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Investigating Nursing Students' Levels of Knowledge about Alzheimer's Disease

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Abstract

Background: Given that Alzheimer's disease (AD) has become a major public health problem, this study aimed to investigate the AD knowledge level of nursing students who are health professional candidates.

Methods: The population of this cross-sectional study consisted of 346 nursing students taking up a 4-year program. They were asked to fill out a sociodemographic information form and answer questions from the Alzheimer's Disease Knowledge Scale (ADKS).

Results: Among the participants, 67.6% were female and 98.8% were single. The mean age of the students was 20.55 ± 2.05 years. Their general knowledge about AD was low, with a mean ADKS score of 17.6 ± 2.85. The scores of the 4th year students (p = 0.035) and those who received education about the disease beforehand (p = 0.015) were statistically significantly higher than those of the other participants (p < 0.05). No significant relationship with ADKS score was observed for the factors of gender, whether they had elderly relatives, and whether they visited nursing homes.

Conclusions: The participating students had a low level of knowledge about AD. Increasing disease-specific education and practices for nursing students and including discussions on AD in compulsory courses is necessary to fill in the knowledge gaps.

Keywords: Alzheimer's disease, knowledge, nursing students, Türkiye

INTRODUCTION

The global elderly population is rapidly increasing.[1,2] In 2012, dementia was recognized as a common and important public health problem.[3] According to the World Health Organization (WHO), dementia ranks 7th among the leading causes of death and affects around 55 million people worldwide.[4] By 2050, this number is expected to reach 82 million.[5] Owing to the rapid global increase in its incidence, a global action plan for 2017–2025 against dementia was established by the WHO in 2017[6] and primarily aimed to prevent Alzheimer's disease (AD) and improve the quality of life of patients by providing supportive care.[5]

In Türkiye, the elderly are rapidly occupying an increasing percentage of the total population. According to population projections from the Turkish Statistical Institute, this rate rose to 10.2% in 2023 and is projected to reach 12.9% in 2030.[7] According to the Turkish Alzheimer's Association, 600,000 families in Türkiye struggle with AD.[8]

Nurses play an important role in the care of patients and offer support for their caregivers and relatives. Providing optimal care requires the integration of hospital, community, and long-term services to help, support, and meet the needs of people diagnosed with AD and their caregivers.[9] During the clinical practice that is part of their education, nursing students frequently encounter patients with dementia. Therefore, their level of knowledge about dementia mainly influences how they provide holistic care to the elderly population.[10]

Although the global elderly population is increasing, the willingness to work with geriatric patients is decreasing. A review reported that nursing students have insufficient knowledge about the care of older adults.[11] Therefore, understanding the factors that influence nursing students' willingness to work with elderly patients with dementia is of great importance.[5,9]

Students who will become healthcare personnel significantly lack knowledge about AD.[2,12] Studies in Türkiye have shown a lack of knowledge about AD among society members and healthcare professionals.[13,14] Two different studies recommended that geriatric nursing course hours should be increased in schools where nursing education is given, and students must be subjected to practices where they can observe patients with dementia and gain experience.[15,16] In our country, a geriatric nursing course is generally included as an elective course in the curriculum of undergraduate level education and is a compulsory course in some universities. In the Trakya University Kesan Hakki Yoruk School of Health, where this study was conducted, the geriatric

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nursing course is given as an elective course in the 4th grade (7th semester). Prior studies on the knowledge and attitude of healthcare professionals and health sciences students toward AD are limited. Therefore, the present work aimed to investigate the level of knowledge about AD among nursing students who are health professional candidates.

METHODS

This cross-sectional study was carried out at a government university. Approval for this study was obtained from the Ege University Medical Research Ethics Committee (Date 12.03.2021 and Decision number: 21-3T/21) and the institution where this study was conducted. Permission was acquired for the use of the scale as a data collection tool. The participating students were informed about the study, and their voluntary consent was obtained.

The study population consisted of students (N = 501) enrolled in the nursing department of a healthcare college in the fall semester of the 2021–2022 academic year. The study population was 501, the expected frequency was 50% unknown, the margin of error was 5%, and the minimum sample size to be taken at 95% confidence level was calculated as 218. The study sample consisted of 346 students who volunteered to participate in this study.

Data were collected face-to-face by the researcher during meetings that lasted 20–25 minutes. A descriptive information form was prepared in accordance with a literature review and the Alzheimer's Disease Knowledge Scale (ADKS).

This form consists of 19 questions about the socio-demographic characteristics (age, class in the nursing program, and gender) of the participants and their experiences related to AD (their families' region of residence and housing status, their experiences related to AD, their sources of information about the disease, whether they live with elderly relatives or have a family member with AD, life impact, and specific education on AD, and whether they have had an internship in an elderly nursing home).

The ADKS scale is designed to assess the knowledge about AD of different groups of people, including health professionals, other professionals, caregivers, and the general public.[17] The validity and reliability of the Turkish adaptation of this scale were tested by Yılmaz and Yavuz Çolak.[13] ADKS consists of 30 true/false items evaluating the level of knowledge about AD.[13,17,18] The scale questions assess knowledge about the seven aspects of AD as follows: impact of the disease on life (items 1, 11, and 28), risk factors (items 2, 13, 18, 25, 26, and 27), symptoms (items 19, 22, 23, and 30), treatment and management (items 9, 12, 24, and 29), assessment and diagnosis (items 4, 10, 20, and 21), caregiving (items 5, 6, 7, 15, and 16) and prognosis (items 3, 8, 14, and 17). Each correct answer is scored as 1 point. The maximum score is 30.[17,18]

Tabachnick and Fidell accepted that the distribution is normal when the skewness and kurtosis values are between +1.5 and −1.5. AD knowledge level skewness (−0.175) and kurtosis (−0.105), the participants' own score for AD knowledge skewness (0.203) and kurtosis (−0.075), and the variables were all found to be normally distributed.[19] The scales used showed a normal distribution. Nonparametric studies must be conducted when the sample volume is smaller than 30 and normality cannot be assumed for the population distribution.[20] Selection of parametric and nonparametric tests: if the number of samples in the groups is above 30, then parametric tests can be used under the assumption that the data are normally distributed; if the number of samples is below 30, then nonparametric tests can be used.[21,22] In this study, nonparametric tests were used for statistical evaluations because the sample size was less than 30. Mann–Whitney U test and independent sample t test were used to determine significant differences between the scores obtained from two unrelated samples of our quantitative variables. Kruskal–Wallis H test, analysis of variance (ANOVA) (F) test, and Bonferroni test were applied to identify significant differences between the mean scores of more than two unrelated samples. A statistical significance of $p < 0.05$ was considered significant.

RESULTS

Table 1 presents the distribution of participants according to their sociodemographic characteristics and experiences related to AD. A total of 346 nursing students participated in this study, and their mean age was 20.55 ± 2.05 (min = 17, max = 38) years. The majority were female (67.6%), and 44.2% and 43.6% lived in subprovinces and provinces, respectively. The participants were predominantly in the 3rd (28.9%) and 1st (26.6%) years of their nursing program. Most of them spent the majority of their lives in provinces (49.4%) and resided in apartments (58.7%).

Among the students, 91.6% lived with their families and 55.5% lived with elderly people at some point in their lives. Most of them did not have an internship in a nursing home during their education (97.4%). The mean self-scored level of knowledge about AD was 5.23 ± 1.8 (1–10) among the students. In terms of their relationships, 22.0% of the students had a relative diagnosed with AD, and 55.3% of those were second degree relationships. Meanwhile, 43.4% of the students did not know the duration of their relative's illness, and 34.2% knew that the illness duration was 25 months or more. In addition, 85.5% of the relatives were diagnosed by a neurologist.

TABLE 1. Distribution of sociodemographic characteristics and experiences related to AD of the sample population (N = 346)

Sociodemographic characteristics	N	%
Age (years)		
< 19	87	25.1
20	81	23.4
21	99	28.6
> 22	79	22.8
Gender		
Female	234	67.6
Male	112	32.4
Place of residence		
Province	151	43.6
Subprovince	153	44.2
Village	42	12.1
Year in nursing program		
1	92	26.6
2	75	21.7
3	100	28.9
4	79	22.8
Majority of life spent in		
Province	171	49.4
Subprovince	126	36.4
Village	49	14.2
Type of housing		
Apartment building	203	58.7
Detached dwelling	127	36.7
Other	16	4.6
Living together with		
Family	317	91.6
Other	29	8.4
Living with elderly		
Yes	192	55.5
No	154	44.5
Affinity with elderly		
No	154	44.5
Grandmother and grandfather	87	25.1
Grandmother	82	23.7
Grandfather	19	5.5
Other	4	1.2
Time spent living with elderly		
0	154	44.5
2 years and less	77	22.3
3–5 years	32	9.2
6 years and longer	83	24.0
Internship at elderly nursing home		
Yes	9	2.6
No	337	97.4
Having a relative with AD		
Yes	76	22.0
No	270	78.0
Affinity to relative with AD*		
First degree	34	44.7
Second degree	42	55.3
Duration of AD*		
Unknown	33	43.4
6–12 months	8	10.5
13–24 months	9	11.8
25 months and above	26	34.2
Diagnosing physician*		
Neurologist	65	85.5
Psychiatrist	5	6.6
Primary care physician	3	3.9
Geriatrics specialist	3	3.9
Degree of impact on life		
None	17	4.9
Partial	173	50.0
Severe	156	45.1
Participation in an AD education program		
Yes	23	6.6
No	323	93.4
Participation in an NGO		
Yes	9	2.6
No	337	97.4

*Only includes participants who have relatives with an AD diagnosis (N < 346); AD: Alzheimer's Diseases

TABLE 2. Levels of knowledge about AD based on students' sociodemographic characteristics and experiences related to AD

Characteristics	ADKS	
	Mean ± SD	*p*
Age (years)		
< 19	17.45 ± 2.56	
20	16.88 ± 3.17	0.023*
21	17.91 ± 2.84	
> 22	18.14 ± 2.72	
Gender		
Female	17.79 ± 2.62	0.072
Male	17.21 ± 3.26	
Place of residence		
Province	17.76 ± 2.79	
Subprovince	17.55 ± 2.83	0.548
Village	17.24 ± 3.19	
Year in nursing program		
1	17.50 ± 2.67	
2	16.96 ± 2.84	0.035*
3	17.64 ± 2.88	
4	18.29 ± 2.94	
Participation in an AD education program		
Yes	19.00 ± 2.88	0.029*
No	17.50 ± 2.83	
Participation in an NGO		
Yes	15.44 ± 2.07	0.013*
No	17.66 ± 2.85	

*$p < 0.05$; AD: Alzheimer's Diseases; NGO: Nongovernmental Organization

Half (50.0%) of the participants thought that caring for a patient with AD would partially affect their work/social life, and 45.1% thought that the effect would be severe. Almost all (93.4%) of the students had neither participated in a training program about AD nor volunteered for a nongovernmental organization related to AD (97.4%). Under half (48.0%) of the students accessed information

about AD through popular media tools, and 27.2% accessed information through trainings.

Table 2 lists the levels of knowledge about AD among the students according to their sociodemographic characteristics and experiences related to AD. For the comparison of the ADKS scores of the students according to their sociodemographic characteristics, an independent samples t-test was used for the pairs of independent groups, and a one-way ANOVA was used for more than two independent groups. A Bonferroni test was also conducted to determine which characteristics caused a difference. In terms of student age, a significant difference in ADKS score was observed ($p < 0.05$). The group aged 22 years and older had a significantly higher mean ADKS score than the other groups. The ADKS scores of the students also differed significantly according to their year in the nursing program ($p < 0.05$). In particular, 4th-year students had higher ADKS scores than other students, and 4th-grade students had a higher ADKS score than 2nd-grade participants. Significant difference in ADKS score was also observed according to participation in an AD training program ($p < 0.05$); those who participated in a training program had higher ADKS scores than those who did not.

The AKDS score also significantly differed according to whether the participant had previously participated in an NGO related to AD ($p < 0.05$). The participants who have never joined an NGO related to AD had higher ADKS scores than those who participated. Table 3 shows the distribution of students' responses to the scale items. The participants knew the 4th, 9th, and 14th items the most. The items that they knew the least were the 6th, 16th, and 24th. Pearson correlation analysis revealed no significant relationship between the self-scored level of knowledge about AD and the ADKS score among the students (r = 0.019, $p > 0.05$).

Univariate analyses were conducted using ANOVA for total ADKS score and within independent sample t test, Mann–Whitney U test, and Bonferroni test to explore whether demographic characteristics are associated with perceptions on AD. A significant correlation was found between age and symptom subscale ($p = 0.003$) and AD knowledge scale scores ($p = 0.023$). Gender was significantly associated with the impact of the disease on life ($p = 0.003$), treatment and management ($p = 0.022$), caregiving ($p = 0.000$), and course of the disease ($p = 0.001$) subscales. A significant correlation was also found between class and symptom ($p = 0.001$) subscale and AD scale scores ($p = 0.035$). Significant correlations were found among income level and risk factors ($p = 0.001$), long-term residence and assessment and diagnosis ($p = 0.001$), living with family and caregiving ($p = 0.045$), living with the elderly and the effect of the disease on life ($p = 0.001$), living with the elderly and treatment and management ($p = 0.029$), and nursing home internship and assessment and diagnosis ($p = 0.000$). A correlation was detected between the impact of the disease on life ($p = 0.017$) and caregiving ($p = 0.036$) subgroups and the impact of the disease on the work/social life of the caregiver. A relationship was found between participation in the program and risk factors ($p = 0.032$) and ADKS scale ($p = 0.029$) score. A relationship was also observed among civil society volunteerism and the impact of the disease on life ($p = 0.010$), assessment and diagnosis ($p = 0.012$), caregiving ($p = 0.001$), prognosis of the disease ($p = 0.001$), and level of knowledge about AD ($p = 0.013$) (Table 4).

DISCUSSION

This study aimed to determine the level of knowledge about AD among nursing students. Knowledge gaps on AD were discovered among nursing students. Evaluation of the responses to the ADKS scale for assessing knowledge levels revealed that the students are familiar with AD symptoms. However, they have less ideas about AD care and management. Focus must be directed to increasing students' knowledge about these topics in educational programs and course contents. Similar results also showed that nursing students' lack of knowledge is a common problem worldwide.[12]

The mean ADKS score of the nursing students was 17.6 ± 2.85 (min = 10, max = 25), showing that they had a low knowledge about AD. Some studies using the ADKS to measure AD knowledge reported high scores,[3,5,12,23] and others reported low scores.[24–26] Our results are similar to those of some studies conducted using the ADKS.[12,25] Previous investigations using the ADKS in Israel, Nepal, and Türkiye reported the mean scale scores of 22.3 ± 3.34, 19.6 ± 3.36, and 18.00 ± 2.70, respectively, among nursing students.[5,26,27]

Our findings revealed that the ADKS scores of the 4th year students were higher than those of the other students. The 4th year participants were taking a geriatrics course during this study. Earlier reports also revealed that senior students have better scores than junior students because the former have taken gerontology/geriatric nursing courses and attended internships in different settings.[9,28] Students in higher classes are highly educated about AD. High scores were also obtained in the subgroups of symptoms, treatment management, assessment diagnosis, and course of the disease. The students who participated in training programs about AD and voluntary activities for the elderly showed high ADKS scores. Similar studies also emphasized the importance of education and clinical training.[15,29]

Having a relative with AD, doing an internship in a nursing home, and participating in NGO activities related to the elderly all had a positive effect on the nursing students' level of knowledge about AD. Some (22%) of the participating students our study had a relative diagnosed with AD. In a study conducted in Nepal, 22% of the participants had work

TABLE 3. Distribution of students according to the response status of the Alzheimer's Disease Knowledge Scale (ADKS) (n = 346)

Item no	Scale items	Correct Answers N (%)	Wrong Answers N (%)
1	People with Alzheimer's disease are particularly prone to depression	257 (74.3)	89 (25.7)
2	It has been scientifically proven that mental exercise can prevent a person from getting Alzheimer's disease	57 (16.5)	289 (83.5)
3	After symptoms of Alzheimer's disease appear, the average life expectancy is 6 to 12 years	151 (43.6)	195 (56.4)
4	When a person with Alzheimer's disease becomes agitated, a medical examination might reveal other health problems that caused the agitation	307 (88.7)	39 (11.3)
5	People with Alzheimer's disease do best with simple instructions giving one step at a time	130 (37.6)	216 (62.4)
6	When people with Alzheimer's disease begin to have difficulty taking care of themselves, caregivers should take over right away	20 (5.8)	326 (94.2)
7	If a person with Alzheimer's disease becomes alert and agitated at night, a good strategy is to try to make sure that the person gets plenty of physical activity during the day	292 (84.4)	54 (15.6)
8	In rare cases, people have recovered from Alzheimer's disease	193 (55.8)	153 (44.2)
9	People whose Alzheimer's disease is not yet severe can benefit from psychotherapy for depression and anxiety	307 (88.7)	39 (11.3)
10	If trouble with memory and confused thinking appears suddenly, it is likely due to Alzheimer's disease	186 (53.8)	160 (46.2)
11	Most people with Alzheimer's disease live in nursing homes	275 (79.5)	71 (20.5)
12	Poor nutrition can make the symptoms of Alzheimer's disease worse	277 (80.1)	69 (19.9)
13	People in their 30s can have Alzheimer's disease	233 (67.3)	113 (32.7)
14	A person with Alzheimer's disease becomes increasingly likely to fall down as the disease gets worse	307 (88.7)	39 (11.3)
15	When people with Alzheimer's disease repeat the same question or story several times, it is helpful to Remind them that they are repeating themselves	123 (35.5)	223 (64.5)
16	Once people have Alzheimer's disease, they are no longer capable of making informed decisions about their own care.	67 (19.4)	279 (80.6)
17	Eventually, a person with Alzheimer's disease will need 24-hour supervision	287 (82.9)	59 (17.1)
18	Having high cholesterol may increase a person's risk of developing Alzheimer's disease	186 (53.8)	160 (46.2)
19	Tremor or shaking of the hands or arms is a common symptom in people with Alzheimer's disease	175 (50.6)	171 (49.4)
20	Symptoms of severe depression can be mistaken for symptoms of Alzheimer's disease	238 (68.8)	108 (31.2)
21	Alzheimer's disease is one type of dementia	273 (78.9)	73 (21.1)
22	Trouble handling money or paying bills is a common early symptom of Alzheimer's disease	180 (52.0)	166 (48.0)
23	One symptom that can occur with Alzheimer's disease is believing that other people are stealing one's things	162 (46.8)	184 (53.2)
24	When a person has Alzheimer's disease, using reminder notes is a crutch that can contribute to decline	80 (23.1)	266 (76.9)
25	Prescription drugs that prevent Alzheimer's disease are available	197 (56.9)	149 (43.1)
26	Having high blood pressure may increase a person's risk of developing Alzheimer's disease	149 (43.1)	197 (56.9)
27	Genes can only partially account for the development of Alzheimer's disease	287 (82.9)	59 (17.1)
28	It is safe for people with Alzheimer's disease to drive, as long as they have a companion in the car at all times	281 (81.2)	65 (18.8)
29	Alzheimer's disease cannot be cured	207 (59.8)	139 (40.2)
30	Most people with Alzheimer's disease remember recent events better than things that happened in the past	207 (59.8)	139 (40.2)

TABLE 4. AKDS total and subgroup analyses (N = 346)

Items	Life impact (3 Items)	Risk factor (6 Items)	Symptoms (4 Items)	Assessment and diagnosis (4 Items)	Treatment and management (4 Items)	Caregiving (5 Items)	Course of the disease (4 Items)	AKDS (30 Items)
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Age (years)								
19 and younger	2.34 ± 0.68	3.48 ± 1.16	1.92 ± 0.93	2.53 ± 0.79	2.83 ± 1.00	1.74 ± 0.80	2.61 ± 0.92	17.45 ± 2.56
20	2.38 ± 0.75	2.99 ± 1.28	1.85 ± 1.05	2.37 ± 0.89	2.86 ± 0.88	1.85 ± 0.98	2.57 ± 0.95	16.88 ± 3.17
21	2.38 ± 0.65	3.20 ± 1.20	2.23 ± 1.08	2.51 ± 0.75	2.88 ± 0.88	1.84 ± 1.00	2.87 ± 0.89	17.91 ± 2.84
22 and older	2.28 ± 0.75	3.13 ± 1.43	2.35 ± 0.97	2.67 ± 0.78	3.05 ± 0.80	1.89 ± 1.00	2.77 ± 0.95	18.14 ± 2.72
p	0.748	0.077	0.003*	0.130	0.395	0.756	0.103	0.023*
Gender								
Female	2.43 ± 0.67	3.21 ± 1.23	2.09 ± 1.00	2.59 ± 0.76	2.95 ± 0.88	1.71 ± 0.88	2.82 ± 0.89	17.79 ± 2.62
Male	2.19 ± 0.74	3.21 ± 1.35	2.09 ± 1.09	2.38 ± 0.87	2.79 ± 0.93	2.08 ± 1.02	2.47 ± 0.96	17.21 ± 3.26
p	0.003*	0.999	0.968	0.022*	0.124	0.000*	0.001*	0.072
Class								
1	2.36 ± 0.64	3.45 ± 1.09	1.80 ± 0.96	2.57 ± 0.87	2.85 ± 0.96	1.90 ± 0.98	2.58 ± 0.84	17.50 ± 2.67
2	2.36 ± 0.76	3.00 ± 1.37	2.01 ± 0.94	2.33 ± 0.79	2.89 ± 0.86	1.73 ± 0.83	2.63 ± 0.97	16.96 ± 2.84
3	2.43 ± 0.67	3.04 ± 1.25	2.15 ± 1.08	2.51 ± 0.80	2.93 ± 0.91	1.82 ± 0.93	2.76 ± 0.98	17.64 ± 2.88
4	2.23 ± 0.75	3.33 ± 1.36	2.43 ± 1.03	2.65 ± 0.72	2.94 ± 0.84	1.84 ± 1.03	2.89 ± 0.91	18.29 ± 2.94
p	0.296	0.052	0.001*	0.098	0.906	0.723	0.129	0.035*
Majority of life spent in								
Province	2.35 ± 0.67	3.20 ± 1.29	2.16 ± 1.02	2.51 ± 0.83	2.85 ± 0.85	1.88 ± 0.95	2.75 ± 0.92	17.70 ± 2.84
Subprovince	2.33 ± 0.74	3.20 ± 1.23	1.97 ± 1.00	2.52 ± 0.76	3.06 ± 0.90	1.75 ± 0.98	2.71 ± 0.91	17.52 ± 2.80
Village	2.41 ± 0.73	3.24 ± 1.35	2.16 ± 1.12	2.55 ± 0.84	2.67 ± 0.99	1.84 ± 0.83	2.59 ± 1.00	17.47 ± 3.08
p	0.784	0.973	0.236	0.949	0.024*	0.539	0.581	0.816
Living together with								
Family	2.36 ± 0.71	3.20 ± 1.28	2.10 ± 1.01	2.51 ± 0.81	2.91 ± 0.89	1.79 ± 0.94	2.73 ± 0.92	17.59 ± 2.86
Other	2.28 ± 0.65	3.24 ± 1.15	2.03 ± 1.24	2.62 ± 0.78	2.86 ± 0.95	2.17 ± 0.97	2.52 ± 1.02	17.72 ± 2.85
p	0.417	0.974	0.493	0.449	0.840	0.045*	0.324	0.953
Living with elderly								
Yes	2.28 ± 0.72	3.21 ± 1.30	2.05 ± 1.00	2.52 ± 0.87	2.84 ± 0.94	1.84 ± 0.93	2.71 ± 0.96	17.45 ± 2.99
No	2.44 ± 0.68	3.20 ± 1.23	2.14 ± 1.06	2.52 ± 0.71	2.97 ± 0.83	1.81 ± 0.96	2.71 ± 0.89	17.80 ± 2.67
p	0.029*	0.959	0.415	0.964	0.173	0.793	0.954	0.256

TABLE 4. Continue

Items	Life impact (3 Items)	Risk factor (6 Items)	Symptoms (4 Items)	Assessment and diagnosis (4 Items)	Treatment and management (4 Items)	Caregiving (5 Items)	Course of the disease (4 Items)	AKDS (30 Items)
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Time spent living with elderly								
0	2.44 ± 0.68	3.20 ± 1.23	2.14 ± 1.06	2.52 ± 0.71	2.97 ± 0.83	1.81 ± 0.96	2.71 ± 0.89	17.80 ± 2.67
2 years and less	2.19 ± 0.73	3.39 ± 1.22	2.14 ± 1.04	2.82 ± 0.81	2.94 ± 0.88	1.87 ± 0.94	2.69 ± 1.00	18.04 ± 3.05
3–5 years	2.28 ± 0.73	3.00 ± 1.24	2.06 ± 1.01	2.09 ± 0.86	2.91 ± 0.96	2.09 ± 1.06	2.56 ± 1.05	17.00 ± 2.84
6 years and long	2.35 ± 0.71	3.12 ± 1.39	1.96 ± 0.97	2.40 ± 0.85	2.73 ± 0.99	1.71 ± 0.86	2.80 ± 0.89	17.07 ± 2.93
p	0.083	0.420	0.600	0.000*	0.263	0.261	0.672	0.077
Internship at elderly nursing home								
Yes	2.33 ± 0.71	3.00 ± 1.50	2.11 ± 1.05	2.33 ± 0.71	2.33 ± 0.87	2.11 ± 1.54	2.22 ± 0.83	16.44 ± 3.24
No	2.35 ± 0.70	3.21 ± 1.27	2.09 ± 1.03	2.52 ± 0.81	2.92 ± 0.89	1.82 ± 0.93	2.72 ± 0.93	17.64 ± 2.84
p	0.896	0.661	0.965	0.512	0.035*	0.702	0.100	0.343
Degree of impact on life								
None	2.12 ± 0.78	3.53 ± 0.72	2.06 ± 1.25	2.71 ± 0.92	2.88 ± 0.93	2.35 ± 1.11	2.24 ± 1.25	17.88 ± 3.30
Partial	2.27 ± 0.73	3.17 ± 1.22	2.00 ± 0.98	2.49 ± 0.79	2.87 ± 0.87	1.87 ± 0.91	2.67 ± 0.94	17.34 ± 2.73
Severe	2.47 ± 0.65	3.21 ± 1.37	2.20 ± 1.06	2.53 ± 0.81	2.94 ± 0.92	1.72 ± 0.94	2.81 ± 0.86	17.87 ± 2.93
p	0.017*	0.495	0.191	0.518	0.736	0.036*	0.099	0.279
Participation in an AD education program								
Yes	2.26 ± 0.81	3.74 ± 1.21	2.26 ± 0.92	2.70 ± 0.82	3.22 ± 0.80	1.91 ± 1.04	2.91 ± 0.90	19.00 ± 2.88
No	2.36 ± 0.70	3.17 ± 1.27	2.08 ± 1.04	2.50 ± 0.80	2.88 ± 0.90	1.82 ± 0.94	2.70 ± 0.93	17.50 ± 2.83
p	0.652	0.032*	0.367	0.227	0.090	0.695	0.266	0.029*
Participation in an NGO								
Yes	1.67 ± 0.87	3.22 ± 1.09	1.67 ± 1.41	2.11 ± 0.78	2.22 ± 0.83	2.89 ± 0.78	1.67 ± 1.00	15.44 ± 2.07
No	2.37 ± 0.69	3.20 ± 1.28	2.10 ± 1.02	2.53 ± 0.80	2.92 ± 0.89	1.80 ± 0.93	2.74 ± 0.91	17.66 ± 2.85
p	0.010*	0.985	0.253	0.143	0.012*	0.001*	0.001*	0.013*

*$p < 0.05$; AD: Alzheimer's Diseases; NGO: Nongovernmental Organization

experience and 13.6% had an acquaintance (relative, friend, neighbor) with AD.[27] In a study conducted in Saudi Arabia, 22.7% of the students had a relative with AD.[24] Kada's study emphasized that a nursing home internship had a positive effect.[30] In nursing undergraduate programs, educators must create programs ensuring that future nurses are aware of the needs of the increasingly frail elderly population.

In a study conducted among healthcare workers in a tertiary hospital in India, the mean self-assessed score of the participants was 4.89 ± 1.7.[23] Babiker *et al*.[31] reported the self-assessed knowledge score of 5.3 ± 2.1 among four different groups. In the current work, the mean self-scored level of knowledge about AD was 5.23 ± 1.8. These results suggested that the participants were aware of their lack of knowledge about AD.

Kafadar *et al*. found gender to be significantly associated with the course of the disease knowledge area.[32] Ma *et al*. reported that gender, risk factors, and symptoms were statistically significant, with male participants having higher scores in this regard.[33] In our study, statistically significant difference in the scores of AD knowledge level was observed in relation to the subdimensions of the effect of the disease on life, treatment and management, caregiving, and disease course according to the students' gender. Compared with men, women have higher scores on the impact of the disease on life, treatment and management, and disease course. Meanwhile, the caregiving score of men is higher than that of women. Significance was found among different subgroups in the studies. Further studies are needed to determine the reason for this situation.

The main limitation of this study is its limited ability to explain the cause-and-effect relationship due to its cross-sectional nature. In addition, its findings cannot be generalized to all nursing students because this study was conducted in a single school. Further longitudinal and multischool studies are warranted. As one of the studies with small populations conducted in Türkiye about AD knowledge, the present research provides important insights into the current circumstances.

CONCLUSIONS

The participating students had a low level of knowledge about AD. The undergraduate nursing curriculum plays an important role in preparing individuals who will care for the globally increasing elderly population in the future, including those with AD. Therefore, the disease-specific education and practices in undergraduate nursing education must be improved to raise disease awareness, and AD must be included in the curriculum of compulsory courses. This study may shed light on the changes to be made in the undergraduate nursing curriculum.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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