

BMJ Open Willingness for community-based and institutional eldercare among older adults: a cross-sectional study in Zhejiang, China

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ABSTRACT

Objective To investigate the proportion of willingness for community-based and institutional care and their correlating factors among older adults in Zhejiang Province, China.

Design Cross-sectional study.

Setting The Sixth National Health Service Survey, carried out in Zhejiang, China.

Participants 7300 eligible older adults aged 60 years or older.

Main outcomes measures Willingness for community-based and institutional eldercare.

Results The average age of the participants was 69.0±7.3 years. 50.9% of the participants were males, and 49.1% were females. 19.2% came from urban areas and 80.8% were from rural areas. The percentage of willingness for community-based and institutional eldercare was 2.7% and 3.8%, respectively. The corresponding figures for females were 2.9% and 3.5%, respectively, and for males were 2.5% and 4.1%, respectively. Factors positively associated with willingness for community-based eldercare included living in urban areas, high educational attainment, more frequent active exercise and living alone. Factors positively associated with willingness for institutional eldercare included age, living at urban areas, high education attainment, more frequent active exercise and receiving assistance with daily living.

Conclusions Family eldercare was the priority for older adults compared with community-based and institutional eldercare in Zhejiang. The willingness for community-based and institutional eldercare among older adults was affected not only by the older adults themselves, but also by community and family members.

INTRODUCTION

Worldwide, the population is rapidly ageing. The number of people aged 60 years or older was estimated to be 900 million in 2015, and is projected to reach 2 billion in 2050, rising from 12% to 22% of the total global population.¹ China has one of the most rapidly ageing populations.² The number of Chinese people ≥60 years reached 240 million in 2017, accounting for approximately 17.3% of the total population.³ China's seventh national

Strengths and limitations of this study

- This is a community-based study with a large sample and standardised procedures.
- A multistage sampling design was used to increase the samples representativeness.
- Since data are self-reported, the findings may be influenced by recall bias.
- The cross-sectional study design precludes establishment of causal associations between the factors studied and willingness for community-based or institutional eldercare.

population census demonstrated that older adults aged ≥60 years accounted for 18.7% of the total population in 2020.⁴ It is predicted that China will become a super-aged country (with over 20% of the population aged ≥65) in less than 20 years.⁵

The one-child policy was implemented in China in 1979. It contributed considerably to not only control of the global population, but also rapid economic development in China.⁶ However, it also brought many challenges for Chinese people (eg, with older adults' care and labour shortages).⁷ Nowadays, the '4-2-1' family is the most common Chinese family structure, in which, a couple have to care for four older parents and one child.⁸ Many young couples in China have to deal with dual pressures from their careers and from their responsibilities as caregivers for older relatives.

Family eldercare is the most typical eldercare in China. In family eldercare, older adults live at home and receive care from their family members.⁹ In traditional Chinese culture, family eldercare is considered a component of 'filial piety', and of a child's respect for their parents and older adults.¹⁰ In recent years, the Chinese government has encouraged institutional eldercare and community eldercare. In institutional

eldercare, older adults live in professional nursing institutions and receive care from institutional caregivers.¹¹ However, institutional eldercare is not accessible to the majority of older adults due to costs and restricted access.¹² Community eldercare is a combination of family eldercare and institutional care, and is to some extent more akin to family eldercare. Older adults live at home and receive care from the community.¹³ From 2005 to 2011, community eldercare was proposed in government policy and a pilot project was undertaken. It underwent rapid development, with extensive policy initiatives at both central and local level, and the Chinese government put forward the aim of achieving universal coverage of community eldercare in urban areas, 80% coverage in county areas and 50% coverage in rural areas.¹² However, willingness for community eldercare among older adults remains unknown.

Some early studies have described attitudes towards eldercare among older adults in China. One study found that 45.3% of older adults in Heilongjiang were amenable to institutional eldercare,¹⁴ whereas in another study, in Shandong, the proportion was 8.5%.¹⁵ Liu *et al's* study in Hunan Province indicated that willingness for community-based and institutional eldercare was 8.5% and 10.8%, respectively,¹⁶ while Huang *et al* found corresponding figures of 20.8% and 12.7%, respectively, in Xiamen.¹⁷ However, the majority of those studies had relatively limited sample sizes, and only covered several specific streets or villages, resulting in a lack of representativeness. Furthermore, most previous studies focused largely on willingness for institutional eldercare.^{14 17} For example, Xing *et al* found that age, home ownership, having children and living arrangements influenced willingness for institutional eldercare among older adults,¹⁴ but few studies have addressed correlates of community-based care.

Nowadays, the extent of ageing of the population is more extreme in Zhejiang than in China as a whole. The number of older adults aged ≥ 60 years in Zhejiang in 2019 reached 12.01 million, approximately 20.6% of the total population.¹⁸ Understanding patterns of willingness for different modes of eldercare could facilitate and inform eldercare policy making and appropriate allocation of limited eldercare resources.¹⁷ Hence, this study aims to investigate the proportion of willingness for different approaches to eldercare and their correlating factors among older adults in Zhejiang.

METHODS

Sample and procedure

The data in this study were derived from the Sixth National Health Service Survey (NHSS, 2018) in Zhejiang. The NHSS is a regular survey conducted by the National Health Commission of China every 5 years. A multistage sampling design was used. In stage 1, 15 counties/districts were sampled at random from all 90 counties in Zhejiang. In stage 2, five streets were sampled at random from each

selected county/district. In stage 3, two communities/villages were sampled at random from each selected street. In stage 4, sixty households were sampled at random from each selected community/village. Face-to-face interviews with all family members were undertaken by trained interviewers using a panel computer. The survey was conducted using a structured questionnaire and standardised procedures. The construct validity and reliability of the questionnaire have been reported in previous literature,¹⁹ indicating both good validity and reliability. In order to increase the response rate, interviewers visited each household up to three times on different days and at different times during the survey period. Before filling in the questionnaire, the interviewers explained the purpose and confidentiality of the survey, and invited every family member to participate. All participants provided written informed consent prior to the survey. All completed questionnaires were checked by local survey supervisors at the end of every day. After the survey, 5% of households were randomly selected and resurveyed, using 14 questions, to assess survey quality; agreement between this and the original survey responses was 95%.²⁰ Overall, 23 931 participants in 9 029 households were surveyed. 16 631 participants aged < 60 years were excluded, leaving 7 300 participants for inclusion in the final analysis.

Measures

Dependent variables

Eldercare was assessed through the question: 'What kind of eldercare would you like to choose?' (Answer options: family care, community-based care and institutional care).

Independent variables

Household income was assessed through the question 'What was your total household income in the previous year (2017)?' Families were divided into three groups according to their household income: low (< 25 th percentile, ie, $\leq \text{¥}29\ 999$); middle (25–74th percentile, ie, $\text{¥}30\ 000$ – $\text{¥}95\ 999$ yuan); high (≥ 75 th percentile, ie, $\geq \text{¥}96\ 000$). Education attainment was assessed through the question 'What is the highest education level you ever received?' (Options: receiving no education, primary school, middle school, high school and college or above). Smoking status was assessed through the question 'Do you currently smoke cigarettes?' (Options: non-smoker, ex-smoker and current smoker). Drinking status was assessed through the question 'Did you drink alcohol in the past 12 months?' (Options: non-drinker, occasional drinker and current drinker). Physical exercise was assessed through the question 'In the past 30 days, how many times did you actively exercise weekly?' (Options: none, < 1 times, 1–2 times, 3–5 times and ≥ 6 times). Distance to the nearest medical clinics was assessed through the question 'How far is your home from your nearest medical institution' (Options: none, < 1.0 km, 1.0–1.9 km, 2.0–2.9 km, 3.0–3.9 km, 4.0–4.9 km and ≥ 5.0 km). Hypertension was assessed through the question 'Have you ever been diagnosed

with hypertension by physicians' (Options: yes and no). Diabetes was assessed through the question 'Have you ever been diagnosed with diabetes by physicians' (Options: yes and no). Impaired vision was assessed through the question 'How much difficulty did you have in seeing and recognising a person you know from a distance of about 20 m' (Options: none, moderate and severe). Those who chose 'moderate' and 'severe' were categorised into an impaired vision group. Impaired hearing was assessed through the question 'How much difficulty did you have in hearing others clearly?' (Options: none, moderate and severe). Those who chose 'moderate' and 'severe' were categorised into an impaired hearing group. Living alone was assessed through the question 'How many persons there are living with you altogether?' Receiving assistance with daily living was assessed through the question 'In the past 30 days, were you cared for in ordinary lives daily' (Options: yes and no). Source of income was assessed through the question 'Which was your main source of income?' (Options: family members, labour income, retirement pension and others).

Statistical analysis

All statistical analyses were conducted with SAS V.9.4. χ^2 tests were performed to examine the significance of differences in proportions. T-tests were used to examine the significance of mean differences. Analysis of variance was used to compare numerical data between groups. Multinomial logistic regression was used to examine willingness for different eldercare patterns among older adults. Univariate and multinomial analyses were conducted using three levels of willingness ('family eldercare', 'community-based eldercare' and 'institutional eldercare'). The parameter estimates from the multinomial logistic regression were transformed to ORs and their corresponding 95% CI. In the multinomial regression, for the dependent variable, the reference group was 'family eldercare'. All p values were two tailed, and $p < 0.05$ was the threshold for statistical significance.

Patient and public involvement

No patients were involved in setting the research question or the outcome measures, nor were they involved in developing plans for design or implementation of the study.

RESULTS

Descriptive statistics

The average age of the participants was 69.0 ± 7.3 years. 50.9% (3 716) of participants were males, and 49.1% (3 584) were females; 19.2% (1 400) came from urban areas, and 80.8% (5 900) were from rural areas. 9.1% of participants were educated to high school level or above. 82.8% of participants were married. 25.2% of participants' annual household income was 96 000 yuan or more. The percentage of participants with a prior diagnosis of hypertension or diabetes was 45.7% and 12.8%,

respectively. 21.5% of participants were current smokers. 29.2% of participants were current drinkers. 29.9% of participants exercised actively at least six times per week. Sixty per cent of participants lived less than one kilometre from the nearest medical clinic. 20.8% of participants had auditory impairment. Twenty-two per cent of participants had visual impairment. 11.9% of participants lived alone. 43.1% of participants' incomes were mainly from retirement pensions (table 1).

The proportion of willingness

Among the 7300 participants, the proportion of willingness for community-based and institutional eldercare was 2.7% and 3.8%, respectively. The proportion of willingness for community-based and institutional eldercare among females was 2.9% and 3.5%, respectively, and the corresponding figures for males were 2.5% and 4.1%, respectively. No significant difference was found between males and females ($p = 0.32$). The proportion of willingness for community-based and institutional eldercare among urban participants was 5.6% and 8.3%, respectively, and the corresponding figures for rural counterparts was 2.0% and 2.8%, respectively. Compared with rural participants, urban participants were more likely to receive community-based and institutional eldercare ($p < 0.001$). The proportion of willingness for community-based and institutional eldercare among participants aged 60–64 years was 2.9% and 4.0%, respectively, among those aged 65–69 years was 2.8% and 4.4%, respectively, and among those aged ≥ 70 years was 2.4% and 3.2%, respectively. There was no significant difference in proportion between different age groups ($p = 0.19$) (table 2).

Factors associated with community-based and institutional eldercare

In univariate regression analysis, factors associated with institutional care were age, area, education level, marital status, household income, physical exercise, distance to the nearest clinic, living alone and sources of income. Factors associated with community-based care included area, education level, household income, physical exercise, vision level, distance to the nearest clinic, living alone and source of income (table 3).

In multinomial regression analysis, in terms of community-based eldercare, after adjusting for other variables included in the model, older adults living in urban areas were more likely to choose community-based eldercare in comparison with those living in rural areas (OR 1.65, 95% CI 1.18 to 2.31). Older adults educated to high school level or above had a 2.5 times higher probability of willingness for community-based eldercare in comparison to uneducated older adults (OR 2.45, 95% CI 1.41 to 4.26). Compared with older adults who exercised less than once weekly, those who exercised 1–5 times weekly were 1.9 times more likely to receive community-based eldercare (OR 1.86, 95% CI 1.24 to 2.80). Older adults living alone had a two times higher probability of willingness for community-based eldercare than those living

Table 1 Characteristics of participants (N=7300)

Characteristics	Total	Willingness to receive eldercare			P value
		Family	Community based	Institutional	
Average age (years)	69.0±7.3	69.1±7.3	68.1±6.5	68.2±6.9	0.03
Sex					0.32
Male	3716 (50.9)	3470 (50.8)	94 (48.0)	152 (54.7)	
Female	3584 (49.1)	3356 (49.2)	102 (52.0)	126 (45.3)	
Regions					<0.001
Urban	1400 (19.2)	1205 (17.7)	79 (40.3)	116 (41.7)	
Rural	5900 (80.8)	5621 (82.3)	117 (59.7)	162 (58.3)	
Education					<0.001
Receiving no education	2033 (27.9)	1962 (28.7)	30 (15.3)	41 (14.7)	
Primary school	3294 (45.1)	3116 (45.6)	72 (36.7)	106 (38.1)	
Middle school	1309 (17.9)	1181 (17.3)	50 (25.5)	78 (28.1)	
High school or above	664 (9.1)	567 (8.3)	44 (22.4)	53 (19.1)	
Marital status					<0.001
Married	6042 (82.8)	5663 (83.0)	163 (83.2)	216 (77.7)	
Widowed	1134 (15.5)	1059 (15.5)	29 (14.8)	46 (16.5)	
Others	124 (1.7)	104 (1.5)	4 (2.0)	16 (5.8)	
Household income					0.005
≤¥29999	1820 (24.9)	1728 (25.3)	32 (16.3)	60 (21.6)	
¥30 000–¥95999	3642 (49.9)	3397 (49.8)	114 (58.2)	131 (47.1)	
≥¥96 000	1838 (25.2)	1701 (24.9)	50 (25.5)	87 (31.3)	
Source of income					<0.001
Family members	1112 (15.2)	1081 (15.8)	7 (3.6)	24 (8.6)	
Labour income	2252 (30.8)	2184 (32.0)	24 (12.2)	44 (15.8)	
Retirement pension	3148 (43.1)	2824 (41.4)	153 (78.1)	171 (61.5)	
Others	788 (10.8)	737 (10.8)	12 (6.1)	39 (14.0)	
Smoking status					0.67
Non-smokers	4935 (67.6)	4607 (67.5)	137 (69.9)	191 (68.7)	
Ex-smokers	792 (10.8)	746 (10.9)	22 (11.2)	24 (8.6)	
Current smokers	1573 (21.5)	1473 (21.6)	37 (18.9)	63 (22.7)	
Drinking status					0.66
Non-drinkers	4819 (66.0)	4521 (66.2)	124 (63.3)	174 (62.6)	
Occasional drinkers	346 (4.7)	323 (4.7)	9 (4.6)	14 (5.0)	
Current drinkers	2135 (29.2)	1982 (29.0)	63 (32.1)	90 (32.4)	
Active exercise					<0.001
<1time/week	4164 (57.0)	3999 (58.6)	68 (34.7)	97 (34.9)	
1–5 times/week	953 (13.1)	850 (12.5)	43 (21.9)	60 (21.6)	
>6 times/week	2183 (29.9)	1977 (29.0)	85 (43.4)	121 (43.5)	
Distance to the nearest clinics					<0.001
<1 km	4377 (60.0)	4035 (59.1)	143 (73.0)	199 (71.6)	
≥1 km	2923 (40.0)	2791 (40.9)	53 (27.0)	79 (28.4)	
Impaired hearing	1521 (20.8)	1445 (21.2)	29 (14.8)	47 (16.9)	0.025
Impaired vision	1606 (22.0)	1519 (22.3)	31 (15.8)	56 (20.1)	0.075
Living alone	872 (11.9)	788 (11.5)	35 (17.9)	49 (17.6)	<0.001
Receiving assistance with daily living	573 (7.8)	530 (7.8)	15 (7.7)	28 (10.1)	0.37

Continued

Table 1 Continued

Characteristics	Total	Willingness to receive eldercare			P value
		Family	Community based	Institutional	
Hypertension	3335 (45.7)	3112 (45.6)	93 (47.4)	130 (46.8)	0.82
Diabetes	9361 (12.8)	859 (12.6)	31 (15.8)	46 (16.5)	0.068

Data are expressed as n (%).

with others (OR 1.99, 95% CI 1.16 to 3.43). Compared with older adults whose income was mainly from family members, those with their own retirement pensions were 5.2 times more likely to choose community-based eldercare (OR 5.18, 95% CI 2.34 to 11.48) (table 3).

In terms of institutional eldercare, older adults living in urban areas had a 123% higher probability of choosing institutional eldercare than those living in rural areas (OR 2.23, 95% CI 1.66 to 3.00). Compared with uneducated older adults, OR (95% CI) for older adults whose highest level of education was primary school, middle school and high school or above were 1.47 (1.00 to 2.15), 2.02 (1.31 to 3.11) and 2.28 (1.39 to 3.73), respectively. The higher the level of education and of active exercise, the higher probability of choosing institutional eldercare. Compared with those receiving no assistance with daily living, older people who were receiving assistance with daily living were more likely to choose institutional eldercare (OR 1.65, 95% CI 1.07 to 2.54) (table 3).

DISCUSSION

In this study of 7300 older people living in Zhejiang, China, we examined the frequency of willingness for community-based and institutional eldercare through a cross-sectional study, and identified factors influencing these attitudes, providing information to enable informed policy-making and allocation of eldercare resources.

In this study, willingness for family, community-based and institutional eldercare was reported by 93.5%, 2.7% and 3.8% of older adults in Zhejiang, respectively. Family eldercare was the preferred option, which is consistent with traditional social cultural customs. However, the total number of older adults living in nursing facilities in Zhejiang was almost 74 175,²¹ accounting for 0.6% of all older adults. The proportion of older adults who were willing to receive institutional eldercare in our study was much higher than the proportion of those receiving institutional eldercare in reality. Hence, this suggests that institutional eldercare provision lags behind actual demand, and that development of institutional eldercare facilities in Zhejiang needs to be strengthened. Indeed, it is noteworthy that the number of such facilities in China sharply decreased between 2012 and 2018, from 44 304 to 28 671.²²

In this study, the proportion of willingness for family eldercare was higher than that reported in other regions in China (78.3% in Guangzhou, 54.7% in Heilongjiang and 67.5% in Xiamen).^{14 16 15} However, willingness for institutional eldercare was lower than that reported among Korean American elders of a similar age (45%) and among older people in a study of individuals aged 65 or above living in Taiwan, China (16.7%).^{23 24} One possible explanation for the higher proportion of willingness for family eldercare in this study was the preponderance of

Table 2 The proportion of willingness to receive different eldercare

	Overall N=7300	Willingness for eldercare			P value
		Family 6826 (93.5)	Community based 196 (2.7)	Institutional 278 (3.8)	
Sex					0.32
Male	3716	3470 (93.4)	94 (2.5)	152 (4.1)	
Female	3584	3356 (93.6)	102 (2.9)	126 (3.5)	
Regions					<0.001
Urban	1400	1205 (86.1)	79 (5.6)	116 (8.3)	
Rural	5900	5621 (95.3)	117 (2.0)	162 (2.8)	
Age group (years)					0.19
60–64	2404	2239 (93.1)	70 (2.9)	95 (4.0)	
65–69	2107	1955 (92.8)	60 (2.8)	92 (4.4)	
≥70	2789	2632 (94.4)	66 (2.4)	91 (3.2)	

Data are expressed as n (%).

Table 3 Crude and adjusted ORs (COR/AOR) and 95% CIs for willingness for community-based and institutional eldercare among older adults in Zhejiang

Characteristics	Community based		Institutional	
	COR (95% CI)	AOR (95% CI)	COR (95% CI)	AOR (95% CI)
Age group (ref: 60–64 years)				
65–69 years	0.82 (0.57 to 1.17)	0.74 (0.51 to 1.08)	0.73 (0.55 to 0.99)*	0.64 (0.46 to 0.87)†
≥70 years	1.02 (0.72 to 1.45)	1.06 (0.74 to 1.52)	0.90 (0.67 to 1.21)	0.93 (0.69 to 1.27)
Male (ref: female)				
	0.89 (0.67 to 1.18)	0.72 (0.47 to 1.09)	1.17 (0.92 to 1.48)	1.20 (0.86 to 1.68)
Urban (ref: rural)				
	3.15 (2.35 to 4.22)‡	1.65 (1.18 to 2.31)†	3.34 (2.61 to 4.27)‡	2.23 (1.66 to 3.00)‡
Education (ref: receiving no education)				
Primary school	1.51 (0.98 to 2.32)	1.30 (0.83 to 2.03)	1.63 (1.13 to 2.34)†	1.47 (1.00 to 2.15)*
Middle school	2.77 (1.75 to 4.38)‡	1.56 (0.94 to 2.59)	3.16 (2.15 to 4.64)‡	2.02 (1.31 to 3.11)†
High school or above	5.08 (3.16 to 8.15)‡	2.45 (1.41 to 4.26)†	4.47 (2.94 to 6.80)‡	2.28 (1.39 to 3.73)†
Marital status (ref: married)				
Widowed	0.95 (0.64 to 1.42)	0.78 (0.44 to 1.38)	1.14 (0.82 to 1.58)	1.32 (0.85 to 2.04)
Others	1.34 (0.49 to 3.67)	0.80 (0.26 to 2.43)	4.03 (2.34 to 6.95)‡	3.06 (1.59 to 5.88)†
Household income (ref: ≤¥29 999)				
¥30 000–¥95 999	1.81 (1.21 to 2.69)†	0.96 (0.61 to 1.50)	1.11 (0.81 to 1.51)	0.81 (0.57 to 1.16)
≥¥96 000	1.59 (1.01 to 2.49)	0.68 (0.39 to 1.16)	1.47 (1.05 to 2.06)*	0.87 (0.58 to 1.32)
Sources of income (ref: family members)				
Labour income	1.70 (0.73 to 3.95)	1.53 (0.64 to 3.65)	0.91 (0.55 to 1.50)	0.83 (0.48 to 1.40)
Retirement pension	8.36 (3.91 to 17.90)‡	5.18 (2.34 to 11.48)‡	2.72 (1.77 to 4.21)‡	1.41 (0.87 to 2.28)
Others	2.51 (0.98 to 6.41)	2.23 (0.87 to 5.71)	2.38 (1.42 to 4.00)†	1.84 (1.08 to 3.13)*
Smoking status (ref: non-smokers)				
Current smokers	0.84 (0.58 to 1.22)	1.01 (0.63 to 1.62)	1.03 (0.77 to 1.38)	0.92 (0.64 to 1.33)
Ex-smokers	0.99 (0.63 to 1.57)	1.24 (0.72 to 2.15)	0.78 (0.50 to 1.19)	0.69 (0.42 to 1.12)
Drinking status (ref: non-drinkers)				
Current drinkers	1.16 (0.85 to 1.58)	1.36 (0.95 to 1.95)	1.18 (0.91 to 1.53)	1.18 (0.87 to 1.60)
Occasional drinkers	1.02 (0.51 to 2.02)	1.03 (0.50 to 2.10)	1.13 (0.65 to 1.96)	1.08 (0.60 to 1.93)
Active exercise (ref: <1time/week)				
1–5 times/week	2.97 (2.01 to 4.39)‡	1.86 (1.24 to 2.80)†	2.91 (2.09 to 4.05)‡	2.16 (1.53 to 3.07)‡
>6 times/week	2.53 (1.83 to 3.49)‡	1.33 (0.93 to 1.89)	2.52 (1.92 to 3.31)‡	1.67 (1.23 to 2.26)†
Distance to the nearest clinics (ref: ≥1 km)				
<1 km	1.87 (1.36 to 2.57)‡	1.14 (0.81 to 1.59)	1.74 (1.33 to 2.27)‡	1.15 (0.87 to 1.53)
Impaired hearing (ref: no)				
	1.32 (0.96 to 1.82)	0.95 (0.62 to 1.46)	0.85 (0.52 to 1.41)	0.91 (0.65 to 1.29)
Impaired vision (ref: no)				
	0.66 (0.44 to 0.97)*	0.87 (0.58 to 1.33)	0.88 (0.65 to 1.19)	1.08 (0.78 to 1.50)
Living alone (ref: no)				
	1.67 (1.15 to 2.42)†	1.99 (1.16 to 3.43)*	1.64 (1.19 to 2.25)†	1.27 (0.81 to 2.00)
Receiving assistance with daily living (ref: no)				
	0.98 (0.58 to 1.68)	1.42 (0.81 to 2.50)	1.33 (0.89 to 1.99)	1.65 (1.07 to 2.54)*
Hypertension (ref: no)				
	1.08 (0.81 to 1.43)	0.91 (0.67 to 1.23)	1.05 (0.82 to 1.33)	0.89 (0.69 to 1.15)
Diabetes (ref: no)				
	1.31 (0.88 to 1.93)	1.06 (0.71 to 1.59)	1.38 (0.99 to 1.90)	1.11 (0.79 to 1.56)

*P<0.05.

†P<0.01.

‡P<0.001.

rural residents (12 of the 15 selected counties/districts were rural areas). Older adults from rural areas would stay at home with family members, rather than living at nursing facilities.¹⁴

In Chinese traditional culture, care of older adults by their adult offspring was a basic norm within Confucian doctrine. Consistent with previous studies,^{14 17} the

proportion of willingness for community-based and institutional eldercare among urban older adults was higher than among older adults living in rural areas. Compared with older adults from urban areas, those from rural areas held stronger traditional opinions on eldercare and were more conservative. Older adults from rural areas had, on average, lower incomes and poorer social welfare

conditions than their urban counterparts. The majority of older adults living in urban areas rely on retirement pensions and pension insurance, and the retirement system and government subsidy assistance system are relatively complete, while in rural areas older adults mainly rely on their own labour or children to live. The lack of social endowment security results in some rural older adults having little autonomy in their choice of eldercare. Furthermore, the supply of institutional care was relatively deficient in rural areas.^{14 17}

Consistent with a previous study,¹⁴ gender was not related to willingness for institutional eldercare. The same was true of willingness for community-based eldercare in our study. Older adults in Zhejiang province with high school education or above were more likely to choose community-based care, while those educated to primary school level were more likely to choose institutional eldercare, suggesting older adults with higher educational attainment were less conservative and less willing to depend on their adult offspring.

This study found that older adults aged 65–69 years had less preference for institutional eldercare in comparison with those aged 60–64 years, which was inconsistent with previous studies. Xing *et al* found no age differences in willingness to receive institutional eldercare among 422 rural older adults in China.¹⁴ A study conducted in Hong Kong showed that, among older adults, older age tended to be associated with a preference for institutional eldercare.²⁵ One possible reason is that older age (in this study consistent with being born earlier) is associated with stronger adherence to traditional concepts, as well as worse physical condition and higher probability of choosing family eldercare. Future studies are needed to verify the relationship of age with willingness for institutional eldercare.

Our study indicated that those older adults receiving assistance with daily living were more likely to prefer institutional eldercare. One possible explanation was that prolonged care for older adults takes up a lot of time and energy for adult offspring who need to work to support their family, making older adults feel uncomfortable. Another reason was that they may believe institutional eldercare centres could provide more professional nursing since the majority of the older adults were disabled, or suffered from severe illness.²⁶ The finding that living alone was positively associated with willingness for community-based eldercare is consistent with another study in China.¹⁶ Older adults living alone was described as a factor associated with willingness for community-based eldercare and was linked to psychological disadvantages.²⁷ Based on Chinese traditional values and living preference, most Chinese older adults tend to choose to live with their family members when they become single. If they have no family members or family members are not willing to have their older relatives live with them, and living alone is not their preference, they may feel abandoned, less loved and cared about, and even depressed. In such instances, they tend to choose community-based eldercare.²⁸

Behavioural lifestyle and health status, such as cigarette smoking, alcohol drinking, hypertension and diabetes, were neither associated with willingness for community-based eldercare nor with willingness for institutional eldercare, while physical exercise was positively associated with willingness for institutional eldercare. In terms of health status, subjective psychological feelings play a more significant role than objective physical health restrictions. Under different physical health conditions, there was no significant difference in people's choice of eldercare.²⁹ Older adults have a fundamental need for informational communication with families and society, which gives them spiritual consolation. Older adults who often take physical exercise may meet contemporaries outside and be more socially active.³⁰ Therefore, when social support meets the needs of older adults, they prefer to receive institutional eldercare.

The findings of this study have several important implications. First, family eldercare remains the first choice for older adults in Zhejiang, suggesting that more family related eldercare services, including daily living care, home medical healthcare, and emergency rescue services, need to be strengthened and provided to older adults, especially for those living alone or suffering from sudden illnesses. Of note, the Chinese government noted this challenge in 2021, introducing policy to encourage qualified medical institutions to actively provide home medical care services for older adults.³¹ This study provides evidence for related policy-making. Second, provision of institutional eldercare services in society was far behind actual demand, and more institutional care agencies should be developed to meet the various needs of older adults.

Our study has several strengths. First, the survey comprised a structured questionnaire implemented using standardised procedures. Second, it included a large and provincially representative sample. Third, the questionnaire was conducted using a panel computer, reducing logic and data entry errors. On the other hand, the study has several limitations. First, the cross-sectional study design prevents establishment of causal relationships between associated factors and willingness for institutional care. Second, all data were self-reported, which may result in recall bias. Third, although we included some assessment of social support in the study (eg, sources of income and receiving assistance with daily living), data on family support (eg, number of the children and relationships with children) were not collected, which will be remedied in a future study. Additionally, caution is required in generalising the findings of this study to populations with different age ranges and cultural backgrounds.

CONCLUSION

Our study suggested that family eldercare was the priority for older adults compared with community-based and institutional eldercare in Zhejiang. Living in urban areas, education level, active exercise and living alone were

associated with willingness for community-based eldercare, while age, living in urban areas, education level, active exercise and receiving assistance with daily living were associated with willingness for institutional eldercare. The willingness for community-based and institutional eldercare for older adults was affected not only by the older adults themselves, but also by the community and by family members. Targeted policies should be developed to offer appropriate and personalised eldercare. More diverse living options should be provided to build more harmonious eldercare surroundings for older adults.

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