

Original Article

Alzheimer's Knowledge of Nurses and Healthcare Students

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Abstract

Background: Alzheimer's disease (AD) has become an increasingly important public health problem in recent years. Although AD is a prevalent disease, inadequate knowledge and awareness about the disease in the society and among the healthcare professionals complicates the early diagnosis of the disease. The limited number of studies reported that healthcare professionals had inadequate knowledge and awareness levels in AD.

Objective: The present study aimed to determine the knowledge levels of nurses, undergraduate nursing students and geriatric healthcare students about AD.

Methods: This cross sectional study was conducted with 557 nursing and geriatric healthcare undergraduate students and 99 nurses. The data was collected with demographic questions and Alzheimer's Disease Knowledge Scale (ADKS). To determine the differences based on the sociodemographic properties in statistical analysis, t test and One Way ANOVA were applied to numerical variables in the independent groups.

Results: The knowledge on AD was moderate. The knowledge of those who attended AD training was higher, and Alzheimer's knowledge varied based on attendance in AD training. The presence of an individual or individuals with AD in the family did not have an impact on ADKS.

Conclusion: Early diagnosis and treatment, care, accurate guidance and counseling are among the primary roles and responsibilities of healthcare students and health professionals in AD. The findings clearly demonstrated that the AD knowledge levels should be improved. Further inclusion of AD in the curricula, improvement of the time devoted to theoretical instruction and clinical practice and time spent with individuals with AD could lead to effective outcomes.

Keywords: Alzheimer's disease, nurses, healthcare students, Alzheimer's disease knowledge

Background

Alzheimer's disease (AD) has become an increasingly important public health problem in recent years (Alhazzani et al.,2020). The prognosis of the Alzheimer's disease, characterized by aging, constitutes a significant healthcare burden among the

chronic diseases (Keskin et al., 2016; Ozpak, Pazarbası, Keser, 2017).

Alzheimer's disease (AD) is a progressive, irreversible neurodegenerative disease characterized by partial brain cell necrosis, the cause of which is still unknown and could be due to genetic predisposition, and the disease had significant adverse effects on

daily and social life (Aprahamian, Stella, Forlenza, 2013; Korolev, 2014).

AD is among the most common causes of dementia. It was reported that 75% of the individuals with dementia were undiagnosed in 2021, and there were 55 million dementia patients worldwide (ADI, 2021). Similarly, it was indicated that AD, which is the primary cause of dementia in Turkey, is an important health problem among the elderly (Turk Stat, 2021).

The fact that individuals need care to survive from the moment they were born is the reason why nursing exists and is indispensable (Gul, 2019). AD affects the neurons in parts of the brain that control basic bodily functions such as walking and swallowing. In the final stages of the disease, individuals are bedridden and need 24-hour care (Alzheimer's Association, 2019). In addition, the early identification and diagnosis of AD, seeking and receiving professional help, and better strategies to cope with the symptoms of the disease leads to easier management of the disease. Thus, it is important to provide effective nursing care that meets the needs of the patient. Nursing care should include functions that would fulfill the individual's needs, provide information about the procedures, assist the individual in coping with problems, and interpersonal nursing skills (Karaca & Durna, 2018). In addition, quality and effective patient care is one of the most important and fundamental roles of geriatric healthcare students.

It is important for public health to determine the knowledge and awareness levels of pre-service nurses and other healthcare professionals, who would play a key role in the care and treatment of AD patients. Although AD is a prevalent disease, inadequate knowledge and awareness about the disease in the society and among the healthcare professionals complicates the early diagnosis of the disease (Biswas et.al, 2017). Limited number of studies reported that healthcare professionals had inadequate knowledge and awareness levels in AD (Fick, Foreman, 2000; Scherer et al., 2008; Topuz & Dogan, 2012; Kada, 2015). In addition, it should be noted that the number of studies conducted in Turkey is quite limited (Topuz & Dogan, 2012; Turk Stat, 2021; Erim &

Yucel, 2022). Thus, it was considered important to determine the knowledge and awareness levels of nurses and healthcare students to plan future interventions when necessary.

Answers to the following questions were sought in the research:

- Do nurses have adequate knowledge about to AD?
- Do geriatric healthcare undergraduate students have adequate knowledge about to AD?
- Do geriatric healthcare undergraduate students have adequate knowledge about to AD?
- Is having knowlegde or training about to AD impact on care process?

Methodology

Study design: The present cross-sectional study aimed to determine the knowledge levels of nurses and healthcare students on Alzheimer's disease. The study was conducted between June and December 2021, and the study sample included undergraduate nursing and geriatric healthcare students attending two state universities in the Central Anatolia region in Turkey, and nurses employed in a medical faculty hospital in Central Anatolia (n=676).

Participants: The study participants included 80% (n=451) of all undergraduate nursing students, 90% (n=126) of all geriatric healthcare students, and 40% of all nurses (n=99) in the institutions. The study was conducted with all the participants who volunteered to participate in the study; thus, no sample was assigned. The informed written consent form was given to the participants for reading. After the reading, the researches asked to the participants for attending in the research. The participants who wanted to be volunteered to participate in the study, they signed the informed consent written form. After that this process the data forms were given to the volunteered participants for answering

Data Collection Tools: The questionnaire employed to collect the study data included 2 sections. The first section included 9 demographic questions to determine the age, gender, occupation, education level, previous

participation in a training program on AD, presence of a family member with AD, and previous work with AD patients. The second section included the "Alzheimer's Disease Knowledge Scale (ADKS)". The questionnaire was developed on the Google Forms platform and the data were collected online, on the Google Docs website.

Participants were informed about the purpose and procedures of the research. A hyperlink was sent to the participants on the WhatsApp group. The inclusion criteria were [1] attendance in a geriatric healthcare department or an undergraduate nursing department, or working as a nurse, [2] Internet access, and [3] voluntary participation. The Google survey form was completed by 952 individuals.

Alzheimer's Disease Knowledge Scale (ADKS): The Alzheimer's Disease Knowledge Scale (ADKS) was developed by Carpenter et al. (2009) and includes 30 true/false questions to determine the knowledge level on Alzheimer's Disease. The scale was designed for students, healthcare professionals and general public. It takes about 5-10 minutes to complete, The total scale score is calculated by summing the item scores and varies between 0 and 30. The analysis of the psychometric properties of the scale demonstrated that it had adequate reliability (test-retest correlation = .81; internal consistency = .71) and validity (content, predictive, concurrent, and convergent). The validity and reliability of the scale in Turkish culture was determined by Yilmaz and Yavuz (2020). The difficulty index figures of the items in the Turkish version varied between 0.24 and 0.75, their distinctiveness was above 0.10. The test-retest reliability correlation coefficient was calculated as 0.81, the Kuder-Richardson 20 coefficient as 0.74, and the correlations between the item and total scores were determined above the standard (0.20) (Yilmaz, Yavuz Colak, 2020). In the present study, the Cronbach Alpha coefficient was determined as .75.

Ethical Considerations: For this research ethical approval was taken from the University Ethics Review Committee (12.07.2021-E.88285). All patients provided informed consent for each insertion in accordance with the principles of the

Declaration of Helsinki. Participants were provided with an obligatory informed consent form before they accessed the questionnaire forms.

Data Analysis: The study data were analyzed with the SPSS 21 software (IBM SPSS Corp; Armonk, NY, USA). To determine the differences based on the sociodemographic properties in statistical analysis, t test and One Way ANOVA were applied to numerical variables in the independent groups. $p < 0.05$ was accepted as statistically significant. The normal distribution of the data was determined by Kolmogorov-Smirnov and Shapiro Wilks tests.

Results

The participant age varied between 17 and 48 in the study, and the mean age was 22.01 ± 5.47 . The vast majority (78.1%) of the participants was female, 66.8% were nursing students, and 18.6% were geriatric healthcare students. More than half of the nurses (51.5%) had undergraduate degrees, and 23.2% were health vocational high school graduates. 19.2% of the nurses were employed in intensive care units, and 18.2% in the internal medicine department. Eight participants worked in other departments: Pulmonary diseases department (n=2), Palliative care (n=2), Neonatal Service (n=2), and Delivery Room (n=2). 11.7% of the participants previously attended Alzheimer's training. 81% were informed about AD at school, 16.5% during in-service training, and 2 attended a conference. The training lasted 45 minutes for 65.8%, 40 minutes for 16.5%, and 30 minutes for 10.1%. Also, 3.8% (n=26) of the participants had a family member with AD, and 12.7% worked with AD patients.

Among the participants, 82.8% answered the item "as the condition of Alzheimer's patients worsens, fall risk could increase" correctly. Only 9.8% of the participants responded that the statement "it was scientifically proven that mental exercise could prevent Alzheimer's disease" was false. Also, quite low number of participants (14.2% and 13.3%, respectively) stated that the items "Alzheimer's patients could not make informed self-care decisions" and "when Alzheimer's patients could not take care of themselves, caregivers should provide care" were false (Table 1).

The total Alzheimer's Disease Knowledge Scale score varied between 5 and 25, and the mean score was 16.16 ± 3.17 (Table 2).

The mean Alzheimer's Disease Knowledge Scale score was 16.29 ± 3.06 for females and 15.71 ± 3.52 for males. However, there was no significant difference between the scores based on gender ($p=.070$). Similarly, there was no significant difference between the

scores based on occupation ($p=.089$) and age ($p=.755$) (Table 3).

The mean ADKS score of the participants who attended an AD training was 16.49 ± 2.81 , the mean score of those who did not attend a training was 13.67 ± 4.45 , and knowledge on Alzheimer's Disease knowledge varied based on attendance to an AD training ($p<.001$) (Table 4).

Table 1. The distribution of correct responses in the Alzheimer's Knowledge Scale (n=676)

Item		n(%)
1	Individuals with Alzheimer's disease are particularly prone to depression.	505(74.7)
2	It was scientifically proven that mental exercise could prevent Alzheimer's disease.	66(9.8)
3	After the Alzheimer's disease symptoms are observed, the average life expectancy varies between 6-12 years.	390(57.7)
4	When agitation is observed in an individual with Alzheimer's disease, a medical examination could reveal other health problems that could cause agitation.	532(78.7)
5	Alzheimer's patients could follow simple instructions after one try.	232(34.3)
6	When Alzheimer's patients could not take care of themselves, caregivers should provide care.	90(13.3)
7	When the Alzheimer's patient is awake and agitated at night, the caregiver should make sure that the patient's daily physical activities are adequate.	500(74.0)
8	Albeit rare, there are survivors of Alzheimer's disease.	379(56.1)
9	Individuals without severe Alzheimer's disease could receive psychotherapeutic support for depression and anxiety.	557(82.4)
10	Sudden memory loss and confusion could be associated with Alzheimer's disease.	167(24.7)
11	Most Alzheimer's patients live in nursing homes.	228(33.7)
12	Malnutrition leads to the deterioration of Alzheimer's disease symptoms.	402(59.5)
13	Individuals could also develop Alzheimer's in their 30s.	440(65.1)
14	As the condition of Alzheimer's patients worsens, fall risk could increase.	560(82.8)
15	When Alzheimer's patients repeat the same question or story several times, it could be helpful to remind them that they are repeating the same thing over and over.	206(30.5)
16	Alzheimer's patients could not make informed self-care decisions.	96(14.2)

17	Alzheimer's patients will eventually need 24-hour care.	530(78.4)
18	High cholesterol could increase Alzheimer's risk.	364(53.8)
19	Hand or arm tremors are the most common signs of Alzheimer's disease.	307(45.4)
20	Severe depression symptoms could be confused with Alzheimer's symptoms.	472(69.8)
21	Alzheimer's disease is a form of dementia.	509(75.3)
22	Failure to pay bills or mismanagement of finances is among the common early signs of Alzheimer's disease.	360(53.3)
23	Believing that others are stealing something is an Alzheimer's symptom.	301(44.5)
24	Employment of reminder notes prevent the progress of Alzheimer's.	224(33.1)
25	There are prescription drugs that prevent Alzheimer's disease.	301(44.5)
26	High blood pressure could increase Alzheimer's risk.	405(59.9)
27	Genes play a partial role in the development of Alzheimer's disease.	517(76.5)
28	It is safe for Alzheimer's patients to drive, provided they have a companion.	435(64.3)
29	Alzheimer's disease is incurable.	450(66.6)
30	Most Alzheimer's patients remember the recent past better than the distant past.	401(59.3)

n*= The participants number who attend to answered the questions

Table 2. Descriptive Analysis of the Alzheimer's Disease Knowledge Scale Scores (n=676)

	Median(Min-Max)	X±ss
Alzheimer's Disease Knowledge Scores (ADKS)	16.00(5-25)	16.16±3.17

Table 3. The Variations in Alzheimer's Disease Knowledge Scores Based on Participant Demographics (n=676)

Age	Median(Min-Max)	X±ss	p
17-27	16.00(5-25)	16.15±3.22	.755**
28-38	15.50(13-20)	16.18±2.24	
39 or older	18.00(9-22)	16.65±3.46	
Gender			

Female	16.00(5-25)	16.29±3.06	.070*
Male	16.00(6-22)	15.71±3.52	
Occupation			
Geriatric healthcare student	16.00(9-22)	16.10±2.69	.089**
Nursing student	16.00(5-25)	16.04±3.35	
Nurse	17.00(9-22)	16.81±2.85	

*Independent groups t-test **One-Way ANOVA

Table 4. The Variations in Alzheimer's Disease Knowledge Scores Based on Participant Demographics (n=676)

Attendance in AD training	Median(Min-Max)	X±ss	p
Yes		16.49±2.81	<.001*
No		13.67±4.45	
AD patient in the family			
Yes		15.85±3.89	.604*
No		16.18±3.14	
Previous work with AD patients			
Yes		15.39±4.43	.078*
No		16.28±2.93	

*Independent groups t-test **One-Way ANOVA

Discussion

The provision of adequate care is quite difficult for individuals with AD and requires certain knowledge, skills and attitudes. However, the increase in number of individuals affected by AD, it became imperative to train healthcare students to provide care for individuals with AD (Kimzey, Mastel-Smith, Alfred, 2016). In the present study, it was determined that knowledge on AD was moderate. A similar study conducted with healthcare students also reported moderate AD knowledge levels. In that study, all healthcare students stated that

they knew about AD, and most have studied AD (Al Arifi, 2020). In another study conducted with nursing students, it was reported that only a few students perceived themselves as knowledgeable on AD (Kimzey, Mastel-Smith, Alfred, 2016). Another study revealed that nursing staff had limited knowledge on dementia; however, their attitudes towards individuals with dementia were positive (Strøm, Engedal, Andreassen, 2019). In another study, it was reported that hospital nurses, especially emergency department nurses, exhibited poor knowledge on the care of dementia patients

(Lin et al., 2018). In general, AD knowledge levels of the geriatric healthcare and nursing students and the nurses were inadequate, and their AD knowledge levels should be improved. Thus, educators have a challenging task. Since AD became a current reality due to the increase in life expectancy and elderly population, AD should be included in the curriculum, and students should have the opportunity to practice healthcare for individuals with AD. Their knowledge levels should be adequate on graduation, and further improved with regular in-service training.

In the present study, the majority of the participants (78.1%) were female. Although the ADKS scores of the females were higher when compared to males, there was no significant difference between Alzheimer's knowledge levels based on gender ($p=.070$). Similarly, certain studies reported that the knowledge scores of the females were higher (Kada, 2015; Liu et al., 2019), while other did not report a difference based on gender (Kada, 2015; Baral, Dahal, Pradhan, 2020). However, the number of studies on AD knowledge levels of health students and nurses is still quite low. Future studies could lead to a better understanding of the correlation between gender and Alzheimer's knowledge level. Also, efforts should be spent to improve the knowledge, skills and experiences of the gender with low AD literacy.

AD knowledge is essential to provide adequate care and plays a key role in the quality of care (Kada, 2015). In the present study, geriatric healthcare students, nursing students, and a small number of nurses (11.7%) had attended AD training. The knowledge of those who attended AD training was higher, and Alzheimer's knowledge varied based on attendance in AD training ($p<.001$). The attendance of healthcare students in AD training was quite high in Saudi Arabia when compared to our study (Al Arif, 2020). Also, previous studies revealed that the knowledge level of the students with prior AD training was higher, consistent with the current study (Shin et al. 2015; Lin et al., 2018; Sharma et al., 2018). In a previous study, a higher proportion of nursing students had geriatric clinical experience and dementia training when compared to medical students

(Wang, Xiao, Huang, 2020). Also, another previous study revealed that there was a positive correlation between dementia literacy and attendance in lectures or reading media on dementia (Sharma et al., 2018). Although AD training had a direct impact on the knowledge level, AD is often not adequately included in the curricula, and the theoretical knowledge and clinical experience of the students are inadequate. It was also reported that students did not know several facts about AD and had several misconceptions (Kada, 2015). Based on these problems, the curricula should be revised by educators. Furthermore, since healthcare students and nurses could be employed to provide continuous AD care in the future, and course syllabi should devote more time to AD, and students should be allowed to care for individuals with AD as much as and as long as possible.

In the current study, very few geriatric healthcare students, nursing students, and nurses (3.8%) had a family member with AD, and these were mostly (90%) grandparents. The presence of an individual or individuals with AD in the family did not have an impact on scores ($p>.05$). A study conducted with medical students reported higher number of participants with family members or friends with dementia was determined that the presence of a family member or friend with dementia did not affect the knowledge levels of the students (Sharma et al., 2018). Similarly, the studies conducted with university students in Nepal (Baral, Dahal, Pradhan, 2020), nursing students in Indonesia (Sunaryo, Saifullah, Mulyani, 2020) and healthcare professionals in Australia (Annear, 2020) reported no correlation between the presence of a family member with AD and AD knowledge. Unlike all the above-mentioned studies, in a study conducted in Kuwait with college students, it was reported that students who knew someone with dementia in their family had more knowledge when compared to those who did not (Manee et al., 2019).

Conclusion and Recommendations: Early diagnosis and treatment, care, accurate guidance and counseling are among the primary roles and responsibilities of healthcare students and health professionals

in AD. In the current study, it was determined that the knowledge levels of geriatric healthcare students, nursing students and nurses were similar and inadequate. The findings clearly demonstrated that the AD knowledge levels should be improved. Further inclusion of AD in the curricula, improvement of the time devoted to theoretical instruction and clinical practice and time spent with individuals with AD could lead to effective outcomes. Thus, especially the educators who instruct theoretical and clinical courses have significant responsibilities. Furthermore, it is important to increase knowledge levels and awareness of healthcare personnel, especially the nurses, who are employed in hospitals, elderly care centers and primary healthcare services. For this purpose, well-planned in-service training seminars that focus on the existing problems could provide effective results. The presence of only a limited number of studies on AD knowledge is another challenge. Further studies should be conducted to determine the awareness and knowledge levels and clinical competencies of healthcare students and health professionals on AD. Interventions that would increase the knowledge level and awareness of healthcare students and nurses on AD would affect the treatment and patient care in AD, and these steps would directly reflect on the quality of life and care of individuals with AD and their families.

Limitations and strengths of research: This research can only be generalized to the sample of this study. We wished to reach more nurses for evaluating their opinions and knowledge for this research but limited numbers of nurses wanted to participate voluntarily in this research because of they thought that have limited time for responding the questions.

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