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ORIGINAL ARTICLE

Knowledge and Attitudes of Nursing Students Regarding Epilepsy in Türkiye: A Descriptive Study

Türkiye'de Hemşirelik Öğrencilerinin Epilepsiye Karşı Bilgi ve Tutumları

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Abstract

Objective: This study was carried out to determine the knowledge and skills of nursing students regarding epilepsy.

Method: This is a descriptive study, which was carried out between 11.10.2023 and 10.01.2024 at Zonguldak Bülent Ecevit University. Data were collected using personal information form, Epilepsy Knowledge Scale (EKS), and Epilepsy Attitude Scale (EAS). The sample of the study consisted of 585 nursing students.

Results: The students had a mean EKS score of 10.98±2.69 and a mean EAS score of 59.01±7.55. There was a moderate positive correlation between the EKS and EAS scores of the students ($p<0.05$). The female students had significantly higher EKS and EAS scores than the male students ($p<0.05$). The EKS and EAS scores of the students did not differ significantly based on their class years ($p>0.05$). While there were significant differences in both the EKS and EAS scores of the students based on the education levels of their fathers, the education levels of their mothers were related to only their EAS scores ($p<0.05$). The students who knew someone with epilepsy and those who had witnessed an epileptic seizure had higher EKS and EAS scores ($p<0.05$).

Conclusion: Nursing students had moderate levels of knowledge about epilepsy and positive attitudes toward epilepsy. To support positive attitudes toward epilepsy, various public information campaigns can be organized; and this issue can be given a larger part in nursing curricula, and education may be recommended to individuals with epilepsy and their families.

Keywords: Epilepsy, knowledge, nursing, student, attitude

Öz

Amaç: Araştırma, hemşirelik öğrencilerinin epilepsiye yönelik bilgi ve tutumlarını belirlemek amacıyla yapılmıştır.

Yöntem: Bu araştırma tanımlayıcı bir araştırmadır. Araştırma Zonguldak Bülent Ecevit Üniversitesi'nde 11.10.2023 ve 10.01.2024 tarihleri arasında yürütülmüştür. Veriler kişisel bilgi formu, Epilepsi Bilgi Ölçeği (EBÖ) ve Epilepsi Tutum Ölçeği (ETÖ) kullanılarak toplanmıştır. Araştırmanın örneklemi 585 hemşirelik öğrencisinden oluşmaktadır.

Bulgular: Katılımcıların EBÖ puan ortalaması 10,98±2,69 ve ETÖ puan ortalaması 59,01±7,55 bulunmuştur. EBÖ ile ETÖ puanları arasında aynı yönlü orta düzeyde bir korelasyon bulunmuştur ($p<0,05$). Kadın öğrencilerin EBÖ ve ETÖ puanları erkek öğrencilere göre daha yüksek bulunmuştur ($p<0,05$). Öğrencilerin EBÖ ve ETÖ puanları akademik yıla göre farklılık göstermemiştir ($p>0,05$). Babanın eğitim durumu hem EBÖ hem de ETÖ puanı üzerinde etkili olurken, annenin eğitim düzeyi sadece ETÖ puanını etkilemiştir ($p<0,05$). Epilepsili birini tanıyan ve bir epilepsi nöbetine tanıklık etmiş olan öğrencilerin EBÖ ve ETÖ puanları daha yüksek bulunmuştur ($p<0,05$).

Sonuç: Hemşirelik öğrencilerinin epilepsi bilgilerinin orta düzeyde ve epilepsiye yönelik tutumlarının olumlu olduğu belirlenmiştir. Epilepsiye karşı pozitif tutumu desteklemek için çeşitli toplum bilgilendirmeleri, hemşirelik eğitim müfredatında bu konuya daha çok yer verilmesi, epilepsili bireylere ve ailelerine eğitimler verilmesi önerilebilir.

Anahtar Kelimeler: Epilepsi, bilgi, hemşirelik, öğrenci, tutum

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Introduction

Epilepsy, one of the most common neurological disorders globally, affects people of all ages and is associated with significant medical, social, and psychological challenges. The World Health Organization estimates that approximately 50 million people worldwide live with epilepsy, with 80% residing in low- and middle-income countries, where access to care is often limited (1). In Turkey, studies have reported epilepsy prevalence rates ranging between 5 and 8.94 per 1,000 individuals, reflecting its widespread impact (2-5).

Although epilepsy is a commonly encountered disease, people with epilepsy (PWE) are exposed to discrimination, stigma, and negative attitudes worldwide (6,7). This situation has several reasons. Significant determinants of negative attitudes toward epilepsy include meanings attributed to epilepsy throughout history, epileptic seizures, the lack of knowledge in society about epilepsy, and not knowing how to communicate with PWE (8-11). When PWE are exposed to negative attitudes and stigma, their quality of life is negatively affected (12,13).

Research has consistently demonstrated a strong association between knowledge levels and attitudes toward epilepsy. For instance, studies in Tunisia and Turkey have shown that greater awareness correlates with reduced stigma and more favorable perceptions of PWE (14,15). In a study performed with nurses in China, the importance of knowledge about epilepsy in the development of positive attitudes toward epilepsy was emphasized (16). The results of various previous studies have shown the importance of the society's level of knowledge regarding epilepsy in efforts to reduce the prevalence of negative attitudes toward epilepsy in the public.

Nurses have important roles in informing society about epilepsy. Therefore, nurses are expected to have knowledge of epilepsy and display positive attitudes. In Turkey, neurological diseases like epilepsy are usually included in the second academic year in the nursing curriculum. Thus, differences in the knowledge levels and attitudes of nursing students are expected after their second year of education.

This study aimed to examine the knowledge and attitudes of nursing students regarding epilepsy. Accordingly, it was expected to obtain a cross-sectional dataset on the contribution of nursing education in Turkey for supporting epilepsy-related knowledge and attitudes of nursing students.

Main Points

- It was found that students had moderate levels of knowledge about epilepsy and positive attitudes toward epilepsy and there was a positive relationship between Epilepsy Knowledge Scale (EKS) and Epilepsy Attitude Scale (EAS) scores of the students.
- The results of this study showed that gender, father's education level, knowing someone with epilepsy, and having witnessed an epilepsy seizure affected students' epilepsy knowledge level and attitude towards epilepsy.
- This study determined that the EKS and EAS scores of the students did not differ significantly based on their class years. However, the responses to the EKS items indicated that the epilepsy knowledge of the first class students was lower than that of the other classes' students.

Material and Method

Study Design and Sample Selection

This study was carried out with a descriptive design. This study was carried out in the nursing department of the faculty of health sciences of Zonguldak Bülent Ecevit University in Turkey between 11 October 2023 and 10 January 2024. The population of the study included 790 students who were registered at the department of nursing. No sample selection method was used, and the entire population was targeted. The final sample consisted of 585 nursing students who met the following inclusion criteria: (1) at least 18 years old, (2) no sensory impairments that would hinder communication, (3) proficiency in understanding and communicating in Turkish, and (4) willingness to participate in the study.

Data Collection

Data were collected by the researchers face-to-face using a personal information form, the Epilepsy Knowledge Scale (EKS), and the Epilepsy Attitude Scale (EAS).

Personal information form: The form was created by the researchers based on their review of the relevant literature, and included 16 questions about some socio-demographic and epilepsy-related awareness characteristics of the students (17-20).

Epilepsy Knowledge Scale: EKS was developed by Aydemir (17). The scale consists of 16 items, and items 4, 11, 13, and 16 are inversely scored. The total score of the scale varies in the range of 0 to 16, and higher scores indicate higher levels of knowledge about epilepsy. The response options of the scale are "true," "false", and "I do not know". The Kuder-Richardson-20 coefficient of the scale was reported as 0.72 (17). In this study, the Kuder-Richardson-20 coefficient of the scale was found to be 0.64.

Epilepsy Attitudes Scale: EAS was developed in 2008 by Aydemir (17). It is a 5-point Likert-type scale consisting of 14 items. Items 1, 2, 4, 5, 6, 8, 9, 10, 11, 13, and 14 are inversely scored. The total score of the scale varies in the range of 14-70, and higher scores indicate more positive attitudes toward epilepsy and PWE. The Cronbach's alpha coefficient of the scale was reported as 0.84 (17), while this coefficient was found to be 0.86 in this study.

Statistical Analysis

The data collected in the study were analyzed using the IBM SPSS program, version 25.00 (IBM Inc., Armonk, NY, USA). The significance of the differences between two independent groups was tested using Student's t-test for the data that satisfied parametric test assumptions and the Mann-Whitney U test for those that did not. For the

comparisons of three or more groups, One-Way ANOVA, was used for data meeting parametric test assumptions, and the Kruskal-Wallis test was used for data not meeting these assumptions. The relationships between age and scale scores and between the scores of the two scales were tested by performing correlation analyses. The level of statistical significance was taken as 0.05. The protocol of the study complied with the principles of the Declaration of Helsinki. Before starting the study, ethical approval from Zonguldak Bülent Ecevit University Human Studies Ethics Committee (approval number: 354141, date: 22.09.2023), institutional permission from it where the study would be conducted, and written consent from the individuals who agreed to participate were obtained.

Results

The students had a mean total EKS score of 10.98±2.69 and a mean total EAS score of 59.01±7.55 (Table 1). There was a moderate positive correlation between the EKS and EAS scores of the students (r=0.456) (Table 1, Figure 1).

The mean age of the students was 20.94±2.24. It was found that 76.9% of the students were women, 36.2% were 3rd-year students, and 74.2% had income equivalent to expenses. Further demographic characteristics are presented in Table 2.

The female students had significantly higher EKS and EAS scores than the male students (p<0.05). The EKS and EAS scores of the students did not significantly differ based on their academic years, income statuses, or the occupations of their mothers or fathers (p>0.05). While the educational statuses of the mothers of the students were associated only with the EAS scores of the students, both the EKS and EAS scores of the students were associated with the educational statuses of their fathers (p<0.05) (Table 2).

Most students stated that there are different types of epilepsy (61.4%), and some seizures last a few seconds (66.7%). 75% of the students knew that PWE could work, 79.8% of the students knew that PWE could attend mainstream schools, and 64.4% knew that PWE are not dangerous during seizures. The 1st-year students had the lowest rates of correct answers to these items (p<0.05). While 64.1% of the students knew that epileptic seizures can be controlled by medication, only 22.9% knew that brain surgery is a method used in some cases to stop epileptic seizures. The 4th-year students had the highest rates of correct answers to these items (p<0.05). 78.5% of the students stated that 78.5% of the students most PWE have normal intellect. Eighty-seven point seven percent of the students thought that PWE could be at least as successful as others in their work lives, and there was no significant difference in the correct response rates of the students based on their academic years (p>0.05). 84.4% of the students knew that epileptic seizures are caused by the abnormal functioning of nerve cells in the brain. Only 49.2% of the students knew that epilepsy is treatable, and those who were first-year students had the lowest rate of correct answers (p<0.05). It was determined that 88.2% of the students knew that factors such as inadequate sleep, stress, and alcohol consumption increase the likelihood of seizures. Only 16.9% of the students knew that one should not make a person who is experiencing an epileptic seizure smell an onion. Additionally, only 11.5% of the students knew that one should not splash water onto the face of a person experiencing an epileptic seizure to stop their seizure. "Epilepsy patients can lead a normal life" true was 81.7%, while "it is difficult for some epileptic seizures to be noticed by others" true was 50.8% (Table 3).

Two hundred and ninety-four students (50.3%) stated that they would not hide their condition from their friends if they were PWE, and 416 students (71.1%) said they would not keep away from a friend who was a PWE. Some of the students did not comment on whether they would date a PWE (42.6%) and whether they would marry a PWE (39.1%), respectively. However, most students also responded

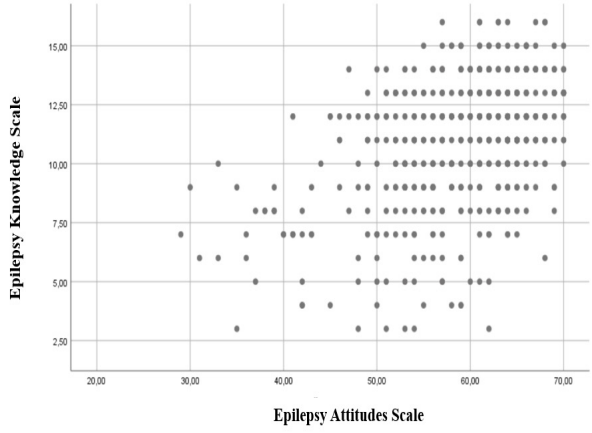

Figure 1.
Correlation Between Epilepsy Knowledge Scale and Epilepsy Attitudes Scale Scores

Table 1.
Relationship Between Epilepsy Knowledge Scale and Epilepsy Attitudes Scale Scores of the Students

Scales	Min-max	X ± SD	Score range	Epilepsy Attitudes Scale	
				r	p
Epilepsy Knowledge Scale	3-16	10.98±2.69	0-16	0.456	<0.001†
Epilepsy Attitudes Scale	29-70	59.01±7.55	14-70	1	—

†=correlation is significant at the 0.01 level, SD=standard deviation, Min-max=minimum-maximum

"absolutely disagree" to the statements about objecting to the employment of aPWE and thinking that having an family member with epilepsy would be embarrassing (respectively, 58.6% and 80.2%). More than half of the students responded "absolutely disagree" to the statements about preferring to keep away from a PWE, thinking that being an epilepsy patient would be a source of shame, and thinking that it would be upsetting to work with a PWE. However, only 134 students (22.9%) "absolutely agreed" with the statement that "I would feel comfortable near a PWE". According to their responses to the items on the EAS, the students who were 2nd- or 3rd-year students had higher rates of positive responses to the item about dating a PWE than those who were 1st- or 4th-year students (p<0.05). According to their responses to the item "it would be embarrassing to have a PWE in my family", the students who were 2nd-year students had more positive attitudes toward PWE than those who were 3rd- or 4th-year students (p<0.05) (Table 4).

It was determined that 46.3% of the students knew someone with epilepsy, and 40% had witnessed someone having an epileptic seizure. While 90.1% of the students reported that they had knowledge of epilepsy, 59% stated that the source of this knowledge was their school (Table 5). The students who knew PWE, those who had witnessed someone having an epileptic seizure, and those who had knowledge of epilepsy had higher EKS and EAS scores than others (p<0.05). The EKS and EAS scores of the students varied significantly based on their sources of knowledge about epilepsy (p<0.05) (Table 5).

Table 2.
Socio-demographic Characteristics of the Students and the Relationships Between These Characteristics and Epilepsy Knowledge Scale and Epilepsy Attitudes Scale Scores (n=585)

Characteristics			**Epilepsy Knowledge Scale**			**Epilepsy Attitudes Scale**		
Age			**r**	**p**		**r**		**p**
Min-max X ± SD	18-49 20.94±2.24		-0.030	0.464		-0.089		0.032
	n (585)	**%**	**X ± SD**	**Test statistic**	**p**	**X ± SD**	**Test statistic**	**p**
Gender								
Female	450	76.9	11.39±2.47	t=6.07	**0.000**	59.55±6.83	t=2.67	**0.008**
Male	135	23.1	9.67±3.00			57.22±9.41		
Academic year								
1st	121	20.7	10.46±2.81	F=2.16	0.092	59.25±7.35	F=1.18	0.316
2nd	112	19.1	11.29±2.09			59.70±5.02		
3rd	212	36.2	11.09±2.72			58.25±7.46		
4th	140	23.9	11.03±2.93			59.40±9.33		
Socio-economic status								
Income less than outcome	47	8.0	10.95±2.71	F=1.53	0.215	57.19±7.45	F=1.72	0.180
Income equals outcome	434	74.2	11.09±2.69			59.06±7.62		
Income more than outcome	104	17.8	10.57±2.69			59.62±7.24		
Mother's education status								
No formal degree	80	13.7	10.49±2.72	χ^2=4.78	0.188	57.55±7.46	χ^2=12.65	0.005 Post-hoc 4>1,2,3 2>1
Primary-secondary school	303	51.8	11.09±2.64			59.40±7.07		
High school	158	27.0	10.92±2.78			58.25±8.43		
Undergraduate or graduate	44	7.6	11.50±2.65			61.77±6.90		
Father's education status								
No formal degree	34	5.8	10.06±2.87	χ^2=5.23	**0.015** Post-hoc **2>1**	56.03±7.94	χ^2=8.27	**0.041** Post-hoc **2,3,4>1**
Primary-secondary school	249	42.6	11.21±2.47			59.50±6.91		
High school	208	35.6	10.87±2.78			58.75±7.63		
Undergraduate or graduate	94	16	11.01±2.95			59.38±8.77		

p<0.05, F=ANOVA, t=independent-samples t-test, χ^2=Kruskal-Wallis test, SD=standard deviation

Table 3.
Responses of the Students to the Items of Epilepsy Knowledge Scale

Epilepsy Knowledge Scale	Correct responses		Academic year	X ± SD	Test statistic	p
	n	%				
1. There are many different types of epilepsy.	359	61.4	1st year 1	0.33±0.47	F=21.45	**<0.001** **2,3,4>1‡** **3,4>2‡**
			2nd year 2	0.56±0.49		
			3rd year 3	0.71±0.45		
			4th year 4	0.74±0.43		
2. Most PWE can work.	439	75.0	1st year 1	0.61±0.48	F=4.72	0.003 **2,3,4>1‡**
			2nd year 2	0.78±0.41		
			3rd year 3	0.78±0.40		
			4th year 4	0.77±0.41		
3. Most PWE attend normal schools.	467	79.8	1st year 1	0.68±0.46	F=4.56	0.004 **2,3>1‡**
			2nd year 2	0.83±0.36		
			3rd year 3	0.84±0.36		
			4th year 4	0.79±0.40		
4. PWE are dangerous during seizures. (R)	377	64.4	1st year 1	0.57±0.49	F=12.35	<0.001 **2,3,4<1‡**
			2nd year 2	0.32±0.46		
			3rd year 3	0.31±0.46		
			4th year 4	0.25±0.43		
5. Some PWE last a few seconds.	390	66.7	1st year 1	0.55±0.49	F=3.30	0.020 **2,3>1‡**
			2nd year 2	0.72±0.44		
			3rd year 3	0.70±0.45		
			4th year 4	0.66±0.47		
6. The seizures of most PWE can be managed by medication.	375	64.1	1st year 1	0.52±0.50	F=5.61	**0.001** **4>1,3‡**
			2nd year 2	0.67±0.46		
			3rd year 3	0.60±0.48		
			4th year 4	0.75±0.43		
7. Brain surgery is a method that is used in some cases to stop epileptic seizures.	134	22.9	1st year 1	0.20±0.40	F=2.74	**0.042** **4>2‡**
			2nd year 2	0.15±0.36		
			3rd year 3	0.23±0.42		
			4th year 4	0.30±0.45		
8. Most PWE have normal intellect.	459	78.5	1st year 1	0.69±0.46	F=3.26	**0.021** **3>1‡**
			2nd year 2	0.82±0.38		
			3rd year 3	0.83±0.37		
			4th year 4	0.76±0.42		
9. PWE can be at least as successful as others in their work lives.	513	87.7	1st year 1	0.81±0.38	F=1.75	0.155
			2nd year 2	0.90±0.29		
			3rd year 3	0.88±0.32		
			4th year 4	0.90±0.30		
10. Epileptic seizures are caused by the abnormal functioning of nerve cells in the brain.	494	84.4	1st year 1	0.75±0.43	F=5.04	**0.002** **2,3>1‡**
			2nd year 2	0.91±0.28		
			3rd year 3	0.88±0.32		
			4th year 4	0.81±0.39		

Table 3.
continued

Epilepsy Knowledge Scale	Correct responses		Academic year	X ± SD	Test statistic	p
	n	%				
11. Epilepsy is a disease that has no treatment. (R)	288	49.2	1st year 1	0.80±0.40	F=21.51	**<0.001** **2,3,4<1‡**
			2nd year 2	0.34±0.47		
			3rd year 3	0.42±0.49		
			4th year 4	0.50±0.50		
12. Factors such as inadequate sleep, stress, and alcohol consumption may increase the likelihood of seizures.	516	88.2	1st year 1	0.76±0.42	F=8.78	**<0.001** **2,3,4>1‡**
			2nd year 2	0.96±0.18		
			3rd year 3	0.90±0.29		
			4th year 4	0.89±0.31		
13. When we see a person having an epileptic seizure, we should have them smell an onion to stop their seizure. (R)	99	16.9	1st year 1	0.96±0.17	F=9.73	**<0.001** **3,4<1‡** **4<2‡**
			2nd year 2	0.87±0.33		
			3rd year 3	0.78±0.40		
			4th year 4	0.74±0.43		
14. PWE can lead a normal life.	478	81.7	1st year 1	0.78±0.41	F=0.92	0.427
			2nd year 2	0.83±0.37		
			3rd year 3	0.80±0.39		
			4th year 4	0.85±0.35		
15. It is difficult for some epileptic seizures to be noticed by others.	297	50.8	1st year 1	0.42±0.49	F=3.02	**0.029** **2>1‡**
			2nd year 2	0.61±0.48		
			3rd year 3	0.50±0.50		
			4th year 4	0.49±0.50		
16. When we see a person having an epileptic seizure, we should splash water onto their face to stop their seizure. (R)	68	11.5	1st year 1	0.95±0.21	F=8.97	**<0.001** **4<1,2‡** **3<2‡**
			2nd year 2	0.96±0.18		
			3rd year 3	0.86±0.33		
			4th year 4	0.78±0.41		

PWE=people with epilepsy,‡=Tukey's test, F=ANOVA, SD=standard deviation

Discussion

This study aimed to evaluate the knowledge and attitudes of nursing students in Turkey regarding epilepsy.

The findings revealed moderate knowledge levels and generally positive attitudes toward epilepsy among the participants, consistent with previous studies conducted in Turkey and globally. The nursing students had a mean EKS score of 10.98±2.69 and a mean EAS score of 59.01±7.55. According to these results, the students had moderate levels of knowledge about epilepsy and positive attitudes toward epilepsy. Unsar et al. (21) reported that nursing students had a mean EKS score of 10.23±4.24 and a mean EAS score of 57.66±8.83. Aksoy and Büyükbayram (18) reported the mean EKS and EAS scores of nursing students as 10.03±3.21 and 59.23±7.17, respectively. In studies carried out in Palestine and Benin, good levels of knowledge about epilepsy and positive attitudes toward epilepsy were found among nursing students (22,23). The results of this study were similar to those in previous studies conducted with nursing students.

A notable result was the moderate and positive correlation between students' knowledge levels and their attitudes toward epilepsy, underscoring the critical role of education in fostering positive perceptions. This finding is consistent with prior research emphasizing the importance of knowledge in combating stigma and fostering inclusivity (18,19,21).

According to the results of this study, gender was a socio-demographic variable that affected epilepsy-related knowledge and attitudes in nursing students. The female students of this study had more knowledge of epilepsy and more positive attitudes toward epilepsy than the male students. This gender difference in knowledge and attitudes towards epilepsy may be associated with the traditionally

Table 4.
Responses of the Students to the Items of Epilepsy Attitudes Scale

Epilepsy Attitudes Scale	Absolutely agree	Agree	No idea	Disagree	Absolutely disagree	Academic year	X ± SD	Test statistic	p
1. If I were an PWE, I would hide it from my friends.	10 (1.7%)	33 (5.6%)	50 (8.5%)	198 (33.8%)	294 (50.3%)	1st year 1	4.30±0.79	F=2.11	0.098
						2nd year 2	4.41±0.81		
						3rd year 3	4.22±0.97		
						4th year 4	4.12±1.11		
2. If a friend of mine had epilepsy, I would keep away from them.	11 (1.9%)	16 (2.7%)	21 (3.6%)	121 (20.7%)	416 (71.1%)	1st year 1	4.67±0.63	F=2.71	0.054
						2nd year 2	4.68±0.64		
						3rd year 3	4.50±0.92		
						4th year 4	4.45±0.97		
3. I would date an PWE.	72 (12.3%)	111 (19.0%)	249 (42.6%)	93 (15.9%)	60 (10.3%)	1st year 1	3.34±1.05	F=31.92	**<0.001** **1.4>2.3‡**
						2nd year 2	2.54±1.01		
						3rd year 3	2.80±1.08		
						4th year 4	3.65±0.97		
4. I would object to the employment of an PWE.	8 (1.4%)	13 (2.2%)	54 (9.2%)	167 (28.5%)	343 (58.6%)	1st year 1	4.54±0.64	F=2.00	0.112
						2nd year 2	4.42±0.81		
						3rd year 3	4.31±0.96		
						4th year 4	4.42±0.84		
5. It would be embarrassing to have an PWE in my family.	3 (0.5%)	12 (2.1%)	19 (3.2%)	82 (14.0%)	469 (80.2%)	1st year 1	4.78±0.48	F=5.21	**0.001** **2>3.4‡**
						2nd year 2	4.89±0.33		
						3rd year 3	4.65±0.74		
						4th year 4	4.59±0.84		
6. I would not approve of my child marrying an PWE.	10 (1.7%)	27 (4.6%)	126 (21.5%)	146 (5.0%)	276 (47.2%)	1st year 1	4.00±1.02	F=0.75	0.521
						2nd year 2	4.18±0.90		
						3rd year 3	4.11±1.03		
						4th year 4	4.14±1.03		
7. I would marry an PWE	107 (18.3%)	171 (29.2%)	229 (39.1%)	43 (7.4%)	35 (6.0%)	1st year 1	3.34±1.03	F=1.04	0.372
						2nd year 2	3.51±1.03		
						3rd year 3	3.43±1.03		
						4th year 4	3.56±1.13		
8. If I knew a doctor was PWE, I would trust them less.	11 (1.9%)	35 (6.0%)	89 (15.2%)	173 (29.6%)	277 (47.4%)	1st year 1	4.07±1.05	F=1.54	0.201
						2nd year 2	4.21±0.94		
						3rd year 3	4.06±1.06		
						4th year 4	4.27±0.92		
9. I would prefer keeping away from an PWE.	4 (0.7%)	14 (2.4%)	32 (5.5%)	155 (26.5%)	380 (65.0%)	1st year 1	4.52±0.74	F=2.21	0.861
						2nd year 2	4.68±0.52		
						3rd year 3	4.47±0.82		
						4th year 4	4.47±0.83		

Table 4.
Responses of the Students to the Items of Epilepsy Attitudes Scale

Epilepsy Attitudes Scale	Absolutely agree	Agree	No idea	Disagree	Absolutely disagree	Academic year	X ± SD	Test statistic	p
10. Being an PWE is an embarrassing situation.	6 (1.0%)	7 (1.2%)	26 (4.4%)	80 (13.7%)	466 (79.7%)	1st year 1	4.78±0.55	F=2.79	0.060
						2nd year 2	4.82±0.62		
						3rd year 3	4.64±0.76		
						4th year 4	4.60±0.77		
11. It would be upsetting for me to work with an PWE.	6 (1.0%)	18 (3.1%)	40 (6.8%)	122 (20.9%)	399 (68.2%)	1st year 1	4.58±0.69	F=1.47	0.220
						2nd year 2	4.62±0.65		
						3rd year 3	4.44±0.95		
						4th year 4	4.50±0.86		
12. I would feel comfortable near an PWE.	134 (22.9%)	212 (36.2%)	161 (27.5%)	57 (9.7%)	21 (3.6%)	1st year 1	3.57±0.99	F=1.30	0.272
						2nd year 2	3.58±1.03		
						3rd year 3	3.62±1.08		
						4th year 4	3.80±1.04		
13. I think PWE are scary.	2 (0.3%)	19 (3.2%)	48 (8.2%)	160 (27.4%)	356 (60.9%)	1st year 1	4.39±0.76	F=0.91	0.432
						2nd year 2	4.51±0.68		
						3rd year 3	4.49±0.77		
						4th year 4	4.38±0.95		
14. I think PWE are not physically attractive.	2 (0.3%)	17 (2.9%)	77 (13.2%)	118 (20.2%)	371 (63.4%)	1st year 1	4.29±0.90	F=2.32	0.074
						2nd year 2	4.58±0.66		
						3rd year 3	4.44±0.84		
						4th year 4	4.41±0.92		

*PWE= People with epilepsy,, *= Tukey's test, F= ANOVA, SD=standard deviation*

ascribed caregiving role of women within Turkish society. In a study conducted with high school students in Nepal, female students were found to have higher knowledge levels about epilepsy than male students (24). Similar results were reached in studies carried out with nursing students (18,21). While epilepsy-related knowledge levels were higher among female Palestinian nursing students, attitudes toward epilepsy did not differ significantly between male and female students (22). The results of this study were compatible with those in the literature. Nevertheless, in another study on the epilepsy-related knowledge, attitudes, and behaviors of students of the health sciences, male students had higher scores than female students (23). The reason for this difference may be variations in sample types across different studies.

The EKS and EAS scores of the students in this study did not differ significantly according to their class years. In the literature, it has been observed that nursing students in higher class years have more knowledge of epilepsy, while their attitudes toward epilepsy do not differ based on their class years (18,19,21,22). In these studies, among nursing students, the absence of a relationship between class years and attitudes toward epilepsy was similar to the result found in this study. However, in another study conducted with nursing students in Turkey, students in higher class years had higher EKS and EAS scores (25). In our study, the highest knowledge levels were found in the 2nd-year students, but the difference among the class years was not statistically significant. Information about diseases is taught in the second year of the nursing curriculum at our university. The fact that second-year nursing students had fresh knowledge about the issue may explain their higher scores in comparison to others. However, a surprising result in our study was that the scores of the students who were in their fourth year of study were not higher than the scores of those who were in lower academic years. At our university, nursing students who start their fourth year of study will have completed all nursing courses successfully and started as intern nurses. Therefore, the lack of a significant increase in their EKS and EAS scores was an unexpected result. The reason for this may be that during their internship (4th year of study), nursing students receive mostly applied training (32 hours of practice per week) and do not receive theoretical training. In light of this result, it is recommended that the educational content of internship programs be revised, and that theoretical class hours be included in the curriculum to allow intern nurses to discuss cases.

Table 5.
Epilepsy-related Experiences of the Students and the Distributions of Their Scale Scores (n=585)

			Epilepsy Knowledge Scale			Epilepsy Attitudes Scale		
	n	**%**	**X ± SD**	**Test statistic**	**p**	**X ± SD**	**Test statistic**	**p**
Do you know a PWE?								
Yes	271	46.3	11.45±2.57	Z=-4.07	**<0.001**	60.60±6.62	Z=-4.69	**<0.001**
No	314	53.7	10.59±2.74			57.65±8.05		
Have you witnessed a person having an epileptic seizure?								
Yes	234	40.0	11.50±2.58	Z=-4.04	**<0.001**	60.23±7.18	Z=-3.43	**<0.001**
No	351	60.0	10.65±2.72			58.21±7.70		
Do you have knowledge of epilepsy?								
Yes	527	90.1	11.16±2.59	t=4.72	**<0.001**	59.24±7.55	t=2.18	**0.029**
No	58	9.9	9.43±3.06			56.96±7.28		
If yes, what is the source of your knowledge about epilepsy?								
School 1	345	59.0	11.33±2.47	χ^2=17.40	**0.004** **Post-hoc** 1,3,5>2 3>4,6	59.41±7.23	χ^2=11.23	**0.047** **Post-hoc** 1,3,5>6
TV-internet 2	54	9.2	9.96±3.02			58.06±8.45		
A person with epilepsy 3	67	11.5	11.64±2.32			61.00±6.68		
Society 4	18	3.1	10.17±3.00			57.33±9.30		
Healthcare professional 5	24	4.1	11.58±2.12			59.83±7.64		
Other 6	19	3.2	10.05±3.41			54.21±9.54		

PWE=people with epilepsy, p<0.05, F=ANOVA, χ^2=Kruskal-Wallis test, t-test=independent-samples t-test, Z=Mann-Whitney U test, SD=standard deviation

On the other hand, in this study, first-year students had lower scores than others in most EKS items. At our university, the majority of the nursing curriculum for the first semester consists of courses on basic medical sciences (anatomy, physiology, microbiology and parasitology). In this semester, students do not take courses on topics such as diseases or nursing interventions. Thus, the lower scores of the 1st-year students in most EKS items in comparison to other students may be attributed to the gains provided by the nursing curriculum in later years of their education. The higher scores of the students who were intern nurses (4th-year nursing students) in items related to the treatment of epileptic seizures (items 6 and 7) and items related to first aid during seizures, (items 13 and 16), showed that their education contributed to their knowledge of epilepsy.

According to their responses to EKS items, most students (>80%) knew that PWE could be at least as successful as other people in their work lives (item 9), epileptic seizures were caused by the abnormal functioning of nerve cells in the brain (item 10), factors such as inadequate sleep, stress, and alcohol consumption could increase the likelihood of experiencing seizures (item 12), and epilepsy patients could lead normal lives (item 14). These results were consistent with other studies carried out with nurses and nursing students (16,22). Nonetheless, the students of this study had inadequate levels of knowledge, indicated by their responses to statements such as that brain surgery could be performed in some cases to stop epileptic seizures (item 7), and epilepsy was a treatable disease (item 11). It would not be advisable to make a person having an epileptic seizure smell an onion (item 13) or splash water onto their face (item 16), and some epileptic seizures could be difficult to notice by others (item 15). These results demonstrated that the students did not have sufficient knowledge of the treatment options for epilepsy and first aid in epilepsy. Although Shawahna and Jaber (22) showed that nursing students responded to items about first aid during epileptic seizures correctly, more accurately, their results about the knowledge levels of students regarding epilepsy treatments were similar to those in our study. One of the roles of nurses in the care of patients with epilepsy is providing education to society, or patient relatives, about first aid during an epileptic seizure. Appropriate first aid during an epileptic seizure is important for the prevention of seizure-related complications and the facilitation of patient safety. In nursing education, it may be recommended that applied training be provided in addition to theoretical training regarding this topic.

The responses of the students of this study to most EAS items did not vary significantly based on their class years. While 26.2% of the students stated that they would date someone with epilepsy, 13.4% said they could marry someone with epilepsy, and 13.3% reported that they would feel comfortable near a person with epilepsy. In other studies carried out with nurses and nursing students, most students reported that they preferred not to date or marry someone with epilepsy (16,26). In a study examining the attitudes

of university students toward epilepsy in Egypt, although 68.2% of students with epilepsy stated that they could marry someone with epilepsy, this rate was 13.4% in those who did not have epilepsy (27). According to the results of multiple studies, PWE are discriminated against by people around them in the context of dating and marriage.

In this study, while the EKS scores of the students did not show significant differences based on the education levels of their mothers, the scores of those whose fathers had primary and secondary school degrees, were higher than the scores of those whose fathers had no formal degrees. The EAS scores of the students whose parents had undergraduate or graduate university degrees were higher than the scores of others. We were unable to find any study that examined parental education levels previous studies carried out on epilepsy-related knowledge levels and attitudes of students. Considering that the family is the initial environment and the first setting of education for an individual, it was expected that the EKS and EAS scores of the students varied depending on the education levels of their parents. In the study she performed with the participation of parents, Kurt (15), reported that individuals with undergraduate or graduate degrees had better knowledge and attitudes regarding epilepsy. Similar results were reached in a study performed on PWE in Malaysia (28).

The EKS and EAS scores of the students of this study did not show any significant difference associated with their socio-economic status. The study conducted by Shawahna and Jaber (22) found that, while the EKS scores of nursing students did not vary according to socio-demographic status, the EAS scores were higher for those with high socio-economic status. In line with the result of our study, no significant relationship was found between the socio-economic status of Jordanian adults and their epilepsy-related knowledge levels, and attitudes (20).

The students of our study who knew a PWE or had witnessed someone having an epileptic seizure had higher EKS and EAS scores. Studies on this topic carried out in previous years revealed different results. In a study conducted with nursing students in Turkey, students who knew a PWE and those who had witnessed someone having an epileptic seizure, had higher EKS scores. In the same study, EAS scores were found to be higher only among those who knew a PWE (18). Moreover, as in our study, other studies have demonstrated that witnessing an epileptic seizure reinforces the knowledge levels and positive attitudes of individuals regarding epilepsy (19,20,22). In a study including students at a faculty of health sciences, witnessing an epileptic seizure was not found to influence epilepsy-related knowledge levels and attitudes significantly (23). Surprisingly, Nepalese high school students who knew a PWE had lower levels of knowledge of epilepsy compared to those who did not know a PWE (24). For the nursing students who participated in this study, knowing a PWE was identified as an effective source of epilepsy-related knowledge (Table 5). It was seen that in addition to knowing a person with epilepsy, receiving information about epilepsy from school or healthcare professionals was also effective (Table 5). Hence, it is recommended that epilepsy be included from a broader perspective in the nursing curriculum and that the clinical internships of nursing students be planned in a way to allow them to work with PWE.

Study Limitation

The limitation of the research is that it was conducted only in a state university within a single province. Therefore, the results of the research cannot be generalized.

Conclusion

In conclusion, nursing students were determined to have moderate levels of knowledge about epilepsy and positive attitudes toward epilepsy. However, they could display negative attitudes toward PWE in the context of dating or marriage. A positive correlation was found between knowledge of epilepsy and attitudes toward epilepsy. Accordingly, to support positive attitudes toward epilepsy, campaigns to inform the public can be organized. Additionally, this topic can be given a more prominent place in the nursing curriculum, and education about the topic can be provided to PWE and their families.

The EKS and EAS scores of the nursing students did not differ significantly based on their class years. In light of this result, it is recommended that:

- Nursing curricula should integrate comprehensive theoretical and practical training on epilepsy throughout undergraduate education, including simulations and case discussions.

- Collaboration with healthcare organizations can help combat stigma and promote positive attitudes toward epilepsy in the broader community.

- Focused training on first aid and treatment options for epilepsy should be prioritized to equip nursing students for their roles as educators and advocates for PWE.

Ethics Committee Approval: The protocol of the study complied with the principles of the Declaration of Helsinki. Before starting the study, ethical approval from Zonguldak Bülent Ecevit University Human Studies Ethics Committee (approval number: 354141, date: 22.09.2023).

Informed Consent: Written consent from the individuals who agreed to participate were obtained.

Footnotes

Author Contributions: Concept - U.D.; Design - U.D., Z.E., A.K.; Data Collection or Processing - U.D., Z.E., A.K.; Analysis or Interpretation - U.D., A.K.; Literature Search - U.D., Z.E.; Writing - U.D., Z.E., A.K.

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References

1. World Health Organization (WHO). Epilepsy. [Internet]. 2024. Available from:https://www.who.int/news-room/fact-sheets/detail/epilepsy [Crossref]
2. Aydin A, Ergor A, Ergor G, Dirik E. The prevalence of epilepsy amongst school children in Izmir, Turkey. Seizure. 2002;11(6):392-396. [Crossref]
3. Kılınçer A, Erdoğan Ç, Ergin A, Acar G, Şahiner T. The prevalence of epilepsy in Denizli city center. Pamukkale Med J. 2012;5(3):110-114. [Crossref]
4. Tekeli̇ H, Yaşar H, Kendirli MT, Şenol MG, Özdağ F, Saraçoğlu M. The prevalence of epilepsy in young Turkish males. Epilepsi. 2012;18(1):1-6. [Crossref]
5. Balal M, Demir T, Aslan K, Bozdemir H. The determination of epilepsy prevalance in Adana city center and relationship with sociodemographical factors. TJFMPC. 2017;11(1):20-28. [Crossref]
6. Mao L, Wang K, Zhang Q, Wang J, Zhao Y, Peng W, et al. Felt stigma and its underlying contributors in epilepsy patients. Front Public Health. 2022;10:879895. [Crossref]
7. Goodall J, Salem S, Walker RW, Gray WK, Burton K, Hunter E, et al. Stigma and functional disability in relation to marriage and employment in young people with epilepsy in rural Tanzania. Seizure. 2018;54:27-32. [Crossref]
8. Shehata GA, Mahran DG. Egyptian students' guardians knowledge, attitude and predictors of negative attitude of epilepsy in Assiut city. J Epidemiol Glob Health. 2014;4(2):87-95. [Crossref]
9. Hills M. Overcoming the stigma of epilepsy. Neurol Asia. 2010;15(Supplement 1):21-24. [Crossref]
10. Demirel U, Okçin F. Epilepsy and stigma. HEAD. 2020;17(4):378-382. [Crossref]
11. Yeni K, Tulek Z, Bebek N. Factors associated with perceived stigma among patients with epilepsy in Turkey. Epilepsy Behav. 2016;60:142-148. [Crossref]
12. Mroueh L, Boumediene F, Jost J, Ratsimbazafy V, Preux PM, Salameh P, et al. Quality of life and stigma in Lebanese people with epilepsy taking medication. Epilepsy Res. 2020;167:106437. [Crossref]
13. Lalatović S, Milovanović M, Krstić N. Stigma and its association with health-related quality of life in adults with epilepsy. Epilepsy Behav. 2022;135:108874. [Crossref]
14. Sansa E, Fray S, Jamoussi H, Chebbi S, Ben Mahmoud M, Ben Ali N, et al. Knowledge and attitudes toward epilepsy among teachers in Tunisia. Epilepsy Behav. 2021;123:108260. [Crossref]
15. Kurt ANC. Characteristics of the knowledge and attitudes of parents about epilepsy. Epilepsy Behav. 2018;86:153-156. [Crossref]
16. Yu Q, Ying YQ, Lu PP, Sun MT, Zhu ZL, Xu ZY, et al. Evaluation of the knowledge, awareness, and attitudes toward epilepsy among nurses. Epilepsy Behav. 2022;136:108920. [Crossref]
17. Aydemir N. Developing two different measures for assessing knowledge of and attitudes toward epilepsy for the Turkish population. Epilepsy Behav. 2008;12(1):84-89. [Crossref]
18. Aksoy M, Büyükbayram Z. Evaluating the knowledge of and attitudes toward epilepsy among Turkish undergraduate nursing students: a cross-sectional study. Epilepsy Behav. 2022;126:108477. [Crossref]
19. Bahçecioğlu Turan G, Dayapoğlu N, Özer Z. Evaluation of nursing students' health fatalism, knowledge, and attitudes toward patients with epilepsy. Epilepsy Behav. 2022;127:108497. [Crossref]
20. Abuhamdah SMA, Naser AY, Abualshaar MAR. Knowledge of and attitude towards epilepsy among the Jordanian community. Healthcare (Basel). 2022;10(8):1567. [Crossref]
21. Unsar S, Özdemir Ö, Erol Ö, Bıkmaz Z, Yenici Bulut E. Evaluation of nursing students' epilepsy-related knowledge and attitudes. Epilepsy Behav. 2020;111:107167. [Crossref]
22. Shawahna R, Jaber M. Assessing knowledge and attitudes of Palestinian undergraduate nursing students toward epilepsy and patients with epilepsy: a cross-sectional study. Epilepsy Behav. 2020;102:106811. [Crossref]
23. Vodougnon C, Gérard D, Bruand PE, Auditeau E, Boumediene F, Zohoun IY, et al. Knowledge, attitudes, and practices of health sciences students regarding epilepsy at the end of their curriculum in Benin. Epilepsy Behav. 2019;92:165-170. [Crossref]
24. Thapa L, Bhandari TR, Shrestha S, Poudel RS. Knowledge, beliefs, and practices on epilepsy among high school students of central Nepal. Epilepsy Res Treat. 2017;2017:6705807. [Crossref]
25. Ozer Z, Turan G, Kose S. Are nursing students ready to provide quality care to patients with epilepsy? A comparative cross-sectional study. Am J Nurs Stud. 2023;3(1):1018. [Crossref]
26. Alkhotani AM, Alkhotani AM. Epilepsy stigma among university students in Makkah: a cross-sectional study. Neuropsychiatr Dis Treat. 2022;18:1047-1056. [Crossref]
27. Thabit MN, Sayed MA, Ali MM. Evaluation of knowledge about epilepsy and attitudes towards patients with epilepsy among university students in upper Egypt. Epilepsy Res. 2018;144:30-33. [Crossref]
28. Yousuf RM, Shahar MA, Marzuki OA, Azarisman SMS, Rosle C, Tin Btw MH. Self-perception of stigma among epilepsy patients in Malaysia. Int Med J Malaysia. 2018;17(1):113-120. [Crossref]