

# The Association Between Volunteer Service Participation and Perceived Health Decline in Older Adults: Evidence from China

Yuqian Li\*

Guangzhou Medical University, Guangzhou 511436, Guangdong, China

Corresponding Author: Yuqian Li (li\_yuqian0424@163.com)

**Abstract:** Against the backdrop of accelerating population aging in China, where the population aged 60 and above reached 323.38 million (23.0% of the total population) by 2025, this study systematically examines the impact of volunteer service participation on perceived health decline among Chinese older adults, along with its age heterogeneity and underlying mediating mechanisms. Based on 9,175 nationally representative valid samples from the 2023 China Longitudinal Aging Social Survey (CLASS), we conduct empirical analysis via baseline ordinary least squares (OLS) regression, age-stratified regression, and Bootstrap mediating effect tests. The results show that volunteer service participation significantly alleviates older adults' perceived health decline, with a more pronounced protective effect for adults aged 70 and above. Self-efficacy plays a significant partial mediating role in this association, with the indirect effect accounting for 15.57% of the total effect. This study enriches the dynamic research on elderly subjective health and provides solid empirical evidence for optimizing elderly volunteer service systems and advancing China's active aging national strategy.

**Keywords:** Volunteer Service Participation; Perceived Health Decline; Older Adults

## 1. Introduction

By 2025, China's population aged 60 and above reached 323.38 million, constituting 23% of the total population [1]. In response, twenty Chinese departments, including the Ministry of Civil Affairs, jointly issued guidelines to promote elderly volunteer services and harness their social value for modernization [2]. Existing research on elderly volunteer services has largely focused on static factors such as participation characteristics and health benefits, leaving dynamic impacts, particularly on perceived health decline, under-explored [3-5]. To address this gap, the present study employs a mediating effect framework with age-stratified subgroup analysis to investigate four core questions: (1) the status and influencing factors of older adults' perceived health decline; (2) the association between volunteer participation and perceived health decline; (3) age-group heterogeneity in this association; and (4) the mediating role of self-efficacy in the above relationship. Our findings will deepen the understanding of the role of elderly volunteer participation in healthy aging, and provide new evidence for the positive effects of volunteer services.

## 2. Literature Review and Theoretical Framework

### 2.1 Volunteer Service Participation of Older Adults and Its Physical and Mental Health Promotion

**Mechanisms**

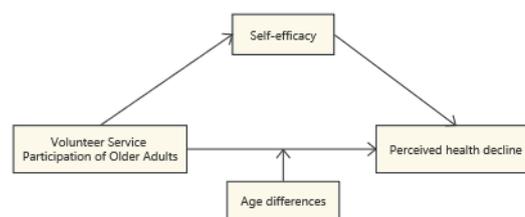
Existing research on elderly volunteerism covers participation barriers, health benefits, and psychosocial pathways [5]. Grounded in active aging theories, volunteering buffers role loss and enhances self-efficacy by shifting identities from care-receivers to value-providers [6]. While physical benefits include improved function and reduced chronic disease risk, outcomes depend on individual-context fit; excessive burdens may yield negative effects [7-10]. However, most studies remain static, with insufficient empirical examination of how volunteering dynamically impacts perceived health decline.

**2.2 Research on Perceived Health Decline and Its Influencing Factors in Older Adults**

Self-rated health is a critical indicator of mortality and functional decline, reflecting both subjective and objective health [11]. Current literature emphasizes its measurement validity, regional and socioeconomic disparities, and influencing mechanisms—including demographics, behaviors, and social support [11-13]. While a research framework exists, most studies are static. Perceived health decline, as a dynamic dimension, is shaped by psychological traits, physical activity, and environmental shocks [14]. This study builds on these findings to empirically test the factors driving dynamic health changes in older adults.

**2.3 Analytical Framework for the Impact of Volunteer Participation on Perceived Health Decline in Older Adults**

Volunteering, a core form of active aging, mitigates perceived health decline through dual pathways: objective physical improvement and subjective psychological adjustment [16]. Age acts as a moderator: the young-old gain more through sustained functional capacity, while the oldest-old benefit primarily via emotional support [17]. Furthermore, self-efficacy serves as a partial mediator. Volunteering enhances self-efficacy through mastery experiences, which fosters positive cognitive appraisal and weakens the perception of health decline [18].



**Figure 1:** Theoretical Analysis Framework.

**3. Data Analysis**

**3.1 Data Source**

Data are from the 2023 China Longitudinal Aging Social Survey (CLASS), a national survey of adults aged 60 years and above across 28 provinces using stratified multi-stage probability sampling. After excluding missing values and outliers, 9,175 valid observations were retained, demonstrating good representativeness.

**3.2 Variable Setting**

Dependent Variable: Perceived health decline, measured by the year-over-year health change (1 = improved to 3 = deteriorated); higher scores indicate greater decline. Independent Variable: Volunteer participation (binary: 1 = yes, 0 = no), defined as involvement in community or social volunteer activities. Mediating Variable: Self-efficacy, a continuous variable (range: 4–20) summed from four 5-point Likert scale items assessing social usefulness and participation willingness. Control Variables: Five dimensions including demographics (age, gender, residence, education, marital status), health behaviors (exercise, smoking), social support (Lubben scale, medical insurance, children's support), economic level (log-transformed income), and mental health (CES-9 depression scale).

### 3.3 Analysis Methods

Analyses include: (1) descriptive statistics; (2) baseline OLS regression; (3) age-stratified regression (60–69 vs. 70 years and above); (4) mediation tests using stepwise regression and Bootstrap.

## 4. Analysis Results

### 4.1 Descriptive Statistics

Among 9,175 older adults, the mean perceived health decline score was 2.086 (SD = 0.394), indicating moderate-to-high subjective decline. Volunteer participation rate was 30.8%. Mean age was 71.4 years (range 60–101); 51.8% were male, 55.5% urban, 12.4% highly educated, and 82.4% married. Regular exercisers comprised 38.7%; smokers, 28.7%. Medical insurance coverage reached 96.3%, and 78.7% received children’s support. Mean log income was 9.51 (SD = 1.18); mean depression score was 15.59 (SD = 3.34). All distributions were normal, supporting subsequent analyses.

**Table 1:** Descriptive Statistics of Variables.

| Variable Category           | Variable Name                   | Mean     | Standard Deviation | Minimum | Maximum |
|-----------------------------|---------------------------------|----------|--------------------|---------|---------|
| Dependent Variable          | Perceived Health Decline        | 2.0862   | 0.3935             | 1       | 3       |
| Independent Variable        | Volunteer Service Participation | 0.3082   | 0.4618             | 0       | 1       |
| Mediating Variable          | Self-Efficacy                   | 12.44752 | 3.29963            | 4       | 20      |
| Demographic Characteristics | Gender                          | 0.5184   | 0.4997             | 0       | 1       |
|                             | Age                             | 71.4396  | 6.0429             | 60      | 101     |
|                             | Urban-Rural Area                | 0.5547   | 0.4970             | 0       | 1       |
|                             | Marital Status                  | 0.8240   | 0.3809             | 0       | 1       |
| Health Behaviors            | Education Level                 | 0.1244   | 0.3300             | 0       | 1       |
|                             | Smoking Behavior                | 0.2868   | 0.4523             | 0       | 1       |
|                             | Physical                        | 3.3329   | 2.8731             | 1       | 9       |

|                             |                    |         |        |        |         |
|-----------------------------|--------------------|---------|--------|--------|---------|
| Social Security and Support | Exercise           |         |        |        |         |
|                             | Medical Insurance  | 0.9625  | 0.1900 | 0      | 1       |
|                             | Social Support     | 14.6202 | 4.8722 | 0      | 30      |
| Economic Level              | Children's Support | 0.7865  | 0.4098 | 0      | 1       |
|                             | Personal Income    | 9.5059  | 1.1759 | 4.6052 | 12.8992 |
|                             | (Logarithmic)      |         |        |        |         |
| Mental Health               | Depression Level   | 15.5859 | 3.3378 | 9      | 27      |

**4.2 Regression Analysis of Volunteer Service Participation on Perceived Health Decline in Older Adults**

Volunteer service participation has a significant and robust negative impact on perceived health decline in older adults. In the baseline model without control variables, the regression coefficient is negative and statistically significant, indicating that participants report lower perceived decline than non-participants. After including all control variables in the full model, the coefficient remains negative and significant, confirming the robustness of this effect.

Regarding control variables, perceived health decline increases significantly with age. Male older adults and those with spouses report significantly lower perceived decline, while urban residents report higher decline than their rural counterparts. At the health behavior level, smoking exacerbates perceived decline, whereas regular physical exercise alleviates it. In terms of social security, medical insurance coverage significantly reduces perceived decline and exerts the largest effect among all variables. Conversely, receiving support from children is associated with higher perceived decline. Depression intensifies perceived decline significantly, while education level, social support, and personal income show no significant effects.

Age-stratified analysis reveals that volunteer participation significantly alleviates perceived health decline in both the young-old group aged 60 to 69 and the oldest-old group aged 70 and above. However, notable age heterogeneity exists: the negative effect is stronger and more statistically significant in the oldest-old group, indicating that volunteering confers greater protective benefits for advanced-age adults.

**Table 2:** OLS Regression Results of the Impact of Volunteer Service Participation on Perceived Health Decline in Older Adults.

| Variable Name                   | Model 1                | Model 2<br>(Baseline Regression) | Model 3<br>(Young-Old Group) | Model 4<br>(Oldest-Old Group) |
|---------------------------------|------------------------|----------------------------------|------------------------------|-------------------------------|
| Volunteer Service Participation | -0.0480***<br>(0.0089) | -0.0476***(0.0092)               | -0.0351**(0.0134)            | -0.0560***(0.0126)            |
| Gender                          |                        | -0.0320**(0.0096)                | -0.0231(0.0147)              | -0.0327**(0.0127)             |
| Age                             |                        | 0.0046***(0.0007)                | —                            | —                             |
| Urban-Rural Area                |                        | 0.0252**(0.0087)                 | 0.0317**(0.0134)             | 0.0246**(0.0115)              |

|                         |                    |                    |                    |
|-------------------------|--------------------|--------------------|--------------------|
| Marital Status          | -0.0293**(0.0113)  | 0.0053(0.0211)     | -0.0513***(0.0132) |
| Education Level         | -0.0186(0.0129)    | -0.0075(0.0161)    | -0.0489*(0.0212)   |
| Smoking Behavior        | 0.0311**(0.0105)   | 0.0360**(0.0159)   | 0.0238(0.0140)     |
| Physical Exercise       | -0.0058***(0.0014) | -0.0067***(0.0022) | -0.0061***(0.0019) |
| Medical Insurance       | -0.1303***(0.0217) | -0.1182***(0.0292) | -0.1312***(0.0316) |
| Social Support          | 0.0000(0.0009)     | 0.0020(0.0013)     | -0.0010(0.0011)    |
| Children's Support      | 0.0510***(0.0101)  | 0.0476**(0.0153)   | 0.0537***(0.0133)  |
| Personal Income         | 0.0067+(0.0037)    | 0.0094(0.0058)     | 0.0027(0.0048)     |
| Depression Level        | 0.0137***(0.0013)  | 0.0106***(0.0019)  | 0.0164***(0.0017)  |
| Adjusted R <sup>2</sup> | 0.0031             | 0.0348             | 0.0186             |
|                         |                    |                    | 0.0341             |

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

### 4.3 Mediating Effect of Self-Efficacy

Self-efficacy plays a significant partial mediating role in the association between volunteer participation and perceived health decline. Bootstrap test results indicate a significant indirect effect (coeff = -0.0074,  $p < 0.001$ ), a direct effect (coeff = -0.0402,  $p < 0.001$ ), and a total effect of -0.0476 ( $p < 0.001$ ). The mediation effect accounts for 15.57% of the total effect, with a 95% confidence interval of [6.07%, 25.07%]. This confirms that volunteering alleviates perceived health decline both directly and through the indirect conduction of enhanced self-efficacy.

## 5. Discussion & Conclusion

This study examined the effect of volunteer participation on perceived health decline among older adults, revealing significant negative prediction, age heterogeneity, and the mediating role of self-efficacy. First, volunteer participation significantly and robustly predicts lower perceived health decline, even after controlling for demographics, health behaviors, socioeconomic status, social support, and mental health. This finding aligns with existing evidence that volunteering sustains physical function through regular activity and provides psychosocial benefits by offering new role identity and social interaction, thereby mitigating value loss and fostering positive health perceptions. Second, significant age heterogeneity exists. While volunteer participation reduces perceived health decline in both the young-old group aged 60 to 69 and the oldest-old group aged 70 and above, the effect is more pronounced in the oldest-old. This supports the social compensation effect, suggesting that vulnerable older adults with limited health resources gain greater marginal benefits from volunteering as a low-threshold intervention [7,19]. Third, self-efficacy partially mediates this relationship, accounting for 15.57% of the total effect. Volunteer participation enhances self-efficacy by maintaining physical and cognitive function and reconstructing social identity, which in turn mitigates negative age stereotypes and reduces perceived health decline [18,20].

## 6. Implication

Based on these findings, three policy implications are proposed. First, integrate elderly volunteer services into health promotion strategies as a low-cost, accessible intervention, improving institutional guarantees and building diversified community platforms. Second, establish age-tiered support systems recognizing that the oldest-old derive greater benefits, developing low-physical-load programs such as neighborhood companionship to leverage social compensation effects, while creating sustainable professional opportunities for the young-old. Third, prioritize self-efficacy enhancement in program design through positive feedback mechanisms and strengthened autonomy, enabling older adults to reconstruct positive self-perceptions and maximize health benefits.

## 7. Study Limitation

This study has two core limitations. First, the cross-sectional design precludes rigorous causal inference regarding dynamic changes in perceived health decline. Second, perceived health decline was measured using a single-item indicator rather than a standardized scale, limiting precision. Future research should employ longitudinal designs and validated scales to verify causal relationships and underlying mechanisms.

## Disclosure of Interests

The authors have no competing interests to declare that are relevant to the content of this article.

## References

- [1] Wang, P.P.: The total national population in 2025 is 1,404.89 million, with continuous advancement of high-quality population development. National Bureau of Statistics of China, Beijing (2026). <http://www.stats.gov.cn>, last accessed 2026/02/04
- [2] Ministry of Civil Affairs of the P.R.China, Organization Department of the Central Committee of the CPC, National Development and Reform Commission, et al.: Guiding opinions on supporting social participation of older adults and promoting the realization of productive aging. Gazette of the State Council of the P.R.China 2025(21), (2025). last accessed 2026/02/04
- [3] Li, Y.X.: Analysis on the characteristics and influencing factors of volunteer service participation of older adults in China. Inner Mongolia Social Sciences (Chinese Edition) 40(4), 164–171 (2019). DOI:10.14137/j.cnki.issn1003-5281.2019.04.023
- [4] Ni, C.X., Guo, S.Y., Peng, Y.Y., et al.: Silver age initiative in the new era: the impact of volunteer service participation on the well-being of older adults. Chinese Journal of Population Science 37(2), 68–83 (2023)
- [5] Sheng, Y.N., Liu, Y.Z.: The impact of social participation on the health of older adults. Chinese Journal of Population Science 2022(6), 97–110+128 (2022)
- [6] World Health Organization: Active ageing: a policy framework. World Health Organization (2002)
- [7] Miao, Q., Zhang, Y.: Productive aging and happy aging: the social compensation effect of public welfare participation. Journal of Zhejiang University (Humanities and Social Sciences Edition) 47(5), 5–18 (2017)
- [8] Zhang, W.C., Wu, Y.Y., Yang, H.L.: Volunteer service, age difference and subjective well-being. South China Journal of Economics 2021(3), 106–124 (2021). DOI:10.19592/j.cnki.scje.380058
- [9] Morrow-Howell, N., Mui, A.C.: Productive engagement of older adults: international research, practice, and policy introduction. Ageing International 38(1), 1–3 (2013)
- [10] Tang, F., Choi, E., Morrow-Howell, N.: Organizational support and volunteering benefits for older adults. The Gerontologist 50(5), 603–612 (2010)
- [11] Gu, L., Qiao, X.C.: Analysis on influencing factors of self-rated health of older adults in China. Population

- Journal 2006(6), 56–62 (2006)
- [12] Hu, H.W., Li, Y.J.: Research on the self-rated health status of older adults in China and its influencing factors—based on the estimation of ordered probit model. *Journal of Shanxi University of Finance and Economics* 38(1), 1–10 (2016)
- [13] Hu, Y., Gong, L., Chen, F.K., et al.: Analysis on influencing factors of self-rated health status of rural older adults. *Chinese Journal of Health Statistics* 34(4), 590–593 (2017)
- [14] Lüdecke, D., von Dem Knesebeck, O.: Worsened self-rated health in the course of the COVID-19 pandemic among older adults in Europe. *European Journal of Public Health* 33(6), 1148–1154 (2023)
- [15] Liu, H., Chao, J.Q., Yang, Y.C., Jiang, L.L.: Analysis and degree comparison of influencing factors of self-rated health in older adults. *Chinese General Practice* 18(7), 773–777 (2015)
- [16] Qian, N.: Elderly volunteer services from the perspective of active aging welfare policy. *Exploration* 2015(5), 120–124 (2015)
- [17] Morrow-Howell, N., Hong, S.-I., Tang, F.: Who benefits from volunteering? Variations in perceived benefits. *The Gerontologist* 49(1), 91–102 (2009)
- [18] Zhou, W.X., Guo, G.P.: Self-efficacy: concept, theory and application. *Journal of Renmin University of China* 2006(1), 91–97 (2006)
- [19] Hu, Y.Q., Zhou, L.S.: Self-efficacy of health behaviors and its influencing factors in community-dwelling older adults. *Chinese Journal of Gerontology* 32(24), 5548–5550 (2012)
- [20] Chen, S.Y., Liu, G., Jing, L.J., et al.: The relationship between community exercise health service quality and health promotion behaviors of older adults: the mediating role of self-efficacy. *Chinese Journal of Health Psychology* 32(11), 1601–1605 (2024)