



Published in final edited form as:

*J Nurs Educ Pract.* 2018 November ; 8(11): 83–91. doi:10.5430/jnep.v8n11p83.

## Nursing students' knowledge about Alzheimer's disease

Lisa Kirk Wiese\*, Christine Lynn Williams

C.E. Lynn College of Nursing, Florida Atlantic University, Boca Raton, Florida, United States

### Abstract

**Objective:** Every 66 seconds a U.S. resident develops Alzheimer's disease (AD). Future nurses will be caring for the rapidly escalating number of adults turning 65, yet information regarding nursing students' knowledge about the age-related disease of Alzheimer's is limited. The purpose of this study was to examine 102 Florida baccalaureate nursing students' basic and advanced AD knowledge.

**Methods:** A descriptive design using two AD knowledge measures and analysis using paired samples *t*-test were employed.

**Results:** Although the setting was a region of the U.S. with the highest percentage of older adults, knowledge deficits regarding age-related Alzheimer's disease were striking. Students' basic knowledge was significantly higher than their advanced AD knowledge ( $t(101) = 2.28, p = .027$ ). Only 31% of students identified that high cholesterol may increase risk. Just 20% of students correctly answered that exercise does not prevent AD. About 25% correctly responded that the average life expectancy after the onset of AD is 6–12 years. Only 2% of nursing students correctly identified that persons with AD experience stress from disease-related symptoms. Overall, less than 50% of students correctly answered any item on the measure designed for use among health care providers.

**Conclusions:** To better prepare nursing students to care for the increasing numbers of older adults facing risk of AD, updated curricula targeting dementia-related illnesses are essential. Information is offered regarding current state of the science resources of benefit to faculty, students, and practicing nurses, such as experiential learning and Hartford Institute of Geriatric Nursing collaborative programs.

### Keywords

Alzheimer's disease knowledge; Nursing students; Educational resources; Interprofessional education

---

\*Correspondence: Lisa Kirk Wiese; lwiese@health.fau.edu; Address: C.E. Lynn College of Nursing, Florida Atlantic University, Boca Raton, Florida, United States.

#### CONFLICTS OF INTEREST DISCLOSURE

The authors declare that they have no competing interests.

## 1. INTRODUCTION

Every 66 seconds someone in the United States develops Alzheimer's disease (AD).<sup>[1]</sup> Over 5 million people are currently diagnosed, and up to 50% may have a missed diagnosis.<sup>[2]</sup> Projections are that by 2050, the number of persons with AD could reach 16 million. These projections are heightened globally where every 3 seconds someone develops AD, but only 1 in 4 is diagnosed.<sup>[3]</sup> AD kills more people than breast or prostate cancer combined. Yet, when 102 nursing students at a four-year Commission on Collegiate Nursing Education (CCNE) institution responded to surveys regarding knowledge and perceptions about AD, they demonstrated significant knowledge gaps. This occurred in the state of Florida (FL), with the highest percentage of older adults in the country. Students are taught about Alzheimer's disease and related dementias (ADRD) in both their chronic care (second year) and adult advanced medical-surgical courses (final year). This raised the question: "Are we adequately preparing our students to care for the increasing magnitude of persons with AD 'silver tsunami'?"

The purpose of this research was to investigate BSN students' basic and advanced AD knowledge. Resources for meeting gaps in knowledge using current, evidence-based AD teaching/learning are offered. Strengthening current course content to include these resources can help to address the identified dementia knowledge gaps.

### Literature review

Current investigations into nursing students' knowledge regarding Alzheimer's disease are limited. The Alzheimer's Disease Knowledge Scale (ADKS) Survey by Carpenter et al.<sup>[4]</sup> is an AD knowledge measure that has been tested among healthcare professionals, formal caregivers of persons with Alzheimer's disease (PWAD), and some student cohorts, most often in other countries: Australia,<sup>[5]</sup> China,<sup>[6]</sup> Malta,<sup>[7]</sup> and India,<sup>[8]</sup> with favorable results. For example, Australian researchers found that for nurses in practice, dementia-specific education, not personal or professional experience in caring for persons with dementia, significantly contributed to dementia knowledge.<sup>[5]</sup> The importance of identifying knowledge gaps prior to education programs was another finding in their cross-sectional study of 360 nurses and staff completing an online version of the ADKS. Further-more, across all positions including security, administration, housekeeping, and transport, and licensed personnel, knowledge was lower regarding (1) the risk for and (2) progression of dementia. Although there was slight improvement in scores based on personal (.7) or professional (.8) dementia care-giving status, there was minimal variation in total ADKS scores across staff roles: The mean score was 23.9 (SD = 2.84) for nurses, 22.11 (SD = 3.41) for support staff, and 23.8 (SD = 3.69) for allied health staff. There was slight improvement in scores based on personal (.7) or professional (.8) dementia care-giving status.

Kimzey et al.<sup>[9]</sup> investigated American nursing students' knowledge about ADRD. They compared the effect of clinical experience, an online learning dementia specific module, and no formal learning program, on 94 nursing students' AD knowledge and perceptions. A convergent mixed method pre-and post-test design using the ADKS and Dementia Attitudes Scale (2015) revealed that students' knowledge and attitudes improved most

through experiential learning, and that one of the most often voiced student concerns was their gap in basic AD knowledge.

The study presented here is important as it brings awareness to the need to provide up-to-date and learning-based AD curricula for nursing students that will positively impact their knowledge. Newly graduated nurses need to be prepared to care for their patients and families adequately using AD knowledge that includes the current state of the science about AD detection, delay, and treatment. If gaps in nursing student knowledge regarding AD are not addressed, patients and families are likely to be less informed and proactive management will be delayed, deleteriously affecting patient/family outcomes.

## 2. METHOD

This was a descriptive quantitative study of 102 undergraduate baccalaureate nursing students' (2016 and 2017 Spring graduating classes) AD knowledge using the recently developed Basic Knowledge of Alzheimer's disease (BKAD) survey (authors) and the ADKS by Carpenter et al.<sup>[4]</sup> Sociodemographic data, and Flesch Kincaid readability scales, Cronbach's alpha, and item and total score analyses were conducted in answering the research question "What do undergraduate BSN students know about AD?" Protection of human subjects was maintained per the guidelines and approval of the authors' university Institutional Review Board. Permission was obtained to use the measures.

### 2.1 Setting and sample

Students attending a FL public university in their last semester of a traditional undergraduate BSN track (admitted in their junior year into the program) participated in this study. The Palm Beach County setting included a diverse community. Over 23% of the population are > 65, and African Americans comprise 19.4%, while Hispanics 21.5%.<sup>[10]</sup> Over thirty percent are speakers of a non-English language, as compared to the national average of 21.5%, including 4.8% Creole speakers, which is unusually high. This diversity was represented in the university's nursing student body of 43% African American, 13% Hispanic, and 4% Asian. At the time this study was conducted, the students learned about mild cognitive impairment and basic dementia care and completed 96 clinical hours in a chronic care facility (one day was in simulation) as juniors. In the senior year, students learned about more complex ADRD care, and were continually exposed to chronic care in an advanced medical-surgical clinical and practicum equaling 150 hours (most patients were > 65 years of age due to the setting population).

### 2.2 Alzheimer's disease knowledge instruments

The ADKS by Carpenter et al.<sup>[4]</sup> consists of 30 true/false items with the total score being the number answered correctly. Stability of the ADKS was measured in previous studies by test-retest correlation = .81. The initial Cronbach's alpha to indicate internal consistency was low, but acceptable for a new measure<sup>[11]</sup> with a Cronbach's  $\alpha = .71$ . More recently, in a sample of psychologists, the ADKS Cronbach's  $\alpha = 0.98$ .<sup>[12]</sup> The ADKS survey addresses seven content domains according to the authors: risk factors (items 2, 13, 18, 25, 26 and 27), symptoms (items 19, 22, 23), assessment and diagnosis (items 4, 10, 20 and 21), treatment

and management (items 9, 12, 24 and 29), and 30), care giving (items 5, 6, 7, 15 and 16), course of the disease (items 3, 8, 14 and 17), and life impact (items 1, 11 and 28).

The BKAD 32-item survey demonstrated good internal consistency (Cronbach's  $\alpha = .81$ ) after several phases of testing with 753 participants in five different rural areas (authors). The BKAD items are based on several sources, including sentinel and current AD measures, the state of the science, and the Alzheimer's Association list of ten warning signs.<sup>[1]</sup> The BKAD addresses subjects' knowledge of early detection and screening that is not addressed in the ADKS. These factors include the time required and new findings regarding AD risk related to vision changes, sleep disorders, diabetes, and cardiovascular disease. Also new in the BKAD is the item regarding cognitive screening that is now a required component of the Patient Protection and Affordable Care Act<sup>[13]</sup> mandated annual wellness visit, which is free of charge to patients.

Although the ADKS includes more symptom items, the BKAD uniquely includes questions regarding recent topics of AD-associated health topics: diabetes, stroke, head injury, and vision and sleep disturbances. The ADKS addresses the key subjects of nursing home admission for PWAD, and instructions for interacting with PWAD, whereas the BKAD does not. The BKAD asks the participant to consider if earlier detection would result in better care, which addresses their perceptions regarding screening. See Table 1 for the BKAD and ADKS item comparisons.

### 3. RESULTS

#### 3.1 Sociodemographics

This was a culturally diverse sample with a range in age and education and country of origin. Sixty-two percent were White, 11.5% African-American, 9.6% Afro Caribbean, 7.7% Hispanic American, 5.8% Asian American, and 3.8% "Other". Almost half (25) of the students were native Floridians, while 11 were from other US states. One student each was from Azerbaijan, Brazil, Caribbean, Dubai, Haiti, Ireland, Macedonia, Malaysia, Poland, and Russia. In addition to their student roles, students also worked as certified nursing assistants, pharmaceutical technician, medical assistant, camp counselor, retail, clerk of court, or in child care, restaurant, etc. Eight students were married, and forty-two were single, with one separated and one divorced. There were no significant relationships between the sociodemographic characteristics and BKAD or ADKS knowledge scores.

#### 3.2 Knowledge scores

The BKAD total scores ( $M = 17.2$ ,  $SD = 2.58$ ) were significantly higher than the ADKS total scores ( $M = 16.7$ ,  $SD = 2.6$ ), with a paired samples  $t$ -test of  $t(101) = 2.28$ ,  $p = .027$ .

**3.2.1 The ADKS**—The nursing students' responses in this pilot study to test the BKAD were similar to several from Carpenter et al.<sup>[4]</sup> pilot study to test the ADKS. For example, in both groups, the most correctly answered item (51%) was "Alzheimer's disease can be cured". The survey item with the lowest percent correct (20%) in both groups was "It has been scientifically proven that mental exercise can prevent a person from getting Alzheimer's disease." There were low scores across both scales in regards to prognosis of

the disease, with 43%–51% agreeing that in rare cases, recovery is possible, and believing that AD could be cured. Scores for the three questions addressing depression were answered correctly more often by the nursing students (40th percentile) than in Carpenter et al.'s<sup>[4]</sup> report; depression symptoms can be mistaken for AD, PWD can benefit from psychotherapy for anxiety and depression, and symptoms of depression can be mistaken for AD.

The nursing students in this study scored lower on items regarding caregivers, such as: caregivers should “take over” care of the PWD immediately upon onset of symptoms (37%) and caregivers should inform the PWD that they are repeating statements (31%). The nursing students also scored low on the item a medical examination might reveal other health problems that are causing the agitation (38%). Students were uninformed regarding AD risk, as seen in the questions regarding cholesterol increasing risk (31%) or poor nutrition increasing symptoms (50%). Not quite half (47%) answered the item correctly regarding the practice of giving one-step instructions to PWD. Overall, the nursing students' percentages of ADKS items answered correctly in this study were quite low, with no items scoring greater than 51% (see Table 2).

**3.2.2 The BKAD**—Over 80% of the students answered 16 of the 20 items correctly (see Table 3). The four items answered correctly by less than 80% (77, 62%), but still higher overall than the ADKS responses (20, 51%) were: There is nothing that can be done to reduce the risk of AD; People with AD always become violent; There may be a link between serious head injury and AD; People with AD are not the people they once were, and People with diabetes, high blood pressure, or stroke are at greater risk for AD. However, only over 90% answered a total of five BKAD items correctly.

## 4. DISCUSSION

Students scored higher on the basic knowledge survey (BKAD) than the ADKS. The ADKS is geared toward health professionals and caregivers, and the BKAD survey is geared toward underserved populations. The BKAD reading level (5.5) is less than the ADKS (10.1), and although many items addressed the same topics, they were worded differently. Table 1 shows the comparison between items of the BKAD and ADKS, and Table 3 shows the percent answered correctly for each measure. Knowledge deficits were apparent in both surveys. One item on the BKAD was of particular concern to the nurse researchers. Only two percent of nursing students correctly answered. The symptoms of AD do not cause any stress to the person who has it. This result presents a definite call for faculty to teach students about the person-hood of those with AD, despite outward symptoms or disease severity.

For providers, the ADKS is useful and challenging; it functions at a higher level and includes topics that are important for providers to know, such as the care, communication with, and management of PWAD.

As we move further into the “Alzheimer’s Era”, where 10,000 baby boomers newly diagnosed with AD are entering the healthcare system on a daily basis,<sup>[14]</sup> it is vital that faculty empower emerging nurses with a solid foundation for caring for PWAD. Nurses are the providers who most often interact with families to provide direct care and teaching,

and therefore nurses need to be educated about current research findings. This knowledge is also important for new nurses themselves, as their generation may have the benefit of better treatment. Findings emphasized through the National Alzheimer's Plan to Act (2012, 2014) are demonstrating that healthier behaviors such as exercise and healthier eating,<sup>[15]</sup> improved management of diabetes<sup>[16,17]</sup> and hypertension<sup>[18]</sup> may delay the onset of AD.

This research was limited by a singular geographic location and curriculum. It would be helpful to examine varied curricula, cultures, and student cohorts to identify trends in nursing education regarding ADRD. The cultural diversity of the student population was a strength of the study.

#### 4.1 Education implications

We suggest that graduating or newly graduated nursing students, as well as seasoned RNs, need more comprehensive and up-to-date education regarding the signs, symptoms, treatment, delay, and risk of AD. Specific courses geared toward care of older adults in nursing and medical student programs showed very favorable results in pretest/post-test designs.<sup>[19,20]</sup>

Increased knowledge does not necessarily transfer to practice, but dementia-specific knowledge can contribute to change.<sup>[5]</sup> Dementia-specific education was recommended by Smyth et al.<sup>[5]</sup> in all institutional healthcare settings. Dementia-specific training should be included in nursing curricula. Dementia care skills can be reinforced in practice settings, similar to mandatory in-services and competency testing that are required in accredited acute-care settings. Education should include all staff and be designed to fit the role.

Smyth et al.<sup>[5]</sup> also called for research evaluating types of education needed to improve attitudes, confidence, and care outcomes. With families of patients becoming more comfortable in asking providers questions regarding this disease<sup>[1]</sup> it is important that nurses, as the "front line" providers, be well equipped to answer questions accurately. In addition to the helpful websites from the Alzheimer's Association, there are numerous nursing education programs available through professional continuing education websites. Various types of dementia-specific education and awareness programs have recently been piloted.

#### 4.2 Educational resources

The following resources should be incorporated when designing and delivering curricula for care of older adults:

1. [ConsultGeri.org](https://www.consultgeri.org) is a Hartford Nursing Institute for Geriatric Nursing resource that provides numerous different care protocols through their "Try This: Best Practices in Nursing Care of Older Adults" program. This includes user-friendly step-by-step guides for conducting a cognitive assessment using The Mini-Cog<sup>TM</sup><sup>[21,22]</sup> or Montreal Cognitive Assessment, known as the MOCA.<sup>[23]</sup> The 2014 Alzheimer's Facts and Figures Report calls for more nurses to be trained in conducting cognitive screening.<sup>[24]</sup> It is critically important to teach students to conduct a brief cognitive assessment so that when they enter the workforce

they can facilitate earlier dementia detection. The steps in conducting a cognitive assessment are provided in an article outlining cognitive assessment steps for nurses to follow (authors).

2. The National Institute of Aging provides extensive “Alzheimer’s Disease and Dementia Resources” for health-care professionals, with specific guides for nurses, under topics such as “patient and caregiver education”, “disease-specific information”, and “patient care”. They provide an extensive list of cognitive assessment tests. <https://www.nia.nih.gov/alzheimers/alzheimers-and-dementia-resources-professionals#professional>
3. The Alzheimer’s Association website offers tools on dementia detection, management, and education that have been selected by an expert taskforce, including the “Health Care Professionals Cognitive Assessment Guide” with written algorithms and video on conducting cognitive assessment. <http://www.alz.org/health-care-professionals/cognitive-tests-patient-assessment.asp>
4. FLAG.<sup>[25]</sup> (Faculty Learning about Geriatrics) is a resource that offers specific curricula and tools for teaching undergraduate baccalaureate nursing students how to care for older adults, and includes a dementia-specific module. Faculty can participate in the various “teach the teacher” FLAG programs that are offered and facilitated by one of the 16 Hartford Centers of Geriatric Nursing Excellence across the nation.
5. NICHE.<sup>[26,27]</sup> Student nurses can also become change agents in healthcare institutions in partnership with the Nurses Improving Healthcare for Elders (NICHE) program,<sup>[28]</sup> that currently has over 300 hospital members in its network. NICHE provides the blueprint and content for delivering nursing centered programs and protocols that improve older adult patient outcomes. As a NICHE member, healthcare agencies have access to interactive, state of the art, 24-hour electronic training resources, mentoring and support for instituting NICHE based projects, and evidence based protocols that meet Joint Commission and other regulatory requirements. Up-to-date webinars regarding dementia assessment and care are available in their curriculum.

## 5. EVIDENCE-BASED APPROACHES TO IMPROVING CARE OF PERSONS WITH DEMENTIA

### 5.1 Intergenerational choir

An intergenerational choir was formed with 13 persons diagnosed with dementia or mild cognitive impairment, and 13 students from a liberal arts college in the Midwest. Caregivers were closed by in the building if needed. The students called themselves “buddies” to the older adults. This effort, “Choir as a Means of Combating AD Stigma”<sup>[29]</sup> began with flyers and emails sent by the Alzheimer’s Association to announce the program and to recruit students with previous choir experience and motivation to work with older cognitively-impaired community members. Practice was held twice weekly, with the first 15–20 minutes of conversation time” between buddies. Students were given prompts as

part of their education program prior to participant interaction. Warm-up exercises included physical contact. Consistent attendance was remarkably high, with only one participant dropping out (a student, due to academic and personal demands). Rather than the traditional choir structure, participants sat in circles, which included caregivers, to foster a sense of togetherness and teamwork. The choir director was noted as being “upbeat” and “humorous”. The songs chosen, which ranged from the Beatles to “We Will Overcome”, were not too complex, and included repetitive refrains. Although they performed five songs together after eight weeks of rehearsal, the most powerful outcome was the change in both students (decreased stigma and increased positivity toward older adults) and caregivers/persons with dementia (decreased isolation, meaningful life experiences despite a terminal diagnosis, and the benefit of music therapy).

## 5.2 Interprofessional education

The structure of the educational program “Time for Dementia” Programme,<sup>[30]</sup> similar to emerging interprofessional development courses, began in the nursing or paramedic student’s first year and medical students’ second year. The researchers partnered with the local Australian Alzheimer’s Society to recruit interested families and visited with them every three months over two years. Visits included student guides regarding conversation, life-story work,<sup>[31]</sup> and completing “This is Me” workbook. The three data collection points (baseline, 12, and 24 months) demonstrated success of the program for both students and families in managing long-term illness. More information and resources regarding this program is available online.<sup>[31]</sup>

## 5.3 Learning through partnerships with community agencies

**Day Interprofessional Internships at Alzheimer’s Centers (ADC)**—McCaffrey et al.<sup>[20]</sup> demonstrated the effectiveness of team care to increase nursing students’ AD knowledge (and medical students’ positive attitudes toward PWD and their caregivers). Community day centers are a potential untapped area for experiential learning, a method that has been shown to have a positive impact on improving care of AD clients.<sup>[7,32]</sup> Students who were involved in direct care with PWD or older adults and received dementia or gerontology-specific education reported decreased negative attitudes, and greater willingness to seek a career working with older adults.

## 6. CONCLUSION

To prepare nursing students to care for the increasing numbers of older adults at risk for ADRD, a program of education targeting ADRD in chronic care and/or medical surgical courses is essential. A knowledge assessment would be helpful prior to creating lesson plans regarding dementia. In this survey of one nursing school in a geographical location heavily populated with older adults, the BKAD measure performed as expected. The ADKS can be useful for identifying knowledge gaps in freshmen or sophomore nursing students to raise awareness. The ADKS can also be used as a measure of learning among students who have received instruction in chronic diseases.



Academic service learning opportunities for nursing students to increase AD understanding and decrease stigma can be created with area Alzheimer's Association chapters. The students can work with area high schools, colleges, and senior centers to design and deliver Alzheimer's education and awareness projects. The Alzheimer's Association can provide important information and resources.<sup>[33]</sup>

Through partnerships between nursing schools and healthcare agencies, culturally competent programs designed for nursing students could be modified to serve the learning needs of practicing RNs. Designating an "ADE" or "Alzheimer's disease expert" on each nursing unit would be a resource for other staff.<sup>[34]</sup> Nursing educators are well-positioned to provide support for their colleagues who are challenged with caring for the one in ten persons over age 65 diagnosed with Alzheimer's disease. (instead of one in ten use "10%" or "rapidly escalating?")

## ACKNOWLEDGEMENTS

The authors are grateful to Dr. Brian Carpenter and his colleagues: Steve Balsis, Poorni Otilingam, Priya Hanson, and Dr. Margaret Gatz, for their work in developing with the Alzheimer's Disease Knowledge Scale, which helped to inspire this research.

## REFERENCES

- [1]. Alzheimer's Association. Alzheimer's Association Facts and Figures Report. 2017. Available from: <http://www.alz.org/dementia/types-of-dementia.asp>
- [2]. Bradford A, Kunik ME, Schulz P, et al. Missed and delayed diagnosis of dementia in primary care: prevalence and contributing factors. *Alzheimer Disease and Associated Disorders*. 2009 Oct; 23(4): 306. [PubMed: 19568149]
- [3]. Prince M, Ali GC, Guerchet M, et al. Recent global trends in the prevalence and incidence of dementia, and survival with dementia. *Alzheimer's Research & Therapy*. 2016 Dec; 8(1): 23.
- [4]. Carpenter BD, Balsis S, Otilingam PG, et al. The Alzheimer's disease knowledge scale: development and psychometric properties. *Gerontologist*. 2009; 49: 236–247. PMID:19363018 10.1093/geront/gnp023 [PubMed: 19363018]
- [5]. Smyth W, Fielding E, Beattie E, et al. A survey-based study of knowledge of Alzheimer's disease among health care staff. *BMC Geriatrics*. 2013; 13: 2. PMID:23282030 10.1186/1471-2318-13-2 [PubMed: 23282030]
- [6]. Kwok T, Lam KC, Yip A, et al. Knowledge of dementia among un-dergraduates in the health and social care professions in Hong Kong. *Soc Work Ment Health*. 2011; 9: 287–301. 10.1080/15332985.2011.572696
- [7]. Scerri A, Scerri C. Nursing students' knowledge and attitudes towards dementia - a questionnaire survey. *Nurse Educ Today*. 2013; 33: 962–968. PMID:23182308 10.1016/j.nedt.2012.11.001 [PubMed: 23182308]
- [8]. Poreddi V, Carpenter BD, Gandhi S, et al. Knowledge and attitudes of undergraduate nursing students toward dementia: an Indian perspective. *Invest Educ Enferm*. 2015; 33: 519–528. [PubMed: 28569960]
- [9]. Kimzey M, Mastel-Smith B, Alfred D. The impact of educational experiences on nursing students' knowledge and attitudes toward people with Alzheimer's disease: a mixed method study. *Nurse Educ Today*. 2016; 46: 57–63. PMID:27598794 10.1016/j.nedt.2016.08.031 [PubMed: 27598794]
- [10]. U.S. Census Bureau. State and county QuickFacts. 2010. Available from: <http://www.census.gov/2010census>
- [11]. Tappen RM. *Advanced nursing research*. Sudbury, MA: Jones & Bartlett Learning; 2016.

- [12]. Nordhus IH, Sivertsen B, Pallesen S. Knowledge about Alzheimer's disease among Norwegian psychologists: the Alzheimer's disease knowledge scale. *Aging Ment Health*. 2012; 16: 521–528. [PubMed: 22129312]
- [13]. Patient protection and affordable care act of 2010, 42 U.S.C. § 18001. 2010.
- [14]. Alzheimer's Association. Alzheimer's association facts and figures report. 2016. Available from: [https://www.alz.org/documents\\_custom/2016-facts-and-figures.pdf](https://www.alz.org/documents_custom/2016-facts-and-figures.pdf)
- [15]. Beydoun MA, Beydoun HA, Gamaldo AA, et al. Epidemiologic studies of modifiable factors associated with cognition and dementia: systematic review and meta-analysis. *BMC Public Health*. 2014; 14: 643. PMID:24962204 10.1186/1471-2458-14-643 [PubMed: 24962204]
- [16]. Huang CC, Chung CM, Leu HB, et al. Diabetes mellitus and the risk of Alzheimer's disease: a nationwide population-based study. *PLoS One*. 2014; 9: e87095. [PubMed: 24489845]
- [17]. Li X, Song D, Leng SX. Link between type 2 diabetes and Alzheimer's disease: from epidemiology to mechanism and treatment. *Clin Interv Aging*. 2015; 10: 549–560. [PubMed: 25792818]
- [18]. de Bruijn RF, Ikram MA. Cardiovascular risk factors and future risk of Alzheimer's disease. *BMC Med*. 2014; 12: 130. PMID:25385322 10.1186/s12916-014-0130-5 [PubMed: 25385322]
- [19]. Baumbusch J, Dahlke S, Phinney A. Nursing students' knowledge and beliefs about care of older adults in a shifting context of nursing education. *J Adv Nurs*. 2012; 68: 2550–2558. PMID:22364192 10.1111/j.1365-2648.2012.05958.x [PubMed: 22364192]
- [20]. McCaffrey R, Tappen RM, Lichtstein DM, et al. Interprofessional education in community-based Alzheimer's disease diagnosis and treatment. *J Interprof Care*. 2013; 27: 534–536. PMID:23879481 10.3109/13561820.2013.817384 [PubMed: 23879481]
- [21]. Borson S, Scanlan J, Brush M, et al. The mini-cog: a cognitive 'vital signs' measure for dementia screening in multi-lingual elderly. *Int J Geriatr Psychiatry*. 2000; 15: 1021–1027. 10.1002/1099-1166(200011)15:11<1021::AID-GPS234>3.0.CO;2-6 [PubMed: 11113982]
- [22]. Borson S, Scanlan JM, Sadak T, et al. Dementia services mini-screen: a simple method to identify patients and caregivers in need of enhanced dementia care services. *Am J Geriatr Psychiatry*. 2014; 22: 746–755. PMID:24315560 10.1016/j.jagp.2013.11.001 [PubMed: 24315560]
- [23]. Cordell CB, Borson S, Boustani M, et al. Alzheimer's association recommendations for operationalizing the detection of cognitive impairment during the medicare annual wellness visit in a primary care setting. *Alzheimers Dement*. 2013; 9: 141–150. PMID:23265826 10.1016/j.jalz.2012.09.011 [PubMed: 23265826]
- [24]. Alzheimer's Association. Alzheimer's association facts and figures report. 2014. Available from: [https://www.alz.org/downloads/Facts\\_Figures\\_2014.pdf](https://www.alz.org/downloads/Facts_Figures_2014.pdf)
- [25]. Edelstein JA, Cheung CK, Voss JA, et al. The faculty learning about geriatrics (FLAG) program: bringing together experts in geriatric nursing education. *J Contin Educ Nurs*. 2011; 42: 378–384. PMID:21598851 10.3928/00220124-20110516-02 [PubMed: 21598851]
- [26]. Mezey M, Kobayashi M, Grossman S, et al. Nurses improving care to health system elders (NICHE): implementation of best practice models. *J Nurs Adm*. 2004; 34: 451–457. 10.1097/00005110-200410000-00005 [PubMed: 15577667]
- [27]. Boltz M, Capezuti E, Bowar-Ferres S, et al. Changes in the geriatric care environment associated with NICHE (nurses improving care for healthsystem elders). *Geriatr Nurs*. 2008; 29: 176–185. PMID:18555159 10.1016/j.gerinurse.2008.02.002 [PubMed: 18555159]
- [28]. Braes T, Milisen K. Assessing cognitive function. Hartford institute for geriatric nursing, Consult GeriRN. 2012. Available from: <https://consultgeri.org/geriatric-topics/assessing-cognition>
- [29]. Harris PB, Caporella CA. An intergenerational choir formed to lessen Alzheimer's disease stigma in college students and decrease the social isolation of people with Alzheimer's disease and their family members: a pilot study. *Am J Alzheimers Dis Other Dement*. 2014; 29: 270–281. PMID:24413542 10.1177/1533317513517044 [PubMed: 24413542]
- [30]. Banerjee S, Farina N, Daley S, et al. How do we enhance undergraduate healthcare education in dementia? A review of the role of innovative approaches and development of the time for dementia programme. *Int J Geriatr Psychiatry*. 2017; 32: 68–75. PMID:27723124 10.1002/gps.4602 [PubMed: 27723124]

- [31]. Alzheimer's Society. Time for Dementia Programme. Alzheimer's Society London 2018. Available from: <https://www.alzheimers.org.uk/get-involved/engagement-participation/time-dementia-programme>
- [32]. Mattos MK, Jiang Y, Seaman JB, et al. Baccalaureate nursing students' knowledge of and attitudes toward older adults. *J Gerontol Nurs.* 2015; 41: 46–56. PMID:25941944 10.3928/00989134-20150429-01
- [33]. Moore J, McKenzie M. Enhancing senior nursing students' education of Alzheimer's disease: a partnership with the Alzheimer's association. *Alzheimers Dement.* 2013; 9: 481–482. 10.1016/j.jalz.2013.05.983 [PubMed: 23232269]
- [34]. Griffiths P, Bridges J, Sheldon H, et al. The role of the dementia specialist nurse in acute care: a scoping review. *J Clin Nurs.* 2015; 24: 1394–1405. PMID:25469780 10.1111/jocn.12717 [PubMed: 25469780]

**Table 1.**

Comparison of BKAD and ADKS Item Topics

| BKAD or ADKS SURVEY TOPICS  | BKAD | ADKS                                  |
|---|------|---------------------------------------|
| AD risk is greater if parent had it (true)  | X    | X                                     |
| AD is normal for aging (false)  | X    | X                                     |
| There is a cure for AD (false)  | X    | X                                     |
| AD is one type of dementia (true)   | X    | X                                     |
| Having high blood pressure, diabetes, heart disease/cholesterol increases AD risk (true)              |      | X (blood pressure)<br>X (cholesterol) |
| There is a link between serious head injury and AD (true)   | X    |                                       |
| The symptoms of AD do not cause any stress/pain to the PWAD (false)                                   | X    |                                       |
| PWAD will change so much that nothing will be left (false)  | X    |                                       |
| PWAD always go through a violent stage (false)  | X    | X (may be a sign of other illness)    |
| Staying physically/mentally/socially active might help to decrease AD risk (true)                     | X    | X (mental)                            |
| Nothing can be done to reduce the risk of getting AD (false)  | X    |                                       |
| Some herbs and vitamins may help with preventing AD (false)   | X    |                                       |
| Memory aids such as written lists are helpful in early AD stages (true)                               | X    | X                                     |
| New medicine is available that may keep AD from getting worse (true)                                  | X    | X                                     |
| Prescription drugs that prevent Alzheimer's disease are available (false)                             |      | X                                     |
| Earlier care provides better chance to slow progression (true)  | X    |                                       |
| For persons who are over 65, having your memory tested should be part of your regular check-up (true) | X    |                                       |
| Being screened for memory problems can take as little as five minutes (true)                          | X    |                                       |
| If you think you may be getting AD, you should ask your nurse or doctor for a memory test (true)      | X    |                                       |
| Wearing a heavy coat in the middle of summer may be a sign of AD (true)                               | X    |                                       |
| Having difficulty driving may be a sign of AD (true)  | X    | X                                     |
| It is safe for PWAD to drive, as long as they have a companion in the car at all times (false)        |      | X                                     |
| Difficulty following directions/Remembering the rules of a familiar game may be a sign of AD (true)   | X    |                                       |
| Recognizing close friends & family may be a sign of AD (true)   | X    |                                       |
| Forgetting appointments frequently may be a sign of AD (true)   | X    |                                       |
| Forgetting names of familiar objects may be a sign of AD (true)                                       | X    |                                       |
| PWD Remember recent events better than past events (false)  |      | X                                     |
| Recent confusion and memory loss may be a sign of AD (true)   |      | X                                     |

| BKAD or ADKS SURVEY TOPICS   | BKAD | ADKS           |
|--|------|----------------|
| Asking repeated questions may be a sign of AD (true)   | X    |                |
| When PWAD repeat the same question or story several times, it is helpful to remind them that they are repeating themselves (false) |      | X              |
| New problems with vision may be an early sign of AD (true)   | X    |                |
| Trouble counting money or paying bills may be a sign of AD (true)  | X    | X (early sign) |
| People with AD prone to depression (true)  |      | X              |
| Symptoms of severe depression can be mistaken for symptoms of AD (true)  | X    |                |
| People whose Alzheimer's disease is not yet severe can benefit from psychotherapy for depression and anxiety (true)                | X    |                |
| After symptoms of Alzheimer's disease appear, the average life expectancy is 6 to 12 years (true)                                  |      | X              |
| PWAD do best with simple, instructions given one step at a time (true)   |      | X              |
| When PWAD begin to have difficulty taking care of themselves, caregivers should take over right away (false)                       |      | X              |
| It has been scientifically proven that mental exercise can prevent a person from getting Alzheimer's disease (false)               |      | X              |
| If agitated, get plenty of exercise during the day (true)  |      | X              |
| A medical examination might reveal other health problems that caused the agitation in PWAD (true)                                  |      |                |
| In rare cases, people have recovered from Alzheimer's disease (false)  |      | X              |
| Most PWAD live in nursing homes (false)  |      | X              |
| Poor nutrition can make the symptoms of Alzheimer's disease worse (true)   |      | X              |
| People in their 30s can have Alzheimer's disease (true)  |      | X              |
| PWAD become increasingly likely to fall down as the disease gets worse (true)  |      | X              |
| PWAD are no longer capable of making informed decisions about their own care (false)   |      | X              |
| PWAD may believe that others are stealing their things (true)  |      | X              |
| Eventually, PWAD will need 24-hour supervision (true)  |      |                |
| Hand tremors or shaking is common in PWAD (false)  |      | X              |
| For PWAD, using notes as a reminder is a crutch that can contribute to decline (false)   |      | X              |
| There is no link between lack of sleep and increased AD risk   | X    |                |
| Genes can only partially account for the development of Alzheimer's disease (true)   |      | X              |

**Table 2.** Selected ADKS items correctly answered by south Florida nursing students (n = 102)

| Items correctly answered by south Florida Nursing students (n = 102)  | Per (%) |
|---|---------|
| It has been scientifically proven that mental exercise can prevent a person from getting Alzheimer's disease*                           | 20      |
| After symptoms of Alzheimer's disease appear, the average life expectancy is 6 to 12 years  | 25      |
| When a person with Alzheimer's disease becomes agitated, a medical examination might reveal other health problems causing the agitation | 38      |
| People with Alzheimer's disease do best with simple, instructions given one step at a time  | 47      |
| In rare cases, people have recovered from Alzheimer's disease*  | 43      |
| If trouble with memory and confused thinking appears suddenly, it is likely due to Alzheimer's disease*                                 | 47      |
| Most people with Alzheimer's disease live in nursing homes*   | 40      |
| Poor nutrition can make the symptoms of Alzheimer's disease worse   | 50      |
| A person with Alzheimer's disease becomes increasingly likely to fall down as the disease gets worse                                    | 47      |
| Once people have Alzheimer's disease, they are no longer capable of making informed decisions about their own care*                     | 43      |
| Eventually, a person with Alzheimer's disease will need 24-hour supervision   | 39      |
| Having high cholesterol may increase a person's risk of developing Alzheimer's disease  | 31      |
| Tremor or shaking of the hands or arms is a common symptom in people with Alzheimer's disease*  | 32      |
| Symptoms of severe depression can be mistaken for symptoms of Alzheimer's disease   | 42      |
| One symptom that can occur with Alzheimer's disease is believing that other people are stealing one's things                            | 39      |
| Genes can only partially account for the development of Alzheimer's disease   | 44      |
| It is safe for people with Alzheimer's disease to drive, as long as they have a companion in the car at all times*                      | 46      |

Note.

\* = False is the correct answer

**Table 3.**

Selected BKAD Items correctly answered by south Florida nursing students (n = 102)

| Items  | Percent Correct (%) |
|--|---------------------|
| The chance of getting AD is greater if a parent had it                                 | 96                  |
| Persons with AD could remember things if they just tried harder *                      | 94                  |
| Nothing can be done to reduce the risk of getting AD *                                 | 75                  |
| There may be a link between serious head injury and getting AD                         | 73                  |
| The symptoms of AD do not cause any stress to the person who has it *                  | 2                   |
| Persons with AD experience less pain than other people *                               | 92                  |
| Being with others may keep your memory sharp   | 87                  |
| Being screened for memory problems can take as little as five minutes                  | 83                  |
| Staying physically active might help to decrease the chances of getting AD             | 81                  |
| There is no link between lack of sleep and AD risk *                                   | 76                  |
| For persons over 65, having your memory tested should be part of your regular check-up | 48                  |
| New problems with vision may be an early sign of AD                                    | 34                  |

Note.

\* = False is the correct answer