Extended Abstract

Title: "Exploring the Psychological Impact: How Spatial Distribution of Offspring Influences Depression Among Vietnam's Elderly Population"

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Introduction: The global aging population is undergoing one of the most profound demographic transformations of the 21st century, presenting significant challenges for public health, economic stability, and social structures. By 2050, the proportion of individuals aged 60 and older is projected to rise from 15% to 22% globally (UN, 2022). In Asia, and particularly in Vietnam, where the elderly population is expected to surpass 25% by 2049, rapid population aging and socio-economic changes are disrupting traditional family support systems. These shifts have resulted in increased isolation and a higher prevalence of mental health issues, especially depression. The Socioemotional Selectivity Theory (Carstensen, 1992) suggests that emotionally meaningful relationships are central to well-being in later life; however, geographic separation from adult children may undermine these relationships in the Vietnamese context. This study aims to clarify how living arrangements and the geographic location of children are associated with depressive symptoms among older adults in Vietnam, while also considering a broad set of demographic, health, and social factors.

Data and Sample: This study utilized data from the 2018 baseline wave of the Longitudinal Study of Aging and Health in Vietnam (LSAHV), a nationally representative survey of individuals aged 60 and above. The initial sample comprised 6,050 respondents selected through a multistage sampling design covering six major regions of Vietnam, with intentional oversampling of those aged 70–79 and 80+ to ensure robust representation of the oldest-old. For the present analysis, only self-respondents aged 60 or older with at least one living child and complete information on all key variables were included, resulting in a final analytic sample of 3,688 participants.

Measurements: Depressive symptoms were assessed using the 11-item short-form Center for Epidemiological Studies Depression Scale (CES-D 11), with a Cronbach's alpha of 0.88 in this sample. Respondents rated symptoms over the past week on a 0–3 scale; scores were prorated for up to two missing responses. A score of 8.8 or above was used as the cut-off for probable clinical depression (Tran et al., 2022). The main independent variable was the spatial distribution of offspring, categorized hierarchically as: (1) Coresident (living with at least one child), (2) Nearby resident (children in the same commune or district), and (3) Distant resident (all children living outside the district or abroad). Additional covariates included demographic (age, gender, marital status, education, residence, income, work status), health (self-rated health, physical activity, sleep satisfaction, disability), and social factors (social participation, welfare receipt, religious and non-religious group membership), all based on established links with depression risk.

Data Analysis: Descriptive statistics were used to summarize key sample characteristics. Multivariable logistic regression models were fitted in a sequential (block-wise) approach to assess associations between offspring spatial distribution and depression, adjusting for demographic, health, and social factors. Interaction terms with gender, age group, marital status, and place of residence were included to test for effect modification. Model fit was evaluated using AIC and BIC, and robust standard errors were applied. Statistical significance was set at $p < 0.05$.

Results

Characteristics of sample population: The final analytic sample included 3,688 older adults (mean age 70.1 years; 55% women; 62% rural). Most lived with at least one coresident child (67.5%), while 25.0% had children living nearby and 7.6% had only distant children. Overall, 26% of respondents met the threshold for depressive symptoms. Significant variation in demographic, health, and social characteristics was observed across living arrangement groups.

Factors Influencing Depression Status in Elderly Adults: Multivariable regression (Table 1) analyses showed that older adults with children living nearby had higher odds of depression compared to those living with children (OR = 1.24, 95% CI: 1.04–1.48) after adjusting for demographic and socioeconomic factors, but this association was no longer significant when health and social variables were included. Instead, very good self-rated health (OR = 0.30, 95% CI: 0.23–0.39), absence of disability, and participation in non-

religious organizations (OR = 0.66, 95% CI: 0.54–0.80) were the strongest protective factors.

Interaction analyses (Table 2) found that rural older adults with children living nearby had a 56% increased risk of depression (OR = 1.56, 95% CI: 1.03–2.37), while no significant interactions were observed for gender, age group, or marital status.

Goodness-of-fit: Model fit was evaluated using AIC, BIC, pseudo R^2, and AUROC. Inclusion of health and social engagement variables, in addition to demographic and economic factors, improved model fit and discrimination: AIC and BIC reached their lowest values in the fully adjusted model (AIC = 3753.01; BIC = 3895.91), pseudo R^2 increased to 0.1230, and AUROC rose to 0.75, indicating good predictive accuracy for late-life depression.

Discussion and Conclusion: The study found that while living with children was initially associated with lower depression risk in older Vietnamese adults, this relationship was explained by differences in health and social participation, and was only independently significant among rural elders. Very good self-rated health, absence of disability, and active non-religious social participation were the strongest protective factors. The results highlight the importance of health and social engagement for mental well-being in later life, particularly in rural areas where family proximity remains culturally important.

Limitation: Findings are limited by the cross-sectional design, simplification of family structure measures, and reliance on self-reported data. Further longitudinal and mediation analyses are needed to clarify causal pathways and explore the role of relationship quality and community resources.

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Table 1. Multivariable Logistic Regression Analysis of Factors Affecting Depression Level Among Elderly Adults (n=3,688)

Have depressive symptomatology	MODEL 1		MODEL 2		MODEL 3		MODEL 4	
	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)
Offspring Distribution (ref: Coresident)								
Nearby resident	1.18	0.99,1.39	**1.24***	1.04,1.48	1.13	0.94,1.36	1.15	0.95,1.36
Distant resident	0.86	0.64,1.15	1.12	0.82,1.51	1.04	0.75,1.43	1.01	0.73,1.40
Demographic Characteristics								
Female (ref: Male)	--	--	**1.25****	1.06,1.48	1.14	0.95,1.37	1.15	0.96,1.38
Age group (ref: 60-69)								
70-79	--	--	**1.24***	1.04,1.48	1.1	0.91,1.34	1.1	0.91,1.34
80+	--	--	**1.44****	1.16,1.79	1.08	0.85,1.37	1.06	0.83,1.35
Married/De facto (ref: Others)	--	--	**0.75****	0.63,0.89	**0.81***	0.67,0.97	**0.80***	0.67,0.97
Educational level (ref: Elementary/lower)								
High school	--	--	0.84	0.70,1.00	0.96	0.79,1.16	0.99	0.82,1.20
College/higher	--	--	**0.49*****	0.36,0.67	**0.62****	0.45,0.86	**0.65***	0.48,0.90
Rural (ref: Urban)	--	--	**1.24***	1.05,1.47	1.12	0.93,1.34	1.13	0.94,1.35
Working (ref: Not working)	--	--	**0.66*****	0.55,0.80	0.85	0.70,1.03	0.85	0.70,1.03
Annual household income (VND) (ref: < 10 million VND)								
≥ 10 million	--	--	0.88	0.75,1.05	0.9	0.76,1.08	0.91	0.76,1.09
Do not know	--	--	1.00	0.80,1.24	1.03	0.81,1.30	1.03	0.82,1.30
Health related variables								
Self-rated health (ref: Not healthy)								
Very healthy/ Healthier than average	--	--	--	--	**0.30*****	0.23,0.39	**0.29***	0.23,0.38
Average	--	--	--	--	**0.44*****	0.36,0.53	**0.43***	0.36,0.52
Physical exercises (ref: Inactive)	--	--	--	--	0.88	0.75,1.05	0.91	0.74,1.12
Sleep satisfaction								
No	--	--	--	--	**2.33*****	1.96,2.77	**2.39***	2.00,2.84
Not sure	--	--	--	--	**2.17*****	1.66,2.84	**2.18***	1.67,2.85
Any disability (ref: No disability)	--	--	--	--	**1.71*****	1.37,2.12	**1.67***	1.34,2.08
Social Determinants								
Social participation (ref: No participation)	--	--	--	--	--	--	0.93	0.75,1.14
Social welfare benefits (ref: Yes)	--	--	--	--	--	--	0.82	0.65,1.02
Religious group membership (ref: No	--	--	--	--	--	--	1.12	0.75,1.67

Have depressive symptomatology	MODEL 1		MODEL 2		MODEL 3		MODEL 4	
	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)	OR	CI (95%)
membership)								
Non-religious group membership (ref: No membership)	--	--	--	--	--	--	**0.66***	0.54,0.80

Robust standard errors used. *p < 0.05; **p < 0.01; ***p < 0.001.

Table 2. Adjusted Odds Ratios (ORs) for Depression by Offspring Spatial Distribution and key sociodemographic variables

Have depressive symptomatology	OR	95% CI
Interaction effects with gender		
Offspring distribution (ref: Coresident)		
Nearby resident	0.95	0.72, 1.26
Distant resident	0.74	0.44, 1.26
Female (ref: Male)	1.01	0.81, 1.26
Offspring distribution x Gender (ref: Coresident x Male)		
Nearby resident x Female	1.39	0.96, 2.01
Distant resident x Female	1.69	0.87, 3.30
Interaction effects with place of resident		
Offspring distribution (ref: Coresident)		
Nearby resident	0.84	0.58, 1.20
Distant resident	0.75	0.46, 1.22
Rural (ref: Urban)	0.98	0.79, 1.21
Offspring distribution x Gender (ref: Coresident x Urban)		
Nearby resident x Rural	**1.56***	**1.03, 2.37**
Distant resident x Rural	1.75	0.91, 3.35
Interaction effects with age group		

Have depressive symptomatology	OR	95% CI
Offspring distribution (ref: Coresident)		
Nearby resident	1.19	0.89, 1.58
Distant resident	0.97	0.64, 1.45
Age group (ref: 60-69)		
70-79	1.11	0.88, 1.40
80+	1.07	0.80, 1.42
Offspring distribution x Gender (ref: Coresident x 60-69)		
Nearby resident x 70-79	0.89	0.59, 1.34
Nearby resident x 80+	1.06	0.65, 1.73
Distant resident x 70-79	1.43	0.71, 2.88
Distant resident x 80+	0.38	0.11, 1.34
Interaction effects with marital status		
Offspring distribution (ref: Coresident)		
Nearby resident	1.34	0.98, 1.82
Distant resident	1.21	0.67, 2.19
Married/De facto (ref: Others)	0.87	0.70, 1.08
Offspring distribution x Gender (ref: Coresident x Others)		
Nearby resident x Married/De facto	0.79	0.54, 1.16
Distant resident x Married/De facto	0.75	0.37, 1.53

Robust standard errors used. *p < 0.05; **p < 0.01; ***p < 0.001.