Prevalence and Trends of Dementia in Korea: A Systematic Review and Meta-Analysis

You Young Kim,¹ Ji Won Han,² Yoon Seop So,¹ Ji Young Seo,² Ka Young Kim,² and Ki Woong Kim¹,3,4

¹National Institute of Dementia, Seongnam; ²Department of Neuropsychiatry, Seoul National University Bundang Hospital, Seongnam; ³Department of Psychiatry, Seoul National University College of Medicine, Seoul; ⁴Department of Brain and Cognitive Science, Seoul National University College of Natural Sciences, Seoul, Korea

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Address for Correspondence:  
Ki Woong Kim, MD  
Department of Neuropsychiatry, Seoul National University College of Medicine and Seoul National University Bundang Hospital, 166 Dumi-ro, Bundang-gu, Seongnam 463-707, Korea  
Tel: +82.31-787-7432, Fax: +82.31-787-4058  
E-mail: kwkimmd@snu.ac.kr

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INTRODUCTION

Although a rapid increase in the number of patients with dementia is a worldwide problem with significant health and economic consequences, the rates of increase is not uniform. The numbers in developed countries are expected to increase by 100% between 2001 and 2040 and by > 300% in Asian and South American countries (1). The rate of growth of the aged population in the Republic of Korea (hereafter, Korea) is known to be one of the fastest in the world (2). Korea is expected to move from an aging society to a “super-aged” society in only 26 yr (2000-2026), and 37.6% (17.9 million) of the population is expected to be of the age > 65 yr by 2050 (2). In addition, the rapid industrialization in the past four decades has brought extensive changes in the structure and value of Korean families. For example, the percentage of one-person households is increasing, particularly in the elderly population where it will reach approximately 33%. At the same time, more women have started to work; therefore, the number of informal caregivers is decreasing. Because of this rapidly aging population and progressive westernization of lifestyle, dementia has emerged as a major health problem in Korea (3, 4).

It is essential to accurately estimate the current and future prevalence as well as the risk factors of dementia in elderly adults in Korea, which will be used to effectively plan the long-term care and medical costs that will be covered by the National Health Insurance, National Medical Aid Program, National Long-term Care Insurance, and other private insurance programs. In 2008, the Nationwide Survey on Dementia Epidemiology of Korea (NaSDEK), the first study of its kind, was conducted (5). From the results of the NaSDEK study, the standardized prevalence of dementia based on age, sex, education, and urban residency was estimated to be 8.1% (95% confidence interval [CI], 6.9%-9.2%) for overall dementia and 24.1% (95% CI, 21.0%-27.2%) for mild cognitive impairment. In 2012, a second NaSDEK study was conducted from which the prevalence was estimated to be 8.7% (95% CI, 6.7%-10.8%) for overall dementia and 24.1% (95% CI, 21.0%-27.2%) for mild cognitive impairment. As in Western countries, Alzheimer disease (AD) was the most prevalent subtype (5.7% in 2008; 6.2% in 2012) followed by vascular dementia (VaD) (2.0% in 2008; 1.5% in 2012) in the NaSDEK studies.

Before the NaSDEK study, there have been many epidemiological studies on dementia in the elderly population in Korea since 1990 (6-17). These studies were conducted in regional populations by using various study designs and diagnostic evaluations, and reported a wide range of estimates on dementia prev-
alence. However, the results of these studies may provide insight into the possible epidemiological transition of dementia in the past 2 decades and the potential impacts of the study methods on the prevalence estimates of dementia, which the NaSDEK study could not provide in 2008 or 2012. Whether the variance in the estimates of dementia prevalence reflects real regional differences or methodological approaches has never been studied. To our knowledge, no meta-analysis on the prevalence or trends of dementia in the Korean population has been performed. Therefore, we performed a meta-analysis of epidemiological studies of dementia conducted in 1990-2013 to investigate the epidemiological transition of dementia and potential moderator variables that may affect heterogeneity in the prevalence estimates in Korea.

MATERIALS AND METHODS

Literature search

A literature search was conducted using the following electronic databases: PubMed, Scopus, EMBASE, KoreaMed, KISS, and RiCH. The literature search was limited to studies published in 1990-2013. A survey report of the Korean Ministry of Health and Welfare was also used in this meta-analysis. We screened titles and abstracts by using the following search terms: (“Dementia” [MeSH] and (“Prevalence” [MeSH] OR “Epidemiology” [MeSH]) and (Korea) or (Korean)) for PubMed; (“Dementia” [Mesh] and “Prevalence” [MeSH]) for KoreaMed; and (“Dementia” [Mesh] and “Prevalence” [MeSH] in Korean) for KISS and RiCH. Search terms with a wider scope were used to search for literature in PubMed, Scopus, and EMBASE because of the lack of compatibility of Korean electronic databases with the other electronic databases.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) systematic review guidelines (18) were followed. In the first stage, we excluded studies that were clearly irrelevant, duplicates within or between databases, studies with insufficient description of the weighting adjustment method used, and studies with convenience sampling. In the second stage, we reviewed the abstracts of the remaining articles and included the studies that fulfilled the following inclusion criteria: 1) cases were collected according to a population-based field survey, and were not based on hospital or institutional data or the follow-up phase of a cohort population; 2) the study reported the number of patients aged ≥ 60 yr; and 3) dementia was not diagnosed purely on the basis of cognitive impairment, such as according to a cut point on the Mini-Mental State Examination (MMSE).

Data extraction

Data extraction was performed to determine the prevalence of dementia, including the following four sections that were based on methodological factors and the characteristics of the study population:

1) Study design: method of screening, diagnosis and confirmation, and sampling
2) Participants: sample size and response rate and characteristics of participants such as age-group, study location, and residing in an urban or rural area
3) Dementia identification: screening tools, diagnostic criteria, and instruments
4) Results: overall prevalence of dementia and that of the subtypes, AD and VaD.

The prevalence was extracted on the basis of the available data considering the prevalence and total number of patients according to sex, urban residency, 5-yr age-bands, and publication year presented in the articles. The effective prevalence considering each parameter could be calculated by using the prevalence for the different parameters and the total number of patients.

Quality assessment

Quality of studies was assessed by using the quality scoring method proposed by the World Alzheimer’s Report (WAR) in 2009 (19) for the following elements:

1) Sample size < 500, 0.5 points; 500-1,499, 1 point; 1,500-2,999, 1.5 points; and ≥ 3,000, 2 points
2) Design including a 2-phase study with no sampling of screen negatives, 0 points; 2-phase study with sampling of screen negatives but no weighting, 1 point; and 1-phase or 2-phase study with appropriate sampling and weighting, 2 points
3) Response proportion < 60%, 1 point; 60%-79%, 2 points; and ≥ 80%, 3 points
4) Diagnostic assessment inclusion of multi-domain cognitive test battery, formal disability assessment, informant interview, and clinical interview, 1 point each

Statistical analysis

Meta-analysis was used to synthesize data and calculate the overall prevalence of dementia. A random-effects model was applied because of heterogeneity across the studies, the magnitude of which was measured by using Higgins $\hat{\tau}$. Subgroup analysis and meta-regression method were conducted to explain the heterogeneity and investigate the effect of stratifying subgroup factors on the prevalence. For meta-regression, logit event rate and the standard error were calculated. For detecting the presence of publication bias, funnel plots were prepared. The arithmetic equation stated below was used to calculate the increment in age for a doubling in the prevalence rate by using the mean log ratio of prevalence increment according to each 5-yr age-band. As we used pooled prevalence rates from meta-analysis for this calculation, a fitted model is not proper for 2 measurements of growing quantity, $q_t$ at time $t_1$ and $q_t$ at time $t_2$.
(assuming that prevalence rates grow exponentially): Time of doubling = \( \left( \frac{t_2 - t_1}{\log(2)/\log(q_1/q_2)} \right) \). All meta-analyses were analyzed by using Comprehensive Meta-Analysis version 2.2 (BioStat International, Englewood, NJ, USA) and STATA 13.0 (StataCorp, College Station, TX, USA) software.

**RESULTS**

**Included studies**

We identified 704 abstracts from 6 databases, of which 508 studies were from PubMed, 93 from KoreaMed, 63 from Scopus, 32 from EMBASE, 5 from KISS, and 3 from RiCH; we also used 1 original report of the Korean Ministry of Health and Welfare. In the first stage, 654 articles were excluded because they were clearly irrelevant studies. In the second stage, 40 articles were excluded because of duplication within or between the databases, inadequate sampling or diagnosis, and insufficient description of weighting or standardization. The final sample for meta-analysis included 11 studies (Fig. 1). The characteristics of these studies are summarized in Table 1.

Among the 11 studies, 1 (13) did not provide a prevalence estimate of overall dementia, and 1 (12) did not provide a prevalence estimate of AD. These 2 studies did not provide the prevalence estimates of VaD either. The sample size of the studies ranged from 500 to 6,141, and the pooled sample size was 17,703. All subjects were elderly Korean individuals aged ≥ 65 yr. Table 2 shows the quality of these studies. Nine of the 11 studies used a 2-phase design: population screening in phase I and diagnostic evaluation in phase II. Ten studies provided an adjusted prevalence. Response rates were generally good (approximately 58%-96%). Eight studies included the results for comprehensive diagnostic assessment of dementia, including clinical interview, formal disability assessment, informant interview, and function and neuropsychological assessments.

**Pooled prevalence and subgroup analysis**

The pooled prevalence of dementia was 9.2% (95% CI, 8.2%-10.4%) from 10 studies, with the range of prevalence from 6.3% to 12.8% (Fig. 2). The pooled prevalence of AD and VaD was 5.7% (95% CI, 5.0%-6.4%) from 10 studies and 2.1% (95% CI, 1.6%-2.7%) from 9 studies, respectively (Fig. 3). The overall heterogeneity in these studies was high (F = 82.1%, P < 0.001).

The pooled age-specific prevalence of dementia approximately increased with each 5-yr age-band (65-69 yr, 3.0% [95% CI, 2.0%-4.0%]; 70-74 yr, 5.3% [95% CI, 4.0%-7.1%]; 75-79 yr, 11.7% [95% CI, 9.0%-15.1%]; 80-84 yr, 21.9% [95% CI, 16.5%-28.5%]; ≥ 85 yr, 33.2% [95% CI, 25.0%-42.5%]; P < 0.001) (Table 3). The doubling of age-specific prevalence was estimated to be 5.8 yr for overall dementia. Dementia was significantly more prevalent in women (10.7%; 95% CI, 8.7%-13.2%) than in men (6.8%;
A detailed analysis of the characteristics of studies, survey procedures, and prevalence of dementia is presented in Table 1. This table includes data on the references, year of publication, survey area with urbanity, design of the study, sample size, screening test, diagnostic test, diagnostic criteria, score of quality, crude prevalence, and the adjusted prevalence of dementia, AD, and VaD.

The prevalence of dementia showed noticeable variations over time, with a slight increase from 1995 to 2013. The age-specific prevalence of AD increased sharply with age, peaking at 28.7% in those aged ≥ 85 yr. Similarly, the prevalence of VaD increased slightly with age.

The pooled age-specific prevalence of AD sharply increased with each 5-yr increase in age from 1.2% in subjects aged 65-69 yr to 28.7% in those aged ≥ 85 yr (P < 0.001). The doubling of age-specific prevalence was estimated to be 4.4 yr for AD, which was shorter than that for overall dementia. The prevalence of AD in women was 7.2% (95% CI, 5.9%-8.9%), which is much higher than the 3.4% (95% CI, 2.6%-4.3%) observed in men (P < 0.001).

The pooled age-specific prevalence of VaD increased slightly with each 5-yr increase in age from 1.0% in subjects aged 65-69 yr to 2.0% in those aged ≥ 85 yr (P = 0.007). The prevalence of VaD in subjects aged 65-69 yr was 2.0%, significantly lower than that in subjects aged ≥ 85 yr (P < 0.001). The prevalence of VaD in men was 2.5% (95% CI, 1.9%-3.3%), which is much higher than the 1.8% (95% CI, 1.1%-2.5%) observed in women (P < 0.001). The prevalence of VaD increased with age, peaking at 9.0% in those aged ≥ 85 yr (95% CI, 7.3%-10.7%). The differences in prevalence were significant between age groups (P < 0.001). The prevalence of VaD was 7.2% in rural areas and 4.0% in urban areas (P < 0.001), with a higher prevalence in rural areas. The prevalence of VaD was significantly higher in areas with a higher proportion of residents aged ≥ 65 yr (P < 0.001).

The pooled age-specific prevalence of VaD sharply increased with each 5-yr increase in age from 1.2% in subjects aged 65-69 yr to 28.7% in those aged ≥ 85 yr (P < 0.001) (Table 4). The doubling of age-specific prevalence was estimated to be 4.4 yr for AD, which was shorter than that for overall dementia. The prevalence of AD in women was 7.2% (95% CI, 5.9%-8.9%), which is much higher than the 3.4% (95% CI, 2.6%-4.3%) observed in men (P < 0.001). By quality of study, although it was not significant, prevalence of AD was from 5.2% to 5.5% in the studies with more than 8 points and 7.2% in the study under 8 points of score. Prevalence of AD considering the survey year increased slightly from 5.1% in 1995-1999 to 6.2% in 2010-2013, but this was not significant (P = 0.114).

The pooled age-specific prevalence of VaD increased slightly with each 5-yr increase in age from 1.0% in subjects aged 65-69 yr to 2.0% in those aged ≥ 85 yr (P = 0.007). The prevalence of VaD in men was 2.5% (95% CI, 1.9%-3.3%), which is much higher than the 1.8% (95% CI, 1.1%-2.5%) observed in women (P < 0.001). The prevalence of VaD increased with age, peaking at 9.0% in those aged ≥ 85 yr (95% CI, 7.3%-10.7%). The differences in prevalence were significant between age groups (P < 0.001). The prevalence of VaD was 7.2% in rural areas and 4.0% in urban areas (P < 0.001), with a higher prevalence in rural areas. The prevalence of VaD was significantly higher in areas with a higher proportion of residents aged ≥ 65 yr (P < 0.001).
Table 2. Quality assessment of the studies*

| Elements of quality score | Number of studies (%) |
|---------------------------|-----------------------|
| Survey year               |                       |
| 1990-1994                 | 2 (18.2)              |
| 1995-1999                 | 3 (27.3)              |
| 2000-2004                 | 2 (18.2)              |
| 2005-2009                 | 3 (27.3)              |
| 2010-2013                 | 1 (9.1)               |
| Sample size               |                       |
| 500-1499                  | 8 (72.7)              |
| 1500-2999                 | 1 (9.1)               |
| ≥ 3000                    | 2 (18.2)              |
| Design                    |                       |
| One-phase, or two-phase study with no sampling of screen negatives | 2 (18.2) |
| Two-phase study with sampling of screen negatives but no weighting back | 2 (18.2) |
| One-phase or two-phase study with appropriate sampling and weighting | 7 (64) |
| Response proportion       |                       |
| < 60%                     | 1 (9.1)               |
| 60-79%                    | 8 (72.7)              |
| ≥ 80%                     | 2 (18.2)              |
| Comprehensive diagnostic assessment | 8 |
| Quality score             |                       |
| < 8                       | 3 (27.3)              |
| 8-8.9                     | 1 (9.1)               |
| 9-9.9                     | 4 (36.4)              |
| ≥ 10                      | 3 (27.3)              |

*According to the criteria proposed in the World Alzheimer Report 2009.

Fig. 2. Forest plot of prevalence studies of dementia in the elderly Koreans.
yr to 4.2% in those aged 80-84 yr, and then decreased thereafter \((P = 0.001)\) (Table 5). The doubling of age-specific prevalence was estimated to be 7.2 yr in subjects with VaD aged < 84 yr, which was longer than that for subjects with overall dementia. The pooled prevalence of VaD did not differ considering the sex \((P = 0.656)\) or by urban residency \((P = 0.930)\). The prevalence of VaD decreased from 2.8% in 1995-1999 to 1.5% in 2010-2013, but the change was not significant \((P = 0.182)\).

The prevalence of AD (5.7%; 95% CI, 5.0%-6.4%) was much higher than that of VaD (2.1%; 95% CI, 1.6%-2.7%). The ratio of AD/VaD doubled in the past two decades from 1.96 to 4.13 \((P = 0.021)\) (Fig. 4).

**DISCUSSION**

Epidemiological indices such as prevalence, incidence, and risk factors play a key role in policymaking, planning, and allocation of health and welfare resources according to specific at-risk populations. To our knowledge, this is the first study since 1990 to review reports of the prevalence of dementia in the elderly population in Korea. By using meta-analysis, we were able to estimate the pooled prevalence of dementia in the elderly population in Korea with reasonable precision. The overall prevalence estimate of dementia of subjects aged ≥ 65 yr in Korea was 9.2%. It is much higher than the prevalence estimates of overall dementia in Asian people (4.1%-7.63%) reported in the World Alzheimer’s Report (WAR) in 2009 (19). This difference may be attributed to mortality and true geographical differences of incidence. However, several other factors should be considered. First, the participants in the WAR in 2009 were younger than those in the present meta-analysis. Furthermore, the WAR in 2009 estimated a pooled prevalence of dementia in the participants aged ≥ 60 yr. For a direct comparison, we needed a prevalence estimate of dementia in elderly Koreans aged 60-65 yr. Second, other methodologies such as sampling strategy, screening methods, and criteria that were used to diagnose dementia were considerably different between studies. For a direct comparison, a series of subgroup analyses stratified consider-
ing the study methodologies were warranted.

In the past two decades, the prevalence of overall dementia tended to decrease until 2000-2005 and then increased thereafter, although this trend was not statistically significant. Considering that the risk of dementia depends strongly on age and education (5), this prevalence trend might have been influenced by the interaction between changes in educational level and life expectancy in Korea; the proportion of uneducated people rapidly decreased from 54.2% to 19.1% and the life expectancy increased from 71.3 yr to 81.4 yr in the past two decades. In a previous trend analyses on Americans, increasing levels of education among old people explained about 40% of the observed relative decrease in cognitive impairment prevalence compatible with dementia between 1993 and 2002 (20). In the past two decades, a dramatic decrease of uneducated people in the elderly have been driving the decrease of dementia prevalence, particularly in the 1990s before population aging began to accelerate in Korea. On the contrary, 10-yr increase of life expectancy in the past two decades have been driving the increase dementia prevalence in the same period since dementia prevalence generally doubles every 5 yr after the age of 65 yr (21). Korea began to move rapidly from an aging society to a super-aged society since 2000. These two strong demographic changes have been driving interactively the trend of dementia prevalence in the past two decades. Since the decrease of uneducated people will reach at a plateau within 10 yr while the population aging will continue until 2050, the influence of population aging will be stronger than that of better education on dementia prevalence in the future. In the present study, the doubling time of age-specific dementia prevalence was 5.8 yr in Korea. However, it was much longer in low- and middle-income countries (approximately 7.5 yr), which may be attributed, at least in part, to a high mortality in patients with dementia in these countries (22).

AD has been the most prevalent subtype of dementia followed by VaD in Korea, since 1990. Furthermore, the predominance of AD has steadily increased in the past 2 decades in Korea. In this period, the prevalence of AD increased from 5.0% to 6.5%, but that of VaD decreased from 2.8% to 1.5%; therefore, the AD/VaD ratio increased from 1.96 to 4.13. As the doubling time of age-specific dementia prevalence was 5.8 yr in Korea. However, it was much longer in low- and middle-income countries (approximately 7.5 yr), which may be attributed, at least in part, to a high mortality in patients with dementia in these countries (22).

Table 3. Prevalence of dementia stratified considering sociodemographic factors, quality of study, and survey year

| Factors          | Numbers | Prevalence | 95% CI Lower | 95% CI Upper | Heterogeneity | Meta-regression |
|------------------|---------|------------|--------------|--------------|---------------|----------------|
| Age year         |         |            |              |              |               |                |
| 65-69            | 8       | 3.0        | 2.02         | 4.0          | 50.0          | 0.72           |
| 70-74            | 8       | 5.3        | 4.0          | 7.1          | 85.6          | < 0.001        |
| 75-79            | 8       | 11.7       | 9.0          | 15.1         | 58.2          | 0.019          |
| 80-84            | 5       | 21.9       | 16.5         | 28.5         | 81.3          | < 0.001        |
| 85+              | 4       | 33.2       | 25.0         | 42.5         | 86.5          | < 0.001        |
| Gender           |         |            |              |              |               |                |
| Male             | 9       | 6.8        | 5.3          | 8.6          | 78.6          | < 0.001        |
| Female           | 9       | 10.7       | 8.7          | 13.2         | 91.8          | < 0.001        |
| Urbanity         |         |            |              |              |               |                |
| Urban            | 6       | 9.1        | 7.7          | 10.7         | 86.3          | < 0.001        |
| Rural            | 5       | 9.4        | 7.9          | 11.2         | 73.0          | 0.006          |
| Rural+Urban      | 1       | 10.7       | 7.6          | 14.9         |               |                |
| Education        |         |            |              |              |               |                |
| 0-25%            | 2       | 7.6        | 5.3          | 10.7         | 77.9          | 0.03           |
| 25-50%           | 5       | 10.1       | 8.1          | 12.4         | 86.5          | < 0.001        |
| 50-75%           | 2       | 8.1        | 5.9          | 11.2         | 83.3          | 0.02           |
| 75-100%          | 1       | 10.8       | 6.8          | 16.8         |               |                |
| Survey year      |         |            |              |              |               |                |
| 1990-1994        | 2       | 10.1       | 7.3          | 13.9         | 0.0           | 0.34           |
| 1995-1999        | 3       | 9.9        | 7.6          | 12.9         | 90.0          | < 0.001        |
| 2000-2004        | 2       | 9.7        | 6.9          | 13.6         | 76.9          | 0.04           |
| 2005-2009        | 2       | 7.3        | 5.2          | 10.1         | 64.6          | 0.1            |
| 2010-2013        | 1       | 8.7        | 5.6          | 13.3         |               | 0.18           |
| Quality of study |         |            |              |              |               |                |
| < 8              | 2       | 11.21      | 9.2          | 13.3         | 0.0           | 0.6            |
| 8-8.9            | 1       | 12.8       | 10.0         | 16.3         |               | -0.1           |
| 9-9.9            | 4       | 8.8        | 7.6          | 10.2         | 70.5          | 0.02           |
| ≥ 10             | 3       | 8.0        | 7.0          | 9.2          | 51.3          | 0.13           |

*Significance; P value < 0.05; † Number of studies that provided data available for each meta-analysis according to adjusted total prevalence, age-specific prevalence and age-gender specific prevalence, partially including crude prevalence; ‡Proportion of the subject who had no formal education (%); §Logit event rate was used for meta regression.
since the 1990s (1, 24). Complex interactions among vascular etiologies, changes in the brain, and host factors including age play roles in the development of VaD (28, 29). The epidemiological transition of dementia observed in Japan was explained by the modification of these potential risk factors of VaD. In Korea, nationwide public health promotion programs since 2008 might have contributed to modifying these risk factors and, thus, to decreasing the incidence of VaD.

Although this review aimed to provide the best possible estimate of prevalence of dementia in Korea, it has several limitations. Several studies included in the current meta-analysis did not provide a standardized prevalence rate, age- or sex-specific prevalence, or prevalence of the dementia subtypes. Some studies included small sample sizes and, therefore, could not be included in some subgroup analyses. The stratification methods for potential risk factors of dementia, such as age, were not uniform across the studies.

In conclusion, the prevalence of dementia in Korea is higher than that in other Asian and Western countries. The prevalence has increased since 2005 because of rapid increase in the aged population. AD is the most prevalent type, and its predominance is expected to increase with an increase in the aged population.

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**DISCLOSURE**

The authors have no conflicts of interest to disclose.
Table 5. Prevalence of vascular dementia stratified by sociodemographic factors, quality of study, and survey year

| Factors               | Numbers\(^a\) | Prevalence | 95% CI          | Heterogeneity | Meta-regression |
|-----------------------|---------------|------------|-----------------|---------------|-----------------|
|                       |               |            |                 |               |                 |
|                       |               |            | Lower           | Upper         | \(P^2\)         | \(P\) value*    | \(b^0\)         | \(P\) value*    |
| Age year              |               |            |                 |               |                 |                 |                 |                 |
| 65-69                 | 5             | 1.0        | 0.6             | 1.7           | 0.0             | 0.676           | 0.3             | 0.001           |
| 70-74                 | 5             | 1.9        | 1.1             | 3.1           | 70.6            | 0.009           |                 |                 |
| 75-79                 | 5             | 2.6        | 1.6             | 4.1           | 61.4            | 0.035           |                 |                 |
| 80-84                 | 3             | 4.2        | 2.5             | 7.2           | 62.9            | 0.068           |                 |                 |
| 85+                   | 3             | 2.4        | 1.2             | 4.7           | 47.4            | 0.150           |                 |                 |
| Gender                |               |            |                 |               |                 |                 |                 |                 |
| Male                  | 8             | 2.2        | 1.3             | 3.8           | 27.0            | 0.213           | 0.17            | 0.656           |
| Female                | 8             | 2.6        | 1.5             | 4.4           | 96.1            | < 0.001         |                 |                 |
| Urbanity              |               |            |                 |               |                 |                 |                 |                 |
| Urban                 | 5             | 2.0        | 1.3             | 3.0           | 90.8            | < 0.001         | -0.03           | 0.930           |
| Rural                 | 5             | 2.0        | 1.3             | 2.9           | 21.0            | 0.281           |                 |                 |
| Rural-Urban           | 1             | 1.9        | 0.6             | 5.5           |                 |                 |                 |                 |
| Education\(^b\)      |               |            |                 |               |                 |                 |                 |                 |
| 0-25%                 | 2             | 1.3        | 0.7             | 2.4           | 0.0             | 0.319           | 0.003           | 0.672           |
| 25-50%                | 4             | 2.5        | 1.6             | 3.8           | 89.3            | < 0.001         |                 |                 |
| 50-75%                | 2             | 2.5        | 1.4             | 4.4           | 0.0             | 0.870           |                 |                 |
| 75-100%               | 1             | 1.3        | 0.5             | 3.5           |                 |                 |                 |                 |
| Survey year           |               |            |                 |               |                 |                 |                 |                 |
| 1990-1994             | 2             | 1.9        | 0.9             | 3.9           | 69.1            | 0.072           | -0.13           | 0.182           |
| 1995-1999             | 3             | 2.8        | 1.6             | 4.9           | 87.4            | < 0.001         |                 |                 |
| 2000-2004             | 1             | 2.0        | 0.7             | 5.6           |                 |                 |                 |                 |
| 2005-2009             | 2             | 1.5        | 0.7             | 3.1           | 69.7            | 0.069           |                 |                 |
| 2010-2013             | 1             | 1.5        | 0.6             | 3.8           |                 |                 |                 |                 |
| Quality of study      |               |            |                 |               |                 |                 |                 |                 |
| < 8                   | 1             | 1.9        | 1.0             | 3.5           |                 | -0.07           | 0.576           |                 |
| 8-8.9                 | 1             | 4.8        | 2.8             | 8.0           |                 |                 |                 |                 |
| 9-9.9                 | 4             | 1.8        | 1.3             | 2.5           | 59.0            | 0.062           |                 |                 |
| ≥ 10                  | 3             | 1.9        | 1.4             | 2.6           | 63.3            | 0.065           |                 |                 |

\(^a\)Significance; \(P\) value < 0.05; \(^b\)Number of studies that provided data available for each meta-analysis according to adjusted total prevalence; age-specific prevalence and age- and gender-specific prevalence, partially including crude prevalence; \(^c\)Proportion of the subject who had no formal education (%); \(^d\)Logit event rate was used for meta regression.

ORCID

You Joung Kim [http://orcid.org/0000-0002-1103-3858](http://orcid.org/0000-0002-1103-3858)

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