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The Relationship between Family Structure and Intergenerational Support Patterns among Rural Older Adults in Guangxi, China

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Abstract

This study examines the influence of co-residence with children and the number of children on intergenerational support (financial support, daily care, emotional support) among elderly people in rural areas of Guangxi, China. Using cross-sectional data from 3,308 respondents aged 65 and above, multivariate logistic regression was employed for data analysis. The results revealed different patterns: living together significantly predicted all three types of support, with the greatest impact on daily care (OR = 1.94–2.55, $p < 0.001$); the number of children significantly predicted economic support and high-level emotional support, but not daily care. Incremental contribution analysis indicated that increasing living together significantly improved the model fit of all results (LR χ^2 = 13.30–85.88, $p < 0.001$), while the number of children only improved economic support (LR χ^2 = 16.07, $p = 0.003$) and emotional support (LR χ^2 = 11.07, $p = 0.026$). These research findings challenge the single-dimensional concept of family structure and indicate that in rural China, living convenience is more influential on functional support than the number of children. This study contributes to the field of family sociology, distinguishing the spatial and network dimensions of family structure and having implications for rural aging policies.

Keywords: Intergenerational Support**,** Financial support, Daily Care, Emotional support, Co-residence, Number of Children

Introduction

China is experiencing one of the most rapid and large-scale population aging processes in the world. According to the seventh national census, the population aged 60 and above reached 264 million in 2020, accounting for 18.7% of the total population, and this proportion is projected to exceed 30% by 2035(Statistics, 2021). This demographic shift is particularly pronounced in rural areas, where massive out-migration of young adults has left behind a growing population of older adults, intensifying the challenges to the traditional family-based

support system. Under the combined forces of industrialization and urbanization, the structure and function of rural families have undergone profound transformations, posing serious questions about the sustainability of intergenerational support for the elderly(Liu, 2022) .

Guangxi Zhuang Autonomous Region, located in western China, epitomizes the convergence of multiple challenges in rural aging. As a major labor-exporting province, Guangxi has witnessed a sustained exodus of rural working-age population: in 2022, out-migrant workers accounted for over 25% of the rural labor force(Bureau, 2023). Consequently, the proportion of rural residents aged 65 and above has surged to 16.8%, exceeding the national rural average (Huang & Su, 2024). Moreover, Guangxi is home to the largest Zhuang population and more than 10 other ethnic minorities, whose family structures and caregiving norms may differ from those of Han communities. This ethnic and cultural diversity, combined with economic underdevelopment and inadequate public services, makes Guangxi a critical yet under-researched setting for understanding how family structure shapes intergenerational support in contemporary rural China.

Changes in Family Structure and Challenges to the Function of Elderly Care

The transformation of rural family structure is most evident in two interrelated trends: shrinking household size and declining number of children. The average household size in rural China dropped from 3.10 in 2010 to 2.62 in 2020(Shang & Zhao, 2022), and the proportion of one-child families has increased significantly(Ma et al., 2023) . In Guangxi, the situation is exacerbated by massive labor out-migration, leading to a growing number of “empty-nest” households(Huang & Su, 2024).These structural changes inevitably weaken the functional foundation of family-based old-age support, which has long relied on the presence and availability of adult children. However, while it is clear that family structure matters, the specific mechanisms through which different dimensions of family structure—particularly spatial proximity (co-residence) and network size (number of children)—influence distinct types of intergenerational support (financial, daily care, emotional) remain poorly understood.

Theoretical Dimensions of Generational Support and Family Structure

According to intergenerational solidarity theory, family relationships are multidimensional, encompassing structural (e.g., geographic proximity), functional (e.g., exchange of support), and emotional dimensions(Bengtson & Roberts, 1991). In the context of rural China, where filial piety remains a central cultural value, the structural dimension—particularly co-residence and number of children—is expected to shape the functional support that older parents receive. However, existing studies often treat these structural indicators in isolation. Some research emphasizes the role of co-residence in facilitating daily care and emotional closeness(Litwak & Kulis, 1987; Wu, 2021), while others highlight the importance of having multiple children for pooling economic resources(Wang et al., 2024) . Rarely are both dimensions examined simultaneously to compare their relative contributions to different types of support. This study addresses this gap by systematically disentangling the effects of co-residence and number of children on financial, daily care, and emotional support among rural older adults in Guangxi.

Research Objectives and Questions

To address these gaps, this study examines how co-residence with children and number

of children differentially influence three types of intergenerational support (financial, daily care, emotional) among rural older adults in Guangxi. Specifically, we ask: (1) What are the independent effects of co-residence and number of children on each support type, after controlling for sociodemographic factors? (2) How do the explanatory powers of these two family structure dimensions compare across support types, and do they interact? (3) What do the patterns reveal about the underlying mechanisms of intergenerational support in a context of rapid family change? By answering these questions, this study aims to move beyond the unidimensional conceptualization of family structure and provide nuanced evidence for understanding the evolving role of families in elder care in rural China.

Research Significance

This study contributes theoretically by refining the measurement of family structure—distinguishing spatial proximity from network size—and by testing their differential effects on support types, thereby extending intergenerational solidarity theory to a non-Western context. Practically, the findings will inform targeted policies for rural aging: identifying whether support deficits stem from lack of proximity or limited network size can guide interventions such as housing subsidies to encourage co-residence or social support programs to compensate for fewer children. As Guangxi and similar regions face accelerating aging and family change, such evidence is crucial for safeguarding elder well-being and fostering intergenerational resilience.

Methods

Study Design and Setting

This study employed a cross-sectional survey design to examine the relationship between family structure and patterns of unidirectional intergenerational support from adult children to older parents in rural Guangxi Zhuang Autonomous Region, China. Data were collected from 2022. The study covered all 14 prefecture-level cities in Guangxi: Nanning, Liuzhou, Guilin, Wuzhou, Beihai, Fangchenggang, Qinzhou, Guigang, Yulin, Baise, Hezhou, Hechi, Laibin, and Chongzuo.

Sampling and Participants

In accordance with the principle of science and economy, which takes into account both the representativeness of the sample area and the sample individuals to Guangxi and the need not to increase the workload of the survey by increasing the sample size too much, the stratified multi-stage sampling method was adopted on the basis of giving full consideration to the scientific nature of the sampling and its feasibility.

According to the Demographic Statistics Yearbook, with Guangxi as the overall population, stratified, multi-stage, whole-population, probability-proportional sampling methods were used to stratify the sampling of districts, counties, streets (townships) and neighborhood (village) committees, and survey households were drawn from the neighborhood (village) committees, with the basic unit of one person in each household to carry out the survey.Inclusion criteria were: (1) aged 65 years or older; (2) rural household registration and permanent residency (continuous residence in the area for at least 6 months). Exclusion criteria included: (1) refusal to provide informed consent after detailed explanation by trained interviewers; (2) in households with three or more elderly members,

those aged 80 years or older who were unable to complete the questionnaire due to cognitive impairment; (4) individuals younger than 65 years.

A total of 5,016 questionnaires were initially distributed. After excluding urban residents (n=1,247), childless older adults (n=312), individuals under 65 years (n=98), and incomplete questionnaires (n=51), the final analytical sample comprised 3,308 rural older adults. Notably, the final dataset contained no missing values across all variables.

Measures

Independent Variables

The family structure was operationalized through the use of two variables.:

Co-residence with children: A binary categorical variable indicating whether the older adult currently resided with any of their adult children (1 = Yes, 2 = No).

Number of children: A three-category variable representing the total number of children, reverse-coded as: 1 = five or more children (≥5), 2 = three to four children (3-4), and 3 = one to two children (1-2). This coding scheme was intentionally designed to ensure that SPSS automatically designated the lowest fertility group (1-2 children) as the reference category in multinomial logistic regression analyses, facilitating interpretation in the context of rural China's fertility transition.

Dependent Variables

Intergenerational support was conceptualized as unidirectional support flowing from adult children to older parents, assessed through older adults' self-reported evaluations. Five distinct dimensions were measured, each operationalized as a five-category ordinal variable based on respondents' subjective assessments.In the subsequent analysis, the researchers combined the five dimensions into three categorical variables

Financial support from children: Older adults' self-rated evaluation of monetary assistance received from their children, categorized as: 1 = Less (including "not at all" and "slightly"), 2 = Medium ("moderately"), and 3 = More ("quite a bit" and "a great deal").

Daily care from children: Older adults' self-rated evaluation of instrumental assistance with activities of daily living provided by their children, categorized as: 1 = Less (including "not at all" and "slightly"), 2 = Medium ("moderately"), and 3 = More ("quite a bit" and "a great deal").

Emotional support from children: Older adults' self-rated evaluation of emotional closeness, concern, and psychological support received from their children, categorized as: 1 = Less (including "not at all" and "slightly"), 2 = Medium ("moderately"), and 3 = More ("quite a bit" and "a great deal").

For multivariate logistic analysis, "Less" served as the reference category for all three dependent variables, generating two comparisons for each outcome: Medium versus Less, and More versus Less.

Covariates

The following sociodemographic and socioeconomic variables were included as control variables to adjust for potential confounding:Sex,Age: ,Ethnicity,Educational level,Marital status,Household per capita income,Relationship with family members,Self-rated health status.

Data Collection Procedure

The investigator are composed of health personnel from county (district) mental-related health institutions and township health centers or community health service centers, or university students from medical schools, and the survey is conducted by the investigator in a face-to-face manner by questioning the respondents.

Statistical Analysis

All statistical analyses were conducted using IBM SPSS Statistics version 26.0 ,and differences were considered statistically significant at P<0.05.First, descriptive statistics (frequencies and percentages) were computed for all categorical variables to characterize the sample distribution and patterns of intergenerational support. multivariate logistic analysis（MLR） was employed as the primary analytical technique to examine the effects of family structure on intergenerational support patterns while controlling for covariates.

Before conducting the regression analysis, a linear regression model was used to diagnose the multicollinearity of the independent variables. The results showed that the VIF values of each independent variable were all close to 1 and were all less than 5, while the Tolerance values were all greater than 0.1, indicating that there was no multicollinearity problem in the model.

Ethical Considerations

The study protocol was approved by the Ethics Committee of Guangxi Medical University (approval no.: 2021-021）. All the participants signed a written informed consent form before the data collection. The informed consent process detailed the research purpose, operational procedures, the voluntary nature of participation, and confidentiality measures. The participants were informed that they could withdraw from the study at any time without any penalty. All the data were anonymized using unique identifiers and stored in an encrypted server.

Results

Sample Characteristics and Distribution of Three Types of Intergenerational Support

This study included a total of 3,308 rural older adults from Guangxi. The sample comprised 57.0% female and 43.0% male participants. Age distribution was as follows: 70–79 years (46.7%), 65–69 years (34.4%), and ≥80 years (18.8%). Han ethnicity accounted for 57.1%, while other ethnic minorities constituted 42.9%. Educational attainment was predominantly primary school (49.1%), followed by illiterate/low literacy (27.9%) and junior high school or above (23.0%). The majority (72.8%) were married or cohabiting. Household per-capita income was most commonly in the 0–1,499 CNY range (55.6%), followed by 1,500–2,999 CNY (30.9%) and ≥3,000 CNY (13.5%). Relationship with family members was rated as "good" by 84.2%, "fair" by 14.7%, and "poor" by 1.1%. Self-rated health was "average" for 53.8%, "good" for 27.4%, and "poor" for 18.7%. Co-residence with children was reported by 66.4% of participants, while 33.6% did not co-reside. Number of children was most commonly 3–4 (50.1%), followed by ≥5 (28.9%) and 1–2 (21.0%).

For the three outcome variables, the distribution was as follows: financial support—low (19.20%), medium (41.87%), high (38.94%); daily care—low (21.34%), medium (42.47%), high (36.19%); and emotional support—low (13.48%), medium (43.65%), high (42.87%).
Result of multinomial logistic regression analysis were conducted with "low support" as the reference category, estimating odds ratios (OR) with 95% confidence intervals (CI) and p values for "medium vs. low" and "high vs. low" comparisons, respectively.

Family Structure and Financial Support
To examine the independent and joint effects of family structure variables, this study constructed five n models: Model 1 (M1) is Univariate model, containing only the dependent variable "Co-residence with children"; Model 4 (M4) is also Univariate model, with only the dependent variable "number of children" included; Models 2 and 5 are partial adjustment models, which add all the Covariates; Model 3 (M3) is a complete model, incorporating both the family structure variable and all the Covariates.

Univariate models showed that, compared with older adults not co-residing with children, those co-residing with children had higher likelihood of receiving greater financial support (M1: Medium vs. Low OR=1.35, 95%CI 1.11–1.64, p=0.002; High vs. Low OR=1.62, 95%CI 1.33–1.97, p<0.001). In the single-factor model M4 examining only number of children, having ≥5 children was positively associated with higher financial support (Medium vs. Low OR=1.77, 95%CI 1.36–2.32, p<0.001; High vs. Low OR=1.38, 95%CI 1.05–1.81, p=0.020), and having 3–4 children was also significant for "Medium vs. Low" (OR=1.34, 95%CI 1.06–1.70, p=0.015).

After adjusting for Covariates, the effect of co-residence remained significant. In the full model M3 simultaneously incorporating "co-residence + number of children + Covariates," co-residing with children remained significantly associated with higher financial support (Medium vs. Low OR=1.28, 95%CI 1.05–1.56, p=0.015; High vs. Low OR=1.47, 95%CI 1.19–1.80, p<0.001). The effect of number of children showed partial attenuation: having ≥5 children remained significant only for "Medium vs. Low" (OR=1.71, 95%CI 1.29–2.28, p<0.001) but not for "High vs. Low" (p=0.145); having 3–4 children was non-significant in both comparisons (p>0.05).

Regarding covariates, with M3 as the primary result, ethnicity, household per-capita income, and relationship with family members showed significant associations with financial support levels. Han ethnicity showed positive and significant associations for both "Medium/High vs. Low" comparisons; low-income groups (0–1,499 CNY) showed negative and significant associations for both comparisons (compared to high-income groups ≥3,000 CNY); and "very good" relationship with family members corresponded to significantly elevated ORs for higher support levels.

Table1
Multinomial Logistic Regression of Family Structure on Financial Support from Children(N = 3,308)

Family structure variables / Models	**Medium vs Low OR (95% CI)**	**p**	**High vs Low OR (95% CI)**	**p**
Co-residing with children — Yes (ref: No)				
Model 1	1.35 (1.11-1.64)	0.002	1.62 (1.33-1.97)	<0.001
Model 2	1.28 (1.05-1.56)	0.016	1.46 (1.19-1.79)	<0.001
Model 3	1.28 (1.05-1.56)	0.015	1.47 (1.19-1.80)	<0.001
Number of children — 3–4 (ref: 1–2)				
Model 3	1.27 (1.00-1.62)	0.053	1.08 (0.85-1.38)	0.532
Model 4	1.34 (1.06-1.70)	0.015	1.18 (0.93-1.50)	0.167
Model 5	1.29 (1.01-1.64)	0.042	1.10 (0.86-1.40)	0.448
Number of children — ≥5 (ref: 1–2)				
Model 3	1.71 (1.29-2.28)	<0.001	1.24 (0.93-1.65)	0.145
Model 4	1.77 (1.36-2.32)	<0.001	1.38 (1.05-1.81)	0.020
Model 5	1.71 (1.29-2.27)	<0.001	1.23 (0.93-1.64)	0.151

Family Structure and Daily Care

Co-residing with children showed strong and stable positive associations with daily care support levels. In the univariate model M1, those co-residing with children had significantly higher likelihood of being in higher daily care support categories (Medium vs. Low OR=2.01, 95%CI 1.67–2.41, p<0.001; High vs. Low OR=2.74, 95%CI 2.25–3.33, p<0.001). After simultaneously adjusting for number of children and Covariates in the full model M3, this association remained robust (Medium vs. Low OR=1.94, 95%CI 1.60–2.35, p<0.001; High vs. Low OR=2.55, 95%CI 2.08–3.11, p<0.001).

The association between number of children and daily care was relatively weak and inconsistent: in M3, having ≥5 children reached significance only for "Medium vs. Low" (OR=1.37, 95%CI 1.04–1.80, p=0.026) but not for "High vs. Low" (OR=1.15, 95%CI 0.86–1.53, p=0.344); having 3–4 children was non-significant in both comparisons. This pattern suggests that daily care relies more on the "residential accessibility/care availability" mechanism rather than the "number of children/burden-sharing capacity" mechanism.

In the covariate analysis, when M3 was used as the primary outcome indicator, race and family member relationship had a significant impact on the level of daily care: Individuals with good family member relationships were significantly more likely to receive higher levels of daily care support (for example, the odds ratio [OR] between the high-score group and the low-score group was 4.82, 95% confidence interval [CI] 1.97–11.85, p < 0.001).

Table 2
Multinomial Logistic Regression of Family Structure on Daily Care from Children(N = 3,308)

Family structure variables / Models	**Medium vs Low OR (95% CI)**	**p**	**High vs Low OR (95% CI)**	**p**
Co-residing with children — Yes (ref: No)				
Model 1	2.01 (1.67-2.41)	<0.001	2.74 (2.25-3.33)	<0.001
Model 2	1.93 (1.59-2.33)	<0.001	2.54 (2.08-3.10)	<0.001
Model 3	1.94 (1.60-2.35)	<0.001	2.55 (2.08-3.11)	<0.001
Number of children — 3–4 (ref: 1–2)				
Model 3	1.05 (0.83-1.33)	0.696	1.03 (0.80-1.31)	0.827
Model 4	1.13 (0.90-1.42)	0.305	1.14 (0.90-1.44)	0.278
Model 5	1.08 (0.86-1.37)	0.503	1.07 (0.84-1.37)	0.572
Number of children — ≥5 (ref: 1–2)				
Model 3	1.37 (1.04-1.80)	0.026	1.15 (0.86-1.53)	0.344
Model 4	1.40 (1.08-1.81)	0.011	1.20 (0.92-1.57)	0.175
Model 5	1.36 (1.04-1.79)	0.026	1.14 (0.86-1.51)	0.365

Family Structure and Emotional Support

In terms of emotional support, living with children was significantly associated with higher levels of emotional support, and this relationship remained robust even after adjusting for covariates and the number of children (Model 3: moderate vs. low OR = 1.46, 95% CI 1.17–1.82, $p < 0.001$; high vs. low OR = 1.62, 95% CI 1.29–2.04, $p < 0.001$).

Number of children was primarily associated with "high emotional support (vs. low)": in M3, having 3–4 children (vs. 1–2) was significant for "High vs. Low" (OR=1.50, 95%CI 1.14–1.98, p=0.004), as was having ≥5 children (OR=1.39, 95%CI 1.01–1.91, p=0.043), but neither reached statistical significance for "Medium vs. Low" (3–4 children p=0.145; ≥5 children p=0.073). This pattern suggests that medium levels of emotional support mainly depend on interaction frequency brought by co-residence, while high-level support requires a larger family network scale as foundation.

Regarding covariates, with M3 as the primary result, "relationship with family members" was one of the strongest predictors of emotional support: "very good" vs. "poor" showed OR=8.45 (95%CI 3.79–18.83, p<0.001) for "Medium vs. Low" and OR=12.36 (95%CI 5.11–29.93, p<0.001) for "High vs. Low"; older adults with lower household per-capita income also showed relatively lower likelihood of receiving higher emotional support.

Emotional support: Both adding "number of children" (LR χ^2=11.07, df=4, p=0.026) and adding "co-residence" (LR χ^2=17.15, df=2, p<0.001) significantly improved model fit. Although

the different degrees of freedom preclude direct comparison of chi-square values, co-residence showed higher statistical significance (p<0.001 vs. p=0.026) and a slightly larger effect size contribution, suggesting that emotional support is influenced by both interaction frequency and family network scale.

Table 3
Multinomial Logistic Regression of Family Structure on Emotional Support from Children(N = 3,308)

Family structure variables / Models	**Medium vs Low OR (95% CI)**	**p**	**High vs Low OR (95% CI)**	**p**
Co-residing with children — Yes (ref: No)				
Model 1	1.58 (1.27-1.96)	<0.001	1.84 (1.48-2.29)	<0.001
Model 2	1.46 (1.17-1.82)	<0.001	1.64 (1.30-2.06)	<0.001
Model 3	1.46 (1.17-1.82)	<0.001	1.62 (1.29-2.04)	<0.001
Number of children — 3–4 (ref: 1–2)				
Model 3	1.22 (0.93-1.60)	0.145	1.50 (1.14-1.98)	0.004
Model 4	1.27 (0.97-1.65)	0.078	1.56 (1.19-2.03)	0.001
Model 5	1.24 (0.95-1.62)	0.119	1.53 (1.16-2.02)	0.003
Number of children — ≥5 (ref: 1–2)				
Model 3	1.33 (0.97-1.81)	0.073	1.39 (1.01-1.91)	0.043
Model 4	1.34 (1.00-1.80)	0.047	1.37 (1.02-1.85)	0.037
Model 5	1.32 (0.97-1.80)	0.075	1.38 (1.01-1.90)	0.045

Nested Model Fit Comparison (Δ−2LL) and Incremental Contribution of Family Structure Variables

To compare the independent incremental explanatory power of "co-residence" and "number of children" across the three types of support, M3 (the full model containing both family structure variables and all control variables) served as the reference model. We examined the improvement in model fit resulting from adding "number of children" or "co-residence" to reduced models (LR χ^2 = Δ−2LL). Results showed:

(1) Daily care: Compared to models with control variables only, adding "co-residence" significantly improved model fit (LR $\chi^2 = 85.88$, df = 2, $p < 0.001$, $\Delta R^2 = 0.13$), whereas adding "number of children" did not significantly improve fit (LR $\chi^2 = 7.24$, df = 4, $p = 0.124$). This suggests that daily care support is primarily driven by the "residential accessibility/time investment mechanism" associated with co-residence, rather than merely by the number of children.

(2) Economic support: Both adding "number of children" (LR $\chi^2 = 16.07$, df = 4, $p = 0.003$) and adding "co-residence" (LR $\chi^2 = 13.30$, df = 2, $p = 0.001$) significantly improved model fit, with comparable explanatory power ($\Delta R^2 = 0.114$). This suggests that economic support reflects both the "resource pool/burden-sharing capacity mechanism" (associated with more children) and the "need visibility/interaction frequency mechanism" (associated with co-residence).

(3) Emotional support: Both adding "number of children" (LR $\chi^2 = 11.07$, df = 4, $p = 0.026$) and adding "co-residence" (LR $\chi^2 = 17.15$, df = 2, $p < 0.001$) significantly improved

model fit. Although the different degrees of freedom preclude direct comparison of chi-square values, co-residence demonstrated higher statistical significance ($p < 0.001$ vs. $p = 0.026$) and a slightly larger effect size contribution. This suggests that emotional support is simultaneously influenced by interaction frequency (enhanced by co-residence) and family network scale (enhanced by number of children).

Table4 S1
Likelihood Ratio Tests for Nested Model Comparisons Assessing Incremental Contribution of Family Structure Variables (N = 3,308)

Outcome	Comparison	LR χ^2	df	p
Daily care	M2 → M3 (adding number of children)	7.24	4	0.124
	M5 → M3 (adding co-residence)	85.88	2	<0.001
Economic support	M2 → M3 (adding number of children)	16.07	4	0.003
	M5 → M3 (adding co-residence)	13.30	2	0.001
Emotional support	M2 → M3 (adding number of children)	11.07	4	0.026
	M5 → M3 (adding co-residence)	17.15	2	<0.001

Discussion

Main Findings

This study based on the survey data of 3,308 rural elderly people in Guangxi, systematically examined the differential impacts of two core dimensions of family structure - living arrangements with children and the number of children - on three types of intergenerational support (economic support, daily care, and emotional support). The research found that the mechanisms by which living arrangements with children and the number of children affect different types of support are significantly different: living arrangements with children are the dominant predictors of daily care and emotional support, while economic support is significantly influenced by both.This discovery reveals the complexity of how family structure affects the function of intergenerational support.

The differential mechanism of the family structure on different types of support

Economic Support: The Dual Mechanism of Resource Pool Effect and Demand Visibility

This study shows that economic support is significantly influenced by both living together (M3: OR = 1.28–1.47, $p < 0.001$) and the number of children (M3: ≥ 5 children OR = 1.71, $p < 0.001$). More children mean a wider range of potential sources of economic support. At the same time, the economic support effect of living together (although the effect size is smaller than that of daily care) suggests the role of the "visibility of needs" mechanism - children living together are more likely to perceive their parents' economic needs and are more likely to achieve support through "giving" behaviors during daily interactions.

It is worth noting that the impact of the number of children on economic support shows a "partial attenuation" pattern: in the single-factor model M4, ≥ 5 children significantly affect "high vs low" economic support (OR = 1.38, $p = 0.020$), but in the complete model M3, it becomes insignificant (OR = 1.24, $p = 0.145$). This indicates that the effect of the number of children is partially explained by the living arrangement - families with more children are more likely to achieve economic independence through separate living, thereby diluting the

advantage of the number. This finding reveals the intrinsic relationship among various dimensions of family structure and suggests that future research should consider the interaction of multiple dimension characteristics.

Daily care: Accessibility of residence surpasses the number of children

This study shows that living with children has a dominant influence on daily care support (M3: medium vs low OR = 1.94, high vs low OR = 2.55, all $p < 0.001$), while the impact of the number of children is weak and unstable. This finding is consistent with the discussion by Eggebeen and Hogan (1990)(Eggebeen & Hogan, 1990) (Eggebeen & Hogan, 1990)and Shu Binbin and Tong Yuying (!!! INVALID CITATION !!!)who analyzed from the perspective of intergenerational separation and found that the separation of adult children from their parents would lead to a reduction in intergenerational support.

More importantly, the nested model comparison shows that including the co-residence factor significantly improves model fit (LR $\chi^2 = 85.88$, $p < 0.001$), while including the number of children has no significant contribution (LR $\chi^2 = 7.24$, $p = 0.124$). This suggests that the core mechanism of daily care is "accessibility of residence and time investment" rather than "the number of children". Even if there are many children, if they do not live together, geographical distance and temporal separation will significantly hinder the actual provision of care. This finding provides an insight into the modern evolution of the traditional "raising children for old age" in rural China: In the context of labor outflow and the formation of nuclear families, the simple advantage of the number of children is no longer sufficient to meet the care needs of the elderly. The importance of residence arrangement is increasingly prominent.

Emotional support: The complementary effect of interaction frequency and network size

The result patterns of emotional support are the most complex: both living together and the number of children significantly improve the model fit, but the mechanisms are different. Living together has a significant positive effect on both moderate and high levels of emotional support (M3: OR = 1.46–1.62, $p < 0.001$), while the number of children is mainly associated with high-level emotional support (M3: 3–4 children OR = 1.50, $p = 0.004$; ≥ 5 children OR = 1.39, $p = 0.043$), having no significant effect on moderate-level support. This finding suggests two layers of mechanisms for emotional support: moderate-level emotional communication mainly relies on frequent daily interactions (provided by living together), while high-level psychological intimacy and emotional dependence require a larger family network as the foundation.

Recommendations

The findings of this study offer direct implications for rural elderly care policies. Regarding daily care, the policies should encourage and support intergenerational living or living close to each other. This can be achieved by providing housing renovation subsidies and adjusting rural land policies to lower the threshold for such living arrangements, rather than merely emphasizing the traditional concept of "multiple children". Regarding economic support, special attention should be paid to the elderly care risks of only children and families with two daughters. This can be addressed by improving rural old-age insurance and establishing village-level mutual assistance funds to make up for the lack of family support resources. Regarding emotional support, while acknowledging the importance of physical cohabitation, it is also necessary to develop emotional support networks at the community level, such as

senior activity centers and volunteer services, to provide alternative emotional sustenance for the elderly who cannot live together.

Research Limitations and Future Research Directions

This study has the following limitations. Firstly, the cross-sectional design cannot determine the causal relationship between family structure and intergenerational support. Future studies should adopt longitudinal tracking designs to examine the dynamic changes. Secondly, the intergenerational support is based on the self-assessment of the elderly, which may have recall bias or social expectation bias. Future research can conduct triangulation verification by combining the reports of children. Thirdly, the sample is limited to rural areas in Guangxi. The extrapolation of the research conclusions needs to be cautious, and future studies should conduct cross-regional comparative research.

Conclusion

In summary, through the analysis of a large sample survey of elderly people in rural areas of Guangxi, this study reveals the differential influence mechanisms of the dual dimensions of family structure on three types of intergenerational support. The study found that living with children is the core determinant of daily care and emotional support, while economic support benefits from the accessibility of living together and the number of children. In the context of rapid aging and changes in family structure, these findings have significant theoretical and practical value for understanding the rural elderly care dilemma and formulating targeted support policies.

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