The Effects of Family, Community, and Public Policy on Depressive Symptoms among Elderly Chinese

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Abstract

Economic reforms during the past few decades in China have been associated with migration of young Chinese from rural to urban centers. This migration as well as the one-child policy and increased longevity have affected the well-being of the elderly, who largely remain in rural residences. An erosion of the cultural tradition of filial piety has resulted and may adversely affect the mental health of a growing elderly population and increase the risk ofdeveloping depressive symptoms. We analyzed data from the China Health and Retirement Longitudinal Study that were collected in 2011. These data were from anationally representative and publicly available dataset, which provided comprehensive information about individuals aged ≥ 45 years in China. We evaluated the associations between 3 types of social support (family, community, and public) and depressive symptoms in the Chinese elderly (≥ 60 years) with a focus on age differentials and type of residential registration (urban or rural hukou). The results indicated that components of family, community, and public support were significantly and negatively associated with depressive symptoms. These components included living with a spouse, having frequent contact with children, having a senior center in the community, receiving a subsidy from the local agency, and receiving a pension. Also, the elderly living in a rural hukou had greater levels of depressive symptoms, and depressive symptoms in this population were most significantly and negatively affected by having a senior center in the community and receiving a local subsidy. Moreover, none of the three support mechanisms significantly affected the depressive symptoms of the oldest old. These results suggest that specific types of social support may negatively affect depressive symptomsand provide opportunities for targeted interventionsfrom community leaders and policy-makers that improve mental health and well-being among a growing elderly population in China.

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Research Highlights

- Multiple factors are negatively associated with depression in the elderly.
- These factors include components of family, community, and public policy.
- Different types of support affect groups segmented by age category and hukou.

Introduction

Depression is a common mental health disorder and a major contributor to the global burden of disease. The World Health Organization (October, 2012) reported that > 350 million people suffer from depression worldwide, but < half who are affected by depression receive the necessary treatment. Globally, resources for mental health are insufficient, inequitably distributed, and inefficiently organized (World Health Organization, 2011). Rates of mental illness vary between populations by geographic area (Shen, 2014) and by age. If depression is untreated, it can cause chronic conditions, grief, decreased quality of life, and an increased risk of suicide (Kaneko, Motohashi, Sasaki, &Yamaji, 2007). Moreover, depression is a very costly disorder in China (Hu, He, Zhang, & Chen, 2007). By providing effective treatment and exploring strategies that influence the prognosis of depression, the global burden may be significantly reduced (Wang& Zhao, 2012). As a result, global efforts that focus on improving the mental health of older adults (Su et al., 2012) are an imperative.

Historically, the elderly Chinese population has experienced low levels of depressive symptoms. This may be due to the family-based arrangements that have traditionally supported the elderly (Giles, Wang, & Zhao, 2010). Family support is known to protect against depression, and in China, the social norm of filial piety has been a core value to Chinese culture. Children live with their parents and support them emotionally and financially. These norms and initiatives have supported the health and well-being of the Chinese elderly population directly and indirectly. With the development of the economy and demographic shift toward a larger older adult population over the next two decades, it will be impossible to rely solely on the traditional family support system for elder care (Chen & Liu, 2009). In anticipation of this new reality, two forms of support, namely community support (including community facilities for the elderly, and a community-based subsidy for the elderly) and public support (social welfare policies, such as health insurance and pensions for the elderly), initiated over the last few decadesin China may positively affect the mental health of the older adult population.

The government has aimed to build community support through a social engineering project that promotes and enhances the health of its population (Shen, 2014). And the Central government in recent decades has instituted health policies and pension programs, forms of public support, whichaim to provide health insurance and income security to the Chinese. Therefore, in China, there are three main types of support including family, community, and public support.

Based on these developments, this study aims to extend the current research through the use of national data and investigate two main research questions:

1. How do three different forms of social support, namely family, community, and public support, impact the depressive symptoms of elderly Chinese?
2. How do each of the following covariates affect the relationship between each of the three social support mechanisms and depressive symptoms:
   - Residential registration system (rural or urban hukou)?
   - Age differentials?

Background

The recent decades of economic reforms have propelled growth and development in China. Numerous economic, health, and education indicators convey that the Chinese economy has grown and is more developed today than previously. The World Bank (2014) has reported that gross domestic product per capita (in current United States dollars) increased from $314 in 1990 to $4,433 in 2010. Other indicators include increased literacy, increased access to sanitation, decreased mortality of children < 5 years, and decreased incidence of tuberculosis.

In addition to these positive developments, China is experiencing a demographic shift that will have a major effect on economic, political, and social conditions. China has the world's largest population, which totaled 1.385 billion in mid-year, 2013 (United Nations Department of Economic and Social Affairs, 2012) and the world's largest aging population (Peng, 2011). Life expectancy at birth in years for the total population increased from 69.7 in 1991 to 75.0 in 2011. The population aged ≥ 65 years represents 12% total population and is projected to increase to 30% by 2050 (United Nations Department of Economic and Social Affairs, 2012).

Due to increased longevity and improved economic conditions, the population of adults aged > 60 years are projected to reach 400 million in 2030 (World Bank, 2014). The old age dependency ratio, which is defined as the ratio of older adults (> 64) to the working-age population (individuals aged 15-64), has increased from 8.5% in 1980 to 11.4% in 2010, and is projected to equal 39.0% in 2050 (United Nations Department of Economic and Social Affairs, 2013). Also, the relative burden of the oldest population on the mid-aged (50-64) population, called the parent-support ratio, is increased dramatically. China now has the heaviest aged dependency burden of any population.

Increased longevity, the one-child policy, and the migration of youth from rural to urban areas affect the existing and projected increases in the old age dependency and parent-support ratios. The increase in life expectancy yields a larger older population with a variety of needs. And the one-child policy, which was implemented in 1979 and modified in the 1980s, has resulted in a decreased growth rate of single-child families in rural areas and an increased growth rate of single-child families in urban areas (Feng et al., 2014).

Moreover, as the economy has developed, youth have migrated to cities to seek employment and the benefits associated with urban environments. Rural areas are experiencing a decrease in youth populations. Consequently, fewer children are available to live with and support their parents. Data from the World Bank (2014) indicate that the percent of adults living in an urban environment in China increased from 19.4% of the total population in 1980 to 49.2% in 2010. Rural areas have a larger percent of older adults because younger residents are migrating to urban areas and older rural residents often remain behind (Cai et al., 2012). The family support for the rural elderly may be insufficient due to relatively fewer youth living in rural settings and increased numbers of dependent elderly (Giles, Wang, & Zhao, 2010). As a result, elders may not have the financial and emotional support of their children and family members.

Additionally, the migration of youth to urban centers has affected the social conditions of China's growing elderly population. Urbanization has produced changes in human activity, diet, and social structures, impacting chronic conditions, mobility limitations, the ability to participate in activities, and mental health among older Chinese.

For example, He and colleagues (1991) found that increases in blood pressure were greater among individuals who had moved to urban areas than those who stayed in rural areas.

Moreover, air pollution and occupational and traffic hazards can affect physical health, which can adversely affect daily functioning and quality of life (Wada, et al., 2005). In conjunction with the increased risk to physical health, recent economic developments and changes in family structure and health care coverage in China may affect the mental health of China's elderly citizens, who face increased vulnerability to depressive symptoms.

Depression is a public health concern in all developing countries, especially China. Depression occurs in 1 of 6 elderly worldwide (Puffer & Miller, 2001). Untreated depression may cause chronic conditions, grief, reduced quality of life, and the increased risk of suicide (Kaneko, Motohashi, Sasaki, &Yamaji, 2007), and frequency of suicide is higher in urban than rural settings (Lee et al., 2007). Increased awareness of the importance of psychological health is a major concern to governments worldwide, especially in countries that have large elderly populations and advancing economies.

As Chinese elders age and face the social, economic and financial challenges resulting from recent decades of economic growth, their mental health may be compromised and the prevalence of depressive symptoms may be increasing. Although adapting to these challenging circumstances may be difficult, three forms of support that typically protect against depressive symptoms and are evident in Chinese culturetoday include: family support, community support, and support from policies related to health care and pensions.

Historically, family support has been a dominant source of care in China. In this tradition adult children are the main source of social support for their elderly parents (Chou et al., 2006). Cultural norms emphasize family ties, intergenerational bonds and family care (Zhan, Liu, & Bai, 2005; Zhan, Liu, & Guan, 2006), which are manifest through China's culture of collectivism and the long-term tradition of filial piety. Family support for rural elderly is potentially changed by the migration of working age adults to cities (Cai et al., 2012). Also, the type of residential registration system (rural or urban hukou) is potentaiually modified. While older adults remain in rural areas, young people are moving to cities, limiting the social support that may be available to China's elders. Should the one child from a family move to the city, the elder parents are left without care in old age and must rely on resources exclusive of support from their children.

Yet, our literature review found few studies that have investigated the associations between hukou and depressive symptoms in the Chinese elderly. Furthermore, most knowledge about depression is based on Western attitudes, diagnoses, and treatment, and little is known about social support mechanisms that may affect depression in Chinese elders, such as support from family.

Community support also is important. In recognition of the need for community services that satisfy the growing needs of the elderly Chinese, the Chinese government is constructing a nationwide community building social project, which strives to build community as a functional establishment that responds to the new demands of society (Yan &Gao, 2007). Up until recently communities traditionally have not had the capacity nor resources to support the growing number of elderly and the challenges resulting from youth migration. And in areas where community support exists, such as through the community center or a local governmental subsidy, little is known about the impact of these community supports on depressive symptoms of the elderly.

Government programs and policies that support the income needs and health of the elderly are important to their well-being. Based on the growing need of health care coverage among the Chinese population, the government recognized a few decades ago the need to provide better health insurance to Chinese citizens. As a result, the government implemented a few different types of health care policies. In 1998 the Urban Employees Basic Medical Insurance (UEBMI) plan was established. However, this socialized medical insurance was not effective in containing costs because of non-mandatory individual and employer contributions and limited coverage of urban employees (Wagstaff&Lindelow, 2008; Zhang et al., 2011), and later reforms were required. Rapid socioeconomic development in China and the limitations of prior health system reforms prompted Chinese leadership to reform the health care system in ways that promoted greater social equity and stability (Tanner, 2004). Other policies that were implemented included the Minimum Living Standard Guarantee System, New Cooperative Medical Insurance System, and Medical Assistance for Low-Income Residents. In 2006, universal and affordable health care coverage was established as a national priority in China (Zhang et al., 2011).

Local Chinese officials were motivated to register every village resident and urban resident without full-time employment in a "voluntary" rudimentary cooperative health insurance program (Frazier, 2014).

As a result, health care coverage became available to all urban and rural residents, and primary care capabilities in small hospitals and community health centers were strengthened. By 2011, Ministry of Health officials claimed to have enlisted 1.28 billion participants in the rural cooperative health insurance program, close to the goal of universal health insurance coverage (Frazier, 2014). Although the increased coverage to rural populations is noteworthy, these insurance programs are rudimentary and frequently required individuals to pay up to 60% out-of-pocket medical expenditures for inpatient medical expenditures (Hsiao, 2014).

In addition to improved health coverage, the Chinese government began a pension system in 1951. Government officials and workers employed by the government and state-owned enterprises in urban areas were provided with generous benefits, but the rural population had to rely on land and family as the source of old age support (Kaijie, 2003). This placed increasing strain on traditional, family-based mechanisms of support for the elderly. As a result, China introduced a new rural pension system during the past decade, which will be available throughout China by 2016 (Giles, Wang, & Zhao, 2010). Although many of these policies initiated by the Central government were not specifically designed for the elderly, they are expected to benefit the aging population.

Based on the confluence of these factors, the purpose of this study was to evaluate the effects of family, community, and public support on depressive symptoms of adults aged ≥ 60 years in China, the age when adults are classified as elderly in China. We focus on depression as the aspect of mental health that is critical to the general health of the elderly. As a basic human right, good mental health is a key factor that may improve longevity and quality of life. As we test the effects of three support mechanisms on depressive symptoms, we also consider the impact of age and type of residential registration in these relationships.

Hypotheses

Based on China's economic reforms, cultural traditions, and implementation of health care and pension policy, we hypothesized that family support, local community offerings, and public policies related to medical insurance and pensions are associated with depressive symptoms in elderly Chinese.

We tested the hypotheses that the following characteristics may have positive effects on mental health and therefore are negativelyassociated with depressive symptoms in elderly Chinese:

i. Family support: living with a spouse, having a large extended family, or having frequent contact with their children with whom they do not live;

ii. Community support: having a community center in the vicinity or receiving a financial subsidy from the local government;

iii. Public policy support: receiving support from the Central government in the form of health insurance or a pension.

Furthermore, this current study hypothesized that the association of different types of social support on depression of elderly Chinese varies among subgroups segmented by hukou (Residential registration differences: having residence in an urban or rural environment) and age differences(young-old (60-69), mid-old (70-79), or oldest old (80+)). This study will test these hypotheses using regression on specific subgroups.

Methods

Data

The China Health and Retirement Longitudinal Study (CHARLS), a survey of adults ≥ 45 years in China, was designed to collect micro-data at the household and community levels. A national baseline survey was conducted in 2011-2012, which covered 150 districts and 450 villages/urban communities throughout China. To reflect the Chinese mid-aged and elderly populations, 17,708 individuals in 10,257 households were interviewed. The aim of the survey is to provide a high quality, nationally representative and publicly available dataset that provides a wide range of information about individuals and households in China.

These data were ideal for our analysis of 3 types of support (family, community, and state policy) on depressive symptoms in elderly Chinese. Data for the present study were extracted from the 2011 CHARLS, a survey in which four-stage, stratified, cluster sampling was used to select eligible individuals (Zhao, Y., Strauss, J., Yang, G., et al., 2013). Based on the aims of this research, we extracted elderly (age $\geq$ 60) from the total sample population, and have 5740 observations, who met this age criteria and were selected for our study sample.

Variables

Depressive symptoms were measured using a modified 10-item Center for Epidemiologic Studies Depression Scale (CES-D) (Boey, 1999). To determine depressive symptoms, respondents were asked to assess their feelings and behaviors during the past week on a scale from 1 to 4 (1, rarely or none of the time; 2, some or a little of the time [1 to 2 days per week]; 3, occasionally or moderate amount of the time [3 to 4 days per week];and 4, most or all of the time [5 to 7 days per week].

The 10 items included: (1) I was bothered by things that don't usually bother me; (2) I had trouble keeping my mind on what I was doing; (3) I felt depressed; (4) I felt everything I did was an effort; (5) I felt hopeful about the future (reverse code); (6) I felt fearful; (7) My sleep was restless; (8) I was happy (reverse code); (9) I felt lonely; and (10) I could not get "going."The responses were summed to provide a total score (range, 10 [few or no depressive symptoms] to 40 [depressive symptoms usually or constantly]), with higher scores indicating greater depressive symptoms. An alpha coefficient 0.79 on the modified version of the survey (Boey, 1999) was comparable to the internal consistency of the full scale (Radloff, 1977).

Family support was measured with 3 survey items: (1) whether the subject currently was living with a spouse (reply: 0, no; 1, yes); (2) the number of extended family members and relatives; (3) the frequency of contact with their children with whom they do not live ("How often do you have contact with your child [name] either by phone, text message, mail, or email?" Response scale range, 1 to 9; 1, almost every day; 9, almost never).

Community-based support was measured with 2 items: (1) availability of an activity center for the elderly in the community (0, no; 1, yes); and whether the respondent was receiving a subsidy from local government for adults aged ≥ 60 (0, no; 1, yes).

Public support was measured with 2 items: (1) "Are you the policy holder/primary beneficiary of any of the types of medical insurances listed below? (Please circle all that apply.)" Options included medical insurance (urban employee, urban resident, urban and rural resident, or government) or medical aid (score: 0 options, no; ≥ 1 options, yes); and (2) "Are you currently receiving a least 1 kind of pension?" Options included supplemental, resident, or rural pension insurance (0 pension income, no; ≥ 1 pension, yes).

Respondents aged ≥ 60 years were eligible for inclusion in the study and age was measured as a categorical variable (3 categories: 60-69 years, 70-79 years, and $\geq$ 80 years). Sex was categorized as female (1) or male (0). Education level was the highest level of school completed, and the 12 responses were grouped into 3 categories: (1) illiterate (could neither read nor write); (2) literate and elementary or middle school completed; or (3) high school and above (completed high school, vocational school, college, or graduate school).

Mobility limitations and difficulties with various activities because of a health or physical problem were determined from a question about difficulty in regularly performing any tasks from a list (excluding difficulties that were expected to persist < 3 months) (score range: 1 [no difficulty] to 4 [cannot perform the task]. Sample questions included, "Do you have any difficulty….. with running or jogging about 1 Km? …..getting up from a chair after sitting for a long period? ….stooping, kneeling, or crouching? …picking up a small coin from a table?"

Chronic conditions were determined from responses to the question, "Have you been diagnosed with [condition] by a doctor?" Conditions included hypertension; dyslipidemia (elevation of low density lipoprotein, triglycerides, or total cholesterol, or decreased high density lipoprotein level); diabetes or high blood sugar; cancer (excluding minor skin cancers); chronic lung diseases such as asthma, chronic bronchitis, or emphysema; liver disease; heart problems such as heart attack, coronary heart disease, angina, or congestive heart failure; stroke; kidney disease; stomach or other digestive diseases; emotional, nervous, or psychiatric problems; memory-related disease; and arthritis or rheumatism. Absence of any condition was coded "no," and presence of ≥ 1 chronic condition was coded "yes."

Activity participation was determined from the question, "Have you done any of these activities in the last month? (code all that apply)" The activities included: interacted with friends; played mahjong, chess, or cards; going to the community club; provided help to family, friends, or neighbors or cared for a sick or disabled adult who neither lived with you nor paid you for the help; went to a sport, social, or other club; took part in a community-related activity; did voluntary or charity work; attended an educational or training course; invested in stock; used the internet; or other activity (coding: 0, absence of any participation; 1, participation in any activity in the previous month).

Hukou is China's permanent residential registry system that distinguishes between urban and rural residences. In the present study, the reference category was rural. In addition, household consumption was used to measure income level because house consumption is commonly used as an index of economic well-being in mid-income countries such as China (Strauss et al., 2011). The per capita household consumption was defined as the sum total spent on all items including food and housing. The size of the per capitaliving space was the average number of square meters of the subject's home per person.

Statistical Analysis

Data analysis was performed with statistical software Stata Version 12 IC (StataCorp 2010). Descriptive data were reported as mean ± standard deviation, mean ± standard error, or number (%). In our preliminary analyses we ran two independent *t*-tests on the sample population to determine if there were differences in depressive symptoms based on age and rural vs. urban residency. Both groups consisted of 5740 subjects. The results showed that the oldest old, ≥ 80 years of age, had statistically significant higher depressive symptoms (19.65 ± 0.34) compared to those aged 60-79 (18.95 ±.09), t (5738) = -2.120, p = 0.034. Additionally, the second *t*-test indicated that subjects with rural residency had statistically significant higher rates of depressive symptoms (19.70 ± .10) compared to adults with urban residency (16.70 ± .15), t (5738) = 15.12, p = 0.001. In the data analysis that follows, we segmented the sample population by hukou and age, respectively, and further analyzed how the key independent variables affect the dependent variable in the specific subgroups.

Results

Descriptive statistics can be found in Table 1. The sample consisted of 5740 adults aged ≥ 60 years. Approximately half were female, and most were aged 60 to 69 years. Most subjects were illiterate or literate and completed elementary school. The mean level of mobility limitations was 14, and most had ≥ 1 chronic condition. Many subjects reported that they participated in ≥ 1 activity during the previous month (48%) and lived in a rural environment (76%). Mean annual per capita household consumption is 7084 yuan (equivalent to 1133 United States dollars) and living space was 41 square meters (approximately 134 square feet). The mean depressive symptom score was 19.

Most subjects lived with a spouse and subjects had an average of 12 relatives and friends. The mean contact with children was mid-scale. About one-third of the sample population had a senior center in their community and less than one-quarter of the population received a local subsidy. While a small number of subjects received a pension, almost all subjects received medical insurance and welfare.

Multiple regression showed that significant independent risk factors for depressive symptoms included family support variables (living without a spouse, having fewer family members and relatives, and lack of contact with children), community support variables (absence of a senior center in the community and not receiving a subsidy), and public support variables (not receiving a pension and not having medical insurance/welfare) (Table 2).

Sociodemographic factors that were negatively associated with depressive symptoms included being male, age ≥ 70 years, having a high school degree or more education, absence of mobility limitations, absence of chronic disease, activity participation, and living in a city (Table 2).

Multiple regression results with segregation of findings by urban and rural hukouare are shown in Table 3. The family and community support factors are more significantly and negatively associated with depressive symptoms among rural hukou elders than among urban hukou elders. The following characteristics were negatively associated with depressive symptoms among rural hukou eldlers: living with a spouse, having a greater number of extended family members and relatives, having more frequent contact with children, having a senior center in the community, and receiving a subsidy (Table 3). Among the community support factors, receiving a pension was negatively associated with depressive symptoms among urban hukou elders.

Multiple regression with segregation of findings by age group showed that the following factors were negatively associated with depressive symptoms in subjects aged 60 to 69: living with a spouse, greater frequency of contact with children with whom they do not live, having a senior center in the community, receiving a subsidy, receiving a pension, being male, having a high school education or more, having mobility limitations, having ≥ 1 chronic condition, participating in an activity during the previous week, and living in a city (Table 4). In subjects aged ≥ 80 years, having mobility limitations and ≥ 1 chronic condition were significantly associated with depressive symptoms (Table 4).

Urban residence was significantly and negatively associated with depressive symptoms for subjects aged < 80 years, and not significantly associated with depressive symptoms for subjects aged ≥ 80 years (Table 4).

Discussion

An important challenge to Chinese society is to address the existing levels and potential increase in the depressive symptoms of its elderly. This study provided new information about the relationship between three types of support mechanisms and depressive symptoms among elderly Chinese, specifically as they relate to the residencies and age differentialsof older Chinese adults. Traditional family support is still significantly associated with depressive symptoms; stronger the family support, the lower are the depressive symptoms. As Chinese society experiences an era of transition and the erosion of filial piety, a cultural norm that has sustained the elderly for hundreds of years, family support remains important but is at-risk, specifically among rural elderly adults (Ikels, 2004).

Living with a spouse is a strong negative predictor of depressive symptoms. When children and extended family are taken into consideration, they too have significant and negative influence on depressive symptomatology of older adults. Hence, the ability of children and their elderly parents to adapt to economic and social changes is critical. Adaptation and the availability of technology can potentially bridge the gap between family support and depression. Adaptation can include the recognition of a change in residencies and the need for more open communication among family members about decisions related to the welfare of elderly parents. The use of technology can potentially provide greater communication between generations, specifically between children, who do not live with their aging parents. Also, improved transportation options can offer greater access to all family members, which can encourage more frequent visitation among relatives and friends.

Community support is also critical to the well-being of elders, specifically for those living in a rural residency, which puts one at risk of depressive symptoms. Consequently, it is important for government officials to recognize that having a senior center in the community and receiving a subsidy from the local government are two factors that can minimize depressive symptoms in this at-risk population.

We encourage local governments to acknowledge the impact their programs can have on the mental health of rural elders and support elders in their application for the subsidies for which they are eligible by keeping paperwork simple and by advertising in the community that these subsidies are available. Because there is a more significant effect of community programs on depressive among rural elders than urban elders, cultural and structural differences in community programs and policies should be taken into consideration when addressing the depressive symptoms of elders in these two types of residencies. The differences in behavioral responses should be addressed. The rural elderly responded more favorably to community supports. One reason for this positive response may include the fact that the rural elderly are known to have fewer resources, and as a result, they might take advantage of community opportunities more than urban residents might. We encourage local governments and communities to pay more attention to the welfare of the elderly by providing community centers and subsidies to the elderly more readily. Also, in an agricultural or rural residency, people may know their neighbors well and view each other more as acquaintances, and not as strangers, which could build greater trust and friendship in communities. This trust and friendship could lead to more involvement in community activities and ultimately to better mental health.

We encourage local government to respect and take advantage of the community relationships, and play an active role in building neighborhoods.

And finally, public support of good mental health is a critical factor in minimizing depressive symptomatology. Government policies and programs can be vast and have far-reaching effects; hence, the importance of their effective implementation and coverage cannot be overestimated. For example, there has been a slow take-up of pensions for peasants in rural areas since their implementation in 2009. This is an area where the government can intervene and improve the policy. By understanding the reasons for the slow take-up of benefits, government can revise the policy both in prevalence and generosity so it benefits more peasants, who may be eligible for the pension income.

Additionally, a potential response to the projected growth of the older adult population and the associated risk of increased loneliness and isolation is to change public policy and increase the official retirement age, which currently is 60 years of age for men, and 55 years of age for women.

Since life expectancy has increased and the retirement policy was implemented in the 1950s, it behooves the Chinese government to rethink the policy and revise it so that barriers that limit older adults from participating in the labor force are removed. In this way older adults can continue to earn wages, which can protect against poverty and depressive symptomatology.

Lastly, this study also assessed age differentials and their influence on the relationship between three different forms of support and depressive symptoms. One critical conclusion pertains to the oldest old in this study. In the multivariate analyses, none of the support mechanisms had a significant influence on depressive symptoms of the oldest old; whereas, family and community support mechanisms had a significant influence on the depressive symptoms of adults aged 60-79. For example, having a senior center in the community for the two groups (60-69 and 70-79) had a significant negative effect on depressive symptoms. Based on this finding, we encourage local governments to take advantage of the benefits senior centers can bestow on community members by providing these centers in communities for adults aged < 80.

This study also has some specifications that are unique to our research question. One of the main independent variables, living with a spouse, does not take marital satisfaction into consideration, which is associated with depressive symptoms among the elderly (Miller et al, 2013).

By considering marital satisfaction as it relates to depressive symptoms in future research, we may gain a more detailed understanding of the importance and meaning of family support. Also, the low levels of depressive symptoms in the sample population may be due to the stigma associated with depression and the common attitude among the Chinese of accepting depression as "part of life" (Lee, 1995). Future research on depression among the Chinese elderly may consider the cultural artifacts that affect the meaning and practices that shape depression, and recognize among the Chinese that the experience of depression may be expressed in physical symptoms, such as boredom, discomfort, pain, dizziness or fatigue, rather than as psychological symptoms (Klienman, 2004). A future considerationis to assess physical symptoms when screening for depression.

In conclusion, we recognize the economic reforms that have taken place in China over these past few decades have created opportunity and challenge for the health and well-being of the elderly in China. The older adult population is large and is projected to grow over the next few decades; hence, it is critical that government and policy-makers take proactive steps to protect the mental health of the population, specifically the Chinese elderly from increased prevalence of depressive symptoms. To that end, this study proposes various types of support. Most importantly, we recommend local and central governments focus their efforts on building a policy infrastructure that targets all older Chinese, intervening at the local levels, and protecting against the loss of family support by substituting more comprehensive community and public policy support mechanisms.

Table 1. Descriptive Statistics(CHARLS Data, 2011)

Variable	Mean ± SD or Number(%)
Dependent variable	
Depressive symptom score(10-40)	19 ± 7
Independent variables	
Support	
Family support	
Living with a spouse (1=Yes; 0=No)	4477 (78)
Number of extended family members and relatives	12 ± 4
Lack of contact with children (1-9)	5 ± 2
Communitysupport	
Senior center in community (1=Yes; 0=No)	2009 (35)
Subsidy to elderly ≥ 60 years (1=Yes; 0=No)	1263 (22)
Public support	
Receiving a pension (1=Yes; 0=No)	976 (17)
Medical insurance and welfare (1=Yes; 0=No)	5396 (94)
Covariates	
Gender (1=Male; 0=Female)	2870 (50)
Age	
60-69 years	3616 (63)
70-79 years	1722 (30)
≥ 80 years	402 (7)
Education level	
Illiterate	2066 (36)
Literate and elementary school	2583 (45)
High school +	1091 (19)
Mobility limitation (9-36)	14 ± 5
Chronic disease (1=At least one; 0=No chronic disease)	4362 (76)
Activity participation last week (1=At least one; 0=No activity)	2755 (48)
Hukou (1=Urban; 0=Rural)	1378(24)
Annual household consumption per capita (yuan)	7084 ± 10899
Square living space per capita (meters)	41 ± 34
N	5740

Table 2: Depressive Symptomatology Regressed on Social Support of Family (Model 1), Community (Model 2), and Public Policy (Model 3) Controlling for Socio-Demographic Characteristics

	Model 1	Model 2	Model 3
Living with spouse (Ref. =No)	-0.038***	-0.039***	-0.037***
	(0.010)	(0.010)	(0.010)
Number of extended family and relatives	-0.003*	-0.003*	-0.003*
	(0.001)	(0.001)	(0.001)
Lack of contact with children	0.006***	0.006***	0.007***
	(0.002)	(0.002)	(0.002)
Senior center in community (Ref. = No)		-0.049***	-0.049***
		(0.009)	(0.009)
Subsidy to elderly aged over 60 (Ref. = No)		-0.042***	-0.037***
		(0.010)	(0.010)
Receiving a pension(Ref. = No)			-0.031**
			(0.011)
Medical insurance and welfare(Ref. = No)			-0.030+
			(0.017)
Gender(Ref. = Female)	-0.034***	-0.036***	-0.036***
	(0.009)	(0.009)	(0.009)
Age (Ref: Age 60-69)			
Aged 70-79	-0.060***	-0.057***	-0.057***
	(0.009)	(0.009)	(0.009)
Aged 80 +	-0.101***	-0.100***	-0.098***
	(0.017)	(0.017)	(0.017)
Education (Ref. = Illiterate)			
Literate and elementary school	0.006	0.008	0.009
	(0.010)	(0.010)	(0.010)
High school +	-0.050***	-0.049***	-0.048***
	(0.014)	(0.014)	(0.014)
Log(Mobility limitation)	0.374***	0.367***	0.365***
	(0.014)	(0.014)	(0.014)
Chronic disease (Ref. = No chronic disease)	0.084***	0.082***	0.083***
	(0.010)	(0.010)	(0.010)
Activity participation last week(Ref.=No activity)	-0.038***	-0.036***	-0.034***
	(0.008)	(0.008)	(0.008)
Hukou (Ref. =Rural)	-0.091***	-0.079***	-0.081***
	(0.011)	(0.011)	(0.011)
Log(per capita household consumption)	0.003	0.004	0.005
	(0.004)	(0.004)	(0.004)
Log(per capita living square)	-0.007	-0.006	-0.006
	(0.006)	(0.006)	(0.006)
Constant	1.986***	2.014***	2.042***
	(0.057)	(0.056)	(0.058)
F	119.547	109.438	98.095
Adjusted R-square	0.224	0.232	0.233

Note: N=5740；Standard errors in parentheses；+ p<0.10, * p< 0.05, ** p< 0.01, *** p<0.001.

Table 3: Depressive Symptomatology Regressed on Social Support of Family, Community, and Public Policy and Segmented by Hukou

	Urban	Rural
Living with spouse (Ref. =No)	-0.047*	-0.033**
	(0.021)	(0.012)
Number of extended family and relatives	-0.003	-0.003*
	(0.002)	(0.001)
Lack of contact with children	0.007*	0.006**
	(0.003)	(0.002)
Senior center in community (Ref. = No)	-0.012	-0.063***
	(0.016)	(0.010)
Subsidy to elderly aged over 60 (Ref. = No)	0.004	-0.049***
	(0.020)	(0.011)
Receiving a pension (Ref. = No)	-0.046*	-0.023+
	(0.019)	(0.013)
Medical insurance and welfare (Ref. = No)	-0.017	-0.036+
	(0.029)	(0.020)
Gender (Ref. = Female)	-0.049**	-0.034***
	(0.017)	(0.010)
Age (Ref: Age 60-69)		
Aged 70-79	-0.055**	-0.057***
	(0.017)	(0.011)
Aged 80 +	-0.060+	-0.109***
	(0.031)	(0.020)
Education (Ref. = Illiterate)		
Literate and elementary school	-0.033	0.014
	(0.025)	(0.011)
High school +	-0.095***	-0.035*
	(0.026)	(0.018)
Log(Mobility limitation)	0.299***	0.381***
	(0.029)	(0.016)
Chronic disease(Ref. = No chronic disease)	0.080***	0.084***
	(0.020)	(0.011)
Activity participation last week(Ref. = No activity)	-0.058***	-0.028**
	(0.016)	(0.009)
Hukou (Ref. = Rural)		
Log(per capita household consumption)	0.006	0.004
	(0.008)	(0.005)
Log(per capita living square)	0.003	-0.006
	(0.013)	(0.007)
Constant	2.104***	2.000***
	(0.116)	(0.067)
N	1352	4388
F	19.775	68.260
Adjusted R-square	0.191	0.207

Note: Standard errors in parentheses；+ p<0.10, * p< 0.05, ** p< 0.01, *** p<0.001.

Table 4: Depressive Symptomatology Regressed on Social Support of Family, Community, and Public Policy and Segmented by Age Category

	Aged 60-69	Aged 70-79	Aged 80 +
Living with spouse (Ref. =No)	-0.054***	-0.028+	-0.001
	(0.014)	(0.017)	(0.034)
Number of extended family and relatives	-0.001	-0.006**	-0.002
	(0.001)	(0.002)	(0.005)
Frequency of contact with children	0.006**	0.007*	0.009
	(0.002)	(0.003)	(0.006)
Senior center in community (Ref. = No)	-0.055***	-0.056***	0.042
	(0.011)	(0.016)	(0.034)
Subsidy to elderly aged over 60 (Ref. = No)	-0.030*	-0.052**	-0.037
	(0.012)	(0.018)	(0.043)
Receiving a pension (Ref. = No)	-0.031*	-0.025	-0.021
	(0.014)	(0.019)	(0.042)
Medical insurance and welfare (Ref. = No)	-0.045+	-0.014	-0.058
	(0.023)	(0.027)	(0.055)
Gender (Ref. = Female)	-0.036***	-0.043**	-0.010
	(0.011)	(0.016)	(0.036)
Education (Ref. = Illiterate)			
Literate and elementary school	-0.003	0.029+	-0.013
	(0.012)	(0.017)	(0.039)
High school and over	-0.063***	-0.003	-0.097
	(0.017)	(0.025)	(0.063)
Log(Mobility limitation)	0.387***	0.336***	0.355***
	(0.018)	(0.024)	(0.049)
Chronic disease(Ref. = No chronic disease)	0.080***	0.079***	0.101**
	(0.012)	(0.017)	(0.036)
Activity participation last week(Ref. = No activity)	-0.035***	-0.033*	-0.031
	(0.010)	(0.015)	(0.033)
Hukou (Ref. = Rural)	-0.074***	-0.101***	-0.070
	(0.014)	(0.020)	(0.046)
Log(per capita household consumption)	0.003	0.003	0.015
	(0.006)	(0.006)	(0.011)
Log(per capita living square)	-0.003	-0.007	-0.023
	(0.007)	(0.011)	(0.023)
Constant	2.006***	2.082***	1.869***
	(0.078)	(0.100)	(0.216)
N	3597	1733	410
F	71.488	33.240	7.352
Adjusted R-square	0.239	0.229	0.199

Note: Standard errors in parentheses；+ p<0.10, * p< 0.05, ** p< 0.01, *** p<0.001.

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