



Comparing the Characteristics of Patients With Newly Diagnosed Dementia Before and After 2008 in Seoul, South Korea: A Population-Based Study

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Dear Editor,

The burden of dementia is growing as the South Korean population ages.¹ The South Korean government declared a “war on dementia” in 2008, and 25 dementia support centers (DSCs) were established between 2007 and 2009 in Seoul, South Korea. We previously reported that the dementia incidence in Seoul increased rapidly after 2007 and then stabilized after 2011.² In the current study, we investigated the characteristics of patients with newly diagnosed dementia before and after 2008, and considered variables such as age, comorbidities, income, and dementia type.

Using customized research data from the National Health Insurance Service (NHIS) database, data of patients with dementia diagnosed during 2005–2007 and 2009–2011 were analyzed and compared. We compared time periods between before the DSCs were established and those when dementia incidence increased rapidly after they were established. The data source and method of identifying patients with dementia have been described in detail previously.² In brief, patients with dementia were defined by dementia-related diagnostic codes from the Korean Standard Classification of Diseases (F00, F01, F02, F03, G30, G31.00, G31.01, G31.02, G31.03, G31.04, and G31.82) or by the use of antidementia drugs (donepezil, galantamine, rivastigmine, and memantine). In order to only include patients with newly diagnosed dementia, those who had visited the hospital previously and were diagnosed with a dementia-related code were excluded. The International Classification of Diseases (ICD-10) version of the Charlson Comorbidity Index (CCI) was used.^{3,4} The patients were divided into groups according to age (six groups: 60–64, 65–69, 70–74, 75–79, 80–84, and ≥85 years old), sex, CCI (four groups: 0, 1, 2, and ≥3), income (quintiles), and dementia type (unspecified dementia [F03], Alzheimer’s disease dementia [F00, G30], vascular dementia [F01], and other [F02, G31.00–04, G31.82]). Patients with dementia who were first diagnosed during 2005–2007 or 2009–2011 were compared using *t*-test and chi-square test.

This study evaluated 35,271 patients with incident dementia. The total number (age-adjusted incidence per 100,000 person-years) of patients with newly diagnosed dementia was 9,980 (273.21) during 2005–2007 and 25,291 (576.01) during 2009–2011 ($p < 0.0001$). The age at first diagnosis increased from 76.45 ± 7.64 years (mean \pm SD) to 77.89 ± 7.78 years ($p < 0.0001$). The percentage of females with dementia increased slightly from 67.02% to 67.11% ($p < 0.0001$). A comparison of the patients who were diagnosed with dementia during 2005–2007 versus those diagnosed during 2009–2011 indicated significant differences between age groups ($p < 0.0001$), CCI groups ($p < 0.001$), income groups ($p < 0.0001$), and dementia types ($p < 0.0001$) (Fig. 1). Specifically, the proportions of patients aged ≥ 85 years, with a CCI of 0, in the lowest income group, and with unspecified dementia increased from 14.86% ($n = 6,689$) to 21.29% ($n = 5,383$) (Fig. 1A), from 76.33% ($n = 3,618$) to 78.81% ($n = 19,932$) (Fig. 1B), from 20.58% to

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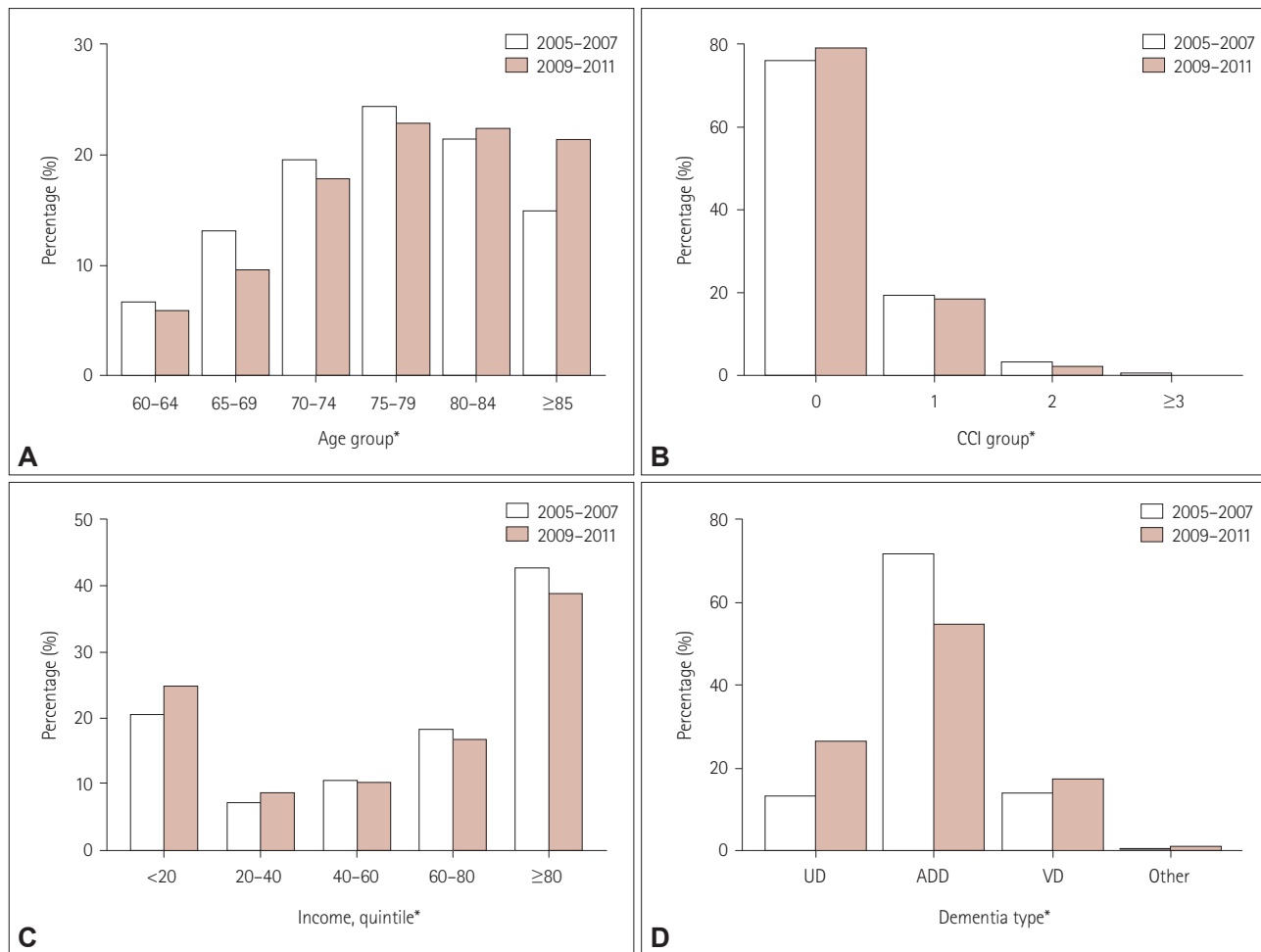


Fig. 1. Patients with dementia who were first diagnosed during 2005–2007 were compared with those diagnosed during 2009–2011. The patients were divided into the following groups: (A) age, (B) Charlson Comorbidity Index (CCI), (C) income (quintiles), and (D) dementia type. * $p < 0.0001$ (2005–2007 vs. 2009–2011). ADD, Alzheimer’s disease dementia; UD, unspecified dementia; VD, vascular dementia.

24.95% (Fig. 1C), and from 13.22% to 26.47% (Fig. 1D), respectively.

The National Dementia Plans (NDPs) were instigated in South Korea in 2008.⁵ These plans included a mass dementia screening program, education to encourage self-checkups for dementia, financial medical support for patients with dementia and their caregivers, infrastructure expansion, and public awareness campaigns.^{4,6} DSCs, which were responsible for implementing the NDPs, were introduced in all districts of Seoul during 2007–2009. These efforts have reduced the socioeconomic barriers experienced by patients with dementia and facilitated dementia diagnoses. The increases in the numbers of older and low-income patients and of patients without comorbidities among newly diagnosed patients with dementia after 2008 may be related to the reduced socioeconomic barriers. Implementing mass screening programs makes it easier to identify patients in the early stages of dementia.^{4,7} The reason for the increased incidence of unspecified dementia was

not clear, but a possible reason is identifying dementia at its early stages without sufficient pathological studies. Further studies are needed to clarify this.

The main limitation of the study was the use of NHIS claims data. Results from neuropsychological tests could not be analyzed, and patients who did not receive antidementia medications were excluded. However, these limitations applied to both of the groups that were compared, which minimized the resulting bias. In conclusion, our findings suggest that, patients in South Korea with newly diagnosed dementia after 2008 were more likely to be older, have fewer comorbidities, have a low income, and be diagnosed with unspecified dementia.

Ethics Statement

This study was approved by the Institutional Review Board of Hanyang University Guri Hospital (2019-10-004) and registered at the Clinical Research Information Service (KCT00623).

Availability of Data and Material

The datasets generated or analyzed during the current study are available from the National Health Insurance Sharing Service (NHIS) [<https://nhiss.nhis.or.kr>]. Upon an individual researcher's dataset request, NHIS provides customized data to the researcher.

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Conflicts of Interest

Hyuk Sung Kwon, an assistant editor of the *Journal of Clinical Neurology*, was not involved in the editorial evaluation or the decision to publish this article. All remaining authors have declared no conflicts of interest.

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