

Awareness and Understanding of Dementia in Community-Dwelling Adults Without Dementia and Stroke

Hyun Young Park¹, Young Seo Kim¹, Hyung Jong Park², Hak Seung Lee¹, Seung Han Suk³

¹Department of Neurology, Wonkwang University School of Medicine, Institute of Wonkwang Medical Science and Regional Cardiocerebrovascular Center, Iksan, ²Department of Neurology, National Naju Hospital, Naju, ³Department of Neurology, Wonkwang University Sanbon Medical Center and Wonkwang University Ansan Municipal Geriatric Hospital, Gunpo, Korea

Corresponding Author:
Seung Han Suk, MD
Department of Neurology,
Wonkwang University Sanbon
Medical Center, 327 Sanbon-ro,
Gunpo 15865, Korea

Tel: +82-63-859-1410
Fax: +82-63-842-7379
E-mail: suksh@wku.ac.kr

Received: June 8, 2016
Revised: August 3, 2016
Accepted: September 27, 2016

Background: Early diagnosis and treatment of dementia has become a critical medical issue; however, knowledge and understanding of dementia in the general population remains insufficient. Accurately determining and increasing the level of knowledge of dementia will help improve dementia treatment and prevention. **Methods:** Using a questionnaire, we examined the degree of interest in dementia, comprehension of dementia, and level of knowledge of dementia among 716 middle-aged and elderly individuals without a history of stroke or dementia. We conducted an analysis of these associations with risk factors of dementia. **Results:** Most participants had an interest in dementia (93.3%) and a comprehension of dementia (91.1%). An analysis of the association between the level of knowledge of dementia, according to the characteristics of the participants and each variable, showed that higher education level, presence of a spouse, and higher level of interest in dementia exhibited a statistically significant positive correlation. **Conclusion:** This study shows that the level of knowledge about dementia in the community is relatively high for those participants who have a high interest in dementia or higher education level. To increase awareness of dementia and reduce dementia-associated socioeconomic costs, educational activities could be tailored to fit the level of education or interest in dementia of individuals, as an effective intervention for community-dwelling healthy adults.

Key Words: Dementia, Education, Prevention, Knowledge

INTRODUCTION

Korea has become an aging society, and it is expected to become a super-aging society¹⁾. The population with dementia is growing in proportion to an increase in the elderly population²⁾. Dementia is a major disease among the elderly in the country, and therefore, the importance of early diagnosis of dementia is emerging. To increase understanding and knowledge of dementia, the government is making efforts to create awareness of this disease and encouraging its early diagnosis. However, overall understanding and knowledge of dementia is still lacking in the general population³⁻⁵⁾. The lack of knowledge of dementia leads to a delay in early diagnosis and treatment and makes it difficult to manage the complications that are associated with later stages of dementia such as falls, bedsores, and infections⁶⁻⁸⁾. Therefore, accurately determining and improving the level of comprehension and knowledge of dementia not only will help with

the treatment and prevention of dementia but will also be socioeconomically beneficial^{6,9-12)}.

We conducted a survey of participants who did not have any history of dementia or stroke to examine their level of knowledge of dementia and the factors influencing it. Using these results, we proposed a plan to increase the understanding of dementia and help establish a path for dementia-related public health services.

MATERIALS AND METHODS

1. Study Population

The Prevention of Stroke and Dementia (PRESENT) project is an ongoing, regional government-run, project that was initiated in July 2007 for the prevention of stroke and dementia through public education, public relations, early medical check-ups, and research in Korea. As part of the PRESENT project, stroke-free and dementia-free adults (aged 50-75

years) were recruited by random sampling or volunteering. Data collection involved 2 steps and was conducted over 2 years from January 2009 to December 2010. Systematic random sampling with administrative support from the regional government was performed in 2009. Among the baseline cohort (n=28,779) aged between 50 and 75 years, we contacted every 100th person using the official registration listing for the PRESENT project as provided by the regional government office (the PRESENT project is a regional government-run project). If a potential participant could not be contacted, refused to participate, had moved, or had a history of stroke/dementia, we moved on to the next person on the list. Telephone interviews to confirm participation in this study were conducted by trained research nurses, and 1,603 participants were contacted through this process. Those who seemed to have dementia, stroke, or were incapable of doing daily living activities as determined by a neurologist were excluded from the study, and only 716 participants responded to the survey examining the level of knowledge of dementia. All procedures were performed at the center after obtaining written consent from the participants. The study protocol was approved by the Wonkwang University Hospital ethics committee (approval number: 2016-08-HRE-083).

2. Questionnaire

The questionnaire used in this study consisted of questions evaluating the knowledge of dementia (Table 1), degree of interest of the subject, and degree of comprehension about dementia. The detailed items assessing the knowledge of dementia were answered as "Yes" or "No"; 1 point was awarded for each correct answer and no points were given for a wrong answer; thus, higher scores indicated a higher level of knowledge of dementia. Other items were investigated

to obtain information on dementia as coping measures when family members or relatives were suspected of having dementia and the preferred facilities for dementia treatment after its onset.

3. Statistical Analysis

Clinical variables were analyzed using independent t-tests, analysis of variance or Kruskal-Wallis H test, and the Spearman correlation; analyses were conducted to determine the correlation between the degree of interest and degree of comprehension. Statistical analyses were performed using the SPSS ver. 13 (SPSS Inc., Chicago, IL, USA). Differences were considered statistically significant at $p < 0.05$.

RESULTS

The demographic characteristics of the participants are shown in Table 2. Overall proportions of those interested in dementia and those aware of dementia were similar, with 668 respondents (93.3%) interested in dementia, and 652 (91.1%) aware of it at least slightly. However, a strong awareness of dementia (10.1%) was lower among the participants than a strong interest in dementia (39.0%), indicating the need for accurate education on dementia (Table 3). The mean score for general knowledge of dementia (13 items) was 8.77 (0-13 scores), and the mean correct answer rate was 67.1% (Table 1). In addition, knowledge of dementia was significantly higher in females ($p=0.028$), those with a higher education level ($p=0.001$), and those with the presence of a spouse ($p=0.001$) (Table 3); however, no differences were found according to age. An analysis of correlation with the degree of interest and degree of comprehension of dementia showed that knowledge of dementia was higher when the degree

Table 1. Questionnaire regarding the general knowledge of dementia

Questions	No. (%)
Dementia is a complex of symptoms resulting from various diseases developed in the brain	616 (86.0)
Dementia interferes with daily activities due to decreased cognitive functions such as memory	687 (95.9)
Everyone eventually experiences dementia when they get older, as a part of the aging process	558 (77.9)
The most common disease that causes dementia is Alzheimer disease	251 (35.0)
Stroke may develop into dementia	443 (61.8)
Patients with dementia may display psychiatric symptoms such as delusion, auditory hallucination, and visual hallucination	544 (75.9)
Symptoms of dementia may occur at any time	594 (82.9)
When dementia is in progress, you may not name the objects when you look at them or recall the words during conversation	630 (87.9)
Evaluation for cognitive function is important to diagnose dementia	544 (75.9)
Early detection of dementia is possible	494 (65.9)
There are treatable causes of dementia	415 (57.9)
Changing the environment often can help improve the symptoms of dementia	72 (10.0)
Blood pressure and blood sugar control (treatment of hypertension/diabetes) helps prevent dementia	429 (59.9)

No., number of correct answers.

of interest and degree of comprehension were higher ($p < 0.001$) (Table 4). Considering these results, enhancing knowledge of dementia or education about dementia seems to be required in a population with lower levels of education who are at high risk for dementia.

The conduits of information on dementia were mainly the media (61.1%) such as newspapers, TV, and radio, followed by family, relatives, and neighbors (30.8%), and medical professionals such as doctors, oriental medicine practitioners, and nurses (2.7%). This indicates that the acquisition of information through educational efforts in medical settings is low. Additionally, most participants responded that they visit hospitals for examination as a coping measure when members of their family and relatives are suspected to have dementia (87.1%). Furthermore, their preferred facilities to receive treatment for dementia after its onset were, in order, geriatric hospitals (54.9%), university hospitals or general medical clinics (34.3%), and social welfare centers such as nursing homes or daily care centers (5.7%).

DISCUSSION

This study aimed to determine the level of general knowledge and awareness of dementia in middle-aged and elderly individuals aged 50–75 years. Additionally, the deficits in disease knowledge were identified by investigating influencing factors. From these results, under the assumption that a high

level of knowledge encourages behaviors to manage dementia, we aimed to help establish the direction for dementia-related public health services by increasing the knowledge of the public about dementia.

Knowledge of dementia, as measured from the questionnaire, showed that the participants had a relatively accurate knowledge of major symptoms of dementia as well as an understanding of the basic concept of the disease and onset time of symptoms. However, it also demonstrated the presence of a pessimistic view of the disease among participants, which held that treating dementia is impossible. Additionally, knowledge level was lower regarding treatment and manage-

Table 2. Demographic characteristics of participant

Variable	Male	Female
Age (yr)		
≤59	185 (47.2)	207 (52.8)
60-69	95 (45.9)	112 (54.1)
≥70	48 (41.1)	69 (58.9)
Education level (yr)		
Illiteracy	5 (11.1)	40 (88.9)
≤6	62 (31.3)	137 (68.7)
7-9	54 (39.4)	84 (60.6)
10-12	115 (52.5)	104 (47.5)
≥13	84 (72.8)	31 (27.2)
Occupation		
No	77 (25.1)	230 (74.9)
Yes	265 (64.8)	144 (35.3)
Marital status		
Not married	33 (20.6)	126 (79.4)
Married	296 (53.1)	261 (46.9)
Family member		
No	17 (23.1)	56 (76.9)
Yes	312 (48.5)	331 (51.5)
Religion		
No	108 (46.6)	124 (53.4)
Yes	147 (30.3)	337 (69.7)

Values are presented as number (%).

Table 3. Mean point of general knowledge of dementia

Variable	No. (%)	Mean±SD	p-value
Age (yr)			0.204
≤59	392 (54.8)	8.9±2.4	
60-69	207 (28.9)	8.6±2.5	
≥70	117 (16.3)	8.6±2.5	
Sex			0.028
Male	329 (45.9)	8.6±2.4	
Female	387 (54.1)	9.0±2.4	
Education level (yr)			0.001
Illiteracy	45 (6.3)	8.0±2.2	
≤6	199 (27.8)	8.4±2.5	
7-9	138 (19.3)	8.6±2.6	
10-12	219 (30.5)	9.0±2.4	
≥13	115 (16.1)	9.4±2.1	
Occupation			0.738
No	307 (42.8)	8.8±2.5	
Yes	409 (57.2)	8.7±2.4	
Marital status			0.001
Not married	159 (22.3)	8.2±2.6	
Married	557 (77.7)	8.9±2.4	
Family member			0.016
No	73 (10.2)	8.1±2.7	
Yes	643 (89.8)	8.8±2.4	
Religion			0.015
No	232 (32.4)	8.5±2.5	
Yes	484 (67.6)	8.9±2.4	
Degree of interests for dementia			<0.005
Not Interested	48 (6.7)	6.6±3.0	
Average	144 (20.1)	8.4±2.6	
Slightly Interested	245 (34.2)	8.6±2.3	
Very Interested	279 (39.0)	9.5±2.0	
Degree of comprehension for dementia			<0.005
Not aware	64 (8.9)	7.1±2.7	
Have heard	354 (49.5)	7.9±2.6	
Slightly aware	226 (31.5)	9.4±2.8	
Very much aware	72 (10.1)	9.8±1.8	

SD, standard deviation.

Table 4. Correlation between participants and knowledge of dementia

Variable	Age	Education level	Occupation	Marital status	Family members	Religion	Insurance	K-MMSE	Degree of interests for dementia	Degree of comprehension for dementia	Knowledge of dementia
Female sex	0.050	-0.346**	-0.396**	-0.272**	-0.155**	0.212**	0.067*	-0.203**	0.154**	-0.055	0.079*
Age		-0.359**	-0.314**	-0.148**	-0.106**	0.051	0.057	-0.384**	-0.144**	-0.135**	-0.083*
Education level			0.253**	0.247**	0.172**	0.074*	-0.029	0.583**	0.123**	0.246**	0.164**
Occupation				0.108**	0.034	-0.098*	-0.121**	0.196**	-0.003	0.072*	-0.012
Marital status					0.588**	-0.008	-0.257**	0.226**	0.058	0.091*	0.122**
Family members						-0.040	-0.289**	0.151*	0.083*	0.066*	0.087*
Religion							0.010	0.026	0.072*	0.000	0.088*
Degree of interests for dementia											0.197**
Degree of comprehension for dementia											0.342**

K-MMSE, Korean Version of Mini-Mental Status Examination.
* $p < 0.5$, ** $P < 0.01$.

ment after the onset of dementia, as many participants responded that changing the patient's environment often helps improve the symptoms of dementia. Considering that the knowledge of dementia was significantly higher when the degree of interest and degree of comprehension on dementia were higher, we expect that increasing individual interest and comprehension of dementia can improve the knowledge of dementia. To achieve this, media such as television or radio, which was found in the survey as the major route through which people access information on dementia, could be the best way to distribute accurate knowledge widely.

It is known that having a high level of knowledge of a particular disease is associated with its illness-related behaviors¹³. In this regard, a health belief model that explains health behaviors related to illness representations and mental health shows that increased exposure of individuals to a disease increases the knowledge of the disease and triggers its illness-related behaviors¹⁴. Illness-related behaviors include appropriate awareness regarding the disease, prevention of risk factors, proper coping with the disease itself and its related complications upon early diagnosis and onset of the disease, as well as illness-related help-seeking behaviors^{5,15,16}. Therefore, increasing the degree of interest and comprehension and obtaining accurate knowledge of dementia may induce appropriate illness-related behaviors for managing dementia and thereby help in the early diagnosis^{2,17,18}, treatment, and proper management after onset, and in coping with its complications^{9-12,19-21}.

The Health Insurance Review and Assessment Service in Korea announced that the number of patients who were treated for dementia are gradually increasing, and its duration of illness is relatively long compared to that of other diseases. Furthermore, it is an irreversible, progressive disease with a long period of morbidity and severe impairment. Thus, its medical costs could represent a huge socioeconomic burden in the future²². Therefore, prevention, early diagnosis, and

early treatment of dementia are very important, and proper management of patients with dementia and appropriate coping measures for dementia-related complications such as falls and bedsores are also required. By applying the health belief model to this disease, an individual's degree of interest and comprehension of dementia increases, and subsequently, the knowledge of dementia increases, which could be a significant way to reduce the socioeconomic costs associated with dementia. However, this study does have some limitations. First, because of the mixed study samples, recruitment of participants by systematic random sampling, and inclusion of volunteers who are more likely to be of generally lower socioeconomic status, the study population may have not been representative of the general population. Second, although the questionnaire was not validated, we conducted the study in a population that included younger elderly adults (aged >50 years), which will emphasize the importance of standardized education covering this younger age group. In addition, correlation of knowledge of dementia with degree of interest or comprehension for dementia was statistically significant; however, because its correlation coefficient was not high, there may be a limitation in generalizing these results.

Currently in Korea, early detection services for dementia and its related promotional and educational services are actively ongoing, mainly in regional health centers and dementia centers. Efforts are being made to increase the comprehension and interest of dementia through such promotional and educational services. However, currently there is no standardized and common evaluation questionnaire to assess the level of knowledge of dementia. Therefore, developing a standardized questionnaire that accurately determines the misconceptions and deficits in knowledge of dementia, followed by the application of promotional and educational programs, could help not only increase the interest and comprehension of dementia in the general population, but also reduce the medical costs of dementia by triggering illness-related behaviors.

Conflicts Of Interest Disclosures: The researchers claim no conflicts of interest.

Acknowledgement

This study was supported by Wonkwang University Research Grant in 2016.

REFERENCES

1. Korean Statistical Information Service. Aged population by province (Population items). 2014 [Internet]. Daejeon: Statistics Korea; 2016 [cited 2016 Feb 4]. Available from: <http://www.kosis.kr>.
2. Lee Y, Na DL, Cheong HK, Hong CH, Back JH, Kim J, et al. Lifestyle recommendations for dementia prevention: PASCAL. *J Korean Geriatr Soc* 2009;13:61-8.
3. Kim JA, Ko JK, Moon SN. Dementia knowledge and related factors in middle-aged adults. *J Korean Acad Adult Nurs* 2006;18:293-302.
4. Steckenrider JS. What people know about alzheimer's disease: a study of public knowledge. *Am J Alzheimers Dis Other Demen* 1993;8:6-14.
5. Werner P. Knowledge about symptoms of Alzheimer's disease: correlates and relationship to help-seeking behavior. *Int J Geriatr Psychiatry* 2003;18:1029-36.
6. Lee JY, Park S, Kim KW, Kwon JE, Park JH, Kim MD, et al. Differences in knowledge of dementia among older adults with normal cognition, mild cognitive impairment, and dementia: A representative nationwide sample of Korean elders. *Arch Gerontol Geriatr* 2016;66:82-8.
7. Bradford A, Kunik ME, Schulz P, Williams SP, Singh H. Missed and delayed diagnosis of dementia in primary care: prevalence and contributing factors. *Alzheimer Dis Assoc Disord* 2009;23:306-14.
8. Moise P, Schwarzingler M, Um MY, Dementia Expert's Group. Dementia care in 9 OECD countries: a comparative analysis. *OECD Health Working Papers* 13. Cedex: OECD; 2004.
9. Cattel C, Gambassi G, Sgadari A, Zuccalá G, Carbonin P, Bernabei R. Correlates of delayed referral for the diagnosis of dementia in an outpatient population. *J Gerontol A Biol Sci Med Sci* 2000;55:M98-102.
10. Freter S, Bergman H, Gold S, Chertkow H, Clarfield AM. Prevalence of potentially reversible dementias and actual reversibility in a memory clinic cohort. *CMAJ* 1998;159:657-62.
11. Small GW. Differential diagnosis and early detection of dementia. *Am J Geriatr Psychiatry* 1998;6(2 Suppl 1):S26-33.
12. van Reekum R, Simard M, Farcnik K. Diagnosis of dementia and treatment of Alzheimer's disease. Pharmacologic management of disease progression and cognitive impairment. *Can Fam Physician* 1999;45:945-52.
13. Leventhal H, Nerenz DR, Purse J. Illness representations and coping with health threats. In: Baun A, Taylor SE, Singer JE, editors. *Handbook of psychology and health: social psychological aspects of health*. Hillsdale (NJ): Earlbaum; 1984. p. 219-52.
14. Jorm AF, Korten AE, Jacomb PA, Christensen H, Rodgers B, Pollitt P. "Mental health literacy": a survey of the public's ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *Med J Aust* 1997;166:182-6.
15. Jorm AF. Mental health literacy. Public knowledge and beliefs about mental disorders. *Br J Psychiatry* 2000;177:396-401.
16. Wemer P. Lay person's recommendations about interventions for Alzheimer's disease: correlates and relationship to help-seeking behavior. *Am J Alzheimers Dis Other Demen* 2004;19:309-15.
17. Sheikh I, Ogden J. The role of knowledge and beliefs in help seeking behaviour for cancer: a quantitative and qualitative approach. *Patient Educ Couns* 1998;35:35-42.
18. de Nooijer J, Lechner L, de Vries H. Early detection of cancer: knowledge and behavior among Dutch adults. *Cancer Detect Prev* 2002;26:362-9.
19. Gupta A, Thomas P. Knowledge of stroke symptoms and risk factors among at-risk elderly patients in the UK. *Int J Clin Pract* 2002;56:634-7.
20. Lee SE, Lee HY, Diwan S. What do Korean American immigrants know about Alzheimer's disease (AD)? The impact of acculturation and exposure to the disease on AD knowledge. *Int J Geriatr Psychiatry* 2010;25:66-73.
21. Yardley C, Glover C, Allen-Mersh TG. Demographic factors associated with knowledge of colorectal cancer symptoms in a UK population-based survey. *Ann R Coll Surg Engl* 2000;82:205-9.
22. Health Insurance Review and Assessment Service. Total number of dementia patients and total medical cost for dementia in Korea [Internet]. Wonju: Health Insurance Review and Assessment Service; 2014 [cited 2015 Aug 10]. Available from: <http://www.hira.or.kr>.