

Social Support and Elderly People's Happiness in China: Evidence from the Chinese Longitudinal Healthy Longevity Survey (CLHLS)

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Abstract: To investigate the direct effect and indirect effect of three different types of social support on elderly people's happiness, and to provide some suggestions for improvement. This descriptive and analytical study was carried out on 8,082 elderly who come from the CLHLS in 2018 dataset. Moreover, we conducted data analysis in 2 steps using multiple linear regression. The empirical results indicate that three dimensions of social support have a significantly positive effect on elderly people's happiness. Furthermore, the indirect effect of family support and community support on elderly people's happiness via the mental health is positive, while the indirect effect of relevant sector support on elderly people's happiness via the mental health is not significant. Simultaneously, the indirect effect of social support on elderly people's happiness via the physical health is also not significant. Social support has a considerable positive impact on happiness among elders. Thus, we suggested that an all-round, multi-level social support system should be developed to improve elderly people's happiness.

Keywords: Elderly People's Happiness; Social Support; Mediating Effects; Mental Health

1. Introduction

According to the seventh national census bulletin which is published in May 2021, the people aged 60 and above accounted for 18.7% of the total population, while those over 65 made up 13.5%. Compared with the sixth national census, the proportion of people aged 60 and above increased by 5.44%, and the proportion of people aged 65 and above increased by 4.63%. With the acceleration of

China's aging process, healthy aging has attracted more and more attention. Health is a critical determinant of healthy aging. In social science research, subjective happiness plays an important role in human health. So improving subjective happiness has an important meaning for healthy aging construction.

There are so many factors that influence older people's subjective happiness. Among those factors, social support has long been recognized as an important predictor of subjective well-being in older individuals [1]. Numerous studies have been carried out to explore the notion of social support and the measurement of social support. For example, social support is defined as information that might make the participant feel cared for and loved, respected [2]. Social support is an intimate relationship with mutually directional connections [3]. Following that, scholars gradually improved the concept of social support, dividing it into emotional support and instrumental support [4,5]. The basis of emotional support is a support person's qualities or behavior, such as empathy, caring, love, respect, and trust [6]. Instrumental support can involve things like spending time with someone or giving them materials or money [7]. Furthermore, from the perspective of social support providers, social support can be divided into formal support and informal support [8]. The main source of formal support is official organizations such as government, institutions and communities. The main source of informal support is family members, neighbors, friends, peer groups and other members [9]. Compared with formal support, informal support offered by families is still a matter of widespread concern and it is often overlooked in terms of total care costs [10]. In a series of studies, researchers have consistently focused on the impact of social

support on elderly health. Nonetheless, there are two main reasons why our research makes marginal contributions to the literature. (1) we built upon an analytical framework for the impact mechanism of social support on elderly people's happiness. (2) we constructed a multivariate multiple mediation model. Introduce physical health and mental health as mediator variables, and analyze the interaction between mediator variables.

2. Mechanism Analysis

We developed a conceptual model of the mechanism of the relationship between social support and elderly people's happiness, as shown in Figure 1. Based on the availability of data and research purposes, we divided social support into three aspects, which includes family support, community support and government support. The effects of social support on elderly people's happiness include direct effect and mediation effect.

Firstly, the direct effect is that the social support directly improves elderly people's happiness. (1) Some key factors such as financial support, life care, company from family play moderating roles in the process of family support to directly improve elderly people's happiness [11]. (2) The close interaction such as home visit and so on between the elderly people and community worker are epitomized by the community support [12]. It directly increases elderly people's sense of happiness. (3) Government support is mainly reflected in social security systems such as endowment insurance and medical insurance [13,14]. It ensures the elderly people's access to food, health expenditure and so on, thus directly improving their happiness.

Secondly, the mediation effect is that the social support indirectly improves elderly people's happiness from two dimensions: physical health and mental health. On the one hand, the physical health dimension refers to the fact that the social support enables elderly people to enjoy more participation in social interaction, thus gaining more sense of happiness [15,16]. On the other hand, the mental health dimension means that the social support strengthens elderly people's sense of personal value and make elderly people get more happiness [17].

Based on the above analysis, we propose the

following hypotheses to be tested.

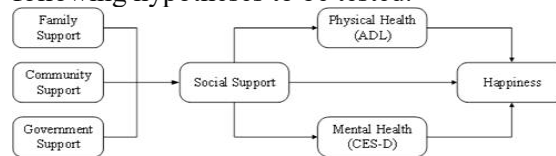


Figure 1. The Mechanism of Social Support Effect on Elderly People's Happiness

2.1 Social Support and Happiness of the Elderly People

(H1.1) Family support can directly improve elderly people's happiness.

(H1.2) Community support can directly improve elderly people's happiness.

(H1.3) Government support can directly improve elderly people's happiness.

2.2 The Mediating Effect of Physical Health

(H2.1) Physical health plays a mediating role in the influence of family support on elderly people's happiness.

(H2.2) Physical health plays a mediating role in the influence of community support on elderly people's happiness.

(H2.3) Physical health plays a mediating role in the influence of government support on elderly people's happiness.

2.3 The Mediating Effect of Mental Health

(H3.1) Mental health plays a mediating role in the influence of family support on elderly people's happiness.

(H3.2) Mental health plays a mediating role in the influence of community support on elderly people's happiness.

(H3.3) Mental health plays a mediating role in the influence of government support on elderly people's happiness.

3. Materials and Methods

3.1 Data Source

The data of study come from the Chinese Longitudinal Healthy Longevity Survey (CLHLS) in 2018. In the 2018 CLHLS dataset samples, which included 15,874 old people. The participants were excluded if they (1) were younger than 60 years old; (2) lacked happiness data; (3) lacked social support data; (4) lacked physical health and mental health data; (5) lacked values in other control variables. We excluded 20 respondents who were younger than 60 years old and 944

respondents who lack happiness data. We also dropped 3903 cases with missing information of social support, 42 cases with missing information of physical health and mental health, 2883 cases with missing information of control variables. Then 8082 of them were selected as our analysis.

3.2 Variable Selection

3.2.1 Explained variable: subjective happiness

The explained variable was subjective happiness (*Happ*). The CLHLS included the question “How do you rate your life now?” with five response options: very good, good, so so, bad, very bad. In order to indicate the greater happiness with a high value, we assigned values 5 to 1 to the responses (5=very good, 4=good, 3=so so, 2=bad and 1=very bad).

3.2.2 Explanatory variable: social support

The explanatory variable was the social support. According to mechanism analysis, the social support was composed of family support, community support and government support. We adopt the financial support as family support (*Fam*), which means the sum of money (including cash and value of materials) for the old people last year which was got from his/her children and their spouses. Information about community support (*Com*) is obtained mainly through the question “What kind of social services are available in your community?” for which there are 9 options (personal daily care, home visits, psychological consulting, daily shopping, social and recreation activities, legal aid, healthcare education, neighborhood-relation and any other). If the participants choose any of these options, *Com* is assigned a value of 1. Otherwise, we defined that the value is 0. Finally, whether participants were enrolled in endowment insurance and medical insurance was used as an indicator of government support. If the respondent had medical insurance (any of public free medical, urban employee/resident medical insurance, new rural cooperative medical) or endowment insurance (public old age insurance), it is considered to have government support (*Gov=1*), otherwise, we consider there is no government support (*Gov=0*).

3.2.3 Mediating variable: physical health and mental health

The mediating variable included physical

health and mental health. Physical health was measured by six activities (i.e., bathing, dressing, toileting, indoor transferring, continence and feeding) from the activities of daily living (*ADL*) scale. Individuals were inquired if she/he had any difficulties with each of the activities, each item had three response categories: “without assistance”, “one part assistance”, and “more than one part assistance”. We classified the respondent as *ADL* not disabled (*ADL=1*) if they reported needing no any help in the six activities above, otherwise, we classified them as *ADL* disabled (*ADL=0*).

Mental health was assessed based on the 10-item CES-D scale. The CES-D comprised 10 questions as follows: (1) “are you worried about some small things?” (2) “is it hard for you to focus on what you’re doing?” (3) “are you feeling sad or depressed?” (4) “do you think that as you get older, you get more useless?” (5) “do you frequently experience fear or anxiety?” (6) “do you often feel lonely and isolated?” (7) “do you feel unable to continue your life?” (8) “are you full of hope for future life?” (9) “are you as happy now as you were when you were younger?” (10) “how is your sleep quality now?” For the questions (1)、(2)、(3)、(4)、(5)、(6)、(7)、(8)、(9), the answers was divided into five levels: never, seldom, sometimes, often and always. For the questions (10), the answers included five options: very good, good, so so, bad, very bad. The first seven questions were negative statements. we assigned a score of 0 if the answer is “never”, and “seldom”, other item was scored as follows: 1 (sometimes), 2 (often), 3 (always). The last three questions were positive statements. For the questions (8) and (9), The “never”, and “seldom” answer is assigned a value of 3; other item was scored as follows: 2 (sometimes), 1 (often), 0 (always). For the questions (10), the “very bad”, and “bad” answer is assigned a value of 3; other item was scored as follows: 2 (so so), 1 (good), 0 (very good). Finally, the total score of mental health is obtained.

The total score ranges from 0 to 30. The higher score indicated a higher level of depressive symptoms. *CES-D* is assigned a value of 0 if the total score is above 20. otherwise, *CES-D=0*.

3.2.4 Control variable

Besides, Control variable included gender

(Sex), age (Age), hukou type (Hukou), marital status (Marr), years of education (Edu), residence type (Retype), main occupation (Work). Therein, genders were categorized into male and female (Male = 1, female = 0). Age was validated true age of interviewee. Hukou type were categorized into urban residents and rural residents (Urban=1, rural=0). For marital status, we redefine “currently married and living with spouse” and “currently married and separated” as married, and assign a value of 1, we redefine “divorced”, “widowed”, “never married” as others, and assign a value of 0. Years of education were recorded according to the actual years of education. Residence type were categorized into three groups (live with household members=1, live alone=2, live in an institution=3). For main occupation, we redefine “professional and technical personnel” and “governmental, institutional or managerial personnel” as technical job, and assign a value of 1, we redefine other types occupation as nontechnical job, and assign a value of 0.

3.3 Model Analysis

The research was carried out in three stages using STATA version 16. First, using

$$ADL_i = \alpha + \tau_{11}Fam_i + \tau_{12}Com_i + \tau_{13}Gov_i + \sum \Gamma_m Cont_{mi} + \varepsilon_1 \quad (2)$$

$$CES - D_i = \alpha + \tau_{21}Fam_i + \tau_{22}Com_i + \tau_{23}Gov_i + \sum \Gamma_m Cont_{mi} + \varepsilon_2 \quad (3)$$

$$Happ_i = \alpha + \beta'_1Fam_i + \beta'_2Com_i + \beta'_3Gov_i + \zeta_1ADL + \zeta_2CES - D + \sum \Gamma_m Cont_{mi} + \varepsilon_y \quad (4)$$

In Equation (2) and Equation (3), *ADL* and *CES-D* represents the intermediary variable to be test. Moreover, since the mediating variable are binary variables, we modeled these variables with binary logistic model.

In Equation (4), we built models by adding mediators into the Equation (1), namely the above benchmark model.

To investigate whether the two mediating effects exist and how social support plays a role in happiness through the two dimensions, this study proposed the products of coefficients test. In detail, we will further explore the following steps of mediation effects. First, we conduct a coefficient t-test of the direct effect social support on the happiness of individuals in the benchmark model 1 (Equation 1). If the t-tests for $\beta_i (i = 1, 2, 3)$ is significant, the analysis process will continue. Otherwise, this suggests that there does not exist mediating effect in the model.

subjective happiness as the explained variable, we built benchmark regression models, take response to the family support, the community support, the government support and the control variable as the explanatory variable, the model form is as follows:

$$Happ_i = \alpha + \beta_1Fam_i + \beta_2Com_i + \beta_3Gov_i + \sum \Gamma_m Cont_{mi} + \varepsilon_x \quad (1)$$

in Equation (1), *Happ_i* denotes the subjective happiness of the individual *i*. *Fam_i* is a continuous variable including the sum of all financial support from the elderly's family. *Com_i* and *Gov_i* indicate whether the respondent had community support and government support. $\sum Cont_{mi}$ refers to a series of control variable such as age, sex, hukou and so on. α is a constant. From β_1 to β_3 are the parameters to be estimated and ε_x is the random error. In this equation, we use ordered probit regression to examine the relationship between social support and happiness.

Second, we build an intermediary effect model, test the indirect effect of the family support, the community support and the government support on elderly people's happiness with *ADL* and *CES-D* as the intermediary variable.

Second, we test the $\tau_{mi} (m = 1, 2; i = 1, 2, 3)$ in the mediation model (Equation 2 and 3). At the same time, we also test the $\beta'_i (i = 1, 2, 3)$ and $\zeta_m (m = 1, 2)$ in direct effect after adding the two mediating variables (Equation 4). If all the above coefficients are significant, then the research model is a partially mediated model. If the $\tau_{mi} (m = 1, 2; i = 1, 2, 3)$ and $\zeta_m, m = (1, 2)$ are significant, but the β'_{1-4} is not significant, then the research model is full mediated model. Finally, under the premise that the β_1 to β_4 is significant, if at least one of the $\tau_{mi} (m = 1, 2; i = 1, 2, 3)$ and $\zeta_m, m = (1, 2)$ is not significant, we cannot to judge whether the model has a mediating effect. Specifically, to test the mediating effect, we constructed the following z-statistics:

$$Z = \frac{\hat{\tau}\hat{\zeta}}{S_{\tau\zeta}} \quad (5)$$

In Equation (5), $\hat{\tau}$, $\hat{\zeta}$ represents respectively

the estimator of τ , ζ , $S_{\tau\zeta}$ represents the standard error of the estimator of $\hat{\tau\zeta}$. It is the time to judge whether the model has a mediating effect, if the Z statistic reaches a significant level, it is considered that there were remains a mediating effect, otherwise it is considered not to exist.

4. Results

This section shows the descriptive analysis and the results of the regression models. First, our paper presents basic information of the study participants. Second, estimated coefficients for the variables; that is, the regression results for social support, physical health, mental health and happiness. Finally, this research further explores mediation effects analysis based on the results of the benchmark regression model.

4.1 Descriptive Analysis

In order to clearly present the objective level

Table 1. Descriptive Statistics of the Model Variables

Variable Name	Definition	Mean	Std	Min	Max
Explained Variable					
Happ	Very bad=1, bad=2, so=3, good=4, very good=5	3.875	0.786	1	5
Explanatory Variable					
Fam	The sum of money from family last year	3312	6922	0	299994
Com	Yes = 1, No = 0	0.642	0.480	0	1
Gov	Yes = 1, No = 0	0.926	0.263	0	1
Mediating Variable					
ADL	Without disabilities=1, With disabilities=0	0.773	0.419	0	1
CES-D	Normal=1, depression=0	0.736	0.441	0	1
Control Variable					
Sex	Male = 1, female = 0	0.409	0.492	0	1
Age	Trueage	84.70	11.83	60	117
Hukou	Urban=1, rural=0	0.156	0.363	0	1
Marr	Married=1, widowed or unmarried=0	0.419	0.493	0	1
Edu	Years of education	2.518	3.437	0	22
Retype	Live with families=1, live alone=2, live in institutions=3	1.215	0.463	1	3
Work	Technician or manager=1, other=0	0.0474	0.212	0	1

Data Source: The Chinese Longitudinal Healthy Longevity Survey (CLHLS) in 2018

4.2 Regression Analysis

Table 2. presents regression results of four models. In Model 1, At the level of $P < 0.1$, there was a significant positive correlation between the three dimensions of social support and subjective happiness of elder people. The result verified the hypotheses H1.1, H1.2 and H1.3.

Model 2 and Model 3 are the regression results

of social support, health and happiness of the elderly in China, the definition and value description of the variables are shown in Table 1.

Among the 8082 older adults, there were 5629 older adults who feel very good or good with their current living conditions, accounting for 69.7% and average score 3.875 points (total score is 5 points).

Table 1. also shows that the mean of annual financial transfers provided by the younger generation to elderly was 3,312 Yuan. The average scores of the community support and government support were 0.642 and 0.926, respectively, reflecting good overall community support and government support among older adults.

The average scores of the ADL and CES-D were 0.773 (for a range between 0 and 1) and 0.736 (for a range between 0 and 1), reflecting that mental health among Chinese elderly is slightly higher than that of physical health.

of the mediating variables. In Model 2, The result shows three dimensions of social support significantly correlated with the physical health of the elder people. In Model 3, the result shows that family support and community support was significantly and actively correlated with the mental health of the elderly.

In Model 4, we added mediating variables including physical health and mental health, which was based on Model 1. Let us compare Model 1 and Model 4. This comparison

highlights the difference of the effects of social support on happiness of the elderly without and with mediating variables. At the level of $P < 0.01$, there was a significant positive correlation between the mental health and subjective happiness of elder people.

The coefficient on three dimensions of social support in Model 1 is 0.00000765, 0.0995 and 0.0821 respectively, but the coefficient on

three dimensions of social support in Model 4 is 0.00000688, 0.0913 and 0.0744 respectively. We can find that the coefficient substantially goes down in the Model 4 regressions when we include mediating variables as explanatory variable. It indicates that physical health and mental health may play a mediating role in the influence of social support on the happiness of the elderly

Table 2. The Regression Result of Social Support on the Elderly Happiness

	<i>Happ</i> (Model 1)	<i>ADL</i> (Model 2)	<i>CES-D</i> (Model 3)	<i>Happ</i> (Model 4)
<i>Fam</i>	0.00000765***	-0.0000119***	0.0000118**	0.00000688***
<i>Com</i>	0.0995***	-0.2114***	0.0967*	0.0913***
<i>Gov</i>	0.0821*	0.2484**	0.0701	0.0744
<i>Sex</i>	-0.0787***	0.1789**	0.1475**	-0.1052***
<i>Age</i>	0.0024*	-0.1028***	0.0007	0.0031**
<i>Hukou</i>	0.2089***	-0.6272***	0.1359*	0.2041***
<i>Marr</i>	-0.0584*	0.2322***	-0.0046	-0.0610*
<i>Edu</i>	0.0251***	0.0420***	0.0694***	0.0177***
<i>Work</i>	0.2733***	-0.3963**	0.2599	0.2642***
<i>Retype 2</i>	-0.2950***	0.9156***	-0.4555***	-0.2483***
<i>Retype 3</i>	-0.2379***	-0.6362***	-0.7754***	-0.1321
<i>CES-D</i>				0.6989***
<i>ADL</i>				0.0406
<i>N</i>	8082	8082	8082	8082
<i>R²</i>	0.015	0.247	0.023	0.048

Note: ***, ** and * indicate that the results are significant at 1%, 5% and 10% levels, respectively

4.3 Mediation Analysis

The above analyses reveal that social support was associated with significant enhance in the happiness of older people. Below, we will further explore the mediation effects of physical health and mental health between social support and happiness of the elderly. The result of the indirect mediating effect is presented in Table 3. As showed in the table, the tests of β_{xy} , τ_{xm} and ζ_{my} were t-test statics about coefficient of social support. The Sobel test was used to confirm the significant of the mediating variables when only one of the τ_{xm} and ζ_{my} was significant. Concerning the physical health channel, this study chose

ADL as a mediating variable. The result of the Sobel test method

suggests that the P-value of the primary explanatory is less than 0.05. Therefore, the mediation effect of the physical health is non-significant. The hypotheses H2.1, H2.2 and H2.3. were rejected.

Concerning the mental health channel, this study chose *CES-D* as a mediating variable. The result of the Sobel test method suggests that the P-value of the government support on happiness is also less than 0.05. Therefore, the mediation effect of the mental health about the government support on the happiness of the elderly is non-significant. The hypotheses H3.1 and H3.2 were verified but the hypotheses H3.3 was rejected.

Table 3. Mediating Effects

Mediating Variable	Explanatory Variable	Test of β_{xy}	Test of τ_{xm}	Test of ζ_{my}	z-Statistic	p-Value	Mediation effect
<i>ADL</i>	Family support	0.00000765***	-0.0000128***	0.0406	-1.098	0.272	Non-significant
	Community support	0.0995***	-0.215***	0.0406	-1.119	0.263	Non-significant
	Government support	0.0821*	0.243**	0.0406	1.055	0.292	Non-significant
<i>CES-D</i>	Government support	0.0821*	0.0478	0.699***	0.490	0.624	Non-significant

We can calculate the total effect of social support on happiness of the elderly. The total effect of each dimension of social support are as follows:

The total effect of family support on happiness:

$$\beta_1 = \beta_1' + \tau_{11}\zeta_1 + \tau_{21}\zeta_2 = 0.00000688 - 0.0000128 * 0 + 0.0000132 * 0.699 = 0.00002 \quad (6)$$

The total effect of community support on happiness:

$$\beta_2 = \beta_2' + \tau_{12}\zeta_1 + \tau_{22}\zeta_2 = 0.0913 - 0.215 * 0 + 0.110 * 0.699 = 0.16819 \quad (7)$$

The total effect of government support on happiness:

$$\beta_3 = \beta_3' + \tau_{13}\zeta_1 + \tau_{23}\zeta_2 = 0 + 0.24 * 0 + 0 * 0.699 = 0$$

By comparing the total effects of the three dimensions of social support, it can be seen that

community support has a greater impact on the happiness of the elderly.

5. Conclusion

The present study has several noteworthy strengths. On the one hand, the study divided social support into three dimensions: family, community, and government support. Support from family and community support all have a direct positive impact on happiness of the elderly. The study discovered that community support had the greatest impact on the happiness of the elderly in China. Compared to family financial support, community service can boost the elderly's social activities and engagement, resulting in increased pleasure and happiness. On the other hand, the study uses physical and mental health as mediating variables, as well as a multiple mediation model, to investigate the mechanism of social support's impact on elderly happiness. The findings identified that mental health plays a mediating role in the influence of family and community support on elderly people's happiness. Meanwhile, the present study also utilized that the indirect effect of social support on elderly people's happiness via the physical health is not significant.

Thus, in order to promote healthy ageing and enhance the happiness of the elderly, we should pay special attention to the level of social support for the elderly when formulating pension service policy. Assistance for family

members such as paid holiday can serve to increase more opportunities for individuals to accompany the elderly. Activities like the Community Support Campaign are crucial in enhancing the lives of older people in the community, regardless of their origin, age, or income. Subsidies such as old age allowance can alleviate the economic burden and improve the living standards of the elderly. These interventions are essential to providing the elderly with ways to feel happiness so they can enjoy a better, healthier life in our society.

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