHARLS

Posted Date: November 5th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10568349/v1

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Additional Declarations: No competing interests reported.

Abstract

Background

Widowhood and solitary residence weaken companionship, monitoring, and immediate household care for older adults. In China, rapid population aging and declining family co-residence have increased the number of widowed solitary elders, yet it remains unclear whether different types of social support are differentially associated with well-being in this high-risk subgroup. This study examines the heterogeneous associations between multiple support indicators and life satisfaction among Chinese widowed solitary elders aged 60 and above.

Methods

Data from a nationally representative survey of Chinese older adults were analyzed for 1,007 widowed solitary elders using descriptive statistics, logistic regression, and multiple sensitivity tests.

Results

Overall, 38.7% of widowed solitary older adults reported high life satisfaction, indicating generally low subjective well-being within this vulnerable subgroup. ADL/IADL functional impairment was consistently negatively associated with life satisfaction. ADL/IADL assistance receipt was positively linked to high life satisfaction in the primary model (OR = 1.373, 95% CI [1.009, 1.870]), though this association was specification-sensitive. In the supplementary depressive symptom model, medical service utilization was significantly associated with reduced odds of low depressive symptoms (OR = 0.641, 95% CI [0.470, 0.874]), implying that medical service utilization mainly reflects unmet health demands and psychological vulnerability instead of effective welfare gains. It is worth noting that social participation exhibited no stable association with life satisfaction across model specifications. Institutional income security exerted a consistent protective effect, whereas the well-being benefits of cash transfers from adult children lacked stability across sensitivity analyses.

Conclusion

These findings indicate that different forms of social support carry heterogeneous welfare implications for widowed solitary elders. The results support targeted gerontological practice that converts service availability into concrete daily help, uses medical utilization as a risk signal for follow-up, and coordinates formal security and family support as complementary rather than interchangeable resources.

Background

Population aging is not merely a demographic transition; it entails a fundamental reorganization of care, risk, and everyday dependence. In China, this reorganization has unfolded amid rapid gains in longevity, fertility decline, rural-to-urban migration, shrinking household size, and uneven expansion of formal old-age protection. Long-term care policy increasingly operates on the assumption that most older adults will age in place, with institutional care reserved for a smaller group with intensive needs [1, 2, 3, 4]. Forecasts based on CHARLS point to sharply rising care needs, while the Peking University–Lancet Commission frames healthy aging in China around functional ability, prevention, and equitable service access rather than treatment alone [5, 6]. For applied gerontology, therefore, the central question is not only whether services exist, but also whether services are translated into help that older adults can actually use in daily life at home.

Home- and community-based care in China is best understood as a mixed institutional arrangement rather than a single, unified program. Civil affairs systems, neighborhood or village committees, community social organizations, family-doctor contracting, subsidized service providers, and informal kin networks can all be implicated in older adults' care experiences. This institutional hybridity makes measurement precision especially important. A survey item recording assistance with an activity of daily living may capture help from children, paid workers, neighbors, volunteers, or community agencies. A survey item recording medical service utilization may reflect access to care, unmet preventive need, or an acute health crisis. Accordingly, this article treats CHARLS variables as indicators of support exposure and need exposure, not as direct measures of policy performance.

Widowed solitary older adults present a demanding test of this care regime. Widowhood eliminates the spouse as a source of companionship, instrumental help, and embodied assistance with daily routines, while solitary residence removes co-resident monitoring and immediate household response. International evidence shows that living alone does not automatically mean aging in isolation; social network type and relationship quality shape whether solitary residence becomes a risk factor [7, 8]. Nevertheless, Chinese evidence indicates that solitude and health are dynamically related, and that loneliness and kin availability carry important implications for well-being and economic support [9, 10, 11, 12, 13]. The subgroup examined here is therefore not simply "independent"; it is structurally vulnerable when functional decline, illness, or bereavement requires time-sensitive assistance.

Life satisfaction is an appropriate outcome for studying this exposure because it captures a global cognitive evaluation of life circumstances, distinct from transient affect or clinical symptom scores [14, 15]. In later life, quality of life and life satisfaction are shaped by health, functional capacity, social relations, autonomy, material resources, and the meaning attached to home and community [16, 17]. For widowed single-person elders, these domains interact in distinctive ways. A modest amount of help with bathing, mobility, household tasks, or medical accompaniment may carry substantial value because it stabilizes ordinary routines. By contrast, a medical visit may reflect access to care but also signals disease severity, pain, anxiety, or a recent health crisis. Thus, identical survey indicators may carry different meanings in this subgroup than in the general older adult population.

Three research gaps motivate this study. First, most Chinese research on home- and community-based care examines broader older populations, disabled elders, or urban-rural disparities, rather than specifically isolating widowed solitary households. Prior studies have shown that community care availability, home-based services, alternative care arrangements, and community support are associated with quality of life or life satisfaction [18, 19, 20, 21, 22]. However, these findings do not establish whether support carries the same meaning when spousal and co-resident family resources are absent. Second, service utilization indicators are inherently ambiguous. Andersen's behavioral model emphasizes that utilization reflects predisposing factors, enabling resources, and need [23]. Among older adults, multimorbidity, functional limitation, and long-term care arrangements can drive service utilization, rendering such utilization as much a warning signal of vulnerability as an indicator of access [24, 25]. Third, formal and informal supports are not interchangeable. Filial piety remains morally salient in Chinese families, yet filial support is shaped by migration patterns, economic resources, gender dynamics, sibling structure, and parental need [26, 27, 28].

The study speaks to an applied gerontology audience rather than a readership focused exclusively on China-specific policy. Its empirical context is Chinese, but its methodological concern is general: population surveys frequently contain administratively convenient variables that are prone to overinterpretation. Medical service utilization, activity participation, maintenance receipt, and assistance receipt can all appear to represent support, yet each may also reflect vulnerability, selection effects, or underlying need. A rigorous applied study must therefore delineate what each variable can and cannot demonstrate before translating findings into practice. This clarification is particularly important for international readers, who may lack familiarity with the institutional meanings of Chinese pensions, subsidies, village committees, or family-doctor contracts.

Accordingly, this article examines whether ADL/IADL assistance receipt, medical service utilization, social participation, institutional income security, and filial maintenance from adult children are associated with higher life satisfaction among widowed solitary elders in China. It advances a care-conversion argument: applied gerontology should distinguish formal assistance availability or recorded utilization from support that effectively translates into daily functioning and well-being. The study does not claim to estimate causal effects of community care. Instead, it uses CHARLS 2020 to identify patterned associations and to clarify the construct-validity boundaries of commonly used support indicators. This approach is more useful for practice because it identifies which indicators may guide screening, follow-up, and targeted assistance for a high-risk subgroup.

Methods

Design and data source

This cross-sectional observational study uses the data from CHARLS 2020, which is a nationally representative survey of Chinese residents over the age of 45 and their spouses [29]. The study follows STROBE principles for observational reporting, including transparent sample construction, explicit

measurement definitions, and cautious interpretation of associations [30]. CHARLS includes modules on household structure, health, functioning, medical service utilization, income, transfers, social participation, and psychological well-being. These modules allow comparison of practical assistance, utilization, social contact, and economic support within one dataset.

Sample construction

The CHARLS 2020 individual file contained 19,395 respondents. Respondents over the aged of 60 were retained, leaving 10,654 cases. The sample was then restricted to respondents recorded as widowed, including 2,300 cases. The principal analytic definition of solitude used the CHARLS household member count to identify single-person households, yielding 1,152 respondents. After excluding cases without a valid life satisfaction response, the analytic sample contained 1,007 respondents. A supplementary mental-state model required complete CES-D-10 scoring and used 818 respondents. A long-term living-alone sensitivity sample required at least 180 days of solitude in the first half of the year and included 766 complete regression cases. Because household roster variables can be misread by international audiences, solitude status is interpreted as a household-structure indicator and tested against the duration-based sensitivity sample.

Measures

Outcome variables

This coding strategy addresses construct validity in two ways. First, it avoids equating assistance receipt with formal community home-care provision. The observed variable records that help crossed the threshold into daily activity, but it does not identify the institutional pathway. Second, it separates assistance from ADL functional status. ADL status measures need intensity, whereas assistance receipt measures whether help was reported. The primary outcome was high life satisfaction. CHARLS asks respondents to evaluate life satisfaction; responses of very satisfied or completely satisfied were coded 1, and other valid responses were coded 0. The binary outcome captures a clearly favorable evaluation, while an ordered-logit sensitivity model preserves the original scale. The supplementary outcome was low depressive symptoms/better mental state, defined as CES-D-10 score < = 10 after reverse scoring the positive items. The CES-D-10 is widely used as a screening measure, not as a clinical diagnosis [31]. Its purpose here is to test whether the support indicators behave similarly for cognitive life evaluation and depressive-symptom burden.

Core support indicators

The focal support indicators were specified conservatively. ADL/IADL assistance receipt was coded 1 when the respondent reported receiving help with at least one basic or instrumental activity. The ADL/IADL distinction is central to gerontological assessment because basic self-care and more complex

household tasks mark different levels of independent-living capacity [32]. This variable should not be read as formal community service use because CHARLS does not fully identify provider type, frequency, adequacy, or service quality. Medical service utilization indicated recent outpatient or inpatient use and was interpreted as both access and need exposure. Social participation indicated at least one social, recreational, community, or voluntary activity in the prior month. Institutional income security indicated receipt of a pension, old-age allowance, medical assistance, or government subsidy. Children's cash transfers were coded as 1 if respondents received any cash transfer from adult children.

The two are conceptually entangled, because assistance is often triggered by limitation, but the distinction is still useful for applied screening: an elder with limitation and no help represents a different practice problem from an elder with limitation and some help. The available data do not permit a full met-need/unmet-need model, so the interpretation remains explicitly associational.

Institutional income security is also intentionally broad. Pensions, old-age allowances, medical assistance, and subsidies differ in generosity, eligibility, and regularity, but they share one feature relevant to the subgroup: they are formal channels less dependent on a child's immediate capacity or willingness to transfer money. Adult-child's cash transfer is measured separately because family money has a different social meaning and may be crisis-responsive. Treating these sources as distinct helps avoid a common error in later-life research: assuming that all economic receipts are equivalent once converted into a binary variable.

Covariates

Covariates included age, sex, education, chronic disease status, urban residence, and ADL functional status. Education was grouped as illiterate/not completing primary school, primary school, junior middle school, and high school or above. ADL status was classified as no limitation, mild/moderate limitation, and severe disability. These variables were included because later-life well-being is shaped by socioeconomic status, health, function, and place, and because functional need may confound associations between support receipt and life satisfaction. Urban residence was retained because service density, pension adequacy, adult-child migration patterns, and community governance capacity differ substantially across rural and urban settings in China.

Analysis

Descriptive statistics characterized the analytic sample. Pearson correlations and variance inflation factors assessed preliminary associations and multicollinearity. Fully adjusted binary logistic models estimated the association between support indicators and high life satisfaction, reporting odds ratios and 95% confidence intervals. A supplementary logistic model estimated the association with low depressive symptoms. Sensitivity analyses used ordered logistic regression, excluded respondents aged 80 or above, restricted the sample to long-term living-alone respondents, used an alternative care measure, and applied individual survey weights. All results were read alongside direction, interval width,

and stability across models. Because the design is cross-sectional, estimates are interpreted as associations rather than causal effects; assistance, medical use, and children's transfers may all be need-triggered.

Results

Sample profile

Table 1 summarizes the analytic sample. Women represented 71.7% of respondents, and rural or village residents represented 69.7%. Educational attainment was low: 65.1% were illiterate or had not completed primary school. In functional terms, 30.2% had mild/moderate ADL limitation, and 2.7% had severe disability.

Table 1
Sample characteristics and support indicators

Characteristic or measure	n or value	% or range
Analytic life-satisfaction sample	1,007	100.0
High life satisfaction	390	38.7
Low depressive symptoms/better mental state	445 of 818	54.4
Medical service utilization	380	37.7
ADL/IADL assistance receipt	295	29.3
Social participation	442	43.9
Institutional income security	876	87.0
Adult-child's cash transfer	713	70.8
Age, mean (SD)	72.58 (6.97)	Range 60–95
Female	722	71.7
Rural/village residence	702	69.7
Illiterate/not completed primary school	656	65.1
Primary school	187	18.6
Junior middle school	96	9.5
High school or above	68	6.8
No chronic disease recorded	598	59.4
1–2 chronic diseases	356	35.4
3 or more chronic diseases	53	5.3
No ADL limitation	676	67.1
Mild/moderate ADL limitation	304	30.2
Severe ADL disability	27	2.7

Note. Percentages use the life-satisfaction analytic sample (N = 1,007) except for low depressive symptoms/better mental state, which uses the CES-D-10 complete sample (N = 818).

Only 38.7% of widowed solitary elders reported high life satisfaction, while 54.4% of respondents with complete CES-D-10 data met the low depressive symptom threshold. In terms of support indicators, 37.7% had recent medical service utilization, 29.3% received ADL/IADL assistance, 43.9% engaged in recent social activities, 87.0% obtained institutional income security, and 70.8% received cash transfers from adult children.

[Insert Table 1 about here]

Correlations across all support indicators were weak, and all variance inflation factors fell below the commonly accepted critical cutoffs for multicollinearity. This distinction between low inter-variable correlation and acceptable collinearity is meaningful because the five support indicators capture distinct conceptual domains instead of interchangeable proxies for a single latent construct. Medical service utilization had only a weak correlation with ADL/IADL assistance receipt, while social participation, institutional income security, and adult children's cash transfers exhibited weak intercorrelations with one another. This descriptive pattern validates the core conceptual premise: practical daily help, medical service utilization, social engagement, formal pension benefits, and intergenerational monetary support should be analyzed as separate predictors, as each may reflect distinct pathways linked to elevated or diminished life satisfaction.

Baseline life-satisfaction model

Table 2 presents the fully adjusted logistic regression results for high life satisfaction. Receipt of ADL/IADL assistance showed a positive association with the outcome (OR = 1.373, 95% CI [1.009]). This odds ratio carries substantive practical meaning yet is only borderline significant, as its confidence interval barely crosses the null value of 1. By contrast, functional limitation yielded a more robust negative correlation with life satisfaction. Mild/moderate ADL limitation predicted reduced odds of high life satisfaction (OR = 0.649), while severe ADL limitation showed an even stronger negative magnitude (OR = 0.336). Taken together, these two sets of regression outputs demonstrate that practical daily assistance can only be interpreted alongside functional vulnerability, rather than treated as an isolated service indicator.

Table 2
Fully adjusted logistic models for life satisfaction and mental state

Variable	High life satisfaction OR [95% CI]	Low depressive symptoms OR [95% CI]
Medical service utilization	0.827 [0.624, 1.097]	0.641*** [0.470, 0.874]
ADL/IADL assistance receipt	1.373** [1.009, 1.870]	1.092 [0.759, 1.571]
Social participation	1.143 [0.876, 1.491]	1.107 [0.819, 1.495]
Institutional income security	1.289 [0.864, 1.924]	1.216 [0.772, 1.915]
Adult-child's cash transfer	0.796 [0.594, 1.067]	1.018 [0.730, 1.419]
Age	1.024** [1.005, 1.044]	1.016 [0.993, 1.039]
Male	0.958 [0.707, 1.299]	1.584*** [1.129, 2.222]
Primary school	0.670** [0.468, 0.960]	0.755 [0.514, 1.109]
Junior middle school	0.625* [0.385, 1.013]	1.385 [0.827, 2.321]
High school or above	0.339*** [0.178, 0.646]	1.203 [0.641, 2.259]
No chronic disease recorded	1.282* [0.975, 1.686]	1.174 [0.866, 1.592]
Urban residence	0.938 [0.687, 1.280]	1.714*** [1.204, 2.441]
Mild/moderate ADL limitation	0.649*** [0.477, 0.882]	0.325*** [0.231, 0.459]
Severe ADL disability	0.336** [0.128, 0.879]	0.185*** [0.064, 0.530]
Pseudo R-squared	0.039	0.096
N	1,007	818

Note. OR = odds ratio; CI = confidence interval. Reference categories are female, rural/village residence, illiterate/not completed primary education, and no ADL limitation. *p < .10. **p < .05. ***p < .01.

[Insert Table 2 about here]

[Insert Fig. 1 about here]

Figure 1 displays adjusted odds ratios and corresponding 95% confidence intervals for social support predictors derived from two separate fully adjusted logistic regression models. Blue markers refer to estimates for high life satisfaction (Table 2), while orange squares denote results for low depressive symptoms from the supplementary CES-D-10 model. The vertical dashed line represents OR = 1; confidence intervals intersecting this reference line indicate statistically non-significant associations at the 0.05 level. This figure visualises divergent associations of support indicators across the two well-being outcomes.

Medical service utilization showed a negative yet non-significant correlation with high life satisfaction in the fully adjusted model (OR = 0.827, 95% CI [0.624, 1.097]). Social participation carried a non-significant positive association (OR = 1.143), and institutional income security also yielded a positive but statistically insignificant point estimate (OR = 1.289). In contrast, cash transfers from adult children were linked to a non-significant negative odds ratio (OR = 0.796). Among covariates, age was positively associated with high life satisfaction, whereas respondents with higher educational attainment presented lower odds relative to the illiterate or primary-school reference group. This educational gradient may stem from cohort disparities, divergent life comparison benchmarks, or varying expectations of independent aging; however, the present dataset cannot disentangle these competing interpretations.

Supplementary and sensitivity analyses

Consistent with the pattern observed in Fig. 1, the supplementary CES-D-10 regression model delivered a key comparative result, as shown in Table 3. Medical service utilization was significantly correlated with reduced odds of mild depressive symptoms (OR = 0.641, 95% CI [0.470, 0.874]), while all tiers of ADL limitation retained robust negative associations with mental well-being. By contrast, receipt of ADL/IADL assistance failed to reach statistical significance within this depressive symptom model. Taken together these findings indicate that practical daily support bore a closer relationship with global life evaluation than depressive symptom levels, whereas medical service utilization was strongly linked to psychological vulnerability. This clear divergence reinforces the rationale for treating life satisfaction and depressive symptoms as complementary rather than interchangeable outcome indicators.

Table 3
Sensitivity analyses for core support indicators

Variable	Ordered logit	Excluding age 80+	Long-term living alone	Alternative care measure	Weighted logit
Medical service utilization	0.729**	0.843	0.695**	0.828	0.924
ADL/IADL assistance receipt	1.281*	1.455**	1.247	1.922***	1.021
Social participation	1.184	1.035	1.155	1.153	1.336**
Institutional income security	1.645***	1.464*	1.565*	1.266	0.989
Adult-child's cash transfer	0.987	0.754*	0.842	0.802	0.625***
Model fit/N	LL = -1229.7; N = 1,007	Pseudo R^2 = 0.041; N = 831	Pseudo R^2 = 0.052; N = 668	Pseudo R^2 = 0.045; N = 1,006	Pseudo R^2 = 0.047; N = 949

Note. Cells report odds ratios for the core support indicators. Ordered logit reports cumulative odds ratios. LL = log likelihood. *p < .10. **p < .05. ***p < .01.

[Insert Table 3 about here]

Sensitivity analyses refined and contextualized the core baseline findings. In the ordered logistic regression specification, ADL/IADL assistance maintained a positive association, medical service utilization turned significantly negative, and institutional income security yielded a statistically positive correlation. Removing participants aged 80 years and above strengthened the point estimate of ADL/IADL assistance. Within the long-term solitary living subsample, medical service utilization showed a significant negative association and institutional income security remained positive, yet the association of daily assistance lost statistical significance. When adopting an alternative measurement for care receipt, the positive coefficient of assistance became substantially larger. The weighted regression model weakened the magnitude of the assistance estimate, rendered social participation statistically significant, and identified a significant negative association with cash transfers from adult children. These cross-model fluctuations do not negate the baseline regression outcomes and call for cautious interpretation of results: ADL/IADL assistance stands out as the most favorable positive support indicator, while medical service utilization and cash transfers from adult children are closely intertwined with respondents' health and care needs.

Discussion

Principal findings

The core contribution of this study lies not in identifying a single service variable that determines life satisfaction, but in systematically demonstrating that different types of social support carry heterogeneous welfare implications for widowed solitary elders, providing empirical calibration for the simplistic policy narrative that "service coverage equals welfare."

This study examined five distinct support-related indicators among widowed solitary elders in China, a structurally vulnerable subgroup that has been consistently understudied relative to general older adult populations. Most existing research on Chinese elder care focuses on single support domains—either family care, community services, or pension security—without systematically comparing how different support types operate simultaneously within the same vulnerable population. The contribution of this study is therefore not that a single service variable explains life satisfaction. Rather, the results show that support indicators carry fundamentally different welfare meanings: some function as protective resources, others as need signals, and still others as unreliable correlates whose significance shifts across model specifications. ADL/IADL assistance receipt was positively associated with high life satisfaction in the main model, but the association was not invariant across specifications. Functional limitation was consistently harmful across all models. Medical service utilization behaved mainly as a need and risk signal, especially in the depressive symptom supplementary model. Social participation and economic support were directionally informative but statistically unstable, with significance appearing and disappearing depending on sample restrictions and weighting strategies. These findings align with applied gerontology's concern with improving elders' quality of life, while also showing why policy language must not outrun measurement precision.

The model therefore supports an applied, not causal, reading of daily assistance as a potential marker of manageable, safer solitary living arrangements. This interpretive stance is particularly important for cross-sectional observational studies, where causal claims risk overstating what the data can support and misleading policymakers seeking quick intervention levers. The most important empirical discipline is proportional interpretation. The assistance estimate in the main model is not large enough, nor stable enough, to justify a claim that assistance causes life satisfaction. Its value is diagnostic: when a widowed solitary elder reports help with daily activities, that report may indicate that a fragile household has acquired some practical manageability. Conversely, the absence of assistance among those with limitations should be treated as a potential unmet-need flag. This diagnostic reading is more consistent with the cross-sectional design and more useful for service targeting than an overstated causal narrative.

Practical assistance and care conversion

The real test of care accessibility lies not in whether a community has established elder care stations on paper, but in whether those services can be translated into tangible, accessible, and dignified daily assistance that widowed solitary elders can actually experience in their everyday lives.

The core conceptual implication is the distinction between service coverage and care conversion. A community may have an elder service station, a volunteer roster, or a family-doctor contract, yet these

structures become welfare only when they translate into help with bathing, dressing, meals, household tasks, shopping, mobility, medication routines, or clinic attendance. This distinction is consistent with a growing body of evidence that community care availability and alternative care arrangements can improve quality of life, but it adds a subgroup-specific emphasis: for widowed solitary elders, support must arrive at the temporal scale of daily routines [18, 21, 33]. Low education, rural residence, limited mobility, and weak digital skills may all prevent nominal service availability from becoming actual help, creating a gap between policy announcements and lived experience that is particularly pronounced for this structurally isolated subgroup.

Care conversion is also a dignity issue. Widowed solitary elders may resist help if services are stigmatizing, administratively burdensome, or perceived as charity. Assistance that is timely, familiar, and routine can preserve autonomy because it prevents minor functional difficulties from becoming crises. Assistance that arrives late, only after hospitalization, or only after adult children intervene may preserve survival without preserving confidence in everyday life. For readers, this is the applied point: gerontological practice should evaluate whether a service can be reached by the people most likely to need it, not only whether the service is listed in a local care plan.

The finding should therefore be used to guide screening rather than causal claims. Programs should identify widowed solitary elders who have ADL/IADL difficulty and classify whether need is met, unmet, or only informally patched. Ideally, future CHARLS-based studies would distinguish provider source and assistance adequacy. In the current data, assistance cannot be attributed specifically to formal community care, paid care, children, neighbors, or volunteers. The manuscript therefore uses the conservative term ADL/IADL assistance receipt. This terminology is essential: overlabeling the variable as community care would create a construct-validity problem and weaken the credibility of the applied argument.

Medical utilization as a warning indicator

Medical service utilization is not a marker of a successful care system, but rather a critical warning signal that can identify widowed solitary elders facing elevated health risks, psychological vulnerability, and unmet care needs.

The medical-utilization results caution against treating service use as a simple success metric, a misinterpretation that remains surprisingly common in policy evaluations and program reports where higher utilization is often celebrated as evidence of improved access. Andersen's behavioral model of health services use expects utilization to be driven partly by need, and this is particularly plausible for widowed solitary elders who lack a live-in caregiver to monitor health changes and intervene early [23]. Recent outpatient visits or hospitalization may reflect poorly controlled chronic disease, pain, fall risk, medication problems, anxiety, or absence of preventive monitoring. The significant negative association with low depressive symptoms strengthens this interpretation: medical encounters are not neutral events for this subgroup; they often coincide with periods of heightened psychological vulnerability. For

someone living alone, a health event is also an autonomy event: it exposes the possibility that no one will notice deterioration, accompany the person to care, or assist after discharge.

Applied practice should convert medical utilization into follow-up pathways. Recent hospitalization, repeated outpatient visits, or abrupt changes in health service use should trigger home assessment, medication review, nutrition screening, fall-risk inspection, rehabilitation referral, and emotional check-in. Long-term care insurance and integrated medical-care pilots are relevant only if they connect reimbursement to assistance in the home rather than stopping at the clinic door [24, 34]. For this subgroup, the question is not whether medical care was used, but whether use activated prevention, recovery management, and daily support that extend beyond the clinical encounter.

The data do not show that community health follow-up would cause higher life satisfaction. They show that medical service utilization identifies respondents whose mental state and life satisfaction are more vulnerable. In practice, such a signal can be used in a triage logic: hospital discharge, repeated outpatient visits, and chronic-disease flare-ups can prompt a home visit or phone contact, particularly when the registry shows widowhood and solitude household status. The goal is not to reduce clinically necessary care; it is to prevent medical encounters from remaining disconnected episodes that leave underlying social and functional needs unaddressed.

Social participation and relational quality

The protective effect of social participation stems not from how many activities an elder attends, but from whether participation can build sustained, trustworthy, and accessible social connections that widowed solitary elders can rely on in times of need.

The unstable social participation estimates should not be read as evidence that participation is irrelevant. A binary indicator of any activity in the prior month is too thin to capture the social relations that protect widowed solitary elders. Social participation can improve life satisfaction when it diversifies activities, expands networks, and reduces loneliness [35, 36, 37]. More broadly, social isolation and perceived isolation are distinct pathways to poor health and mortality, and a single activity-participation variable cannot capture either dimension adequately [17, 38, 39, 40]. For a widowed elder, a community activity is protective only if it produces continuity: someone who notices absence, can be contacted in distress, and is trusted enough to enter the home. Without this relational depth, participation may remain a superficial form of social contact that does not meaningfully buffer against the vulnerabilities of solitary living after spousal loss.

Community programs should not rely only on participation counts as their primary performance metric. They should build relationship continuity through paired visits, shared meals, neighbor mutual-aid groups, telephone reassurance, small group activities, and named social workers or volunteers who maintain regular contact with isolated elders. Evidence from solitary Chinese older adults in Hong Kong and rural Chinese elders indicates that social support and loneliness mediate life satisfaction, not participation frequency per se [36, 41]. Programs that treat social participation as attendance may miss

the relational mechanism that actually matters for well-being, particularly for widowed individuals who have lost their primary social companion and may require more intentional relationship-building than generic group activities can provide.

Economic support and family limits

Cash transfers from adult children are culturally meaningful expressions of filial piety and provide economic supplementation, but they cannot substitute for an institutionalized, routine, and accessible care support system.

Institutional income security appeared more predictable than adult children's cash transfers in sensitivity analyses, even though the main estimate was not significant. This pattern is compatible with prior research showing that family support remains central in China while formal security increasingly matters for subjective well-being and care choices [20, 42, 43, 44]. Adult children's cash transfers are culturally meaningful, reflecting enduring filial norms and intergenerational obligation, but they are also endogenous to need. Adult children may send money precisely because the parent is ill, disabled, hospitalized, lonely, or financially strained. Cash is therefore not equivalent to daily presence, and filial responsibility cannot substitute for a functional community care infrastructure that can respond to the temporal demands of daily living.

The family-policy implication is delicate. Chinese gerontology cannot ignore filial norms, and the data show that many respondents received money from adult children. Yet filial norms do not resolve the practical timing of care. Migrant adult children may be emotionally committed but physically absent; only children may face competing work and childcare obligations; daughters and sons may differ in expected and actual support roles; and widowed parents may avoid asking for help to preserve dignity and avoid burdening their children. For a widowed solitary elder, a cash transfer can purchase food or medicine, but it cannot by itself notice a fall risk, cook during acute illness, or accompany rehabilitation. Formal systems should therefore strengthen, rather than merely assume, family capacity, recognizing that structural changes in migration, employment, and family size have reshaped what families can realistically provide.

For implementation, the findings suggest a staged assessment model. The first stage identifies widowed solitary elders through household registration, community contact, or primary-care records. The second stage screens functional limitation and recent medical service utilization. The third stage records whether assistance is actually received and from whom. The fourth stage links the elder to a low-threshold response: home visit, meal support, transportation, medication review, or social contact. This sequence is more actionable than a general recommendation to expand community care. It also respects heterogeneity: some widowed solitary elders are resilient and socially embedded, while others are invisible until illness or disability reveals unmet need.

Limitations and methodological contributions

The academic value of this study lies not in providing definitive policy conclusions, but in establishing honest interpretive boundaries for future research and aging practice through rigorous awareness of empirical limitations.

Several findings should not be overstated, and intellectual honesty requires acknowledging what this study cannot establish. First, ADL/IADL assistance receipt does not identify provider source, quality, frequency, cost, or adequacy, meaning the variable captures whether help exists but not whether it is sufficient, appropriate, or dignified. Second, cross-sectional data cannot establish whether assistance increased satisfaction or whether more satisfied elders were more able to obtain help, leaving the direction of influence unresolved. Third, the solitude definition is based primarily on household structure, though the duration-based sensitivity test partially addresses this concern by confirming that long-term solitary living shows similar patterns. Fourth, the study does not measure widowhood duration, grief intensity, adult children's geographic proximity, number of adult children, digital ability, community service quality, or local policy implementation, all of which could moderate the observed associations. These limitations make the study inappropriate as a definitive policy-evaluation article, but appropriate as an applied observational analysis that identifies screening-relevant associations and measurement cautions that can guide more rigorous subsequent work.

What this study does provide, however, is a methodological caution and a conceptual framework that can inform both future research and current practice. By demonstrating that different support indicators carry different welfare meanings and that significance varies across specifications, the study argues against the common practice of treating any positive service coefficient as evidence of program success. Instead, it advocates for a more nuanced approach that distinguishes between protective resources, need signals, and unstable correlates—each requiring different policy responses and different levels of confidence in interpretation. This methodological humility is itself a contribution, particularly in a policy environment where rapid aging creates pressure to declare interventions effective before the evidence can support such claims.

Future research directions

Future research should move from exposure indicators to care pathways. A stronger design would combine longitudinal CHARLS waves with provider-source measures, transfer amounts, adult-child's distance, widowhood duration, and community service metadata. Qualitative interviews would also be valuable because assistance can be experienced as relief, dependence, obligation, or loss of face. The same act of help may affect life satisfaction differently depending on whether it is chosen, imposed, stigmatized, or embedded in a trusted relationship. These mechanisms are invisible in the present cross-sectional survey but essential for designing applied interventions.

Conclusion

For widowed solitary elders in China, different types of social support do not carry equal welfare weight: daily functional assistance stands out as the most consistent positive correlate of life satisfaction, while

medical utilization signals vulnerability rather than benefit, and economic and social support show unstable effects that depend on measurement and specification. This study answers a core question for Chinese aging policy—not whether support matters, but which forms of support actually translate into improved well-being for the most structurally exposed subgroup of older adults. These conclusions hold even with the study's limitations. The cross-sectional design cannot establish causality, but the consistency of functional limitation effects across all models and the divergent patterns of different support indicators together suggest that the observed associations are not merely artifacts of confounding. The inability to distinguish provider sources does not weaken the core finding that daily assistance matters; instead, it highlights how little is currently known about the mechanisms through which help reaches isolated elders, making this question all the more urgent for future research.

This study makes three practical contributions. First, it provides empirical support for the concept of care conversion, arguing that policy evaluation should shift from counting service stations to measuring whether assistance actually reaches daily life. Second, it offers a screening framework for frontline practitioners: recent medical utilization, functional limitation, and absence of daily help together identify widowed solitary elders at highest risk of poor well-being. Third, it demonstrates that filial piety and family transfers, while culturally important, cannot substitute for routine, accessible community care infrastructure—a finding that offers actionable insights for long-term care system reform across rapidly aging societies.

The deepest question remains unanswered: what does it take for a community service to actually become felt, trusted, and dignified help for someone living alone after losing a spouse? Until gerontological research can answer this question at the level of daily experience, the gap between policy ambition and lived reality will persist. This study is a first step toward closing that gap, one daily activity at a time.

Abbreviations

ADL
Activities of daily living
IADL
Instrumental activities of daily living
CHARLS
China Health and Retirement Longitudinal Study
CES-D-10
10-item Center for Epidemiologic Studies Depression Scale
STROBE
Strengthening the Reporting of Observational Studies in Epidemiology

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Clinical trial number

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Supplemental Material

Supplemental material for this article is available online.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by Guangxi University Young and Middle-aged Teachers' Basic Scientific Research Ability Improvement Project (Grant No. 2024KY0493), National Natural Science Foundation of China (Grant No. 81760606), Bagui Scholar Fund Project of "Social Medicine and Health Service Management" of Guangxi (Grant No. 2020GXWFSAA57146), Jiangsu Social Science Foundation Major Project (Grant No. 26ZXZD005), Guilin Medical University Education and Teaching Reform Research Project (Grant No. JG202419), National Innovation and Entrepreneurship Training Program for Undergraduate Students (Innovation Training Program, Grant No. 202410601055), Postgraduate Research Project of Guilin Medical University (Grant No. GYYK2025021), and Guilin Medical University Campus Culture Construction Excellence Project: "Shaping Character through Medical Humanities and Nurturing Students through Culture".

Author Contribution

Yang Li: Conceptualization, Methodology, Writing – Original Draft, Data Curation, Formal Analysis, Funding Acquisition, Writing – Review & Editing.Jian Huang: Writing – Original Draft, Formal Analysis.Wenxin Ma: Data Curation, Supervision.Zhao Chen: Funding Acquisition, Writing – Review &

Editing.Wuxiang Shi: Validation, Visualization, Writing – Review & Editing, Funding Acquisition.All authors reviewed and approved the final manuscript.

Acknowledgement

The authors would like to sincerely thank Professor Wenyu Liu from Dalian University of Technology and Dr. Linghan Lan from Guilin University of Electronic Technology for their valuable support in revising and polishing this manuscript.

Data Availability

CHARLS data were deposited into the China Health and Retirement Longitudinal Study database and are available at the following URL:https://charls.pku.edu.cn/.

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Figures

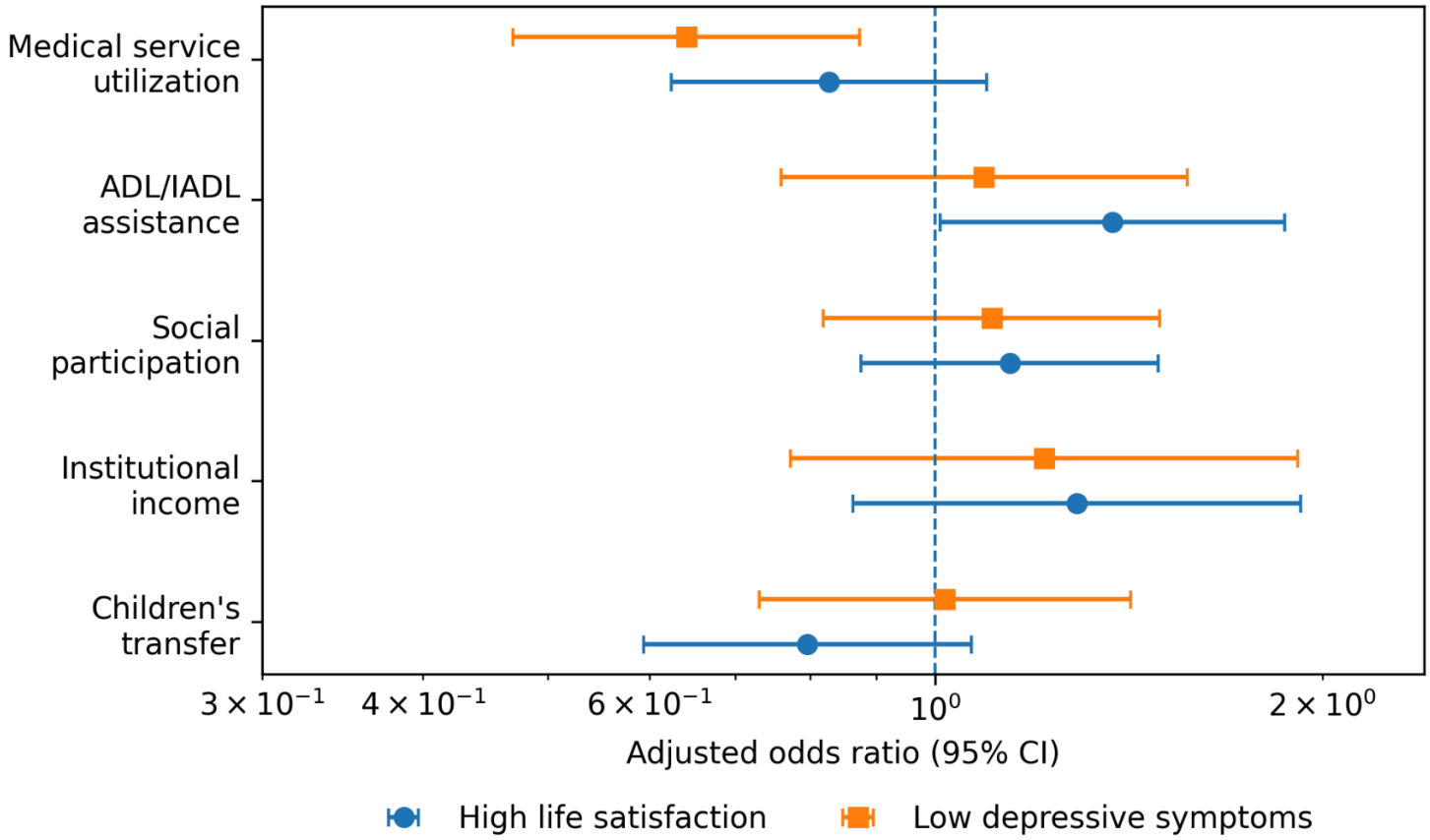


Figure 1

Adjusted odds ratios for core support indicators

Note. Markers show odds ratios and horizontal lines show 95% confidence intervals from the fully adjusted life satisfaction model and the supplementary mental-state model. The vertical reference line marks OR = 1.

Supplementary Files

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- BMCSupplementalAppendix.docx