Factors Affecting Intention to Undergo Dementia Screening

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ABSTRACT

Background In the present study, we focused on the main perception-related factors that affect people's intention to undergo dementia screening.

Methods The 344 subjects that answered all the survey questions were included in the analysis. Data on the following variables were collected: Basic attributes such as age, sex, years of education, and number of people in the household; degree of intention to undergo dementia screening; degree of awareness of the seriousness of the consequences of dementia; degree of awareness that the person may someday develop dementia; degree of awareness of their ability to prevent dementia; availability of social support; degree of knowledge of lifestyle habits that can prevent dementia; role in the community and purpose in life.

Results There were 110 people in the strong intention group and 234 people in the weak intention group. On univariate analysis, awareness of seriousness, awareness of morbidity, preventability, and knowledge of preventative lifestyle were statistically significant at a significance level of 5%, and these variables tended to be higher in the strong intention group as compared to that in the weak intention group. These were entered in the logistic regression analysis as the explanatory variables, and intention to undergo screening was entered as the objective variable. The results indicated that awareness of seriousness and knowledge of preventative lifestyle had significant influence on intention to undergo screening.

Conclusion The above results suggested that to increase the intention to undergo dementia screening, psychoeducation that encourages people to understand the serious consequences of dementia, efforts to spread awareness of the risk factors for dementia, and promotion of lifestyle factors that are preventative may be effective.

Key words dementia screening; intention to undergo dementia screening; predictive factor

Population aging is a phenomenon seen not only in Japan but also in other parts of the world. According to a United Nations report, people aged ≥ 60 years will account for an estimated one-fifth of the total world population by 2050.[1] Increased age is a risk factor for dementia.[2] Therefore, as the world's population ages, the number of people suffering from dementia is expected to rise. In Japan, it was reported the prevalence of dementia in the elderly population aged 65 years and older is 11.0.[3]

Although there is no definitive treatment for dementia, treatment with anti-dementia drugs such as donepezil tends to be more effective in the early stages of the disease. In addition, amyloid β-targeted curative therapy to prevent the progression of dementia of the Alzheimer type is being developed, and early diagnosis may become even more important for effective treatment. Because the progression of dementia leads to a decrease in the activities of daily living (ADL) and an increase in the need for nursing care, suffering and distress experienced by the patient, the burden on the family members, and significant economic burden on the healthcare system also increase. Early detection of dementia is thus a key public health imperative not only in Japan but also in other parts of the world.

Ability to detect mild dementia is necessary for its early detection; however, signs of mild dementia are likely to be overlooked in primary care settings.[4] Inadequate knowledge and awareness pertaining to dementia among family caregivers and healthcare professionals such as doctors is believed to be a key underlying reason. Thus, screening tests for mild dementia are being developed. The 7-Minute Screen was developed primarily as a screening tool for Alzheimer's disease (AD). It is a preliminary test of four cognitive functions; time orientation, memory, visuospatial cognition, and speech production. The tool has a reported sensitivity of 90% and a specificity of 92% for mild AD.[5] The Montreal Cognitive Assessment comprises tasks that assess various cognitive functions, including memory, language, executive function, working memory, visuospatial cognition, conceptual thinking, and orientation. It has a sensitivity of 90% and a specificity of 87% for mild cognitive

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Abbreviations: AD, Alzheimer's disease; ADL, activities of daily living

impairment.[6] The Takeda Three Colors Combination Test is a simple test of visuospatial cognition and recent memory that can be completed in 1 min. Its reported sensitivity and specificity for detection of mild AD are 85% and 87%, respectively.[7] In addition, it has a sensitivity of 76% for very mild AD.[8] The Memory Impairment Screen is reproduction task, which employs the use of four words. It has been reported to have a sensitivity of 87% and a specificity of 96% for mild AD.[9]

Although the development of effective screening tests for mild dementia continues, some municipalities in Japan are concurrently implementing dementia screening initiatives. However, the coverage of these screening initiatives has remained low. Galvin et al. reported that the self-perceived benefits of screening as well as people's sense of self-efficacy and their knowledge of dementia were associated with people's intention to undergo screening tests for dementia.[10] However, they did not observe any significant correlation between the people's perception of social support and their intention to be screened. The factors that affect people's intention to undergo dementia screening have not been sufficiently investigated in Japan. Beck reported that perception is a direct motivator that induces behavior.[11] Thus, elucidation of the perceptual factors that increase people's intention to undergo dementia screening can help devise interventions to modify those perceptions for improving the rate of dementia screening. Therefore, in the present study, we focused on the main perception-related factors that affect people's intention to undergo dementia screening.

SUBJECTS AND METHODS

Subjects

Members of the Hachinohe Medical Cooperative Association, Kagawa Medical Cooperative Association, and Kochi Medical Cooperative Association comprised the study population. Survey forms were sent by post between June 2015 and January 2016 to 500 randomly selected people registered as members of the above associations. Inclusion criteria were men and women aged ≥ 60 years. Exclusion criteria were as follows: i) known cases of dementia requiring regular visits to medical facilities; ii) those who underwent a memory loss test at a medical facility or elsewhere within the previous year and iii) those who had appointments to undergo memory loss testing in an outpatient setting or to undergo a comprehensive medical evaluation of the brain. Survey forms were returned by 431 people, who corresponded to a response rate of 86.2%. Of these, 344 people [74 men, 270 women; mean age (SD): 71.6 (± 6.7) years] had answered all the survey questions and therefore were included in the analysis.

Methods

Data on the following variables were collected: Basic attributes such as age, sex, years of education, and number of people in the household; degree of intention to undergo dementia screening (intention to undergo screening); degree of awareness of the seriousness of the consequences of dementia (awareness of seriousness); degree of awareness that the person may someday develop dementia (awareness of morbidity); degree of awareness of their ability to prevent dementia (preventability); availability of social support (includes three items: social support); degree of knowledge of lifestyle habits that can prevent dementia (knowledge of preventative lifestyle); role in the community and role and purpose in life (role/purpose). The survey questions are shown in Table 1. The survey was based on the Health Belief Model[12] and the method reported by Galvin et al.[10] The social support section was the only part that comprised 3 items. All other sections comprised 1 item each. Items from "intention to undergo screening" to "social support" were rated on a 4-step scale as follows: "No" (0 points), "Probably not" (1 point), "Perhaps" (2 points), and "Yes" (3 points). For "knowledge of preventative lifestyle," the choices were: "Not at all" (0 points), "Not very much" (1 point),

Table 1. Questions

1	If there is a dementia screening conducted in your community during this fiscal year, would you undergo screening?
2	If you developed dementia, do you think the consequences would be serious (would it be a problem)?
3	Do you think that you may develop dementia someday?
4	Do you think that it is possible to prevent dementia?
5	Is there someone who can help you when you have such a problem?
6	Is there someone who takes care of you when you are sick in bed?
7	Is there someone who will listen to you talking about your worries and problems?
8	Do you know about lifestyle habits that can help prevent dementia?
9	Do you feel you play a role in your family and community and a purpose for living?

Table 2. Differences between the strong intention and weak intention groups

	The strong intention group (N = 110)	The weak intention group (N = 234)	Statistic (P)
Age	71.4 ± 6.9	71.7 ± 6.7	t = 0.5 (P = 0.643)
Sex			
Male	18	56	χ^2 = 2.5 (P = 0.111)
Female	92	178	
Years of education	12.3 ± 2.1	12.6 ± 2.1	t = 1.3 (P = 0.189)
Household			
Living together	85	185	χ^2 = 0.1 (P = 0.707)
Solitary life	25	49	
Awareness of seriousness	3 (3-3)	3 (2-3)	P = 0.001
Awareness of morbidity	2 (2-3)	2 (2-2)	P = 0.001
Preventability	2 (2-2)	2 (2-2)	P = 0.015
Social support	6 (6-8)	6 (6-7)	P = 0.311
Knowledge of preventative lifestyle	2 (2-3)	2 (2-2)	P = 0.011
Role/purpose	2 (2-3)	2 (2-3)	P = 0.624

"Somewhat" (2 points), and "Very well" (3 points). For "role/purpose," the choices were "Not at all" (0 points), "Not very much" (1 point), "Somewhat" (2 points), and "Very much" (3 points).

Statistical analysis

For the items related to intention to undergo screening, those who answered "Yes" were placed in the strong intention to undergo screening (strong intention) group and those who answered "No," "Probably not," and "Perhaps" were placed in the weak intention to undergo screening (weak intention) group. We used the *t*-test, the chi-square test, and the Mann-Whitney *U* test to assess differences between the strong intention and weak intention groups with respect to age, sex, and years of education of the respondent, number of people in the household, awareness of seriousness, awareness of morbidity, preventability, social support, knowledge of preventative lifestyle, and role/purpose. Variables that showed significant differences ($P < 0.05$) in the univariate analysis were entered as explanatory variables in the logistic regression model with the intention to undergo screening as the objective variable. For variables that showed significant differences, responses of 0 to 2 points were designated as 0 and those of 3 points were designated as 1 as a dummy variable. Data analysis was performed using the IBM SPSS (version 22.0) software (IBM, Armonk, NY).

Ethical considerations

In addition to a written description of the purpose of this study, written explanations were provided about the fact that the data collected through the course of this study will be rendered anonymous prior to analysis, that only those who provide consent would be registered as subjects in the study, and that there will be no negative repercussions of either providing consent to participate or of refusal to provide consent. Those who returned completed survey forms were deemed to have consented to participate in the study. This study was conducted with the approval of the Institutional Review Board at the Tottori University Faculty of Medicine (No. 1601A135).

RESULTS

There were 110 people (32%) in the strong intention group and 234 people (68%) in the weak intention group. Attributes of the study population disaggregated by study group are shown in Table 2. On univariate analysis, awareness of seriousness, awareness of morbidity, preventability, and knowledge of preventative lifestyle were statistically significant at a significance level of 5%, and these variables tended to be higher in the strong intention group as compared to that in the weak intention group.

These were entered in the logistic regression analysis as the explanatory variables, and intention to undergo screening was entered as the objective variable. The results indicated that awareness of seriousness [odds ratio (OR): 5.7, 95% confidence interval (CI): 3.0–11.0] and knowledge of preventative lifestyle (OR: 2.0, 95% CI: 1.2–3.4) had significant influence on intention to undergo screening.

DISCUSSION

Based on the results of this study, 32% of the total number of subjects showed a strong intention to undergo dementia screening. Because no previous studies have investigated the percentage of people who intend to undergo dementia screening, it is impossible to conduct

a relative assessment of this result. However, we believe this is not a high figure; our study calls for further research into possible ways to increase the dementia screening rate.

Univariate analysis indicated that people who had a strong intention to undergo dementia screening were more likely to perceive dementia as a serious illness and to believe themselves to be at a risk of developing dementia in future as compared to the people who showed a weak intention to undergo dementia screening. The Health Belief Model emphasizes that subjectively perceived benefits associated with a sense of threat of disease and the related behaviors instigate preventative health behaviors.[12] The subjective threat of disease is determined by the subjective possibility of morbidity expressed as "a personal estimation regarding the possibility of developing a disease" and a subjective sense of the severity of the disease expressed as "an estimation of the degree to which participation in social activities will be negatively affected as a result of the disease." The fact that those with a stronger intention to undergo screening showed an increased awareness of the severity of the disease and possibility of morbidity than those with a weaker intention to undergo screening is supported by the theory presented by Stretcher & Rosenstock.[12] Meanwhile, those with a stronger intention to undergo screening were more likely to believe that dementia could be prevented than those who had a weaker intention to undergo screening. According to the Health Belief Model, higher level of awareness of the benefits of preventative health behaviors is more likely to motivate people for engaging in preventative health behaviors. Awareness of the benefit of preventative health behaviors is influenced by a subjective sense of expectation involved in benefits expressed as "what degree of benefit can I anticipate by engaging in a certain behavior that will allow me to avoid developing a disease?" Perception of preventability expressed as "dementia can be prevented" is an indication of subjective benefit, and we believe it is for this reason that those with a strong intention to undergo screening had higher scores than those with a weak intention to undergo screening.

Logistic regression analysis indicated that the intention to undergo dementia screening was significantly related to awareness of the seriousness of the disease and knowledge of preventative lifestyle. Those who perceived dementia as a disease with serious consequences had a 6-fold stronger intention to undergo dementia screening than those who were not as strongly convinced about the serious consequences. The results of this study also indicated that awareness of morbidity, which showed a significant association on univariate analysis, did not affect the intention to undergo dementia screening. Stretcher & Rosenstock reported that awareness of the seriousness of the disease was a more powerful predictive factor for subsequent behavior modification than awareness of the morbidity of any given disease. In the present study also the awareness of the seriousness of a disease appeared to have a greater influence on preventative health behavior as compared to merely the awareness of the morbidity owing to dementia. In addition, in the present study, those who were well aware of the lifestyle habits that could prevent dementia had a 2-fold stronger intention to undergo dementia screening than those who were not so well aware of these lifestyle habits. According to Bandura's social learning model, the expectation that a certain behavior will lead to a desired result increases the motivation to engage in the behavior in question.[13] Thus, knowledge of lifestyle habits that can prevent dementia induces an expectation of a desired result, i.e., prevention of dementia is likely to affect the intention to undergo dementia screening. The result that awareness of social support does not affect the intention to undergo dementia screening is consistent with findings reported by Galvin et al.[10] Honda[14] investigated factors that influence the participation of Japanese Americans in colorectal cancer screening. Among the various forms of social support, emotional support was reported to be a particularly important factor associated with increased participation in colorectal cancer screening. The results of the present study contradict those reported by Honda. In Japan, there are many people who consider dementia as a "disease that causes trouble to others," and this may be the reason why social support did not appear to affect the intention to undergo dementia screening.

The above results suggested that to increase the intention to undergo dementia screening, psychoeducation that encourages people to understand the serious consequences of dementia, efforts to spread awareness of the risk factors for dementia, and promotion of lifestyle factors that are preventative may be effective. Empirical investigation of how to increase awareness of the seriousness of dementia through these efforts and whether increasing people's knowledge of preventative habits actually increases the number of people who undergo dementia screening are required in future.

Finally, some limitations of the present study are acknowledged. The survey was administered to people living in three different regions. Inter-regional differences with respect to the awareness of dementia-related issues may have influenced our results. Moreover, survey respondents who were members of health care cooperatives are likely to be more interested in health than the general population; therefore, the findings may

not be entirely representative of the general population. To eliminate such regional and selection biases, it is necessary to recruit subjects more widely and to examine the factors that affect the intention to undergo dementia screening after adjusting for potential differences in the degree of awareness of dementia in the region.

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