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Investigation and Research on the Cognitive Level of Alzheimer's Disease among the Elderly in a Certain Community in Shanghai

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Abstract: This cross-sectional study assessed the knowledge level of Alzheimer's disease (AD) among 143 community-dwelling elderly individuals in Shanghai, China, using a stratified cluster sampling method. The overall AD knowledge score was 55.82 ± 9.79 (out of 66), with the highest score in caregiving knowledge (21.72 ± 2.67), followed by preventive knowledge (18.16 ± 3.92), and the lowest in disease-specific knowledge (15.94 ± 4.86). Multivariate linear regression identified five key factors significantly associated with the total knowledge score: absence of a family history of depression (β = -18.216, $P < 0.001$), living with a spouse (β = -1.429, $P = 0.013$), higher personal monthly income (β = 1.851, $P = 0.007$), actively seeking dementia-related information (β = -4.137, $P = 0.005$), and not having sought medical consultation for suspected cognitive impairment (β = 3.701, $P = 0.034$). The model explained 27.7% of the variance ($R^2 = 0.277$, $F = 10.485$, $P < 0.001$). These findings revealed a moderate level of AD knowledge with significant disparities across domains and population subgroups. The results underscore the need for targeted health education strategies, particularly for individuals living alone, those with lower socioeconomic status, and those with a family history of mental health conditions, to enhance AD awareness and mitigate its impact within China's aging population.

Keywords: Alzheimer's disease; Knowledge level; Community-dwelling elderly; Health literacy; Shanghai

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1. Introduction

Alzheimer's disease (AD), as a progressive neurodegenerative disease, poses a major challenge for global public health. Data from the WHO's *Global Status Report on Public Health Response to Dementia*, released in September 2021, indicated that there are over 55 million confirmed dementia patients worldwide, with 60% to 70% of those being Alzheimer's cases [1]. As the population ages, the prevalence is expected to more than triple over the next 30 years, highlighting the disease burden brought about by accelerated aging [2]. As one of the fastest aging countries, the number of Alzheimer's patients in China is expected to exceed 20 million by 2050 [3]. The

annual cost for Alzheimer's patients in China is $167.74 billion, projected to reach $1.8 trillion by 2050, putting a heavy burden on patients, families, society, and healthcare [4]. The disease is characterized by cognitive decline, behavioral abnormalities, and loss of daily living abilities, which not only seriously impacts patients' quality of life but also puts a lot of economic and psychological pressure on families and society [5]. Therefore, enhancing public awareness, especially among the elderly population, about AD, and strengthening early prevention and management, has become key to slowing disease progression and improving health outcomes [6].

Currently, despite significant progress in understanding the biological mechanisms and treatment methods for AD [1,7], existing research on the cognitive status of patients and high-risk groups is still lacking. Surveys have shown that the awareness rate of AD among the elderly population in China is generally low, with confusion between "natural aging" and "disease" [8], leading to delays in seeking medical attention and treatment. Additionally, factors such as urban-rural differences, educational background, and health literacy significantly affect individuals' depth of understanding of the disease [8]. However, research on the knowledge level of community elderly individuals regarding AD in Shanghai, a megacity with a high degree of aging and concentrated medical resources, is still relatively limited. A study by the Shanghai Municipal Bureau of Statistics pointed out that, as a megacity with an aging rate exceeding 36%, the cognitive needs and characteristics of the elderly community in Shanghai need to be systematically analyzed to guide the formulation of precise health intervention strategies [3,9].

This study, therefore, aims to assess the knowledge level of AD among the elderly in a Shanghai community and to identify its key demographic and socioeconomic determinants. We hypothesize that AD knowledge [10] would be moderate overall and significantly influenced by factors such as income, education, living arrangements, and health information-seeking behavior. The results aim to fill the regional data gap, provide solid evidence for targeted health education in the community, optimize the AD prevention and control system [11], and offer references for innovative health promotion models in an aging society.

2. Method

2.1. Participants

This study used a stratified cluster sampling method to select elderly community residents aged 60 and older with intact cognitive function from the Kangqiao community in Pudong New District, Shanghai, as the subjects of the survey. A total of 143 questionnaires were distributed, and 143 were returned, which resulted in a 100% response rate. All 143 questionnaires were valid, resulting in a validity rate of 100%. The inclusion criteria were as follows: (1) age 60 years or older; (2) residence in the community for at least 6 months; (3) no significant hearing or visual impairments; (4) intact cognitive function and clear consciousness; (5) sufficient comprehension and cooperation abilities; (6) no communication barriers; and (7) voluntary participation in the study. After being reviewed by the Ethics Committee of Shanghai Jian Qiao University, the study's experimental design and plan fully considered safety and fairness, and the research content did not pose harm or risk to the subjects. All participants were adults, and they were recruited based on voluntary participation and informed consent. The research process and data were kept anonymous, and participants' privacy was not disclosed. This study was conducted in the form of an online survey. Before the survey, participants were informed about the questionnaire and asked to confirm their consent. If participants did not agree, they would automatically exit the questionnaire. Therefore, all participants signed an informed consent form.

A priori power analysis using G*Power software indicated that a sample size of 143 would achieve over 95%

power to detect a medium effect size ($f^2 = 0.15$) in a multiple linear regression model with up to 11 predictors at a significance level of $\alpha = 0.05$, which is consistent with similar published studies in the field. All participants were adults and recruited based on voluntary participation and informed consent. Therefore, all participants provided informed consent.

2.2. Questionnaire design

The questionnaire was developed based on the Alzheimer's Disease Knowledge Questionnaire for the elderly, designed by Feng Jinyu from Central South University. The survey included items such as age, gender, ethnicity, residency status, education level, years of education, how long they have lived in Shanghai, marital status, housing situation, monthly income, occupation, type of health insurance, chronic illnesses, medication status, family genetic history, whether they have cared for or interacted with dementia patients, whether any relatives or friends have dementia, whether they have seen a doctor for suspected cognitive issues, whether they have looked for information about dementia, whether they have watched any related videos or documentaries, and whether there are dementia awareness campaigns in the community, making a total of 22 items.

Variables were selected for inclusion in the regression models based on their theoretical relevance to health knowledge from existing literature and significant associations ($P < 0.05$) in the univariate analyses.

2.3. Reliability and validity analysis

The results of this study showed that the Cronbach's α coefficient for internal consistency of the questionnaire was 0.863, with coefficients for each section between 0.873 and 0.898, all above 0.800, which showed the questionnaire has good internal consistency. The split-half reliability was 0.709, with each section scoring between 0.743 and 0.907, all greater than 0.700, which indicated the questionnaire had good split-half reliability. The second survey's results showed a test-retest reliability of 0.938, with section scores between 0.873 and 0.898, all above 0.700, which showed the questionnaire was quite stable. For detailed results, see **Table 1**. In summary, the questionnaire demonstrated good reliability and validity, indicating that the collected data were reliable and suitable for subsequent analysis.

Table 1. Survey reliability results

Item	Knowledge of disease	Knowledge of prevention	Knowledge of care	Overall questionnaire
Cronbach's alpha	0.876	0.898	0.873	0.863
Split-half reliability	0.743	0.837	0.907	0.709
Test-retest reliability	0.876	0.898	0.873	0.938

2.4. Statistical data processing

Data analysis was conducted using SPSS 26.0 software, where normality tests for variables were performed using the Kolmogorov-Smirnov method before statistical analysis. One-way ANOVA and a *t*-test were used for analysis. In multiple linear regression analysis, multicollinearity was tested through the VIF values (1.035 to 1.071) and tolerance (more than 0.9) to make sure the model was robust.

Normality tests for continuous variables were performed using the Kolmogorov-Smirnov method. Categorical variables were described using frequencies and percentages. Continuous variables were presented as mean ± standard deviation (SD). One-way ANOVA and independent samples *t*-tests were used for group comparisons. A

stepwise selection method was used for model building, with entry and removal criteria set at $P < 0.05$ and $P > 0.10$, respectively. Statistical significance was set at $P < 0.05$ (two-tailed) [12].

3. Results

3.1. Basic information of participants

In this survey, the majority of participants were aged between 60 and 65 years (38.5%). A total of 110 participants (76.9%) reported that they had never sought medical consultation for suspected cognitive impairment or dementia. However, 74 participants (51.7%) indicated that they had actively sought information about dementia. For detailed results, see **Table 2**.

Table 2. Demographic and baseline characteristics of participants (n = 143)

Variable	Category	Number of cases (n)	Composition ratio (%)
Age (years)	60–65	55	38.5
	66–70	44	30.8
	71–75	28	19.6
	76–80	9	6.3
	>80	7	4.9
Gender	Male	54	37.8
	Female	89	62.2
Residency	Urban	80	55.9
	Rural	63	44.1
Education level	Primary school or below	39	27.3
	Junior high school	42	29.4
	High school/Technical school	28	19.6
	College	11	7.7
	Bachelor's degree or above	23	16.1
Years of education (years)	<2	15	10.5
	3–5	38	26.6
	6–10	43	30.1
	>10	47	32.9
Length of residence in community (years)	1–2	46	32.2
	3–5	17	11.9
	6–10	13	9.1
	>10	67	46.9
Marital status	Married	132	92.3
	Divorced	3	2.1
	Unmarried	8	5.6
Spouse status	Without spouse	25	17.5
	With spouse	118	82.5
Living arrangements	With spouse only	60	42.0
	With children only	29	20.3
	With spouse and children	34	23.8
	With parents	6	4.2
	Living alone	14	9.8
Personal monthly income (CNY)	≤1000	18	12.6
	2000-3000	36	25.2
	3000-4000	29	20.3
	≥4000	60	42.0

Table 2 (Continued)

Variable	Category	Number of cases (*n*)	Composition ratio (%)
Occupation	Government or state-owned enterprise	17	11.9
	Public institution	38	26.6
	Private enterprise or self-employed	42	29.4
	Farmer	46	32.2
Type of health insurance	Urban employee basic medical insurance	46	32.2
	Urban resident basic medical insurance	44	30.8
	Rural and urban resident basic medical insurance	44	30.8
	Commercial insurance	3	2.1
	Out-of-pocket	6	4.2
Chronic diseases			
Diabetes	No	106	74.1
	Yes	37	25.9
Hypertension	No	63	44.1
	Yes	80	55.9
Cerebrovascular disease	No	123	86.0
	Yes	20	14.0
Hyperlipidemia	No	121	84.6
	Yes	22	15.4
Medication use			
Antihypertensive drugs	No	68	47.6
	Yes	75	52.4
Lipid-lowering drugs	No	110	76.9
	Yes	33	23.1
Hypoglycemic drugs	No	109	76.2
	Yes	34	23.8
Sedatives/Hypnotics	No	129	90.2
	Yes	14	9.8
Analgesics	No	127	88.8
	Yes	16	11.2
Family history			
Alzheimer's disease	No	136	95.1
	Yes	7	4.9
Depression	No	140	97.9
	Yes	3	2.1
Hypertension	No	94	65.7
	Yes	49	34.3
Cerebrovascular disease	No	125	87.4
	Yes	18	12.6
Diabetes	No	123	86.0
	Yes	20	14.0
History of exposure to dementia			
Has cared for a family member with dementia	Yes	30	21.0
	No	113	79.0

Table 2 (Continued)

Variable	Category	Number of cases (*n*)	Composition ratio (%)
Has a relative/friend with dementia	Yes	47	32.9
	No	96	67.1
Sought medical consultation for suspected cognitive impairment	Yes	33	23.1
	No	110	76.9
Actively sought information about dementia	Yes	74	51.7
	No	69	48.3
Watched related videos or documentaries	Yes	86	60.1
	No	57	39.9
Community dementia awareness campaigns available	Yes	82	57.3
	No	61	42.7

3.2. The current status of Alzheimer's disease knowledge among the elderly in the community

The total score on the Alzheimer's disease knowledge questionnaire for the community-dwelling elderly was 55.82 ± 9.79. The scores for the specific domains were as follows: disease knowledge 15.94 ± 4.86, preventive knowledge 18.16 ± 3.92, and caregiving knowledge 21.72 ± 2.67. Details are presented in **Table 3**.

Table 3. Scores on the Alzheimer's disease knowledge questionnaire among community-dwelling elderly (*n* = 143)

Item	Minimum score	Maximum score	Score
Disease knowledge	0	22	15.94 ± 4.86
Concept	0	1	0.87 ± 0.34
Pathogenesis	0	3	1.84 ± 0.92
Risk factors	0	6	3.59 ± 1.80
Symptoms	0	7	5.62 ± 1.88
Diagnosis and treatment	0	4	3.20 ± 1.13
Disease prognosis	0	1	0.83 ± 0.38
Preventive knowledge	0	21	18.16 ± 3.92
Dietary management	0	7	5.51 ± 1.73
Exercise management	0	4	3.55 ± 0.85
Sleep management	0	3	2.68 ± 0.71
Emotional management	0	5	4.68 ± 0.89
Cognitive training	0	2	1.74 ± 0.55
Caregiving knowledge	0	23	21.72 ± 2.67
Self-care for caregivers	0	3	2.90 ± 0.38
Care for patients with Alzheimer's disease	0	20	18.82 ± 2.41
Total score	0	66	55.82 ± 9.79

3.3. Univariate analysis of Alzheimer's disease knowledge among the elderly in the community

Univariate analysis was performed with general demographic characteristics as independent variables and the total Alzheimer's disease knowledge score as the dependent variable. The results revealed that personal monthly income and a family history of depression were significantly associated with the total knowledge score ($P < 0.001$). Furthermore, education level, marital status, living arrangements, type of health insurance, presence of cerebrovascular disease, family history of Alzheimer's disease, diabetes, having sought medical consultation for suspected cognitive impairment, and having actively sought information about dementia also showed statistically significant differences in the total knowledge score ($P < 0.05$). Details are presented in **Table 4**.

Table 4. Univariate analysis of factors associated with total Alzheimer's disease knowledge scores among community-dwelling elderly ($n = 143$)

Variable	*F*-value	*P*-value
Education level	2.846	0.026*
Marital status	5.516	0.005*
Living arrangements	4.160	0.003*
Personal monthly income (CNY)	6.699	<0.001**
Type of health insurance	4.499	0.002*
Cerebrovascular disease	4.867	0.029*
Alzheimer's disease	4.642	0.033*
Depression	17.522	<0.001**
Diabetes	7.022	0.009*
Sought medical consultation for suspected cognitive impairment	6.351	0.013*
Actively sought information about dementia	5.367	0.022*

*$P < 0.05$, **$P < 0.001$

3.4. Univariate analysis of disease knowledge of Alzheimer's disease among the elderly in the community

The results demonstrated that marital status, living arrangements, personal monthly income, type of health insurance, a family history of depression, and whether participants had actively sought information about dementia were significantly associated with disease knowledge scores ($P < 0.05$). Details are shown in **Table 5**.

Table 5. Univariate analysis of factors associated with disease knowledge scores among community-dwelling elderly ($n = 143$)

Variable	*F*-value	*P*-value
Marital status	5.375	0.006*
Living arrangements	2.660	0.035*
Personal monthly income (CNY)	4.262	0.006*
Type of health insurance	2.590	0.039*
Family history of depression	5.850	0.017*
Actively sought information about dementia	5.953	0.016*

*$P < 0.05$, **$P < 0.001$

3.5. Univariate analysis of preventive knowledge among elderly people in the community

The results indicated that marital status, living arrangements, personal monthly income, type of health insurance, presence of cerebrovascular disease, use of lipid-lowering drugs, use of analgesics, a family history of depression, a family history of diabetes, having sought medical consultation for suspected cognitive impairment, and having actively sought information about dementia were significantly associated with preventive knowledge scores ($P < 0.05$). For details, see **Table 6**.

Table 6. Univariate analysis of factors associated with preventive knowledge scores among community-dwelling elderly ($n = 143$)

Variable	*F*-value	*P*-value
Marital status	4.019	0.020*
Living arrangements	3.063	0.019*
Personal monthly income (CNY)	4.999	0.003*
Type of health insurance	3.856	0.005*
Cerebrovascular disease	4.532	0.035*
Lipid-lowering drugs	5.418	0.021*
Analgesics	4.376	0.038*
Depression	7.926	0.006*
Diabetes	8.494	0.004*
Sought medical consultation for suspected cognitive impairment	4.701	0.032*
Actively sought information about dementia	4.126	0.044*

*$P < 0.05$, **$P < 0.001$

3.6. Univariate analysis of elderly care knowledge in the community

The results demonstrated that a family history of depression and having sought medical consultation for suspected cognitive impairment were significantly associated with caregiving knowledge scores ($P < 0.001$). Furthermore, education level, living arrangements, personal monthly income, type of health insurance, presence of diabetes, cerebrovascular disease, and hyperlipidemia, use of hypoglycemic drugs, a family history of Alzheimer's disease, depression, cerebrovascular disease, and diabetes, as well as having sought medical consultation for suspected cognitive impairment, also showed statistically significant associations with caregiving knowledge scores ($P < 0.05$). For details, see **Table 7**.

Table 7. Univariate analysis of factors associated with caregiving knowledge scores among community-dwelling elderly ($n = 143$)

Variable	*F*-value	*P*-value
Education level	3.331	0.012*
Living arrangements	4.623	0.002*
Personal monthly income	5.644	0.001*
Type of health insurance	4.461	0.002*

Table 7 (Continued)

Variable	*F*-value	*P*-value
Diabetes	5.627	0.019*
Cerebrovascular disease	5.878	0.017*
Hyperlipidemia	7.494	0.007*
Hypoglycemic drugs	6.693	0.011*
Alzheimer's disease	8.932	0.003*
Depression	51.254	<0.001**
Cerebrovascular disease	7.836	0.006*
Diabetes	9.649	0.002*
Sought medical consultation for suspected cognitive impairment	15.711	<0.001**

*$P < 0.05$, **$P < 0.001$

3.7. Multiple linear regression analysis of the overall knowledge of Alzheimer's disease among elderly people in the community

A multiple linear regression analysis was performed using the total Alzheimer's disease knowledge score as the dependent variable and the 11 variables identified as statistically significant in the univariate analysis as independent variables, employing a stepwise selection method. Multicollinearity diagnostics indicated that all Variance Inflation Factor (VIF) values were below 5 (range: 1.035–1.071), and all tolerance statistics were greater than 0.1 (range: 0.933–0.966), suggesting no substantial multicollinearity among the predictors. The normality of residuals was confirmed by a histogram and a P-P plot. As shown in **Table 8**, the final model was statistically significant ($F = 10.485$, $R^2 = 0.277$, $P < 0.001$), with five variables retained in the regression equation. Specifically, community-dwelling elderly individuals without a family history of depression, those living with a spouse, those with a higher personal monthly income, and those who had actively sought information about dementia had significantly higher total Alzheimer's disease knowledge scores than their counterparts (i.e., those with a family history of depression, those living alone, those with lower income, and those who had not sought information). Furthermore, elderly individuals who had not sought medical consultation for suspected cognitive impairment or dementia also demonstrated significantly higher knowledge scores than those who had. Details are presented in **Table 8**.

Table 8. Results of the stepwise regression analysis on total Alzheimer's disease knowledge ($n = 143$)

Variable	B	SE	Beta	*t*-value	*P*-value	Tolerance	VIF
Family history of depression	-18.216	5.062	-0.268	-3.598	<0.001**	0.954	1.048
Living arrangements	-1.429	0.568	-0.189	-2.516	0.013*	0.933	1.071
Personal monthly income	1.851	0.673	0.205	2.751	0.007*	0.950	1.053
Actively sought information about dementia	-4.137	1.443	-0.212	-2.868	0.005*	0.966	1.035
Sought medical consultation for suspected cognitive impairment	3.701	1.724	0.160	2.146	0.034*	0.951	1.051

*$P < 0.05$, **$P < 0.001$

3.8. Multiple linear regression analysis of Alzheimer's disease knowledge among elderly people in the community

A multiple linear regression analysis was conducted with the Alzheimer's disease knowledge score as the dependent variable and the six variables identified as significant in the univariate analysis (marital status, living arrangements, personal monthly income, type of health insurance, family history of depression, and having actively sought information about dementia) as independent variables, using a stepwise selection method. Multicollinearity diagnostics showed that all Variance Inflation Factor (VIF) values were below 5 (range: 1.002–1.008), and all tolerance statistics exceeded 0.1 (range: 0.992–0.998), indicating no significant multicollinearity. The normality of residuals was verified by a histogram and a P-P plot. As presented in Table 9, the final model was statistically significant ($F = 8.916$, $R^2 = 0.161$, $P < 0.001$) with three variables entering the regression equation. Specifically, married elderly participants had significantly higher disease knowledge scores than their unmarried or divorced counterparts. Participants with a higher personal monthly income also demonstrated significantly higher knowledge scores. Furthermore, those who had actively sought information about dementia scored significantly higher than those who had not. Details are shown in **Table 9**.

Table 9. Results of the stepwise regression analysis on Alzheimer's disease knowledge ($n = 143$)

Variable	B	SE	Beta	*t*-value	*P*-value	Tolerance	VIF
Marital status	-2.497	0.792	-0.246	-3.151	0.002*	0.993	1.007
Personal monthly income	1.083	0.348	0.242	3.108	0.002*	0.998	1.002
Actively sought information about dementia	-1.837	0.756	-0.190	-2.430	0.016*	0.992	1.008

*$P < 0.05$, **$P < 0.001$

3.9. Multiple linear regression analysis of Alzheimer's disease prevention knowledge among elderly people in the community

Stepwise multiple linear regression was performed to identify factors associated with preventive knowledge scores for Alzheimer's disease. The model included the 11 variables identified as statistically significant in the univariate analysis (marital status, living arrangements, personal monthly income, type of health insurance, presence of cerebrovascular disease, use of lipid-lowering drugs and analgesics, family history of depression and diabetes, having sought medical consultation for suspected cognitive impairment, and having actively sought information about dementia) as independent variables. Multicollinearity diagnostics indicated that all variance inflation factor (VIF) values were below 5 (range: 1.015–1.073), and all tolerance statistics exceeded 0.1 (range: 0.932–0.985), suggesting no significant multicollinearity. Normality of residuals was confirmed by a histogram and a P-P plot. The final model was statistically significant ($F = 9.084$, $R^2 = 0.164$, $P < 0.001$), with three variables retained in the regression equation. Specifically, community-dwelling elderly individuals covered by Urban Employee Basic Medical Insurance, those living with a spouse, and those without a family history of diabetes had significantly higher preventive knowledge scores than those who paid out-of-pocket for medical expenses, those living alone, and those with a family history of diabetes, respectively. See **Table 10** for details.

Table 10. Results of the stepwise regression analysis on preventive knowledge of Alzheimer's disease (n = 143)

Variable	B	SE	Beta	*t*-value	*P*-value	Tolerance	VIF
Type of health insurance	-0.798	0.304	-0.211	-2.625	0.010*	0.932	1.073
Living arrangements	-0.624	0.243	-0.206	-2.567	0.011*	0.932	1.072
Family history of diabetes	-2.238	0.881	-0.199	-2.541	0.012*	0.985	1.015

*$P < 0.05$, **$P < 0.001$

3.10. Multiple linear regression analysis of care knowledge for elderly people with Alzheimer's disease in the community

Stepwise multiple linear regression was conducted to identify factors associated with caregiving knowledge scores for Alzheimer's disease. The model included the 13 variables identified as statistically significant in the univariate analysis (education level, living arrangements, personal monthly income, type of health insurance, presence of diabetes, cerebrovascular disease, and hyperlipidemia, use of hypoglycemic drugs, family history of Alzheimer's disease, depression, cerebrovascular disease, and diabetes, and having sought medical consultation for suspected cognitive impairment) as independent variables. Multicollinearity diagnostics indicated that all variance inflation factor (VIF) values were below 5 (range: 1.016–1.050), and all tolerance statistics exceeded 0.1 (range: 0.952–0.984), suggesting no significant multicollinearity. Normality of residuals was confirmed by a histogram and a P-P plot. The final model was statistically significant (F = 19.850, R^2 = 0.420, $P < 0.001$), with five variables retained in the regression equation. Specifically, community-dwelling elderly individuals without a family history of depression, those who had not sought medical consultation for suspected cognitive impairment, those living with a spouse, those with a higher education level, and those without a family history of cerebrovascular disease had significantly higher caregiving knowledge scores than their respective counterparts. See **Table 11** for details.

Table 11. Results of the stepwise regression analysis on caregiving knowledge of Alzheimer's disease (n = 143)

Variable	B	SE	Beta	*t*-value	*P*-value	Tolerance	VIF
Family history of depression	-8.036	1.236	-0.433	-6.501	<0.001**	0.955	1.047
Sought medical consultation for suspected cognitive impairment	1.556	0.421	0.246	3.694	<0.001**	0.952	1.050
Living arrangements	-0.446	0.137	-0.216	-3.260	0.001*	0.960	1.042
Education level	0.317	0.127	0.165	2.488	0.014*	0.966	1.035

*$P < 0.05$, **$P < 0.001$

4. Discussion

This study provides a systematic evaluation of the knowledge level regarding Alzheimer's disease (AD) among community-dwelling elderly in Shanghai [13]. The findings indicate a moderate overall level of AD knowledge [14–16], with the highest proficiency observed in caregiving knowledge, followed by preventive knowledge, and the lowest in disease-specific knowledge. This pattern suggests that while practical care aspects are more emphasized in current health communication, foundational understanding of the disease's etiology, risk factors, and progression remains a critical gap.

Our multivariate analyses identify several key determinants influencing AD knowledge. Higher personal

monthly income consistently predicts better scores across multiple knowledge domains [17]. This finding aligns with numerous studies [18], underscoring the role of socioeconomic status in enabling access to health information and resources [19]. Similarly, living with a spouse is a significant positive factor, likely due to enhanced social support [20] and health-related communication within the household, which facilitates knowledge acquisition and retention. Conversely, a family history of depression emerges as a strong negative predictor. This association may be linked to the psychosocial burden and potential stigma associated with mental health conditions, which can deter individuals from actively engaging with information about other brain disorders like AD [21].

Notably, the act of actively seeking information about dementia is a significant positive correlate of knowledge levels, particularly for disease-specific knowledge [22–24]. This underscores the "active learner" effect and highlights the pivotal role of accessible and accurate health information channels. However, counterintuitively, individuals who have sought medical consultation for suspected cognitive impairment demonstrate lower caregiving knowledge scores. This might be attributed to the psychological distress or denial following a concerning medical visit, potentially hindering information processing, or it could indicate that this group seeks medical help precisely due to a recognized lack of knowledge.

When contextualized within the existing literature, our results corroborate the well-documented disparities in health literacy linked to socioeconomic and educational factors. The specific vulnerabilities identified in Shanghai's urban elderly population, such as the impact of living arrangements and insurance type, add nuance to the global understanding of AD knowledge determinants. The strong negative association with a family history of depression, while less commonly reported, points to a crucial area for psychosocial intervention.

Despite these insights, several limitations warrant consideration. First, the cross-sectional design of this study precludes any causal inferences from the identified associations. Second, the sample is recruited from a single community in Shanghai, which may limit the generalizability of the findings to other regions or cultural contexts. Third, while the questionnaire demonstrates good reliability, self-reported data are susceptible to social desirability bias and inaccuracies in self-assessment.

Based on these findings and limitations, we propose the following recommendations. Future public health initiatives should develop stratified educational programs targeting specific subgroups, such as individuals living alone, those with lower socioeconomic status, and those with a family history of mental health conditions [25]. Community centers and healthcare providers should leverage multiple media platforms to disseminate evidence-based, easy-to-understand information about AD, encouraging proactive information-seeking behaviors [26]. Furthermore, interventional studies are needed to establish causal relationships and test the efficacy of tailored educational modules.

5. Conclusion

In conclusion, this study elucidates the current landscape and multifactorial determinants of AD knowledge among the elderly in urban China. Addressing the identified gaps through targeted, compassionate, and evidence-based health promotion strategies is imperative for mitigating the impending societal impact of Alzheimer's disease [27].

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Disclosure statement

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