The Quality of Life and Mortality Risk of Elderly People in Rural China: The Role of Family Support

Abstract: The elderly share of China's population is projected to grow well beyond the capacity of the nation's social security system. Meanwhile, family care is being challenged by a decline in fertility and an increase in migration from rural to urban areas. This paper examines the short-, mid-, and long-term effects of family support on elderly well-being in rural China, using four-wave panel data on 1,456 persons aged 60 and above in the Chaohu region of China. Findings showed that compared with living alone, being coresident with others lowered the mortality risk of several chronic diseases; but being coresident with adult children increased the mortality risk of cardiovascular diseases, though it was associated with a higher quality of life in the short and middle term. Children's educational attainment and financial support increased the quality of life except for an increased risk of new incidence of cardiovascular disease in the middle term.

Keywords: family care, living arrangements, education, financial support, health outcomes

Introduction

The populations of China are rapidly aging—by 2050, over 30% of the population will be 60 years or older.[1] Elderly people are usually at a high risk for chronic disorders and have a diminished ability to perform tasks necessary for self-maintenance.[2] High levels of financial and instrumental support are necessary for their survival. Support can come from three main resources: personal resources, public security, and social networks for the elderly. In contrast to the situation in Western countries—where public programs and social services are developed to the point that retirees can rely mostly on personal resources and the social security system—such systems are undeveloped in China, especially in rural areas.[3] This means that the primary caretaker of the elderly in China is the family, not society. In rural China, care of the elderly has traditionally been a family responsibility; individuals depend on their children (generally a married son) for old-age support. As a consequence, the quality of life of the Chinese elderly depends on whether they have married children and how willing and able the children are to support their aging parents.[4]

In conjunction with population aging, the family structure and norms of China are experiencing great changes due to social and demographic transitions. A decline in fertility rates since the 1979 one-child policy has resulted in fewer potential children and kin to provide care for the elderly. This problem is exacerbated in rural China, as adult children are migrating to cities for economic opportunities. Additionally, rapid social change in China has modified traditional attitudes toward filial piety.[5] What has happened to the quality of life of the elderly during this social transition in China? Does family support still serve an important protective function for the rural elderly?

Living arrangements, family support, and health outcomes

Traditionally, care of the elderly are facilitated through coresidence with grown children, usually a married son.[1] To this day, coresidence with an adult child is a central feature of family support systems in much of the developing world.[6] There is much empirical evidence showing that coresidence is the primary means of supporting the

older generation in developing countries.[7,8,9,10] In recent decades, the association between living arrangements and health outcomes has attracted more attention from researchers.

Based on social capital and health behavior theories on the dynamics between living arrangements and elderly health, coresidence is expected to be better for elderly well-being than living alone, since it is more conducive to social interactions and a healthy lifestyle.[11,12] In Western countries, numerous studies have confirmed that older adults who live with others instead of living alone tend to have a better quality of life and are at a lower risk of death.[13,11] A study of rural Taiwanese elders found that those living alone experienced higher levels of stress than those with other types of living arrangements.[14]

However, other research argues that living alone may have a health advantage: older people who are living alone have to take care of themselves, which offers them more opportunity to keep up with their activities of daily living (ADL).[15] In addition, the health selective effect is also offered to explain the dynamics between living arrangements and elderly health. In other words, older people who are in relatively poor health are more likely to live with and depend on their children for care.[16] Hence, the protective effect that applies when they are coresident with their children is offset to some extent. Some studies have provided support for this hypothesis. No difference was found between married couples living alone or with children across a number of health outcomes, including that of self-rated health, functional status, and depressive symptoms.[1712] Studies on older adults found that those living alone did not have an increased mortality risk;[18] in fact, they had a lower mortality risk.[19] Living alone was also found to protect against self-rated health decline and functional status deterioration.[13,17,20,21]

The inconsistency of findings may be attributed to the different measurement of living arrangements, as well as differences in ages and cultural contexts across study samples.[22] This may also reflect the inherent complications of the family support system, which is both advantageous and disadvantageous to elderly health outcomes. Compared to the elderly in Western countries, who are more financially independent, the Chinese

elderly (especially in rural areas) are highly integrated into a system where they both receive and provide support within the family.[23] When older people are in poor mental and physical health, adult children have to live with them and be their primary caregivers. Hence, the support the children provide to their elders is called "need-based support."[16] Those elderly who are stuck with their children at home may not be happy with such an arrangement, and are at an increased risk of mortality as family relationships become potentially complicated and intergenerational conflicts surface.[4] Especially when the elderly are in a deteriorated state of health (such as with chronic diseases), the tremendous burden and stress the children have to deal with may amplify intergenerational conflict and lead to higher mortality risk. Using data from the Chinese Longitudinal Health Longevity Study (CLHLS), the association of living arrangements with health outcomes among the oldest-old Chinese was examined; results indicated that even though the elderly living with their children were significantly less likely to rate their health as poor, they were more likely to have ADL disability and a higher mortality risk than those living alone.[22] That said, the overall effect of living arrangements on Chinese elderly health outcomes is still not clear.

Socioeconomic Status (SES), family support, and health outcomes

In Western countries, individual SES has often been thought of as a precursor to better health; education and income are the primary indicators of SES that dominate health inequality studies.[24] Several theoretical insights have been offered to explain the causal mechanisms between SES and health, including afforded living environment and housing conditions,[25,26] availability of healthy food,[27] physical and mental health care,[28] ability to cope with stress,[29] a sense of personal control,[30,31] and knowledge and skills by which people are able to better self-manage illness and disease.[32] In addition, people with higher SES are more likely to have stable social relationships with their marriage partner and children, both of which are positively associated with quality of life.[33] Theoretically, wealthier and well-educated individuals are expected to have more knowledge and better means to take care of themselves, and are at a lower risk of morbidity and mortality. Studies have confirmed that lower education and income are associated with some forms of functional limitation and disability among older adults of

developed countries.[34,35] The association between SES and health was also examined in Asian societies, and inconsistent patterns were found across Taiwan, Thailand, and the Philippines.[36,37,38] In China higher education and household income were found to be significantly associated with functional status decline and lower mortality risks among adult elders and the oldest-old, but an unexpected positive association between SES and chronic conditions among old adults was also found.[39,40,41] The robust findings may be attributed to the level of economic development and the system of social support.

Considering that the social and psychological implications of coresidence vary depending on the culture and the SES of the family, children's SES may have effects on the health of their elderly parents. China's collective values differ from the individualism observed in Western countries. Health behaviors and health-care decisions tend to be a family affair rather than a personal matter.[42] Family members and close friends exert a stronger influence on personal health behavior and disease management in China than in Western societies.[43] Additionally, the rural elderly usually lack the necessary knowledge and resources to manage their health, due to less education and financial dependence on their family. Family members who are better educated and can provide more financial support improve elderly adults' health outcomes by giving them healthy advice, suggesting more qualified doctors, and ensuring timely health access. Spouse education has been found to be correlated to ADL and mortality for the oldest-old in China.[44] But no study has yet dealt with the association between children's education and the health outcomes of their old parents.

From the above, how family support affects the well-being of China's rural elderly is not clear, and the potential for confounding the association between living arrangements and health outcomes is great, unless multiple measures of family support, elderly health conditions, and SES are considered. The aim of this study is to examine the short-, mid-, and long-term effects of family support—including living arrangements, children's education, and financial support—along different dimensions of health outcomes (mortality risk, incidence of cardiovascular disease, ADL, and self-rated health) over a eight-year period, along with individual demographic and SES confounders.

Data and Method

Data collection

Data used for this panel study come from the survey "Well-being of Elderly Survey in Anhui Province (WESAP)" conducted in 2001(Wave 1), 2003(Wave 2), 2006(Wave 3), and 2009(Wave 4). The WESAP was conducted by the Institute for Population and Development Studies of Xi'an Jiaotong University, in conjunction with the University of Southern California. The respondents were identified by using a stratified multistage method within 72 randomly selected villages of six rural townships in the Chaohu region. A questionnaire survey was administered to the subjects over 60 years old. Of the 1,800 elderly identified as eligible respondents, 1,715 completed the survey in 2001, 1,391 respondents completed the follow-up survey in 2003 (excluding 240 deaths, 76 migrations, and 8 people missing), 1,067 respondents were reinterviewed in 2006 (excluding 236 deaths, 57 migrations, and 31 missing), and 808 respondents completed the follow-up interview in 2009 (excluding 173 deaths, 33 migrations, and 53 missing). In this study, all the migration and missing cases at the follow-up surveys were excluded, and only 1,456 respondents at baseline were used for analysis.

Dependent variables

The dependent variables in this study are mortality risk, incidence of chronic disease, ADL ability, and self-rated health.

(1) Mortality risk refers to the likelihood of death of respondent before follow-up contact.

(2) Incidence of cardiovascular disease occurs when respondents report they had at least one chronic disease such as diabetes, hypertension, heart disease, and stroke. New incidence of cardiovascular disease occurs when the respondent's situation changes from no incidence to incidence between Waves 1 and 2, Waves 2 and 3, and Waves 3 and 4.

(3) ADL ability refers to whether it is difficult to perform daily activities at Waves 2, 3, and 4, which is measured by four items (lifting a 10-kg bag of rice; climbing one flight of stairs; walking 100 meters; and stooping, crouching, or kneeling). The responses "no difficulty," "a little bit," and "incapable of doing by oneself" were

recorded as “3,” “2,” and “1,” respectively. The values of four items were then summed, and recorded as dichotomous based on the median: 0 = low ADL ability (value between 4 and 7); 1 = high ADL ability (value between 8 and 12).

(4) Self-rated health was measured on a four-point scale to a single question: “How do you rate your health status?” The responses of “very good” and “good” were recorded as good self-rated health, and the responses of “just so-so” and “not so good” were recorded as poor self-rated health.

Independent variables

The independent variables of interest were living arrangements, children’ education, and financial support from adult children in Wave 1.

(1) Living arrangements were classified into one of the following three categories: living alone, living with adult children, and living with others.

(2) Children’ education was recorded into three categories: all below junior high school, part below junior high school, and none below junior high school.

(3) Financial support was measured by the total amount of money received from adult children during the past 12 months, and converted using ln+1.

Confounders

Individual SES and demographic indicators were considered confounders in this study. Individual education and income were used to assess SES. Educational attainment was coded as three dummy variables: “illiterate,” “primary school,” and “middle school and above”; income was assessed by the total amount of earnings of the individual and his/her spouse the previous year, including pensions, and converted using ln+1. Four demographic indicators were included in the analysis: age, gender, marital status, and career. Age was assessed as a continuous variable. Gender was measured as female versus male. Marital status and career were corded as dichotomous variables: 0 = “others,” 1 = “married,” and “farmers.”

Data analysis

In this study, we took into account the likelihood of death across all sample members and the quality of life of survivals at follow-up waves in the analysis. The Cox regression model was used to analyze the relationship between mortality risk and living

arrangements, children's education, and financial support, controlling for ADL ability. To test the moderating role of chronic conditions on the association between mortality risk and family support, the analyses were conducted in three groups (with cardiovascular disease, with other chronic disease, and without any chronic disease) separately. We conducted logistic regression to test the effect of family support on the incidence of cardiovascular disease in four terms (incidence in Wave 1, new incidence between Waves 1 and 2, Waves 2 and 3, Waves 3 and 4) separately. Logistic regression models were also used to analyze the association between family support and self-rated health and ADL ability in the short (between Waves 2 and 1), middle (between Waves 3 and 1), and long (between Waves 4 and 1) term. We first tested the effect of living arrangements, children's education, and financial support on each of the health outcomes, controlling for health situation in model 1. Then the elderly persons' SES and demographic variables were further added to test the net effect of family support on health outcomes.

Results

Description of the sample

The characteristics of the sample at baseline are shown in Table 1. Among 1,456 rural elderly, only 20% lived alone; 35% lived with their adult children; the majority of elders lived with others. The elderly living with others averaged 68.89 years, which was younger than those living alone and living with children. There were no great differences in demographic characteristics and SES between the elderly living alone and living with children, except marital status. The majority of elders (88.77%) living alone were widowed or divorced, while the percentage (58.8%) of widowed or divorced people was lower among the elderly living with children. Different with the elderly living alone and with their children, the majority of elderly living with others were men (56.63%), married (87.5%) and with higher SES. In addition, children's education and financial support of the elderly who lived alone was lower. There was no difference in children's financial support of the elderly living with their children or living with others.

The health conditions of the respondents in the four waves were compared based on

living arrangements, as shown in Table 1. The elderly living with others had the lowest mortality risk and best ADL ability. While the percentage of respondents with cardiovascular disease among the elderly living with others increased fast in Waves 3 and 4, there were no great differences in mortality risk, self-rated health, and ADL ability between the elderly living alone and those living with children, except incidence of cardiovascular disease.

Table 1 here

Association of family support with mortality risk

Table 2 shows the result of Cox regression for mortality risk in three groups. In model 1, there were no significant differences of mortality risk between those living with adult children and those living alone among elderly with cardiovascular disease. Those living alone were more likely to die than those living with others in the samples of other chronic diseases. Compared with living alone, living with children and living with others marginally reduced the mortality risk of elderly without any chronic disease. There was no significant impact of children's education and financial support on mortality risk for elders who were suffering from cardiovascular disease. However, children's higher education was more likely to reduce the mortality risk of elders who had other chronic diseases or no chronic disease. In model 2 the coefficient of living with children became significant in group 1, controlled for individual SES and demographic characteristics. The impact of living with others was still significant in group 2; however, the coefficients of children's education were no longer significant.

Table 2 here

Association of family support with incidence of cardiovascular disease

The logistic regression models for incidence of cardiovascular disease are shown in Table 3. The results suggest that living with children significantly reduced the odd ratio of incidence of cardiovascular disease at baseline from living alone, and living with others was marginally associated with a lower risk of incidence of cardiovascular disease at baseline. Children's financial support negatively correlated with new incidence of cardiovascular disease between Waves 2 and 3, and children's higher education was marginally associated with a higher odd ratio of new incidence of

cardiovascular disease between Waves 3 and 4.In model 2 the coefficient of living with others for baseline incidence was no longer significant, and the coefficient for new incidence between Waves 2 and 3 became marginally significant. The impacts of living with children, children's education, and financial support on baseline incidence and follow-up new incidence were still significant.

Table 3 here

Association of family support with self-rated health

Logistic regression models for self-rated health are presented in Table 4. As model 1 showed, both coresidence with children and with others were associated with lower risk of poor self-rated health in Wave 2, when controlled for baseline self-rated health, chronic disease situation, and ADL ability. Children's education and financial support showed a protective function for self-rated health in Waves 2 and 3. Children's education was also significantly associated with self-rated health in Wave 4. In model 2 the coefficient of coresidence with others was no longer significant, while the impact of children's education and financial support on self-rated health in the middle and long term were still significant. Children's financial support was still significantly associated with self-rated health in the short term.

Table 4 here

Association of family support with ADL ability

The results of family support and ADL ability are presented in Table 5. Elders living with others were more likely to have good ADL ability in the short, middle, and long term than those living alone, when controlled for their ADL ability in Wave 1 and status of chronic disease. Children's education showed a protective function for elders' ADL ability in all three terms. Financial support was marginally associated with elders' ADL ability in Wave 3. In model 2 the coefficients of living arrangement and children's education and financial support were no longer significant.

Table 5 here

Conclusion and discussion

Using four waves of panel data derived from persons over 60 years old in rural

China, this study examines the association of family support and health outcomes, indicated by mortality, incidence of cardiovascular disease, self-rated health, and ADL ability. Our findings provide reference for understanding the role of family support on elders' mortality risk and quality of life during a period of dramatic demographic and social change in China.

Living arrangements, as a primary means of family support, were shown to have both health advantages and disadvantages in our study. Our findings suggested that the effects of living arrangements on health outcomes varied by the specific measurement, as well as by elderly parents' chronic conditions and cultural contexts.

Compared with living alone, coresiding with children increased the mortality risk of cardiovascular disease, and coresiding with others lowered the mortality risk of other chronic diseases. The findings partly confirmed the results of a previous study observed among oldest-old Chinese.[22]The disadvantageous effect of coresidence with adult children on mortality risk may be attributed to the fact that need-based coresidence is more likely to lead to intergenerational conflict. Usually old parents who live with their adult children receive financial and instrumental support from their children, and also provide help with the housework (such as housecleaning) and personal care (such as taking care of younger children) in exchange. However, the relationship may change and become complicated when the elderly can't provide any help and depend more heavily on their children's financial support due to cardiovascular diseases and increasing age. More intergenerational conflict may lead the elderly with cardiovascular disease to have a higher mortality risk. e

Inconsistent with findings from the Western developed countries[13,17,20,21] and from the oldest-old Chinese,[22] our findings suggest that old people living alone were more likely than those coresident with adult children to report poor health in the short term, and did not have higher ADL ability, when controlled for individual demographic characteristics and SES. The difference may be attributed to the age and culture difference. In addition, coresidence with children lowered the risk of incidence of cardiovascular disease at the baseline, and new incidences of cardiovascular disease in the middle term.

In sum, family support still plays an important role in maintaining a higher quality of life for the elderly in the short and middle terms in rural China, where economic and social security systems are underdeveloped. However, the advantage of coresidence with children among the rural elderly Chinese disappeared in the long term, and coresidence even increased mortality risk when the elderly were heavily dependent on their children due to the incidence of chronic disease.

The impacts of other means of family support—measured by children's education and financial support on health outcomes—were also tested in our study. Findings suggested that children's education was associated with health advantages as well as disadvantages. While part or all of children's education above junior high school level lowered the risk of poor self-rated health and ADL disability in the middle and long terms, all children's education above the junior high school level increased the risk of new incidence of cardiovascular diseases in the long term. Such a disadvantage maybe is due to unhealthy diet. This study also confirmed that children's financial support protects against the risk of new incidence of cardiovascular disease in the middle term, and the risk of poor self-rated health in the short and middle terms.

To reduce the selection bias, all sample members were included in the analysis of mortality risk, alongside multiple measures of the quality of life of the surviving elderly. In addition, there were no significant differences between respondents living alone and those living with adult children across most socio-demographic and health characteristics. But respondents living with others were younger, more educated, more likely to be married, more likely to have higher income, and less likely to have an ADL disability at baseline. Hence, the selection bias cannot be fully excluded to interpret the findings of our study. Another limitation of this study was obvious. Changes in living arrangements between baseline and follow-up waves were not included, though a few cases changed their living arrangements during the four waves.

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Table 1. Characteristics of the Sample, by Baseline Living Arrangements

Variables	Living alone (n=285) mean (SD)/%	Living with adult children (n=507) mean (SD)/%	Living with others (n=664) mean (SD)/%
Age	74.96(6.71)	74.17(7.74)	68.89(6.40)
Sex (men)	45.96%	44.38%	56.63%
Marital status			
Married	6.67%	41.42%	87.5%
Marriage loss	88.77%	58.38%	11.45%
Unmarried	4.56%	0.20%	1.05%
Career (farmer)	88.42%	89.15%	91.57%
Education			
Illiteracy	84.91%	81.46%	74.06%
Primary school	12.63%	15.98%	21.72%
High school and above	2.46%	2.56%	4.22%
Income (Ln)	2.17(3.08)	2.15(3.29)	4.94(3.30)
Children education			
All below high school	42.19%	36.98%	22.34%
Part below high school	55.08%	55.27%	69.53%
None below high school	2.73%	7.75%	8.12%
Financial support (Ln)	5.63(2.15)	6.32(1.39)	6.34(1.50)
Health in Wave 1			
Incident of cardio disease	38.60%	32.02%	32.98%
Self-rated health(good)	25.90%	22.91%	26.75%
ADL ability	62.68%	59.80%	77.26%
Health in Wave 2			
Death	19.30%	21.30%	11.45%
Incident of cardio disease	37.83%	30.08%	29.59%
Self-rated health (good)	24.78%	36.04%	36.10%

ADL ability	63.76%	64.66%	79.05%
Health in Wave 3			
Death	41.05%	39.64%	23.64%
Incident of cardio disease	41.67%	33.33%	38.46%
Self-rated health (good)	22.56%	25.57%	24.06%
ADL ability	51.79%	59.15%	70.61%
Health in Wave 4			
Death	54.74%	52.27%	34.19%
Incident of cardio disease	47.29%	37.19%	43.02%
Self-rated health (good)	21.71%	24.58%	25.00%
ADL ability	61.24%	64.88%	76.83%

Table 2. Cox-Regression Model for Mortality Risk

	Group1 (with cardio disease)		Group2 (with other chronic disease)		Group 3 (without any chronic disease)	
Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
ADL ability	0.513***	0.560***	0.457***	0.597***	0.365**	0.459*
Living arrangement						
With children	1.327	1.441*	0.841	0.796	0.547+	0.597
With others	0.848	1.325	0.529***	0.657*	0.565+	0.916
Children education						
Part below junior high school	0.872	0.948	0.646***	0.852	0.410**	0.684
None below junior high school	0.748	0.837	0.501*	0.801	1.401	1.318
Financial support (Ln)	1.008	1.023	1.052	1.041	1.080	1.011
Gender (men)		1.915***		2.122***		2.409**
Age		1.061***		1.082***		1.126***
Marital status (married)		1.005		1.321		1.087
Occupation (farmer)		1.044		0.890		2.027
Education						

Primary school		0.700+		0.757		0.673
Above primary school		0.712		0.675		2.023
Income (Ln couple)		0.955+		0.948*		0.951
Chi-square	42.425	103.189	112.778	210.059	35.073	77.121
-2LL	2813.280	2752.560	3717.415	3615.890	631.127	585.916

Table 3. Logistic regression for incidence of cardiovascular disease

Variables	Incidence in 2001		New incidence in short term		New incidence in middle term		New incidence in long term	
	Model 1	Model 2	Model 1	Model 2	Model1	Model 2	Model 1	Model2
Living arrangement								
With children	0.710*	0.656*	0.918	0.823	0.625	0.595+	0.622	0.647
With others	0.749+	0.733	0.823	0.656	1.068	1.003	0.666	0.739
Children education								
Part below junior high school	1.070	1.145	0.915	0.868	0.767	0.779	1.344	1.378
None below junior high school	1.077	1.212	0.527	0.477	0.831	0.816	2.153+	2.234*
Financial support (Ln)	0.986	0.966	1.044	1.040	0.877*	0.880+	1.125	1.111
Gender (men)		0.832		0.754		0.877		0.945
Age		0.999		1.000		1.015		0.995
Marital status (Married)		1.375+		1.265		1.202		0.979
Occupation (Farmer)		0.854		0.756		1.007		1.140
Education								
Primary school		0.747+		1.481		1.047		1.010

Middle school and above		0.648		1.779		1.693		1.169
Income (Ln couple)		0.939**		1.011		0.998		0.966
Constant	0.696	1.162	0.109***	0.145	0.495	0.165	0.088***	0.133
R square	0.005	0.028	0.005	0.016	0.024	0.029	0.017	0.020
-2LL	1766.038	1743.234	768.303	762.541	748.516	745.823	638.863	637.390

Table 4. Logistic Regression for Self-Rated Health

Variables	Self- rated health in Wave 2		Self -rated health in Wave 3		Self- rated health in Wave 4	
	Model 1	Model2	Model1	Model 2	Model 1	Model 2
Self-rated health in Wave 1	1.890***	1.889***	2.381***	2.383***	2.486***	2.486***
Chronic disease						
With cardio disease	0.334***	0.340***	0.432**	0.468**	0.770	0.838
With other disease	0.462***	0.450***	0.574*	0.581*	1.048	1.064
ADL ability	1.756**	1.330	3.779***	3.265***	2.554**	1.971*
Living arrangement						
With children	1.549*	1.692*	1.152	1.335	1.032	1.019
With others	1.411+	1.469	0.925	1.129	0.983	0.899
Children education						
Part below junior high school	1.339+	1.248	1.502+	1.474+	1.610*	1.487+
None below junior high school	1.373	1.257	3.021**	2.954**	1.591	1.404
Child financial support (Ln)	1.144*	1.164**	1.150*	1.154*	1.091	1.084
Gender (men)		1.840***		1.365		1.310

Age		0.986		0.985		0.973
Marital status (married)		0.728		0.601*		0.829
Occupation (farmer)		1.022		1.667		1.407
Education						
Primary school		0.801		0.996		1.179
Middle school and above		0.977		1.113		1.074
Income (Ln couple)		1.038		1.027		1.019
Constant	0.144***	0.352	0.036***	0.062+	0.043***	0.250
R square	0.136	0.162	0.183	0.198	0.117	0.133
-2LL	1338.470	1314.746	906.009	895.532	791.295	782.327

Table 5. Logistic Regression for ADL Ability

Variables	ADL ability in Wave 2		ADL ability in Wave 3		ADL ability in Wave 4	
	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3
ADL ability in Wave 1	5.877***	3.273***	5.804***	3.287***	4.415****	2.412***
Chronic disease						
With cardio disease	0.499**	0.437**	0.439**	0.437**	0.663	0.634
With other disease	0.790	0.747	0.860	0.860	0.982	0.935
Living arrangement						
With children	0.877	0.790	1.332	1.290	1.107	1.026
With others	1.485+	0.780	1.988**	1.492	1.951**	1.283
Children education						
Part below junior high school	1.668**	1.171	1.325	1.069	1.714**	1.319
None below junior high school	2.545**	1.758	2.058*	1.590	3.159**	2.347+
Child financial support (Ln)	0.944	0.948	1.111+	1.100	1.075	1.069
Gender (men)		1.953***		2.074***		1.538*
Age		0.905***		0.894***		0.876***
Marital status (married)		0.948		0.680		0.632+

Occupation (farmer)		0.787		0.997		0.901
Education						
Primary school		0.890		1.228		1.262
Middle school and above		1.134		1.437		1.166
Income (Ln couple)		1.051+		0.999		1.050
Constant	0.974	3.719***	0.176***	9.138***	0.249**	6.646***
R square	0.251	0.348	0.243	0.344	0.186	0.318
-2LL	1151.984	1053.727	1038.441	950.437	826.681	739.486