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Grandparental Caregiving, Social Participation, and Women's Employment: An Analysis of Mediating Effects

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Abstract. As a flexible, low-cost informal caregiving arrangement, grandparental caregiving is an important means of alleviating family care burdens and supporting women's employment. Drawing on data from the China Family Panel Studies (CFPS 2022), this paper constructs a mediating path model of "family caregiving support—social participation—women's employment" and conducts empirical testing using regression and Bootstrap methods. The results show, first, that high-frequency grandparental caregiving significantly increases women's employment probability by freeing their time and energy resources. Second, high-frequency grandparental caregiving significantly enhances women's social participation, demonstrating a strong social capital effect. Third, social participation plays a partial mediating role between grandparental caregiving and women's employment. These findings provide empirical evidence and policy implications for promoting the coordinated development of childcare policies, gender equality, and family support systems.

Keywords: grandparental caregiving, women's employment, social participation

1. Introduction and hypotheses

Under the dual influence of traditional family functions and modern childcare pressures, an increasing number of grandparents are assuming childcare responsibilities for their grandchildren—a phenomenon especially common in both urban–rural settings and larger families. The emergence of grandparental caregiving enables a redistribution of intrafamily care responsibilities, partially relieving women from daily childcare tasks, which in turn affects their employment participation, job stability, and work choices. Based on micro-level data from the 2022 China Family Panel Studies (CFPS), this paper focuses on women's employment behavior in the context of grandparental caregiving, aiming to reveal its underlying impact pathways and mechanisms, thereby enriching the family-embedded perspective in research on women's employment.

1.1. The impact of grandparental caregiving on women's employment

Childcare responsibilities are one of the key factors influencing women's labor supply. Zhang Kangsi and Gu Shuangjing's analysis based on CFPS data found that women's labor force participation rate declines significantly after childbirth, with negative impacts on working hours and labor income [1]. Family responsibilities produce a "crowding-out effect" on women's career

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development, while the lack of public childcare services and rigid employment mechanisms exacerbate the decline in women's labor participation following childbirth. In the context of low labor market participation and fertility rates among married women in Italy, Boca developed a labor supply and fertility decision model, showing that the availability of public childcare services and flexible employment opportunities can improve women's labor force participation and fertility intentions [2]. Against this backdrop, non-market care resources within the family, particularly grandparental caregiving, become crucial for women to balance family and work demands. Wang Jianying and colleagues, using CFPS data, found that grandparental caregiving significantly increases the non-agricultural labor participation rate of rural women of childbearing age and extends their average weekly working hours—especially during the preschool stage of their children—demonstrating its positive effect [3]. However, the mechanisms of grandparental caregiving remain unclear in current research. This study therefore proposes the following hypothesis:

H1: Grandparental caregiving has a significant positive effect on women's employment.

1.2. The impact of grandparental caregiving on women's social participation

In traditional family structures, childcare responsibilities are typically borne by mothers, and this gendered division of labor restricts women's opportunities for outside activities and social interactions to some extent. The involvement of grandparents in caregiving releases valuable time and energy for women, serving as an important support factor for their participation in social activities. Grandparental care not only physically reduces mothers' childcare burdens but also psychologically alleviates their "maternal anxiety," making them more willing and able to step outside the household and expand their social networks. Li Yanchu and Gao Jingjing's research indicates that older adults enhance their own social participation through providing grandparental care, suggesting that this intergenerational support mechanism may also produce a "feedback-style" positive spillover effect on women: grandparents' caregiving reduces women's childcare pressures while indirectly increasing their participation in social activities [4]. Li Sheng and Ren Weirong point out that women's social participation outside the formal system tends to be relatively weak, but once they have relatively sufficient time resources, their motivation for participation can be rapidly activated. Grandparental caregiving precisely provides women with such time resources, alleviating their "time poverty" problem [5]. Therefore, the following hypothesis is proposed:

H2: Grandparental caregiving has a significant positive effect on women's social participation.

1.3. The impact of social participation on women's labor market behavior

Social participation, as an expression of individuals integrating into society, has a significant impact on workers' labor market behavior. Guo Qing further points out that the level of social integration has a significant positive effect on employment quality among the new generation of migrant workers [6]. Deng Zhiping and Zheng Huangye find that the level of voluntary social participation among mobile youth is significantly higher than other types of participation, and that individuals' socioeconomic status is a core variable influencing their capacity for social participation, suggesting a possible bidirectional reinforcement mechanism between social participation and employment opportunities [7]. Li Cong and Li Qiang, in their study of reemployment among older adults, find that internet use significantly expands individuals' social networks, indirectly increasing the likelihood of reemployment by enhancing social connections and interaction frequency [8]. Chen Tingting finds that although childbirth has a significant negative effect on the employment quality of migrant women, this impact is significantly weakened with the involvement of social capital,

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indicating the buffering and enabling functions of social capital [9]. Social participation is not only an important supporting force for women to "step out of the home and enter the workplace," but also serves as an institutional and interactive mechanism for breaking gender divisions of labor and accessing higher-quality employment. Therefore, this study proposes the following hypothesis:

H3: Social participation has a significant positive effect on women's employment.

1.4. The mediating role of social participation

Grandparental caregiving can free women's time and emotional resources, thereby increasing the frequency and quality of their social participation. In turn, social participation can enhance women's social capital and employment readiness, ultimately affecting their employment status. Xu Qi points out that marital and reproductive events, especially childcare responsibilities, significantly reduce the time women have for social interactions and public activities [10]. Similarly, Zhang Qi and Chu Liming find that the care demands of children—especially those aged 0–3 years—significantly increase women's time spent on emotional domestic labor, accounting for over 80% of the total increase [11]. In this regard, Zhu Huilin and colleagues argue that although grandparental caregiving affects older adults' labor supply, for the younger generation of women, the time resources it indirectly frees can promote higher levels of social participation [12]. Grandparental care can to some extent reduce women's pressure to provide constant companionship in daily childcare, potentially creating conditions for them to re-engage in community activities, training, or informal employment, thereby expanding their social networks and improving reemployment opportunities. This study therefore proposes the following hypothesis:

H4: Social participation mediates the relationship between high-frequency grandparental caregiving and women's employment.

2. Research design

2.1. Data source

The data used in this study are drawn from the China Family Panel Studies (CFPS), a nationally representative longitudinal survey jointly conducted by the Chinese Academy of Social Sciences and the Institute of Social Science Survey at Peking University. Launched in 2010, the CFPS employs a multi-stage, stratified, and probability-proportional-to-size (PPS) sampling method, conducting ongoing large-scale interviews at the household and individual levels across China. With broad sample coverage, strong longitudinal continuity, and rich variable dimensions, CFPS provides a solid empirical foundation for this research. Given that the central focus of this study is whether grandparental caregiving indirectly influences women's employment status through enhancing social participation, we primarily utilize two CFPS 2022 subsamples: the "Individual Questionnaire" and the "Household Structure Questionnaire" to construct a micro-level dataset for empirical analysis. Regarding sample selection, this study adopts the World Health Organization's extended definition of "youth" as individuals up to age 44. Accordingly, we include women aged 20 to 44 who have at least one child in the household as the target population. The dataset is further refined by removing cases with substantial missing values in core variables such as frequency of grandparental caregiving, social participation indicators, and employment status to ensure data completeness and the scientific validity of the analysis. After cleaning, the final effective sample consists of 1,445 respondents.

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2.2. Variable description

2.2.1. Dependent variable (Y)

The dependent variable is "employment status," which measures whether the respondent is currently employed. It is derived from a set of labor-related questions in the CFPS individual questionnaire, including: qgb1 (whether currently working), qgb201 (whether self-employed), qgb3 (whether helping with family business), and qgb4 (whether engaged in wage labor). If the respondent reports engaging in any form of employment or is actively seeking work at the time of the survey, the variable is coded as 1. If the respondent is unemployed due to childcare responsibilities, the variable is coded as 0.

2.2.2. Independent variable (X)

Grandparental caregiving refers to a situation in which, due to various reasons, parents are unable to care for their children and (maternal or paternal) grandparents assume the primary caregiving and educational responsibilities for more than six months [13]. This definition emphasizes the grandparents' role as the main caregivers rather than occasional helpers. Zhou Peng has pointed out limitations in current measurement approaches, such as reliance on proxy indicators and failure to differentiate caregiving duration or consider subjective willingness, and recommends combining direct measurement with both objective and subjective elements [14]. Following this, the study uses the original CFPS 2022 question "Do your parents help you with housework or childcare?" and further incorporates caregiving frequency. Respondents who report receiving such help three times per week or more are defined as receiving "high-frequency grandparental caregiving." Based on this, a binary variable is constructed to indicate whether the respondent receives high-frequency grandparental caregiving.

2.2.3. Mediating variable (M)

"Social participation" is used as a mediating variable to reflect the extent to which women expand their social networks and access social support resources that may facilitate labor force participation. Zhao Han and colleagues categorize social participation into four types: political participation, economic participation, religious participation, and engagement in social activities. Given the generally low levels of political and religious participation in the Chinese context, they suggest focusing on the more prevalent dimensions of social and economic participation [15]. Taking into account the characteristics of the CFPS data and the focus of this study, a composite indicator of social participation is constructed from four dimensions: Social Interaction: measured by the frequency with which respondents share their life or work updates with friends on social media in the past year; Online Engagement: based on the U95 question series, which includes questions such as "How important is the internet to you in areas such as staying in touch with family/friends, work, and study?" and "How much time do you spend on mobile internet use per day?"; Public Participation: assessed by asking whether the respondent participated in village or neighborhood committee elections within the past five years; Subjective Sense of Connection: includes self-reported ratings of interpersonal relationships, happiness, and sense of meaning in life.

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2.3. Model specification

This study draws on Wen Zhonglin's mediation effect model [16] to design the analytical framework and describe the relationships among variables using the following regression equations. When the independent variable X influences the dependent variable Y through its effect on another variable M, M is considered a mediating variable.

$$Y = cX + e1 \tag{1}$$

$$M = aX + e2 \tag{2}$$

$$Y = c\prime X + bM + e3 \tag{3}$$

In Equation (1), the coefficient c represents the total effect of the independent variable X on the dependent variable Y. In Equation (2), the coefficient a measures the effect of X on the mediator M. In Equation (3), the coefficient b indicates the effect of the mediator M on Y, controlling for X, while c′ represents the direct effect of X on Y after controlling for M. e1~e3 are regression residuals. In this simple mediation model, the mediation effect is equivalent to the indirect effect, calculated as the product of coefficients a and b. The relationship among the total, direct, and indirect effects is as follows:

$$c = c\prime + ab \tag{4}$$

3. Empirical analysis

3.1. Descriptive statistical analysis

Regarding the dependent variable, 21.7% of women in the sample were unemployed due to childcare responsibilities, while 78.3% were in employment. This indicates that most women of working age still demonstrate a strong willingness and capacity to participate in the labor force. For the independent variable, the mean social participation score is 2.78 with a standard deviation of 1.62, reflecting an overall low level of engagement in social activities within the sample but with substantial variation. Among respondents, 37.2% reported receiving grandparental caregiving support, while 62.8% did not. This suggests that although grandparental caregiving remains relatively common in China, nearly 60% of women still have to shoulder childcare responsibilities independently. Regarding control variables, the mean education level of women in the sample is 4.58 with a standard deviation of 1.664, roughly equivalent to "junior middle school," indicating that the sample is skewed toward the lower and middle education levels. In terms of psychological status, the "moderate" category accounts for the highest proportion (44.5%), followed by "good" (28.1%), indicating that overall, the psychological health of the sampled women tends to be moderate to above average. As for health status, "fairly healthy" is the most common response (53.6%), followed by "very healthy" (21.0%) and "extremely healthy" (13.4%), suggesting generally good health among respondents.

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Table 1. Descriptive statistics

Variable Name	Coding/Values	Mean/Percentage	Standard Deviation
Dependent Variable			
Employment status	0 = Not employed due to childcare 1 = Employed	21.7% 78.3%	
Independent Variable			
Social participation (mean score)		2.78	1.62
High-frequency grandparental caregiving	0 = No 1 = Yes	62.8% 37.2%	
Control Variables			
Education level	0 = Illiterate/Semi-literate 1 = Nursery 2 = Kindergarten/Preschool 3 = Primary School 4 = Junior Middle School 5 = High School/Vocational/Technical School 6 = Junior College 7 = University Undergraduate 8 = Master's Degree 9 = Doctorate 10 = Never Attended School	4.58	1.664
Psychological status	0 = Very poor 1 = Poor 2 = Moderate 3 = Good	4.5% 22.9% 44.5% 28.1%	
Health status	0 = Unhealthy 1 = Average 2 = Fairly healthy 3 = Very healthy 4 = Extremely healthy	6.9% 5.2% 53.6% 21.0% 13.4%	

3.2. Collinearity diagnostics

Before conducting the formal regression analysis, this study performed a collinearity diagnostic on the main independent variables. Specifically, tolerance and the Variance Inflation Factor (VIF) were used as evaluation criteria. Table 2 reports the collinearity diagnostic results for each variable in the regression model.

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Table 2. Collinearity diagnostic results

Variable	Unstandardized Coefficient		Standardized Coefficient	t	Significance	Collinearity Statistics	
	B	Standard Error	Beta			Tolerance	VIF
(Constant)	.674	.045		14.899	.000		
High-frequency grandparental caregiving	.098	.022	.115	4.369	.000	.977	1.023
Composite social participation index	.023	.007	.091	3.472	.000	.973	1.028
Education level	.007	.007	.028	1.048	.295	.962	1.040
Health	-.020	.011	-.048	-1.804	.071	.947	1.056
Psychological status	.012	.013	.024	.877	.380	.924	1.082

From the results, none of the VIF values exceed the commonly accepted threshold of 10, with the maximum VIF being only 1.082. This indicates no severe multicollinearity among the variables. Additionally, all tolerance values are greater than 0.1, further confirming the absence of high linear correlations between model variables. Therefore, the multivariate regression analysis in this study is not affected by collinearity issues, and the estimation results are considered robust and stable.

3.3. Differential analysis

To further examine differences in social participation levels among women with varying characteristics, this study uses one-way analysis of variance (ANOVA) to compare groups based on education level, health status, and psychological status. The results are presented below.

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Table 3. One-way ANOVA results

Grouping Variable		Social Participation (Mean ± SD)	95% CI for Mean	N	F	P	Welch's Test p
Education Level	Illiterate/Semi-literate	2.73 ± 1.62	2.32 - 3.14	63	3.768	0.000	0.002
	Primary School	2.74 ± 1.61	2.52 - 2.96	207			
	Junior Middle School	2.57 ± 1.59	2.44 - 2.71	543			
	High School/Vocational/Technical	2.77 ± 1.61	2.56 - 2.99	225			
	Junior College	3.01 ± 1.59	2.78 - 3.23	194			
	Undergraduate	3.13 ± 1.69	2.89 - 3.37	189			
	Master's Degree and above	3.64 ± 1.53	2.79 - 4.48	15			
	Never Attended School	2.62 ± 1.92	1.14 - 4.10	9			
Psychological Status	Very Poor	2.08 ± 1.43	1.73 - 2.44	65	8.485	0.000	0.000
	Poor	2.53 ± 1.56	2.37 - 2.70	331			
	Moderate	2.88 ± 1.63	2.75 - 3.01	643			
	Good	2.92 ± 1.65	2.76 - 3.08	406			
Health Status	Unhealthy	2.61 ± 1.61	2.28 - 2.93	99	2.377	0.050	0.055
	Average	2.60 ± 1.59	2.23 - 2.96	75			
	Fairly Healthy	2.70 ± 1.61	2.59 - 2.82	774			
	Very Healthy	2.93 ± 1.63	2.74 - 3.11	304			
	Extremely Healthy	2.99 ± 1.65	2.75 - 3.22	193			

First, in terms of education level, women's social participation shows a clear upward trend with increasing education. The mean scores for the illiterate and primary school groups are both below 2.74, while those for undergraduate and higher-degree groups rise to 3.13 and above. Women with a master's degree or higher report the highest mean social participation score (3.64). The difference is statistically significant ($F = 3.768$, $p < 0.001$), and the robust Welch's test also confirms significant group differences ($p = 0.002$). Second, health status also shows a pattern in which social participation increases with better self-reported health. The mean score for the "unhealthy" group is 2.61, which is noticeably lower than the 2.99 reported by the "extremely healthy" group. Although the overall difference is close to conventional significance levels ($F = 2.377$, $p = 0.050$), the Welch's test result is slightly above the threshold ($p = 0.055$). Nonetheless, the mean trend suggests that good

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health promotes women's willingness and ability to engage in social activities. Finally, regarding psychological status, there are significant differences in social participation ($F = 8.485$, $p < 0.001$; Welch's test $p = 0.000$). The mean social participation score is only 2.08 for those reporting "very poor" psychological status, while it rises to 2.92 for those in the "good" category—a clear gap. This finding indicates that women with higher education, better health, and better psychological well-being demonstrate significantly greater enthusiasm for social participation, likely linked to their stronger capacity for information acquisition, richer social resources, and greater role awareness.

This study further investigates which groups of women are more likely to receive high-frequency grandparental caregiving support, using cross-tabulations and chi-square tests to analyze the association with "high-frequency grandparental caregiving." The results are shown in Table 4.

Table 4. Differences in high-frequency grandparental caregiving (n = 1445)

Variable		No Grandparental Caregiving (n, %)	High-Frequency Grandparental Caregiving (n, %)	χ^2	p
Education Level	Illiterate/Semi-literate	36 (57.1%)	27 (42.9%)	64.181	< 0.001
	Primary School	153 (73.9%)	54 (26.1%)		
	Junior Middle School	379 (69.8%)	164 (30.2%)		
	High School/Vocational/Technical	138 (61.3%)	87 (38.7%)		
	Junior College	94 (48.5%)	100 (51.5%)		
	Undergraduate	95 (50.3%)	94 (49.7%)		
	Master's Degree and above	4 (26.7%)	11 (73.3%)		
	Never Attended School	8 (88.9%)	1 (11.1%)		
Psychological Status	Very Poor	48 (73.8%)	17 (26.2%)	6.558	0.087
	Poor	219 (66.2%)	112 (33.8%)		
	Moderate	395 (61.4%)	248 (38.6%)		
	Good	245 (60.3%)	161 (39.7%)		
Health Status	Unhealthy	62 (62.6%)	37 (37.4%)	0.528	0.971
	Average	48 (64.0%)	27 (36.0%)		
	Fairly Healthy	491 (63.4%)	283 (36.6%)		
	Very Healthy	188 (61.8%)	116 (38.2%)		
	Extremely Healthy	118 (61.1%)	75 (38.9%)		

First, regarding education level, the proportion of women receiving high-frequency grandparental caregiving differs significantly ($\chi^2 = 64.181$, $df = 7$, $p < 0.001$). Overall, this distribution displays a "U-shaped" pattern, with the lowest and highest education groups showing higher rates of caregiving support. Second, in terms of psychological status, women with better psychological status appear more likely to receive high-frequency grandparental caregiving. For example, 39.7% of the "good" psychological status group receive such support, compared to only 26.2% in the "very poor" group. However, the overall chi-square value does not reach conventional significance ($\chi^2 = 6.558$, $p =$

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0.087). Third, regarding health status, no significant differences were found in the receipt of high-frequency grandparental caregiving across different health levels (χ^2 = 0.528, p = 0.971). In summary, women's education level has a significant impact on their likelihood of receiving high-frequency grandparental caregiving, possibly influenced by factors such as intergenerational resource allocation, family structure, or social support networks.

Furthermore, this study also examines whether women of different characteristics are more likely to withdraw from employment due to childcare responsibilities. The related analysis is shown in Table 5.

Table 5. Differences in employment status (n = 1445)

Variable		Not Employed Due to Childcare (n, %)	Employed (n, %)	χ^2	p
Education Level	Illiterate/Semi-literate	9 (14.3%)	54 (85.7%)	33.046	< 0.001
	Primary School	47 (22.7%)	160 (77.3%)		
	Junior Middle School	133 (24.5%)	410 (75.5%)		
	High School/Vocational/Technical	63 (28.0%)	162 (72.0%)		
	Junior College	43 (22.2%)	151 (77.8%)		
	Undergraduate	15 (7.9%)	174 (92.1%)		
	Master's Degree and above	1 (6.7%)	14 (93.3%)		
	Never Attended School	2 (22.2%)	7 (77.8%)		
Psychological Status	Very Poor	17 (26.2%)	48 (73.8%)	2.611	0.625
	Poor	74 (22.4%)	257 (77.6%)		
	Moderate	143 (22.2%)	500 (77.8%)		
	Good	79 (19.5%)	327 (80.5%)		
Health Status	Unhealthy	20 (20.2%)	79 (79.8%)	2.155	0.541
	Average	12 (16.0%)	63 (84.0%)		
	Fairly Healthy	165 (21.3%)	609 (78.7%)		
	Very Healthy	69 (22.7%)	235 (77.3%)		
	Extremely Healthy	47 (24.4%)	146 (75.6%)		

Firstly, in terms of educational attainment, women with a bachelor's degree or higher have a significantly lower rate of exiting employment due to childcare compared to those with lower levels of education. In particular, the proportion of women not employed due to childcare responsibilities is generally above 20% among those with a high school education or below. Chi-square test results confirm a significant difference between groups (χ^2 = 33.046, p < 0.001). Secondly, regarding psychological status, the proportion of women not employed due to childcare is 26.2% in the "very poor" group, 22.4% in the "poor" group, 22.2% in the "average" group, and 19.5% in the "good" group. However, these differences are not statistically significant (χ^2 = 2.611, p = 0.625). Thirdly, in terms of health status, the proportion not employed due to childcare is 20.2% among those in "poor health," 16.0% in "fair health," 21.3% in "relatively healthy," 22.7% in "very healthy," and 24.4% in "extremely healthy" groups. Although there are numerical differences among these categories, the overall variation is not statistically significant (χ^2 = 2.155, p = 0.541). In summary, differences in

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women's likelihood of exiting employment due to childcare responsibilities are most pronounced across education levels, suggesting that educational attainment is a key factor shaping women's employment outcomes in the context of childcare demands.

3.4. Regression and mediation effect analysis

Table 6. Regression results for the mediation model

Variable	Model 1: Dependent Variable M		Model 2: Dependent Variable Y		Model 3: Dependent Variable Y	
	Standardized β	P	Standardized β	P	Standardized β	P
Education	0.070	0.008	0.034	0.198	0.028	0.295
Health	0.055	0.039	-0.043	0.107	-0.048	0.071
Psychological Status	0.092	***	0.032	0.235	0.024	0.380
X (High-Frequency Grandparental Caregiving)	0.07**	0.070	0.121***	0.000	0.115***	0.000
M (Social Participation)					0.091***	0.000
R^2	0.027		0.020		0.028	
Adjusted R^2	0.025		0.017		0.025	
F	10.113		7.303		8.298	

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

Table 7. Mediation effect analysis

Effect Type	Effect Value	Boot SE	Boot CI Lower	Boot CI Upper	Relative Effect (Proportion)
Total Effect					
Direct Effect	0.626	0.1449	0.3420	0.9100	
Indirect Effect (Mediated)	0.332	0.0161	0.0070	0.0695	

First, in Model 1, with social participation as the dependent variable, the results show that high-frequency grandparental caregiving has a significant positive effect on women's social participation ($\beta = 0.070$, $p < 0.01$). Controlling for education, health, and psychological status, the overall regression model is significant ($F = 10.113$, $p < 0.001$) with $R^2 = 0.027$, indicating that grandparental caregiving meaningfully promotes women's engagement in social activities. Second, in Model 2, where employment status is the dependent variable, high-frequency grandparental caregiving also has a significant positive predictive effect on women's employment ($\beta = 0.121$, $p < 0.001$). This model explains $R^2 = 0.020$ (adjusted $R^2 = 0.017$), indicating that without considering the mediation path, grandparental caregiving exerts a direct effect on women's employment outcomes. When the mediator is introduced in Model 3, social participation itself shows a significant positive effect on employment status ($\beta = 0.091$, $p < 0.001$). At the same time, high-frequency grandparental caregiving continues to have a significant direct effect on employment ($\beta = 0.115$, $p < 0.001$), indicating partial mediation. The explanatory power of the model improves slightly ($R^2 = 0.028$, $F = 8.298$), showing that including social participation enhances the model's ability to explain women's employment status. Further Bootstrap testing (Table 7) reveals an indirect effect of 0.0332, with a Bootstrap standard error of 0.0161 and a 95% confidence interval [0.0070, 0.0695] that does not

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include zero. This indicates that the mediation effect is statistically significant. In summary, whether women receive high-frequency grandparental caregiving support not only has a direct positive effect on their employment status, but also indirectly promotes employment by increasing social participation.

3.5. Robustness checks

To verify the robustness of the regression results, this study conducted additional analyses by adjusting the sample selection and replacing estimation methods. First, the analytical sample was restricted to cases with complete observations on key variables, reducing the sample size from 1,515 to 1,006. After re-estimating the PROCESS model, the mediation effect remained robust: the positive effect of high-frequency grandparental care on social participation persisted ($B = 0.5714$, $p < 0.001$), and social participation continued to have a significant impact on employment status ($B = 0.2686$, $p < 0.001$). The indirect (mediated) effect also remained statistically significant, with the 95% confidence interval excluding zero ($CI = [0.0863, 0.2369]$), confirming the presence and robustness of the mediation mechanism. Second, the estimation approach was changed from the PROCESS macro to a stepwise causal regression framework, with “social participation” and “employment status” modeled as dependent variables in turn. The results again demonstrated significant positive effects of high-frequency grandparental care on both social participation ($B = 0.236$, $p = 0.007$) and employment status ($B = 0.098$, $p < 0.001$). Social participation also significantly promoted employment ($B = 0.023$, $p = 0.001$). The overall model fit was satisfactory ($F = 10.113$, $p < 0.001$), with an adjusted R^2 of 0.025, indicating reasonable explanatory power.

4. Conclusion and policy recommendations

This study uses data from the 2022 wave of the China Family Panel Studies (CFPS) to conduct an empirical analysis of the mediating mechanism through which high-frequency grandparental care may promote women's employment by enhancing their social participation. The results demonstrate that high-frequency grandparental care has a significant positive effect on women's social participation: grandparents' involvement alleviates the tension between motherhood and employment roles by freeing up women’s time resources and providing emotional support, enabling them to engage more actively in social roles. It also strengthens the internal division of responsibilities and emotional security within the family, offering psychological assurance for women to expand their social networks. Moreover, higher levels of social participation significantly increase the probability of employment for women. Social participation is a critical channel for individuals to accumulate resources, access information, and expand opportunity structures. For women, social participation not only offers more job information and networking opportunities—acting as an “implicit push” during job searches—but also boosts their confidence and agency. Importantly, social participation plays a partial mediating role in the relationship between high-frequency grandparental care and women’s employment. This finding expands on the traditional view of family caregiving as merely a “substitute parenting mechanism,” underscoring the need to incorporate social-behavioral mediation mechanisms into a more systematic understanding of women's employment pathways. In other words, family resources not only provide practical living conditions but also stimulate individuals' capacity to participate actively in society and rebuild their life order.

Based on these findings, this paper offers the following policy recommendations: First, promote the development of integrated care-support networks that involve both families and communities.

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On the one hand, there is a need to accelerate the supply of universal childcare services by supporting the establishment of diverse institutions such as community childcare centers, flexible after-school programs, and nighttime care services through government funding, corporate partnerships, and philanthropic investment to reduce families' caregiving burdens. On the other hand, policy toolkits encouraging grandparental involvement—such as introducing "grandparent care subsidies"—should be developed to help avoid intergenerational conflicts and enable families to achieve a virtuous cycle of "emotional support—role complementarity—co-parenting." Second, build diverse platforms and incentive mechanisms for women's social participation. Policies should coordinate the development of both physical and virtual spaces, encouraging collaboration among communities, women's federations, and social enterprises to establish neighborhood mutual-aid networks, interest groups, and skills training systems, thereby creating regular, low-threshold channels for social participation. In terms of incentives, policymakers can link "social participation records" with "community service points" to establish priority access to certain public services, institutionalizing a stronger sense of motivation and social reward for participation. Finally, promote differentiated and refined employment and social-support policies for women. On one level, policies should be tailored to women's specific characteristics such as educational attainment, health status, and psychological well-being. For example, low-educated women can be offered vocational training and lifelong learning resources; women of childbearing age facing psychological pressures can receive professional counseling services; and those with poorer health or heavier childcare responsibilities can be supported through care subsidies and flexible employment measures. On another level, institutional coordination should be strengthened to build a more equitable and inclusive, women-friendly social support system that prevents structural inequalities—such as urban-rural and economic disparities—from further exacerbating unequal opportunities for women in employment and social participation.

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