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Original Article

National Prevalence and Care Needs of Dementia in Adults Aged >=55 Years: Findings from the China Mental Health Survey

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ABSTRACT

Background: Dementia is a major global mortality cause and key driver of disability in older adults, imposing multidimensional burdens. As China's population ages, accurate prevalence estimates and care need assessments are essential for equitable policy planning. This study investigates young- and late-onset dementia prevalence while comparing health service utilization and unmet care needs between affected and unaffected populations.

Methods: Utilizing China Mental Health Survey data (2013-2015) with multistage probability sampling, we identified 12,663 nationally representative adults aged ≥55 years. Of these, 10,839 completed Stage I assessments and 2,261 received Stage II evaluations, supplemented by psychiatric assessments of initial non-participants (n=197). Dementia diagnosis followed DSM-IV criteria via validated cognitive/functional instruments. Health service utilization and multidimensional care needs (ADLs/IADLs/safety) were quantified through participant/informant interviews.

Results: Among 2 458 participants assessed, dementia prevalence was 2.65% (55-64y) and 5.56% (≥65y). Rural residents showed consistently higher rates than urban counterparts across age groups. Significant education gradients emerged, with urban prevalence decreasing with higher education while rural patterns differed. Individual living with dementia required substantially more care for both samples (55-64 years: 37.4% vs

What is already known on this topic

Dementia prevalence estimates in China vary widely, with limited nationally representative data and little focus on young-onset cases or care needs.

What this study adds

This national study reports dementia prevalence of 2.65% (55–64 years) and 5.56% (≥65 years), revealing education and residence disparities. Despite greater functional care needs, health service use did not increase among dementia patients.

How this study might affect research, practice or policy

Findings highlight the need to integrate functional support into primary care and develop targeted prevention strategies addressing education and urban-rural gaps.

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11..9%, +81.3 monthly hours; 65+ years: 62.6% vs 13.4%, +88.8 monthly hours) without increased health service utilization.

Conclusion: This national study reveals substantial dementia burden in China, exposing systemic healthcare deficiencies through misaligned functional care needs and medical engagement. The neglect of chronic disability management in aging populations necessitates urgent integration of prevention strategies and tailored support frameworks within primary care systems.

1. Background

Dementia, the seventh leading global cause of death and a major contributor to disability and dependency among older adults, affected 57 million people worldwide in 2021, with over 60% residing in low- and middle-income countries (LMICs) [1]. China, aging faster than other LMICs, faces a surge in age-related diseases like dementia, which accounted for 22.5 deaths per 100,000 people in 2019 (up from 1990 rates), becoming the fifth leading cause of mortality [2]. Globally, Alzheimer's disease and other dementias (ADOD) burdened 25,276,989 person-years in 2019, with China contributing 23.6% of this total [3]. Annual dementia-related costs in China are projected to rise from 0.9billion USD in 1990 to114.2 billion USD by 2030 [4], while cases among adults aged ≥60 years are expected to triple to 48.98 million by 2050 [5,6].

Existing studies report inconsistent dementia prevalence estimates in China, ranging from 4.2–7.7% among adults aged ≥60 years to 2.0–13.0% for those ≥65 years [7,8]. These disparities likely stem from methodological heterogeneity—including variations in diagnostic criteria, assessment instruments, sampling schemes, study timelines, and participant characteristics—as well as reliance on small, localized samples from single cities or regions [8]. Notably, prior research has neglected young-onset dementia(onset before 65 years), a critical yet understudied subgroup, further contributing to fragmented understanding. This oversight limits governmental capacity for cost-effective prevention and early interventions mitigating long-term care burdens and forfeits societal opportunities to raise symptom awareness and reduce stigma—delaying help-seeking and worsening outcomes.

Dementia caregiving imposes profound physical, psychological, financial, and social burdens on families [9,10]. Home-based care is critical in China and globally, and this practice is shaped by filial piety (Xiao), a Confucian virtue mandating adult children to respect and care for aging parents [11]. Rooted in tradition, filial piety reinforces familial caregiving, as institutional care remains stigmatized and often reserved for childless or impoverished elders [12,13]. Dementia's progressive decline—marked by communication breakdowns, emotional detachment, and memory loss—exacerbates care burden uniquely [11,14]. These challenges are further amplified by gaps in understanding health service utilization and care needs, particularly for young-onset dementia, whose personal, psychosocial, and economic costs remain underexplored. Robust data are urgently needed to inform budgetary priorities and policy interventions.

In aging societies like China, accurate estimates of dementia prevalence and associated care needs are vital for equitable resource allocation and patient-centered policymaking. This necessitates a life-stage stratified approach to address complexities across the dementia spectrum and enable tailored prevention and intervention pathways. Using a nationally representative sample of adults aged ≥55, this study examines the prevalence of young- (55-64 years) and late-onset (≥65 years) dementia and compares health service use and unmet needs between dementia and non-dementia populations.

2. Methods

2.1. Settings

This study was part of the China Mental Health Survey (CMHS), which was conducted from 2013 to 2015. The main design protocol, as well as the field procedure and quality control strategies of the CMHS has been published elsewhere [15,16]. The CMHS uses a nationally representative sample, and aimed to estimate the prevalence of mental disorders and use of associated mental health services. From 32,552 respondents aged ≥18 years selected via multi-stage probability sampling across 157 Disease Surveillance Points (DSPs) stratified by geographic region, economic development, urbanization level, and population size across 31 provinces, all 12,663 individuals aged ≥55 years were eligible. After excluding 1,155 non-contacts, 353 refusals, and 316 incomplete Stage I interviews, 10,839 participants completed Stage I assessments. Among these, 2,261 received Stage II evaluations based on screening results, augmented by psychiatric assessments of initial non-participants (n=62+135). The study was firstly approved by the Institutional Review Board at the Institute of Mental Health, Peking University, and then received approvals from 10 collaborating institutes, hospitals or universities.

2.2. Study design and procedures

This is a two-stage community based cross-sectional study. Stage I survey was to collect screening information of the cognitive status of respondents who agreed and had the ability to finish the interview, using structural screening instruments, including the Community Screening Instrument for Dementia (CSID) [17]– participant part to access the cognitive status, and the 12-item World Health Organization Disability Assessment Schedule II (WHO-DAS II) [18]to evaluate the disability. Face-to-face interviews were conducted by trained lay interviewers in the households of the respondents using Computer Assist Personal Interview (CAPI) mode [19]. The classification of screening results were generated by an algorithm based on a previous study. The algorithm considered the results of the above two instruments, CSID-participant part and WHO-DAS II, adjusted by the education level of the older persons. Specifically, a weighted composite score was calculated from the CSID cognitive items and WHODAS disability items, with education-stratified cut-offs determined from the reference population; participants scoring above the cut-off were classified as screen-positive.

All older persons with positive screening results, and a random selected same proportion of respondents with negative screening results from the Stage I were interviewed by trained psychiatrists during Stage II. During Stage II survey, the older persons were examined by Geriatric Mental State (GMS) Schedule for their mental status, and their informants were interviewed using the informant section of the Community Screening Instrument for Dementia (CSID) to collect collateral information on the older person's cognitive and functional decline. When multiple informants were available, priority was given to the primary caregiver or the family member most familiar with the participant's daily functioning; if no family informant was available, a close non-family contact was interviewed. Data from the screen-negative participants who received Stage II assessments were used to inform weighting adjustments for prevalence estimation. Moreover, those older persons who refused to participate in Stage I were re-contacted and offered the opportunity to participate in Stage II assessments under a separate informed consent; those unable to finish Stage I interviews due to physical or mental problems were also offered Stage II evaluations when feasible. All Stage II assessments were conducted by trained psychiatrists using the instruments described above.

A new variable named Cogscore was generated from CSID-participant part, while another variable called Relscore was calculated based on CSID-informant part. The 10/66 dementia diagnoses were made for all older persons after running the 10/66 dementia algorithm [20] by considering the Cogscore, Relscore, GMS diagnose and education level. Briefly, the algorithm integrates cognitive testing, informant reports, GMS assessment, and education level into a probabilistic model to generate a dementia diagnosis. The (DSM-IV) dementia diagnoses were also made based on the criteria listed in the manual. The DSM-IV algorithm also includes some information from the History and Aetiology Schedule – Dementia Diagnosis and Subtype (HAS-DDS) [21]. But as the HAS-DDS was not used in the CMHS, those items were treated as not indorsed or missing. Those items measured the onset of dementia, progress of the course, and childhood problems, so they would have less impact on the diagnoses of dementia at current stage. For the primary prevalence estimates presented in this study, we used DSM-IV criteria to facilitate international comparability, as the 10/66 algorithm was originally developed to maximize sensitivity in low- and middle-income settings and may identify a broader range of cases than DSM-IV [22] . In cases where participants met 10/66 but not DSM-IV criteria, they were classified as non-dementia in the main analysis.

2.3. Measures

Cognitive function was assessed using the CSID which evaluated both participants and their informants. The participant assessment comprised memory tests (10-word immediate and delayed recall), a 1-minute animal naming test, and evaluations of orientation, comprehension, judgment, calculation, executive function, and visuospatial abilities [23]. The informant assessment collected collateral information from relatives or caregivers regarding memory decline, cognitive/functional changes, and difficulties in basic (ADL) and instrumental (IADL) activities of daily living. For the primary prevalence estimates, dementia diagnosis was based on DSM-IV criteria, as detailed below. The 10/66 algorithm was applied for cross-validation purposes. Dementia diagnosis followed DSM-IV criteria, requiring: (1) memory impairment plus deficits in at least one other cognitive domain; (2) significant functional decline representing deterioration from baseline; (3) absence of delirium during symptom manifestation; and (4) exclusion of alternative psychiatric disorders. Full diagnostic algorithms for DSM-IV dementia and Clinical Dementia Rating (CDR) are accessible via the 10/66 Dementia Research Group's repository. All participants who met DSM-IV criteria for dementia received a clinical report with diagnostic feedback and referral recommendations, and their families were provided with dementia education materials.

Demographic data (gender, age, education, residence) were collected during Stage I interviews. Education was categorized as illiterate, primary, secondary, or tertiary+. Urban/rural residence followed sampling protocol definitions. Health service utilization was assessed via self-reported visit frequency during the past year. Care needs were evaluated in Stage II using informant-reported 24-hour recall across three dimensions: 1) basic ADLs (dressing, feeding, grooming, toileting, bathing), 2) instrumental ADLs (communication, transportation), and 3) safety monitoring. Informants quantified time spent on each activity during the preceding day and night. For each dimension, a care need was considered present if the participant received any assistance (>0 hours) in at least one activity within that dimension. The overall care need variable was defined as present if the participant had a need in any of the three dimensions. Monthly estimates were calculated as reported hours × 30 for each dimension and in total.

2.4. Statistical analysis

Dementia prevalence with 95% confidence intervals was reported for persons aged 55-64 years and those aged ≥65 years. Continuous variables are expressed as mean and standard deviation, categorical variables as frequency (percentage). This study employs a nationwide stratified multi-stage unequal probability sampling design. Weighting adjustments - including sampling design weights, screening performance adjustment weights, non-response adjustment weights, post-stratification adjustment weights, and weight trimming for extreme values - were applied to ensure robust estimates. The screening performance adjustment incorporated data from the Stage II evaluation of screen-negative participants to correct for potential false negatives. Subgroup analyses examined stage I interview completion status, screening results, gender, age, residence and education. Mutually adjusted prevalence ratios for age, sex, education, and household assets were derived using a Poisson model. Health service utilization (visit rate/number) and care needs (rate/monthly hours) were calculated by dementia status across age groups. Bootstrapped linear regression models estimated additional visits and monthly care needs for participants with dementia versus non-dementia participants, further adjusted for physical comorbidities (Diabetes, Hypertension, stroke and Heart disease). All p-values and confidence intervals used two-tailed tests with significance at $p<0.05$. Data were analyzed in SAS version 9.4.

3. Results

3.1. Sample selection and response rates

Among 12663 persons aged 55 years and over, 1,155 were non-contacts. There were 10839 persons finished stage I interviews. Among those who finished stage I interviews, totally 2261 finished stage II interviews based on screening results of dementia. All older persons who refused to participate in the stage I interviews (353 persons), or failed to finish the stage I interviews (316 persons) were interviewed by psychiatrists during the stage II survey. Among these respondents, 62 (of 353 persons) and 135 (of 316 persons) respondents finished the whole measurements. The overall response rate of the whole survey was 72.8%. Detailed sample selection procedures with response rate in each route were shown in Fig. 1.

3.2. Prevalence of dementia among elderly 55-64 and 65+ years

Table 1 presents weighted dementia prevalence stratified by age group and Stage I interview completion status. Among participants aged 55–64 years, overall prevalence was 2.65% (95% CI: 1.73–3.57%). Prevalence in this age group was 2.67% (95% CI: 1.73–3.60%) for Stage I completers versus 1.90% (95% CI: 0.01–4.49%) for non-completers. Conversely, among those aged ≥65 years, overall prevalence was 5.56% (95% CI: 3.54–7.57%). Here, prevalence was 5.49% (95% CI: 3.40–7.57%) for completers but elevated at 8.12% (95% CI: 2.32–13.92%) for non-completers. Despite these numerical differences, no statistically significant differences in prevalence were observed between completers and non-completers in either age group.

Table 2 presents weighted dementia prevalence among adults aged 55–64 years, stratified by residence, sex, age subgroup, and education. Overall prevalence was higher in rural (3.23%; 95% CI: 1.98–4.48%) than urban residents (1.93%; 95% CI: 0.77–3.10%), with sex-specific rates at 2.04% (male) and 3.27% (female). Prevalence increased significantly with age in both settings: urban (1.02% at 55–59years vs. 2.89% at 60–64years) and rural (2.20% vs. 4.11%). Education gradients differed by residence: urban prevalence decreased from 4.13% (illiterate) to 1.86% (primary), 0.86% (secondary), and 1.55% (tertiary+), without significant differences; rural showed a steeper significant decline from 6.42% (illiterate) to 3.26% (primary), 0.65% (secondary), and 2.39% (tertiary+).

Table 3 presents weighted dementia prevalence among adults aged ≥65 years, stratified by residence, sex, age group, and education. Overall prevalence was higher in rural residents (6.61%; 95% CI: 3.66–9.55%) than urban residents (4.19%; 95% CI: 2.08–6.30%).

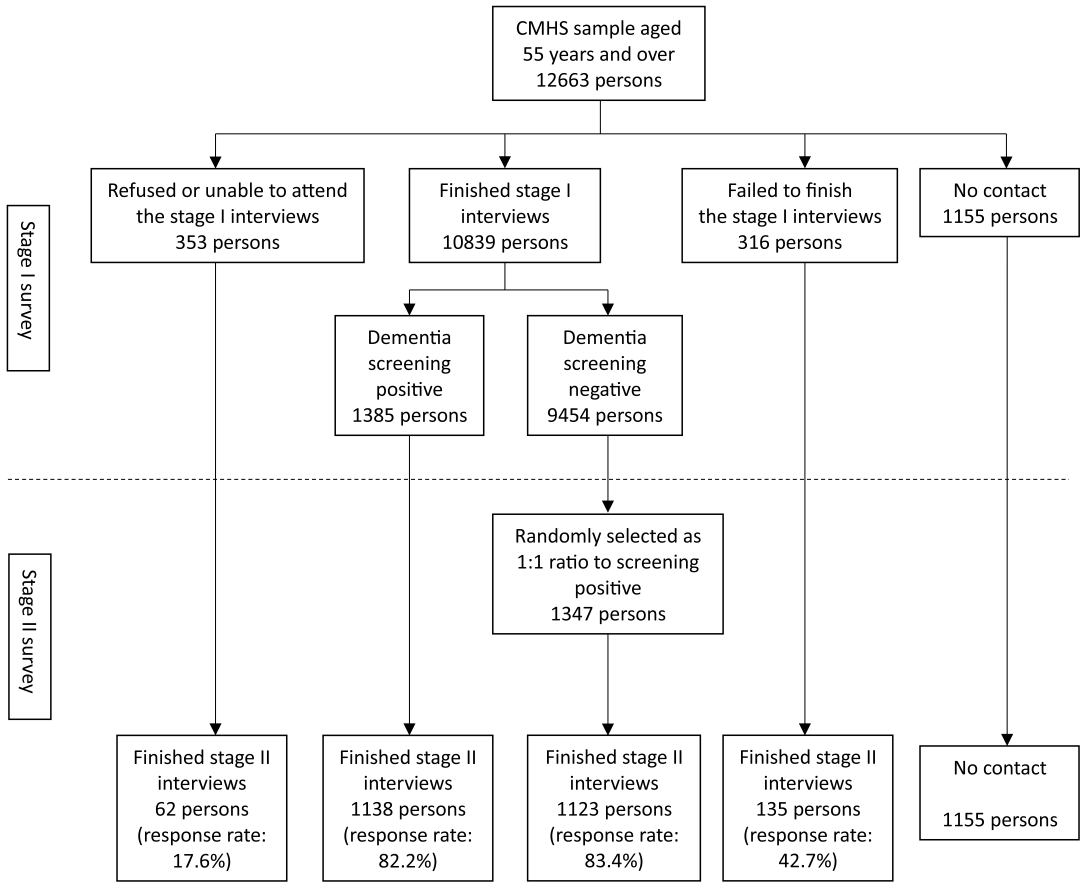

Fig. 1. Flowchart of the sample selection procedures
Dementia prevalence ratio (95% CI) by sample characteristics in persons from different age groups.

Table 1
Weighted prevalence of dementia by age group and stage I interview completion status.

Outcome of the interviews	Sub-groups	Population aged 55-64 years (N=1255)			Population aged 65 years and over (N=1203)		
		N (%)	95% CI	P value*	N (%)	95% CI	*P value**
Finish the stage I interview	Screening positive	79 (18.38)	12.21-24.54	0.626	137 (18.02)	11.91-24.13	0.416
	Screening negative	8 (0.8)	0.19-1.41		10 (2.59)	0.45-4.72	
	Total	87 (2.67)	1.73-3.60		147 (5.49)	3.40-7.57	
Fail to finish the stage I interview	Refusal	2 (5.31)	0.01-16.00		5 (14.07)	6.50-21.65	
	Suspended	2 (0.92)	0.01-2.26		5 (6.45)	0.00-12.95	
	Total	4 (1.92)	0.01-4.49		10 (8.12)	2.32-13.92	
Whole population		91 (2.65)	1.73-3.57		157 (5.56)	3.54-7.57	

* The comparison of prevalence were between the older persons who finished the stage I interview and those who did not finish

Table 2
Weighted prevalence of dementia and distribution by sample characteristics among persons aged 55 to 64 years.

Characteristics	Sub-groups	Urban (N=460)			Rural (N=795)			All(N=1255)		
		N (%)	95% CI	P value	N (%)	95% CI	P value	N (%)	95% CI	*P value*
Gender	Male	9(1.43)	0.22-2.64	0.322	21(2.52)	1.16-3.88	0.144	30(2.04)	1.06-3.02	0.080
	Female	16(2.44)	1.09-3.79		45(3.96)	2.18-5.75		61(3.27)	2.09-4.46	
Age groups	55-59	8(1.02)	0.04-2.01	0.028	27(2.20)	1.19-3.20	0.007	35(1.64)	0.88-2.40	<.001
	60-64	17(2.89)	1.60-4.18		39(4.11)	2.30-5.91		56(3.59)	2.35-4.84	
Education Levels	Illiterate	8(4.13)	0.15-8.11	0.126	31(6.42)	3.39-9.45	<.001	39(5.47)	3.28-7.66	<.001
	Primary	10(1.86)	0.66-3.07		30(3.26)	1.47-5.04		40(2.67)	1.53-3.82	
	Secondary	5(0.86)	0.01-1.95		3(0.65)	0.01-1.59		8(0.76)	0.03-1.49	
	Tertiary and above	2(1.55)	0.75-2.36		2(2.39)	0.01-6.63		4(2.06)	0.01-4.72	
Whole population		25(1.93)	0.77-3.10		66(3.23)	1.98-4.48		91(2.65)	1.73-3.58	0.122*

*The comparison of prevalence were between urban and rural population

Table 3
Weighted prevalence of dementia and distribution among persons aged 65 years and over.

Characteristics	Sub-groups	Urban (N=500)			Rural (N=703)			All(N=1203)		
		N (%)	95% CI	P value	N (%)	95% CI	P value	N (%)	95% CI	*P value*
Gender	Male	17(2.35)	0.76-3.93	0.032	46(8.53)	3.99-13.06	0.235	63(5.83)	2.99-8.68	0.811
	Female	39(5.90)	2.21-9.60		55(4.85)	2.20-7.49		94(5.31)	3.02-7.59	
Age groups	65-69	10(1.42)	0.29-2.55	<.001	25(5.30)	0.76-9.83	0.046	35(3.66)	1.00-6.32	0.002
	70-74	17(3.58)	1.96-5.19		36(5.02)	1.44-8.60		53(4.38)	2.18-6.57	
	75-79	13(9.92)	0.86-18.99		21(6.41)	2.52-10.29		34(8.10)	3.43-12.77	
	80+	16(11.96)	3.47-20.44		19(20.39)	0.01-41.17		35(17.25)	5.72-28.77	
Education Levels	Illiterate	30(13.50)	2.92-24.08	<.001	43(6.20)	1.51-10.88	0.185	73(8.46)	3.66-13.26	0.025
	Primary	15(1.68)	0.30-3.06		40(7.87)	2.86-12.88		55(5.10)	1.87-8.33	
	Secondary	8(1.34)	0.11-2.57		10(2.12)	0.52-3.73		18(1.68)	0.70-2.65	
	Tertiary and above	3(7.64)	0.01-17.90		8(14.41)	2.64-26.19		11(10.60)	2.83-18.36	
Whole population		56(4.19)	2.08-6.30		101(6.61)	3.66-9.55		157(5.56)	3.54-7.57	0.145*

* The comparison of prevalence were between urban and rural population

Significant gender differences occurred in urban areas (males: 2.35%, females: 5.90%), while rural areas showed distinct sex-based patterns (males: 8.53%, females: 4.85%). Prevalence increased progressively with age in both settings: urban rates rose from 1.42% (65–69 years) to 11.96% (≥80 years), and rural rates increased from 5.30% (65–69 years) to 20.39% (≥80 years). Significant education-based variations emerged, with urban prevalence highest among illiterate individuals (13.50%) and lowest at secondary education (1.34%), while rural prevalence was lowest at secondary education (2.12%) but highest among those with tertiary+ education (14.41%), indicating divergent education gradients between settings.

Fig. 1 shows prevalence ratios by sample characteristics for adults aged 55-64 years and ≥65 years. Among those aged 55-64 years, we observed no significant 5-year age gradient, gender difference, or urban-rural residence difference. However, compared to illiterate participants, prevalence ratios were significantly lower among those with primary (0.61, 95% CI: 0.38–0.96) or secondary education (0.22, 95% CI: 0.10–0.49), but not among those with tertiary education or higher. In the ≥65-year group, a significant 5-year age gradient was evident (1.36, 95% CI: 1.22–1.50), with no significant differences by gender, residence, or education level.

As presented in Table 4, health service utilization patterns revealed no statistically significant differences between participants with dementia and non-dementia participants across age strata. Among participants aged 55-64 years, utilization rates were comparable (dementia: 11.70% vs non-dementia: 15.26%; $p>0.05$), as were mean visit frequencies (11.88 vs 13.23). Similarly, no significant disparities were observed in the ≥65 sample (18.09% vs 18.85%; 12.14 vs 10.26 visits).

As detailed in Tables 5 and 6, dementia substantially increased care burdens: among 55-64y adults, proportion reached 37.4% (341.0 monthly hours) versus 11.9% (80.7 hours) in non-dementia counterparts, yielding +81.1 excess hours (ADLs: +42.2h, IADLs: +28.0h, safety: +7.2h). For ≥65y adults (Table 6), dementia proportion was 62.6% (209.8 hours) versus 13.4% (171.2 hours), requiring +88.7 additional hours (ADLs: +47.0h, IADLs: +29.1h, safety: +17.1h) across all functional domains. Dementia substantially elevated care burdens across all functional domains in both samples.

4. Discussion

Drawing on multi-stage probability sampling across China's Disease Surveillance Points (DSPs), the CMHS delivers robust, nationally generalizable dementia prevalence estimates: weighted rates were 2.65% (ages 55–64) and 5.56% (≥65 years). Based on these estimates, we project approximately 10.4 million individuals aged ≥55 years were living with dementia in China in 2015—4.7 million aged 55–64 and 5.7 million aged ≥65, with 5.6 million women and 4.8 million men, reflecting both higher prevalence and larger female population in older age groups. This rigorous sampling strategy ensured countrywide representativeness, revealing distinct epidemiological gradients—a significant education-associated prevalence pattern in younger adults versus an exclusive age gradient in older samples. Critically, while health service utilization showed no dementia-related differences, individuals with dementia exhibited substantially greater care needs across all functional domains (ADL, IADL, safety monitoring), requiring approximately 70 additional monthly care hours compared to non-dementia peers. Although the CMHS data were collected between 2013 and 2015, this period precedes major recent healthcare reforms in China, including the Healthy China 2030 initiative and the expansion of integrated geriatric care services. Our findings thus serve as a rigorous epidemiological baseline against which the impact of subsequent demographic transitions and policy shifts—such as the national long-term care insurance pilots initiated in 2016—can be measured.

Previous systematic reviews report pooled dementia prevalence rates of 3.0–5.3% among older Chinese adults (≥60 years) [24,25]. Our nationally representative estimate of 5.56% for those ≥65 years aligns closely with contemporary Chinese meta-evidence (e.g., 6.0% in the 2010-2020 national review) [26], while exceeding the Prevention and Intervention on Neurodegenerative Disease for Elderly in China (PINDEC) study's DSM-IV-derived estimate of 5.35% [8]. Critically, our prevalence of young-onset dementia (2.65% at ages 55-64) substantially surpasses global reports (0.02–0.08%) [27]. This discrepancy may partly reflect methodological differences, as most previous Chinese studies have historically omitted this younger sample, and our rigorous methodology with structured diagnostic interviews likely provides enhanced detection sensitivity. However, this elevated prevalence may also be

Table 4
Health service utilization (last year) by dementia status.

Groups		Health service utilization (last year)		Additional no.of visits for individuals with dementia compared to non-dementia populations(95%CI)*	*P value*
		(%)	Average no.		
55-64 years	**Dementia**	11.70	11.88	-3.10(-14.86-17.19)	>0.05
	Non-dementia	15.26	13.23		
65+ years	**Dementia**	18.09	12.14	0.94(-6.90-11.08)	>0.05
	Non-dementia	18.85	10.26		

* Estimates based on bootstrapped linear regression models

Table 5
Care Needs (proportion and hours) in Older Adults (55-64Years).

Types of Care	Dementia		Non-dementia		Total		Additional monthly care needs(hours) for individuals with dementia compared to non-dementia populations(95%CI)*	*P value*
	Need care (%) N=31	Monthly care needs(hours) N=14	Need care (%) N=561	Monthly care needs(hours) N=45	Need care (%) N=592	Monthly care needs(hours) N=59		
Activity of daily living (ADL)								
Dressing	21.22	39.05	2.98	6.17	3.26	7.66	8.62(2.73-17.65)	<0.001
Feeding	23.03	45.67	3.64	12.05	3.93	13.57	11.93(4.34-22.99)	<0.001
Grooming	20.04	38.06	1.85	3.75	2.13	5.30	8.24(2.01-16.82)	<0.001
Toileting	16.29	34.93	0.90	0.96	1.13	2.50	6.98(0.98-15.69)	<0.001
Bathing	18.85	20.62	1.71	2.97	1.97	3.77	6.47(1.23-14.20)	<0.001
In total	27.86	178.33	4.40	25.89	4.76	32.80	42.24(15.95-80.32)	<0.001
Instrumental Activity of Daily Living (IADL)								
Communication	32.61	78.73	4.45	39.91	4.87	41.67	21.60(4.73-44.84)	<0.001
Transportation	18.61	35.32	4.96	13.66	5.17	14.64	5.93(0.04-14.19)	<0.001
In total	33.99	114.04	8.86	53.57	9.24	56.31	27.99(6.81-54.12)	<0.001
Safety monitoring	18.25	48.61	0.95	1.28	1.22	3.42	7.25(0.11-17.51)	<0.001
In total	37.44	340.99	11.92	80.74	12.30	92.53	81.14(31.88-150.71)	<0.001

Table 6
Care Needs (proportion and hours) in Older Adults (≥65 Years).

Types of Care	Dementia		Non-dementia		Total		Additional monthly care needs(hours) for individuals with dementia compared to non-dementia populations(95%CI)*	*P value*
	Need care (%) N=65	Monthly care needs(hours) N=34	Need care (%) N=529	Monthly care needs(hours) N=87	Need care (%) N=594	Monthly care needs(hours) N=121		
Activity of daily living (ADL)								
Dressing	28.10	22.66	5.14	23.23	6.13	23.13	11.70(6.60-17.38)	<0.01
Self-feeding	26.91	22.52	6.36	27.09	7.24	26.29	10.79(5.26-16.75)	<0.01
Grooming	25.00	18.46	4.25	20.62	5.14	20.25	8.65(4.05-13.61)	<0.01
Toileting	30.39	18.47	4.20	16.22	5.32	16.61	4.90(0.86-9.61)	<0.01
Bathing	40.81	28.06	3.91	14.96	5.50	17.24	10.90(5.35-17.14)	<0.01
In total	46.61	110.18	7.22	102.11	8.91	103.52	46.95(24.96-69.80)	<0.01
Instrumental Activity of Daily Living (IADL)								
Communication	54.74	57.26	7.81	50.12	9.84	51.37	15.64(3.63-31.74)	<0.01
Transportation	40.08	29.40	3.01	7.63	4.60	11.43	13.20(6.84-20.77)	<0.01
In total	57.37	86.66	9.51	57.75	11.58	62.80	29.09(12.87-51.06)	<0.01
Safety monitoring	18.24	12.99	3.38	11.28	4.02	11.58	17.09(2.67-38.78)	<0.01
In total	62.64	209.82	13.38	171.15	15.51	177.90	88.65(49.63-136.32)	<0.01

contextualized within China's specific risk landscape, including its high burden of premature cardiovascular disease and stroke, which are established contributors to cognitive impairment [28–30]. Regardless of the underlying drivers, our findings highlight a substantial young-onset dementia burden that warrants urgent public health attention.

Consistent with both global and China epidemiological profiles [31, 32], our data demonstrate the characteristic age-dependent rise in dementia prevalence, most pronounced in older sample. Notably, we observed a gender disparity only among urban residents aged ≥65 years, with females exhibiting significantly higher prevalence—a finding potentially reflecting urban-specific sociodemographic factors or healthcare access differentials [33]. More remarkably, our analysis revealed a previously underreported U-shaped education-prevalence relationship in distinct subgroups: rural populations aged 55–64 years and urban dwellers ≥65 years. This pattern suggests dual risk pathways: At lower education levels, diminished cognitive reserve—amplified by early-life disadvantages and healthcare literacy barriers—increases neuropathological vulnerability, particularly in resource-scarce rural settings [33]. At higher education levels, elevated prevalence was unexpectedly associated with occupational stress, vascular burden, or delayed symptom recognition [34], often exacerbated by competitive urban environments. The rural-urban divergence may reflect environmental modulation of education effects: Resource scarcity amplifies low-education risks in rural settings [35,36], while competitive urban demands convert educational advantages into stressors. Given the cross-sectional design of our study, these observed associations should be interpreted as hypothesis-generating rather than evidence of causal pathways. The underlying mechanisms warrant further investigation in longitudinal studies. Nevertheless, these findings suggest that dementia prevention strategies may need to consider educational and residential profiles.

Counter to conventional expectations, our study found dementia diagnosis in adults aged ≥65 years was not associated with increased healthcare utilization compared to cognitively healthy peers—a paradoxical finding given their substantially elevated care requirements. People with dementia demonstrated significantly greater functional dependencies across all domains, including basic and instrumental activities of daily living, alongside heightened safety monitoring needs. This apparent discrepancy may partially reflect sampling limitations inherent to community-based studies: individuals with severe dementia requiring permanent institutional care (predominantly urban residents) or those experiencing premature mortality (disproportionately rural populations) were underrepresented in our sample, potentially attenuating observed healthcare utilization differences. Nevertheless, the critical divergence between medical engagement and functional burden suggests healthcare systems systematically overlook dementia-related disability, prioritizing acute medical conditions over chronic functional impairment. This pattern cannot be explained by lack of health insurance coverage, as over 98% of Chinese older adults had basic medical insurance during the study period [37]. Rather, the low utilization reflects demand-side barriers: low dementia literacy, normalization of cognitive decline as part of aging, and stigma—factors that have contributed to a national dementia diagnosis rate of only approximately 28% [38]. The pattern aligns with documented barriers where cognitive deficits limit symptom reporting and clinicians disproportionately focus on biomarker management over quality-of-life interventions [39]. Beyond systemic factors, cultural norms may also shape this disparity: in China, the Confucian virtue of filial piety (Xiao) reinforces family-based caregiving as the default response to cognitive decline, which may normalize memory loss, delay help-seeking, and contribute to stigma. The stigma is compounded by the derogatory connotations of the Chinese term for dementia and fear of "losing face," leading families to conceal symptoms and avoid clinical engagement. Thus, the low healthcare utilization we observed may reflect both service delivery gaps and culturally embedded preferences for home-based care [40]. Our findings underscore the urgent need to reorient healthcare paradigms toward integrated functional support models, particularly through community-based services that address daily living challenges while mitigating safety risks—an approach proven to reduce caregiver burden and preventable hospitalizations in populations with dementia [41].

An unexpected finding emerged when comparing care needs across age groups: participants aged 55–64 years with dementia required substantially more monthly care hours than those aged ≥65 years, despite the latter being older. This pattern may reflect age-based differences in expectations of independence: younger older adults are more likely to be employed or serve as family providers, making functional decline more deviant from normative expectations and prompting more intensive family support; among those aged ≥65 years, functional decline may be more socially expected, leading to greater acceptance of limitations and lower reported care hours [42,43]. This observation underscores the need for age-specific care planning and further investigation into how societal expectations shape care provision across the dementia trajectory.

This study has several limitations. First, while the exclusion of institutionalized populations may bias prevalence estimates, the impact is likely modest. Data from the study period indicate that China's institutional care capacity covered only about 3% of the elderly population (30 beds per 1,000 older adults), far below the 5–7% rates seen in developed nations [44]. Although dementia-specific institutionalization rates may be higher among those with severe impairment, the overall low institutionalization during 2013–2015 suggests limited underestimation. Second, the cross-sectional design introduces potential recall and response biases. In addition, care needs were assessed using informant-reported 24-hour recall of the preceding day and night. Although practical for large-scale surveys, this method captures a limited temporal window and may not fully capture average daily care needs due to day-to-day variability in patient functioning and informant availability, as well as potential recall bias. Finally, non-response may cause selection bias, though comparable prevalence rates between participants completing and not completing Stage I interviews strengthen result robustness. Key strengths include nationally representative sampling through 157 surveillance points utilizing China's 2010 census-stratified framework (stratified by geography, economic development, urbanization level, and population size), a large-scale design with stringent quality control, and multistage probability sampling across administrative tiers from county/district to households. Critically, this study provides the first investigation of young-onset dementia in younger samples—a novel epidemiological contribution. The population-weighted structure aligned with China Census 2010 demographics ensures robust generalizability to community-dwelling Chinese adults.

5. Conclusion

Utilizing nationally representative sampling and standardized diagnostics, this study quantifies dementia prevalence across Chinese samples, identifying approximately 10.4 million affected individuals in 2015—a rapidly growing population whose substantial socioeconomic burden exposes systemic healthcare deficiencies. The marked divergence between medical resource utilization and functional care needs demonstrates neglect of dementia-related disability, revealing a paradigm prioritizing acute over chronic conditions with profound ramifications for aging societies. Our findings necessitate integrating dementia-specific functional support into primary care—in practice, strengthening urban community health centers and rural village doctor networks to conduct cognitive screening, provide caregiver training, and coordinate community-based long-term care, coupled with referral pathways to specialist memory clinics.

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Declaration of the use of generative AI and AI-assisted technologies

During the preparation of this work, the authors did not use any generative AI or AI-assisted technologies.

Ethical statement

Studies on human and/or animal statement

This study was conducted in accordance with the Declaration of Helsinki and approved by the Ethical Committee of the Sixth Hospital of Peking University (IMH-IRB-2013–13–1).

All procedures involving human participants were performed in accordance with the ethical standards of the institutional and/or national research committee.

Informed consent

Written informed consent was obtained from all participants or their legal representatives prior to participation in the study.

Approval

The study was approved by the Ethical Committee of the Sixth Hospital of Peking University (IMH-IRB-2013–13–1), and subsequently approved by the collaborating institutes, hospitals, or universities involved in the study.

Data statement

The data that support the findings of this study are available from the China Mental Health Survey (CMHS) but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of the CMHS data access committee.

CRediT authorship contribution statement

Zhaorui Liu: Methodology, Writing – review & editing. **Guangming Xu:** Writing – review & editing. **Ruoxi Ding:** Writing – review & editing, Writing – original draft. **Chao Ma:** Formal analysis. **Yueqin Huang:** Methodology, Writing – review & editing. **Lingjiang Li:** Data curation.

Tingting Zhang: Formal analysis. **Jie Yan:** Data curation. **Yaqin Yu:** Data curation. **Xiufeng Xu:** Data curation. **Zhizhong Wang:** Data curation. **Yifeng Xu:** Data curation. **Tao Li:** Data curation. **Huifang Yin:** Data curation. **Xiangdong Xu:** Data curation. **Limin Wang:** Data curation. **Yongping Yan:** Data curation. **Shuiyuan Xiao:** Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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