Recent Trend of Research on Dementia : a Report on the Alzheimer's Association International Conference 2016

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Introduction

We participated in the Alzheimer's Association International Conference 2016 (AAIC 2016) held during July 22-28, 2016 at Toronto, Ontario, Canada. We were able to learn about the trend of global dementia research through presentations by researchers working on dementia, interaction with researchers from around the world, and feedback from participants for our poster presentation. The following report describes the contents of AAIC 2016.

About AAIC and the Alzheimer's Association

AAIC is the world's largest gathering of researchers from around the world focused on Alzheimer's disease and other dementias. As a part of the Alzheimer's Association's research program, AAIC serves as a catalyst for generating new knowledge about dementia and fostering a vital, collegial research community.

The Alzheimer's Association is the leading voluntary health organization in the care and support of patients with Alzheimer's disease and research on the disease. Our mission is to eliminate Alzheimer's disease through the advancement of research, provide enhanced care and support for all affected, and reduce the risk of dementia through the promotion of brain health. Our vision is a world without Alzheimer's disease.

New reports from AAIC 2016

New research results presented at AAIC 2016 covered a wide range of studies on Alzheimer's disease and dementia. The data demonstrate a diversity of findings, covering advances in early detection, evidence regarding protection from the disease, and clinical trial data.

AAIC is the premier annual conference for the presentation and discussion of the latest research on Alzheimer's disease and dementia. For bringing the world closer to breakthroughs in dementia science, AAIC 2016 brought together more than 5,000 leading experts and researchers from more than 70 countries worldwide and featured more than 2,200 scientific presentations.

"It is the goal of the Alzheimer's Association and AAIC, the world's largest forum for the dementia research community, to report on and reflect the state-of-the-art research in all aspects of the Alzheimer's disease and dementia. Research represents hope, and it is our goal to lead the way to a world without Alzheimer's disease," said Maria C. Carrillo, PhD, Alzheimer's Association chief science officer. "This is especially important as the global dementia epidemic continues to grow, affecting every society, race, sex, and socioeconomic level."

Alzheimer's disease is the most common form of dementia, a general term for the loss of memory and other cognitive abilities serious enough to interfere with daily life. Alzheimer's disease accounts for 60%-80% of dementia cases. According to Alzheimer's Association's 2016 Alzheimer's Disease Facts and Figures, among the estimated 5.4 million Americans with Alzheimer's disease, 5.2 million people are aged ≧ 65 years, and approximately 200,000 individuals are aged <65 years (younger-onset Alzheimer's disease).

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Table 1. Topics of AAIC 2016

- Results of new clinical trials
- The protective effect of complex work and formal education on Alzheimer's disease onset
- Advances in early detection of dementia
- New insights into how Alzheimer's disease affects men and women
- Billions in Medicare cost savings possible with better care

New Alzheimer's Therapy Clinical Trial Results

Important clinical trial results for Alzheimer's disease and dementia were reported at AAIC, including the first completed Phase 3 trial of an anti-tau drug in for Alzheimer's disease treatment. In a clinical trial of TauRx therapeutics, the drug failed to demonstrate a treatment benefit in the full study population. In a small subgroup of the study population that received stable anhydrous reduced form of methylthioninium chloride (LMTX®) as a monotherapy, there was a statistically significant benefit on cognitive and functional outcomes, and slowing of brain atrophy. LMTX® is thought to reduce the accumulation of the tau protein, which normally stabilizes neurons, into potentially toxic tangles. "It is a significant event in the history of Alzheimer's disease and dementia research that this Phase 3 anti-tau trial has been completed and that the results have been reported at the Alzheimer's Association International Conference," said Maria C. Carrillo. "In Alzheimer's disease, the most likely scenario for successful treatment in the future is addressing the disease from multiple angles. Having a drug that targets tau complete a Phase 3 trial is a very hopeful sign." Carrillo said, "The results of this Phase 3 trial are interesting but also complex, and it will take time for the field to determine what they mean. Additional research is needed to help us understand these findings so that more and better therapies for Alzheimer's disease can be created and effectively tested."

Cognitive Training may Protect Against the Onset of Dementia

A group of researchers funded by the National Institutes of Health found that speed-of-processing training may reduce the risk of developing cognitive decline or dementia over time. The Advanced Cognitive Training for Independent and Vital Elderly study examined the impact of particular types of cognitive training on healthy adults over a 10-year period. A total of 2,785 participants at six trial sites were divided into the following four groups: 1) memory training, 2) reasoning training, 3) computerized speed-of-processing training, and 4) a control group. Speed-of-processing training was the only one that showed a statistically significant impact on cognitive decline. The researchers observed a 33% reduction in risk of developing dementia over the 10-year period. Scientists say that this is the first time a cognitive training intervention has been shown to protect against dementia in a large randomized controlled trial.

Formal Education and Complex Work may Reduce the Negative Effects of Bad Diet and Cerebrovascular Disease on Cognition

Data presented at AAIC 2016 suggest that people whose work requires complex thinking or activities are better able to withstand the onset of Alzheimer's disease and that working with people, rather than data or physical things, was the main reason for the protective effect. Three additional studies also presented at AAIC 2016 added to the current evidence that modifiable risk factors can

help build resilience against age-related cognitive decline and dementia. According to these reports, formal education, complex work, and newly-identified genes may increase resilience, even in people at the highest risk of the disease, such as those consuming unhealthy diets or those who have cerebrovascular disease. In addition, factors affecting resilience may vary between men and women.

Smell Tests Bring Us One Step Closer to Detection of Memory Decline and Dementia

The potential of odor identification testing to detect cognitive impairment and Alzheimer's disease at an early stage was bolstered by new evidence from two studies presented at AAIC 2016. Researchers evaluated changes in odor identification as an early predictor of cognitive decline, or of the transition to dementia, and compared it to two established biological markers for cognitive decline and dementia brain amyloid PET imaging and thickness of the brain's cortex in areas relevant to memory. Findings showed that odor identification impairment was equally good or better than entorhinal cortical thickness, but not as good as amyloid PET scans, at detecting cognitive decline and dementia. However, PET scans are much more costly and challenging to administer than smell tests. With further research and validation, smell test may prove useful as an early screening tool for those at a high dementia risk.

Proposed New Patient Status: Mild Behavioral Impairment

Researchers presenting at AAIC 2016 in Toronto introduced and described a new condition or patient status, known as Mild Behavioral Impairment (MBI) that may be a forerunner of neurodegeneration and progression to dementia. They also proposed a new MBI checklist designed to be administered by physicians. It evaluates five categories of behavioral symptoms, which may eventually help clinicians capture changes in behavior that signal the beginning of neurodegeneration.

The proposed new checklist has the potential to represent a paradigm shift in formal neurodegeneration testing further from the sole focus on the memory to also encompass behavior. This could aid doctors in reaching an accurate diagnosis earlier and more efficiently. The checklist was developed by an expert group participating in the NPS Professional Interest Area under the auspices of the Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment.

Men Receive Dementia-related Misdiagnosis More Often than Women

Among the estimated 5.2 million Americans aged $\geqq$ 65 years with Alzheimer's disease, nearly two-thirds (3.3 million) are women. However, new data from AAIC 2016 suggests that a high number of men are not accurately diagnosed during their lifetime. Researchers from the Mayo Clinic in Jacksonville, Florida examined records of more than 1,600 individuals from the State of Florida brain bank. They found that women with Alzheimer's disease in the study had lower education and older age at diagnosis and death; on the other hand, men in the study had a lower age of onset, shorter disease duration, and more commonly had an atypical clinical diagnosis (for example, corticobasal degeneration or aphasia rather than Alzheimer's disease).

Australian Researchers Demonstrate How to Reduce Systematic Sedation in Dementia Care

Antipsychotic medications can blunted affect and cause sedation, In addition, such medications are associated with serious safety concerns in people with dementia, such as increasing risk of falls and death. Despite this, more than 25% of patients in residential care facilities in the USA receive

antipsychotic medications to treat the behavioral and psychological symptoms of dementia (BPSD). At AAIC 2016, Australian researchers presented results from an innovative project where they dramatically reduced the use of antipsychotic medication to treat BPSD, successfully eliminating regular use from the treatment plan in 75% of study participants after 6 months. Deprescribing was primarily achieved through training long-term care facility nurses in non-pharmacological and person-centered approaches for managing BPSD. According to the Alzheimer's Association, using antipsychotic medication to treat dementia symptoms should be the last resort. Challenging behaviors can be greatly reduced and the need for drugs can be significantly decreased with proper care and attention.

Early Treatment can Reduce Costs and Mortality

Researchers presenting at AAIC 2016 reported that there is an economic benefit of ensuring that people diagnosed with Alzheimer's disease receive the current standard of care, including the indicated medications. The study showed that patients undergoing appropriate treatment represent a lower cost to the healthcare system and had lower mortality rates during the study compared with those who do not receive treatment for Alzheimer's disease.

Avoiding Hospitalizations of Patients with Alzheimer's Disease Costs Medicare $2.6 Billion

At AAIC 2016, researchers from Boston and New York reported that more than 369,000 hospital admissions of patients with Alzheimer's disease in 2013 in USA were potentially avoidable; these preventable hospital visits cost Medicare $2.6 billion. A majority of people with Alzheimer's disease are older adults and often have multiple health problems, such as heart disease and diabetes, which, require regular and specific medical management. Because of its impact on memory, thinking, and behavior, Alzheimer's disease can significantly complicate management of other diseases, putting these individuals with dementia at higher risk of hospitalizations that may be preventable with proactive care. According to the Alzheimer's Association, the study suggests that management of co-existing diseases remains poor among many individuals with Alzheimer's disease or other dementias. High-quality health care can potentially prevent the need for these expensive hospitalizations.

Our Study

We are interested in the BPSD nursing care among older adults with dementia in gerontological nursing. The title of our poster is "BPSD nursing care in Japan: A review of the literature." We explain our study as follows:

The way elderly people with dementia are viewed in Japan changed in 2004. Since that time, nursing practices have emphasized greater respect for the dignity of the individual. Various approaches and methods from western countries have been introduced and applied to nursing for people who have behavioral disorders centered on BPSD, and these methods are being used on a trial basis to identify which of these approaches works best. There is currently little information and guidelines for the nursing care of older adults with dementia and BPSD who are hospitalized or live in nursing homes. Therefore, we conducted a review of the literature with a general view of nursing for older adults with dementia and BPSD.

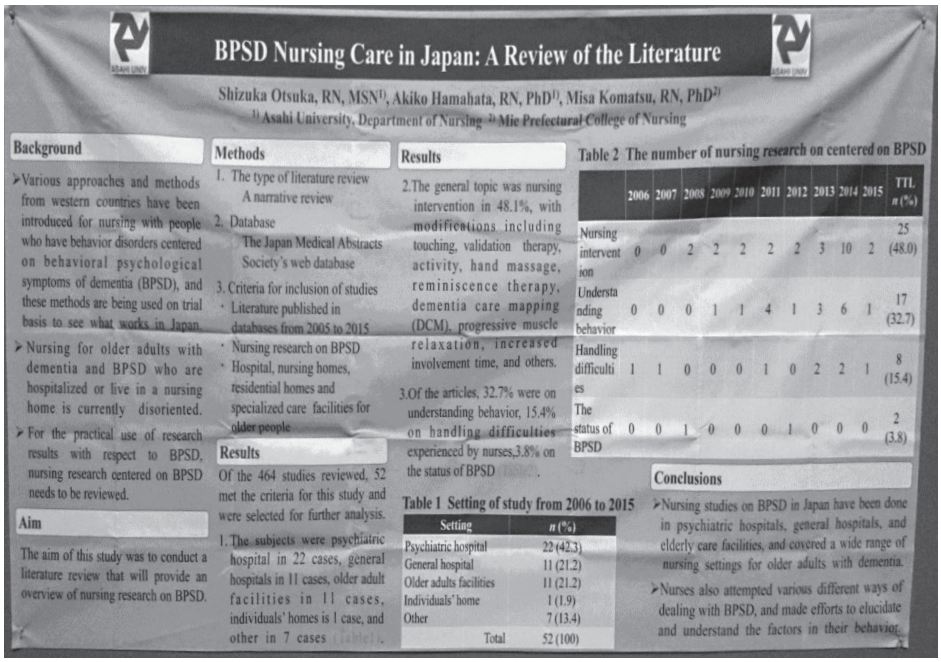
A narrative review was chosen as the approach, using an electronic search ICHUSHI (Japan Medical Abstracts Society), which is Japan's biggest medical literature database. The search was limited to articles published between 2005 and 2015. The full text of selected abstracts was ob-

tained from the journal in which the article was published. The literature on nursing was critically reviewed, and results were presented as a narrative.

As a result of this review, we evaluated 56 articles, including psychiatric hospitals in 24 cases, general hospitals in 12 cases, older adult facilities in 11 cases, individuals' homes in two cases, and others in seven cases. The general topic was nursing activities (39.3%), with modifications including touching, validation therapy, activity, hand massage, reminiscence therapy, dementia care mapping, progressive muscle relaxation, increased involvement time, and others. Of the articles, 14.3% were on the status of BPSD, 12.5% on inciting factors, 10.7% on understanding behavior, 8.9% on handling differences between professions, 7.1% on family support, and 7.1% on handling difficulties experienced by nurses.

Nursing studies on BPSD in Japan have been conducted in psychiatric hospitals, general hospitals, and elderly care facilities. Studies covered a wide range of nursing settings for older adults with dementia. Nurses also attempted various different ways of dealing with BPSD and made efforts to elucidate and understand the factors in their behavior.

Figure 1. Our poster



Conclusion

It was meaningful for us to learn about the experiences and research outcomes from dementia specialists, particularly regarding the recent trends in global dementia research presented at AAIC 2016. In addition, we were able to discuss our study with many researchers and scholars. In AAIC 2016, research results on the cause of Alzheimer's disease, prevention, and medication therapy were presented focusing on recent trends. These will lead to the investigation of dementia and the development of therapeutic tools. Further, all the latest topics are results of research performed in the USA and other countries. However, because the aging population in Japan has been continuously increasing in the past decades, the number of older adults with dementia has also been increasing. We wish to make the most of what we learned in AAIC 2016 and apply these concepts to nursing care, education, and research in Japan.

AAIC 2017 will be held in London, England from July 16 to 20, 2017.