Urban-rural differences in factors associated with willingness to receive eldercare among the elderly: a cross-sectional survey in China

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ABSTRACT

Objective Willingness to receive eldercare is an important factor affecting the reasonable allocation of resources and appropriate development of eldercare services. This study aimed to investigate the differences in willingness to receive eldercare and the influencing factors in urban and rural areas.

Design Cross-sectional survey.

Setting Research was conducted in the urban and rural areas of three cities (Harbin, Qiqihar and Jiamusi) in Heilongjiang province, China.

Participants A total of 1003 elderly were selected through multistage sampling in Heilongjiang province, including 581 in urban areas and 422 in rural areas.

Main outcome measures Descriptive statistics were reported for socioeconomic and demographic status, physical health, life satisfaction and social support in urban and rural areas. Mean differences were examined using t-tests, and categorical variable differences were examined using χ² tests. The factors influencing willingness to receive eldercare in urban and rural areas were analysed using logistic regression.

Results The results showed that 51.6% of urban elderly and 59.0% of rural elderly preferred family eldercare. Factors that influenced willingness to receive eldercare for urban elderly were age (OR 2.791, 95% CI 1.644 to 4.737), house property (OR 0.494, 95% CI 0.329 to 0.740) and objective support (OR 0.764, 95% CI 0.681 to 0.858). For rural elderly, the factors were having children (OR 0.368, 95% CI 0.146 to 0.930), house property (OR 0.371, 95% CI 0.231 to 0.596) and living arrangement (OR 3.361, 95% CI 1.436 to 7.866).

Conclusion More attention should be paid to improving the functioning of family eldercare and promoting the development of varied eldercare services. Investments and targeted policies should be undertaken for different subgroups of urban and rural elderly.

INTRODUCTION

The ageing population has become a major social problem worldwide. In China, the world's largest developing country, the trend of population ageing has become a serious issue, raising concerns around the world. At the end of 2016, 230 million people in China were aged 60 years or older, comprising 16.7% of the total population.2 There were 40.63 million disabled elderly in China, accounting for 18.3% of the aged population. Since ageing populations typically experience increasing health issues, the problems associated with eldercare pose challenges for both government and society.

In China, family and institutional eldercare are the primary means of eldercare. In family eldercare, elderly live at home and receive care from their families. In institutional eldercare, elderly live in an institution that provides their care. The one-child policy has created ‘4-2-1’ families, in which a couple cares for four older people as well as their own child.3 In recent years, younger people have increasingly moved away from home for work. Thus, the functioning of family eldercare has been weakened, and the availability of eldercare provided by adult children has become uncertain.4 Meanwhile, traditional institutional eldercare has been unable to meet the high levels and multiple types of elderly needs.

As a result, China's central and local governments have introduced policies aiming to...
develop eldercare services. A great deal has been invested in infrastructure construction, intended to improve everyday convenience and enrich spiritual and cultural life for the elderly under family eldercare. The government has also promoted the development of both public and private eldercare institutions by enacting preferential policies for private institutions.

Willingness to receive eldercare—which has been defined as attitudes towards and selection preferences for certain types of eldercare among the elderly—can influence the final choice for a given type of eldercare. Previous studies have suggested that it is very important for governments to consider elders’ willingness to receive eldercare when allocating eldercare sources.6–8

An extensive body of literature has focused on the present situation as well as the factors influencing willingness to receive eldercare among the elderly. A study of willingness to use a nursing home among Korean American elderly showed that 45% were willing to use a nursing home.9 In a study of the elderly in Taiwan, however, it was much lower, at around 16.7%.10 Another study, from 2009, showed that in urban and rural areas, only 20% and 17%, respectively, of older adults were willing to live in eldercare institutions.11 Finally, a 2017 study found that 81% of elderly preferred family eldercare.12

Regarding the factors influencing willingness to receive eldercare, many studies have found that certain socioeconomic and demographic factors—including age, sex, sociocultural beliefs and self-assessed economic status—are associated with willingness to receive eldercare.3 13 14 Gruber15 suggested that reductions in social security benefits could significantly alter the living arrangements of the elderly; specifically, a 10% cut in benefits could cause more than 600,000 independent elderly households to switch to shared living arrangements. Other research has shown that the demand for institutional eldercare increases with declining physical health and self-care ability.16 Meanwhile, social support, perceived family harmony and perceived filial piety can also affect willingness to receive eldercare. Liu found that the more social support the elderly received, the more likely they were to accept family eldercare.17 Chou, moreover, found that willingness to receive eldercare was influenced by feelings of loneliness and life satisfaction.11 When there is lower life satisfaction, the elderly tend to prefer institutional eldercare.19 19

However, the effects of these factors on willingness to receive eldercare are not isolated. Previous studies on willingness to receive eldercare have used different theoretical frameworks. Following WHO’s definition that health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity,20 this study established a conceptual framework stemming from four resources: socioeconomic and demographic status, physical health, life satisfaction, and social support.

In China, there are huge differences between urban and rural areas in terms of income and living environments.21 A previous study of willingness to receive eldercare between urban and rural areas showed that the urban elderly were less willing to receive family eldercare than the rural elderly (23.4% and 55.8%, respectively).22 Many other recent studies have examined differences in willingness to receive eldercare between urban and rural areas. However, there has not been an analysis of the different factors influencing willingness to receive eldercare among urban and rural elderly.

This study compared willingness to receive eldercare among urban and rural elderly and analysed the influencing factors. The results are very important for dividing the elderly into different categories, which can contribute to the reasonable allocation of eldercare resources and better meet elders’ needs.

The purposes of this study were as follows: (1) To study willingness to receive eldercare in terms of socioeconomic and demographic factors, physical health, life satisfaction, and social support. (2) To compare and analyse urban-rural differences in the factors associated with willingness to receive eldercare.

METHODS
Data and sample
Multistage sampling was used to select participants. First, 15 cities in Heilongjiang were divided into three grades according to per capita GDP, and one city was selected at each level. Three cities (Harbin, Qiqihar and Jiamusi) were selected. At the end of 2016, the populations of Harbin, Qiqihar and Jiamusi were 1.066 million, 0.536 million and 0.255 million, respectively. The rates of elderly over 60 years old were 17.3%, 18.5% and 10.8%, respectively. Second, three communities in urban areas and three villages from rural areas were randomly selected in each city. Individuals were included in the study if they met the following criteria: aged 60 years or older, clear consciousness and competent at verbal communication. Additionally, participants were told that participation in the survey was voluntary and that returning the questionnaires represented informed consent.

Data collection
A cross-sectional survey was conducted from 1 March 2016 to 31 August 2016. Data were collected through face-to-face interviews using a structured questionnaire. The interviews were conducted by nine undergraduate and nine graduate students from Harbin Medical University who had received training. A manual was created to provide suggestions on how to ask each question. Moreover, a preinvestigation was conducted to identify problems and provide further training for the interviewers.

In total, 1200 questionnaires were distributed (600 urban, 600 rural). Participants who did not respond to the survey or did not answer the question about willingness to receive eldercare were excluded. A total of 1003 valid questionnaires were returned (581 urban, 422 rural), for
a response rate of 83.6%. The response rates for urban and rural areas were 96.8% and 70.3%, respectively.

Assessment tools
The instrument used in this study consisted of a questionnaire composed of five sections. Section 1 focused on the respondents’ socioeconomic and demographic characteristics, including sex, age, monthly income, work, education, children, marriage status, living arrangement, house property and chronic disease. WHO defines chronic diseases as those not passed from person to person.23 They typically have a long duration and generally slow progression. The four main types of chronic diseases are cardiovascular diseases (eg, heart attack, stroke), cancers, chronic respiratory diseases (eg, chronic obstructed pulmonary disease and asthma) and diabetes. For this study, we listed these diseases and set up multiple-choice questions. Respondents were asked, ‘Are you suffering from the following chronic diseases?’ They were considered to have chronic disease if any of the diseases were selected. A ‘yes’ answer was coded 0 while ‘no’ was coded 1.

Section 2 assessed willingness to receive eldercare, based on a single-item measure. Respondents were asked, ‘Which are you willing to choose between: family eldercare or institutional eldercare?’ Respondents marked 0 for family eldercare and 1 for institutional eldercare.

Section 3 assessed self-rated physical health. Respondents were asked, ‘How do you rate your health?’ They answered on a 5-point scale, ranging from 1 (worst) to 5 (best).

Section 4 assessed life satisfaction. The 5-item version of Pavot and Diener’s Life Satisfaction Scale was used for measurement. Respondents were asked to indicate the strength of their agreement with statements on a 7-point scale, ranging from 1 (highly disagree) to 7 (highly agree).24 Then, scores were averaged across items to form a scale score. The scale achieved reasonable reliability in our sample, with a Cronbach’s $\alpha$ of 0.96.

Section 5 assessed social support, which referred to the opportunities available for the individual to receive assistance from other groups in the social environment. This social support scale was created by Xiaoshuiyuan in 1986 and publicly introduced in 1994. It comprises a 10-item scale that classifies social support into subjective support, objective support and support utilisation. Subjective support was measured by four items: (1) How many friends you can get support from. (2) The relationship between you and your neighbours. (3) The relationship between you and your colleagues. (4) Support and care from family members. Objective support was measured by three items: (5) Living conditions in the last year. (6) Financial support in case of an emergency. (7) Comfort and care in case of an emergency. Lastly, support utilisation was measured by three items: (8) How do you express feelings when you are in trouble. (9) How do you seek help when you are in trouble. (10) The frequency with which you participate in group activities.25 Each item was scored on a scale of 1 to 4. Within each subscale, the score for each item was added to form a subscale score. Total social support was the sum of the three subscale scores. The Cronbach’s $\alpha$ values for the individual scales ranged from 0.89 to 0.94. In the present study, the scale demonstrated appropriate reliability.

Data analysis
Data were processed using Epidata and were double-entered to ensure quality. Sample characteristics were analysed using SPSS V.19.0. Descriptive statistics were reported for socioeconomic and demographic characteristics, physical health, life satisfaction, and social support in urban and rural areas. Mean differences were examined using t-tests, and categorical variable differences were examined using $\chi^2$ tests, with the significance set at $p<0.05$. The factors influencing willingness to receive eldercare in urban and rural areas were analysed using logistic regression, set at $p<0.05$. In this study, the outcome variable was willingness to receive eldercare (0 for family eldercare, 1 for institutional eldercare). Based on the literature review and the aims of this study, 15 independent variables were identified as potential factors, including socioeconomic and demographic characteristics, physical health, life satisfaction, and social support.

The normal distributions of the continuous variables were verified using P-P plots and K-S tests. All study variables were tested for multicollinearity.

Patient and public involvement
This study did not involve patients and the public.

RESULTS
Socioeconomic and demographic characteristics of respondents
Table 1 shows the socioeconomic and demographic characteristics of the participants. The questionnaire was completed by 581 respondents from urban areas and 422 from rural areas. In urban areas, 41.0% of respondents were male and 59.0% were female; the average age was 74.23 years. In rural areas, the average participant age was 72.39 years, with more men (55.9%) than women (44.1%). The income of the urban elderly was higher than that of the rural elderly. Most participants (91.6% in urban areas, 93.8% in rural areas) did not work. Most had children (97.6% urban, 90.8% rural), while 19.4% of the urban elderly lived alone compared with 18% of the rural elderly. The proportions of urban and rural elderly who had house property were quite similar (62.1% and 60.2%, respectively). In addition, respondents suffering from chronic diseases in urban and rural areas were 76.6% and 72.0%, respectively.

Physical health, life satisfaction and social support of urban and rural elderly
T-test results are shown in table 2. There were statistically significant differences in life satisfaction ($t$=6.71, $p<0.001$), support utilisation ($t$=10.706, $p<0.001$) and overall social support ($t$=3.5, $p<0.001$) in relation to place.
of residence, with scores being higher for urban respondents than rural respondents.

**Williness to receive eldercare**

Table 3 shows the results of the χ² tests. The results indicated that 51.6% of the urban elderly and 59.0% of the rural elderly would prefer family eldercare. There were statistically significant differences in willingness to receive eldercare between the urban and the rural elderly (χ²=5.359, p=0.021).

**Physical health, life satisfaction and social support among urban and rural elderly in their preferences for family or institutional eldercare**

Table 4 shows the mean levels of physical health, life satisfaction and social support of urban and rural elderly and the
differences in their willingness to receive family or institutional eldercare.

In urban areas, the elderly who preferred family eldercare reported significantly higher scores for subjective support (t=4.788, p<0.001), objective support (t=7.961, p<0.001) and overall social support (t=5.667, p<0.001).

In addition, in rural areas, the scores for subjective support (t=2.969, p=0.002), objective support (t=4.197, p<0.001) and overall social support (t=3.459, p=0.001) were higher among the elderly who preferred family eldercare.

Factors influencing willingness to receive eldercare

Table 5 shows the two models used to assess the factors influencing willingness to receive eldercare in urban and rural areas.

Model 1 was used to analyse the factors influencing willingness to receive eldercare in urban areas. The results showed that age, house property and objective support were predictors of willingness to receive institutional eldercare. Compared with those under 70 years, the elderly who were older than 80 years (OR 2.791, 95% CI 1.436 to 4.737, p<0.001) were more likely to choose institutional eldercare. Moreover, this research can help guide investors in providing suitable services for different types of elderly people.

First, we examined differences in the physical health, life satisfaction and social support of urban and rural elderly. Researchers and managers have extensively studied the topic of improving life satisfaction for the elderly. The present study found that life satisfaction is higher in urban areas than in rural areas (table 2), which is consistent with previous studies. Several factors might have contributed to these findings. First is the influence of income. One study noted that higher economic levels provide more protection, thus maintaining and improving life satisfaction. In the present study, the urban elderly had higher incomes than the rural elderly. Another reason concerns the impact of physical health. Being ill affects daily life and causes pain, which reduces life satisfaction. China’s two-dimensional urban-rural structure has resulted in great differences in living standards and convenience, which most certainly influence differences in life satisfaction.

Regarding social support, the subscale of support utilisation and overall social support were higher for the urban elderly than for the rural elderly (table 2). These results are consistent with previous research. Social support was the main source of relationships and social networks, and it created a sense of happiness for members. In Taiwan, higher cognitive functioning among community-living elderly was associated with increased social support. Another study found that social relations played an important role in elderly health. Therefore, it is important to take measures to ensure social support for the elderly. First, communities should build activity centres based on the actual situation of the elderly. In addition, participatory programmes should be improved. Many participatory programmes for older people, such as village services in England and formal social activity

### Table 2 Physical health, life satisfaction and social support of urban and rural elderly

| Scale range | Urban Mean±SD | Rural Mean±SD | t     | P values |
|-------------|---------------|---------------|-------|---------|
| Physical health | 1–5 3.26±1.02 | 3.36±0.91 | −1.740 | 0.088  |
| Life satisfaction | 5–35 26.53±5.73 | 23.80±6.78 | 6.710 | 0.000  |
| Objective support | 1–20 6.85±2.28 | 6.33±2.17 | −0.395 | 0.693  |
| Subjective support | 8–32 19.34±4.65 | 19.38±5.09 | −0.142 | 0.885  |
| Support utilisation | 3–12 6.67±2.64 | 4.94±2.42 | 10.706 | 0.000  |
| Overall social support | 12–64 32.29±7.14 | 30.66±7.41 | 3.500 | 0.000  |

### Table 3 Comparison of willingness to receive eldercare between urban and rural areas

| Urban areas | Rural areas | χ² | P value |
|-------------|-------------|----|--------|
| Willingness to receive institutional eldercare | 281 (48.4) | 173 (41.0) | 5.359 | 0.021 |
| Willingness to receive family eldercare | 300 (51.6) | 249 (59.0) | 0.038 | 0.845 |
| Total | 581 (100) | 422 (100) | 5.359 | 0.021 |

Bold value indicates <0.05.

### DISCUSSION

By examining urban and rural samples, this study provides new insights into urban-rural differences, to compare differences in willingness to receive eldercare between urban and rural areas and to analyse their influencing factors. This study’s findings can serve as a practical reference for policy making related to the elderly and for eldercare resource allocation between family and institutional eldercare. Moreover, this research can help guide investors in providing suitable services for different types of elderly people.

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support networks in the Philippines, have shown that the elderly who participate in social activities have a corresponding increase in their level of support utilisation.

Next, we examined differences in willingness to receive eldercare among urban and rural elderly. The proportion of urban elderly who chose institutional eldercare was higher than that of rural elderly. This result is consistent with other findings showing that rural elderly have less favourable opinions of institutional eldercare and prefer home care. This phenomenon can be attributed to rural elderly holding strong traditional views about eldercare.

We also found that in both urban and rural areas, willingness to receive family eldercare was higher than the willingness to receive institutional eldercare (table 3). This suggests that family eldercare is still the primary choice among China's elderly. Nevertheless, the proportion willing to receive institutional eldercare was very high in both urban and rural areas (more than 40%). At the end of 2016, 230 million people in China were over 60 years, with 7.302 million available beds, which could meet the needs of only 3.2% of the elderly. As such, there is a shortfall in available eldercare beds. Interestingly, while many elderly said they preferred institutional eldercare, many did not actually seek services at such institutions. The elderly have a fundamental need for emotional and informational communication with families and society, which gives them spiritual consolation. Therefore, when objective support meets the needs of the elderly, they prefer to receive home care.

The rural elderly who had children and lived with family preferred family eldercare (table 5). Other studies have obtained similar results. The elderly who have children tend to choose family eldercare regardless of whether they have social support. There is a traditional concept that raising children ensures warmth in old age, which is part of the culture and a kind of eldercare strategy for rural residents. According to some elderly, if they live in an eldercare institution, their children might be considered unfilial and could be ridiculed.

CONCLUSION
This study investigated differences in willingness to receive eldercare and the influencing factors among urban and rural elderly.
This study provides valuable findings. We found that 51.6% of urban elderly and 59% of rural elderly would prefer family eldercare. Although both urban and rural elderly preferred family eldercare, the proportion of those willing to receive institutional eldercare was high. In the future, we should focus on improving the functioning of family eldercare and promote the development of varied eldercare services.

We also found that the factors influencing willingness to receive eldercare among urban elderly were age, house property and objective support. Among rural elderly, the factors were having children, house property and living arrangement. Investments and targeted policies should be conducted for different subgroups of urban and rural elderly. In addition, governments should improve medical and endowment insurance, and optimise the disposition of resources for the elderly according to the demand for eldercare.  

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Contributors LL conceived and designed the experiments; YX, RP, JQ, HZ performed the experiments; YX, RP, JQ, ZW analysed the data; LL, JW, TS contributed reagents/materials/analysis tools; YX wrote the paper. ZW, WY, XS provided technical support. LL critically revised the paper. All authors checked and proof-read the final version of manuscript.

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REFERENCES
1. Yang K. Study on the choice of endowment willingness and influential factors of rural Residents. Zhejiang: Sci-Tech University, 2015:3. 12.
2. National Bureau of Statistics: the 2016 national economic and social development statistics bulletin. In Chinese http://www.stats.gov.cn/tj/zxfb/201702/20170228_14674242.html (accessed 2 Dec 2017).
3. Zhan HJ, Liu G, Guan X, et al. Recent developments in institutional elder care in China: changing concepts and attitudes. J Aging Soc Policy 2006;18:65.
4. Feng MN, Zhou LZ, et al. Analysis on the present situation and influencing factors of the family function of the elderly in urban and rural areas in Hebei province [J]. Public health 2015;31:137–40.
5. Li Y. The study of the impact elements of urban elderly endowment-take the Kunlun Community in Changchun as an example[J]. ChangChun University of Technology 2016.
6. Yao ZY, Wang SL. Will and influence of the rural aged to be supported by institutional care. Based on the survey of 749 rural aged in the east region[J]. J of hunan agricultural university 2012;6:39–44.
7. Huang XL, Chen W, et al. Analysis on Influential Factors of the Preference for Old-age Support among Elder People in Urban and Rural Areas of Xiamen [J]. Chinese journeyof health statistics 2017;34:729–32.
8. Ma Y, Tao FB, et al. Choices of old-age care and influence factors among empty nestelderly, Xuzhou[J], Chinese rural health service administration 2017;37:1164–6.
9. Jang Y, Kim G, Chiriboga DA, et al. Willingness to Use a Nursing Home: A Study of Korean American Elders. J Appl Gerontol 2008;27:110–7.
10. Chung MH, Hsu N, Wang YC, et al. Factors affecting the long-term care preferences of the elderly in Taiwan. Geriatr Nurs 2008;29:293–301.
11. Chou FJ-ANN. Willingness to live in eldercare institutions among older adults in urban and rural China: a nationwide study. Ageing Soc 2010;30:583–608.
12. L H S, Dong P, et al. The choice of eldercare style and its influencing factors of the elderly in urban areas [J]. Medical in Guangdong 2017;31:833–4.
13. Martikainen P, Moustgaard H, Murphy M, et al. Gender, living arrangements, and social circumstances as determinants of entry into and exit from long-term institutional care at older ages: a 6-year follow-up study of older Finns. Gerontologist 2009;49:34–45.
14. Aguiro-Torres H, van Strauss E, Vithanen M, et al. Institutionalization in the elderly: the role of chronic diseases and dementia. Cross-sectional and longitudinal data from a population-based study. J Clin Epidemio 2001;54:795–801.
15. Gruber J, Engelhartt G V, Perry CD. Social Security and Elderly Living Arrangements[J]. Nber Working Papers 2005;40:354–72.
16. Nyman JA. Analysis of nursing home use and bed supply: Wisconsin, 1983. Health Serv Res 1989;24:511.
17. Liu JH, Tan J. An analysis of the influence of social support on the willingness of eldercare. Social Security Studies 2016;4:13–18.
18. Zuo Q. The Research of Hollow Village Residents Institution Endowment Intend and Influencing Factors-A Study Based on X Town in South Anhui Province: East China University of Science and Technology, 2015.
19. Yuan YF. Analysis of the Elders’ Intentions and Influencing Factors about Living in Institutions-Based on The CLASS Survey Data: Shantou University of Finance and Economics, 2016.
20. World Health Organization, Constitution of the World Health Organization: Principles. http://www.who.int/about/mission/en/
21. Peng H. Research on dualistic Structure of the Urban and Rural areas and the issue of Social Fairness in China[D]. Sichuan University, 2007.
22. Zhou YD, Guo M X. Comparison of the willingness to receive eldercare of urban And rural elderly in X’ an. Chinese Journal of Gerontology 2016;34:1732–4.
23. World Health Organization: http://www.who.int/topics/ noncommunicable_diseases/en/
24. TeoV W, Dienr E. Review of the Satisfaction With Life Scale. Psychol Assess 1993;5:164–72.
25. Xiao SY. The theoretical basis and applications of Social Support Rate Scale. Clin Psychiatry 1994;4:98–100.
26. Li C, Chi I, Zhang X, et al. Urban and rural factors associated with life satisfaction among older Chinese adults. Aging Ment Health 2015;19:947–54.
27. Chai Y, Xu M, Liu B, et al. Effect of the life satisfaction of elderly in urban and rural areas of Hebei province. Chinese J of Gerontol 2016;36:4895–7.
28. Chen L. Study on the life satisfaction and its influencing factors of the elderly in Beijing: Public University of Economics and Business, 2015.
29. Li J X LBZ. Analysis of differences and changes of life satisfaction of the elderly in urban and rural areas-Based on CHLS project survey data[J]. Academia Bimestris 2015;1:101–11.
30. Wang Y. The choice of eldercare in rural areas under the filial piety culture[J]. Data of Culture and Education 2010;2:81–3.
31. Li J X YXJ, Wang GZ, et al. An analysis of the willingness of eldercare and the ways of eldercare in rural areas in China[J]. Population & Economics 2004;5:7–10.
32. Zhang M, Chen CLX, et al. The influence of social support and family living on the function of the elderly in urban and rural areas[J]. Chinese J of Gerontol 2014;34:2201–3.
33. Li L, Shi FF, Zhang Q, et al. Analysis of the current situation and influential factors of social support for the elderly in urban community. Health management in China 2014;41:412–5.
34. White AM, Philogene GS, Fine L, et al. Social support and self-reported health status of older adults in the United States. Am J Public Health 2009;99:1872–8.
35. Yeh SC, Liu YY. Life satisfaction and its influencing factor in the elderly. BMC Health Serv Res 2003;3:9.
36. Mendes de Leon CF, Glass TA, Beckett LA, et al. Social networks and disability transitions across eight intervals of yearly data in the New Haven EPSE. J Gerontol B Psychol Sci Soc Sci 1998;54:S162.
37. Zhang W, Chen M. Psychological distress of older Chinese: exploring the roles of activities, social support, and subjective social status. J Cross Cult Gerontol 2014;29:37–51.
38. Blare NP. Functional ability,participation in activities and life satisfaction of the older people. Asian Soc Sci 2012;8:78–89.
39. Sun M. A Survey and Analysis on the Endowment Intention of the Elderly in the tree Provinces of Northeast of China [D].JiLin university, 2017.
40. Heilongjiang Ministry of civil affairs: statistical bulletin on social services development in 2016. 2016 http://www.hljmzt.gov.cn/915/25829.html
41. Gao RG. Analysis the willingness of institutional eldercare and it’s influential factor of the elderly in the city of Shandong Province. J Community Med 2014;7:17–18.
42. Wang XJ, An Empirical Study on the social support and the choice of eldercare in rural areas: a case study of three villages in Hunan: Central South University, 2011.
43. Zhai DH, Tao LQ. A model for choice between family care and institutional care[J]. Market and Demographic Analysis 2005:62–64.
44. Sun LL, Sen D. The Decision Making for the Old-aged Urban and Rural Elderly: A Support of the Study Based on Chinese Elderly and Its Differences between the China Longitudinal Aging Social Survey[J]. Population & Economics 2017;2:11–20.
45. Gustafson K, BaoFeng H. Elderly care and the ‘one-child’ policy: concerns, expectations and preparations for elderly life in a rural Chinese township. J Cross Sect Gerontol 2014;29:25–36.
46. Zhang Y, Goza FW. Who will care for the elderly in China?: A review of the problems caused by China’s one-child policy and their potential solution. J Aging Stud 2006;20:151–64.
47. Nan Y. An empirical research of the raising children ensures a warm old age of the rural elderly. J Northwest Population J 2012;33:24–8.
48. Qian Y, Chu J, Ge D, et al. Gender difference in utilization willingness of institutional care among the single seniors: evidence from rural Shandong, China. Int J Equity Health 2017;16:77.
49. Tao L, Zhai DH. Research on eldercare facilities run by the private sector in China [J]. Research Programme on Ageing 2004;7:34–40.