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Public Awareness and Attitudes towards Epilepsy: A Cross-Sectional Study

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Abstract **Original Research Article**

Epilepsy is surrounded by stigma and unfavorable attitudes as a result of several inaccurate or insufficient knowledge linked to the disease, and individuals have negative views of the disorder. They must have up-to-date knowledge and an acceptable approach to epilepsy and antiepileptic medications. This study aimed to assess the public general awareness of epilepsy and attitude toward persons living with epilepsy and its associated factors. A descriptive cross-sectional study was undertaken in Taif, Saudi Arabia, targeting the general public with a self-administered validated Arabic questionnaire. The questionnaire, which comprised two sections and included the responder's demographic information, was distributed over social media platforms between March 18, 2022, and June 3, 2022. A total of 500 respondents who met the inclusion criteria were included in the study. The characteristics of the subjects were described using descriptive statistics, and differences were assessed using the independent sample t-test and 2-way ANOVA. A p-value of ≤ 0.05 was used to determine statistical significance. A total of 500 individuals who met the inclusion criteria were included. The mean (standard deviation) score for general epilepsy awareness was 6.78(1.74), which is altogether considered as insufficient. Female participants had a substantially higher mean (SD) awareness score than male participants: 32.58(7.67); 95% CI: 31.34-33.68 versus 29.94(8.79); 95% CI: 28.93-30.95, P0.001. There were no significant differences in participants' awareness scores based on their nationality or occupation. Participants' attitudes towards PWE were mainly favorable, with 482 (96.4%) reporting that they would not be embarrassed if someone in their family had epilepsy, and that PWE should not hide their condition. According to this study, more people are aware of epilepsy and have a good attitude toward it. Furthermore, the study discovered a link between the three variables of interest and sociodemographic parameters such as gender, level of education, and marital status.

Keywords: knowledge; awareness; attitude; epilepsy; people living with epilepsy (PLWE).

INTRODUCTION

The estimated prevalence of epilepsy exceeds 50 million individuals (Bamikole *et al.*, 2019). According to global data, a significant proportion of individuals, ranging from forty to eighty percent, lack a fundamental comprehension of epilepsy. Furthermore, a substantial percentage, ranging from twenty-eight to eighty-seven percent, have unfavorable attitudes towards people living with epilepsy (PLWE) (Wubetu *et al.*, 2020). Numerous prior studies conducted in Saudi Arabia have examined the issue of epilepsy awareness. One such study revealed that a significant proportion of teachers in the nation, namely 57.9%, had insufficient understanding of the illness (Alsulami *et al.*, 2022). This knowledge deficit was seen not only in Saudi Arabia as a whole but also in specific locations such as Tabuk and Arar (Alamri *et al.*, 2018, Al-qahtani *et al.*, 2019). A study conducted in Ile-Ife, Nigeria, revealed that a mere 15.3% of participants shown a high level of knowledge of the condition of epilepsy (Fehintola *et al.*, 2019). This finding suggests a significant lack of information and understanding pertaining to this illness among the Nigerian population. According to research conducted on the Menit population in Southwest Ethiopia, it was found that just 14.4 percent of the participants had a profound understanding of epilepsy (Henok *et al.*, 2016). Epilepsy has a higher frequency in pediatric populations, constituting a significant part of

neurological illnesses in children. In Saudi Arabia, the prevalence rate of epilepsy is reported to be 6.5 per 1000 individuals (Alfakey & Alkarani, 2021). This estimate is derived from the findings of 32 studies done in various Countries. The dissemination of knowledge on the nature, etiology, and treatment of epilepsy, among other related subjects, has been limited, particularly in low-income countries.

The population in Saudi Arabia faces significant risks as a result of limited access to education and inadequate understanding of epilepsy. The provision of public education has a crucial role in safeguarding the lives of individuals with pre-existing medical conditions during emergency circumstances and mitigating the risk of premature mortality. Multiple authors (Holmes *et al.*, 2018, Adewumi *et al.*, 2020) have highlighted the need of public awareness initiatives aimed at enhancing individuals' knowledge of epilepsy and improving their ability to effectively manage the difficulties associated with the condition. There is a need for evidence-based interventions and activities in order to improve the health-related quality of life of individuals with epilepsy and their families (Adewumi *et al.*, 2020). Prior to the development of effective instructional activities, it is crucial to have a comprehensive understanding of the degree of knowledge, awareness, and attitudes pertaining to epilepsy. The current study investigates the level of public knowledge, awareness, and attitudes about epilepsy in order to contribute to the advancement of educational and therapeutic approaches for this condition, as well as to mitigate the associated stigma.

MATERIALS AND METHODS

Setting and sampling

This descriptive cross-sectional research was carried out in Taif, Saudi Arabia, from March 18, 2022, until June 3, 2022. Taif which has a total population of 913,409 persons in 2022. Our target demographic included only young adults (over the age of 18), adults, and seniors who were willing to engage in the study regardless of their educational level. The sample size was not estimated convenance sampling technique was used to get many participants as possible, thus a total of 500 participants who met the inclusion criteria, agreed to participate in the study, and completed the questionnaire were included. Taif University's Research Ethics Committee approved the study. Before taking part in the study, participants agreed informed consent, and all data was kept confidential. Furthermore, participants were free to exit the study at any time.

Variables and data collection

Participants 'socio-demographic characteristics, awareness of epilepsy, and attitudes toward PWE were all variables. A modified validated Arabic questionnaire was employed. The questionnaire was adapted from a study in Tehran that measured public awareness, attitudes, and first-aid measures for epilepsy. The questionnaire was divided into two sections: demographics (sex, marital status, nationality, educational level, and occupation), and general knowledge of epilepsy (10 items), causes (12 items), seizure triggers (8 items), and attitudes (nineteen statements about participants' attitudes towards PWE). Participants chose an answer from a five-point Likert scale in response to these statements.

Validity and reliability

The item content was adopted from a previous study conducted in Tehran (Kangevari M *et al.*, 2019). The content validity of the questionnaire was evaluated by a group of five neurologists, public health, and health education experts. An item discrimination analysis was conducted for each scale to eliminate too difficult and too easy items. Factor analysis was performed for factor structure. Separate test-retest over two weeks were conducted for the three scales of the questionnaire. Test-retest correlation for the awareness scale was 0.87; Kuder Richardson-20 was used to prevent overestimation of internal consistency, and the coefficient was 0.83. Test-retest correlation for the attitudes scale was 0.89; the coefficient alpha was 0.9. Data was collected by distributing the questionnaire through social media platforms (WhatsApp and Telegram).

Data analysis

IBM SPSS Statistics 21 (Chicago, IL, USA) was used for statistical analysis. In terms of knowledge, each accurate answer received one point. The overall knowledge level of epilepsy was determined by adding discrete scores for each correct knowledge item. The overall knowledge score was classified as bad if a participant's score was less than 35% of the total score, average if the participant's score was 36-69% of the overall score, and high if the participant's score was 70% or higher of the overall score. For study variables, descriptive analysis was performed using prescribing frequency distribution and percentage. To analyze the attitudes of participants, "I strongly agree" and "I agree" were considered "I agree," whereas "I strongly disagree" and "I disagree" were considered "I disagree." The independent-sample t-test and one-way analysis of variance (ANOVA) tests were employed to compare the means of two groups and three groups or more. A significant level of less than 0.05 was considered.

RESULTS

A total of 500 individuals who met the inclusion criteria were included. 317 (63.4%) of the participants were men, and 490 (98.2%) were Saudi. In terms of marital status, 253 (50.6%) have never

married. In terms of educational level, 339 (67.8%) had an associate degree and 117 (23.4%) had a high school diploma and diploma. Unemployment was reported by 178 (35.6%) of the interviewees, with 133 (26.6%) being Professionals (Table 1).

Table 1: The demographic profile of respondents (N=500)

Item	Measures	Frequency	Percentage
Sex	Male	317	63.4
	Female	183	36.6
Marital status	Married	227	45.4
	Never married	253	50.6
	Widowed	1	.2
	Divorced	19	3.8
Nationality	Saudi	490	98.0
	Non-Saudi	10	2.0
	Primary school	3	.6
	Middle school	11	2.2
	High school and diploma	117	23.4
	Associate degree	339	67.8
	Bachelor	30	6.0
	Master and PhD	3	.6
Occupation	Managers	50	10.0
	Professionals	133	26.6
	Technicians	37	7.4
	Clerical supports	2	.4
	Services and sales	14	2.8
	Craft workers	4	.8
	Machine operators	27	5.4
	Unemployed	178	35.6
	Student	43	8.6
	Housewife	12	2.4
	Retired	50	10.0

General awareness about epilepsy

The mean (SD) score for general epilepsy awareness was 6.78(1.74), with a range of 0.00 to 10.00 (Table 6). Approximately two-thirds of the 374 participants (78.8) were aware of the various kinds of epilepsy. However, 457 (91.4%) of respondents were aware that epilepsy is a neurological illness, while 238 (47.6%) were unaware that a normal EEG ruled out epilepsy (Table 2).

Table 2: General awareness about epilepsy (N=500)

Statement	True (%)	False (%)	I don't know (%)
Epilepsy is a neurological disorder	457(91.4)	12(2.4)	31(6.2)
Most seizures are controlled after regular drug therapy	423(84.6)	30(6.0)	47(9.4)
Epilepsy is treatable	305(61.0)	94(18.8)	101(20.2)
There are different types of epilepsy	394(78.8)	25(5.0)	81(16.2)
Seizures might be transient and not be sensed by others	344(68.8)	69(13.8)	87(17.4)
PWE needs to take lifelong medications	180(36.0)	142(28.4)	178(35.6)
Some PWE may sense a seizure shortly before it happens	322(64.4)	38(7.6)	140(28.0)
Epilepsy is a psychological disorder	119(23.8)	294(58.8)	87(17.4)
A normal EEG rules out epilepsy	185(37.0)	77(15.4)	238(47.6)
Epilepsy is a contagious disease	14(2.8)	469(93.8)	17(3.4)

Awareness about causes of epilepsy

The mean (SD) awareness score of epilepsy causes was 4.94 (2.66), with a range of.000 to 13.00. 356 (71.2%) of participants said that eye or envy can cause seizures (Table 6). Although 277 (55.4%) stated that insanity is not a cause of epilepsy, 329 (65.8%) stated that demonic possession is a cause of epilepsy. As many as 303 (60.3%) of those polled indicated witchcraft as a possible cause of epilepsy. Among these

500 people, 180 (36.0%) did not know or stated that stroke can cause epilepsy (Table 3).

Awareness of seizure triggers

In terms of seizure triggers, 430 (86.0%) of respondents reported that anger and sleep deprivation could trigger seizures. Furthermore, almost half of them 230 (46.0%) did not know whether smoking could trigger seizures. Although 398 (79.6%) reported that alcohol consumption could trigger seizures (Table 3).

Table 3: Awareness about aetiology of epilepsy & seizure triggers (N=500)

Statement	Yes	(%)	No	(%)
Cause of Epilepsy: Real Causes				
Traumatic brain injury	425	85.0	75	15.0
Genetic influence	402	80.4	98	19.6
Birth injuries	381	76.2	119	23.8
Brain tumour	338	67.6	162	32.4
Drug side effects	396	79.2	104	20.8
Unknown	420	84.0	80	16.0
Prenatal conditions	420	84.0	80	16.0
Stroke	320	64.0	180	36.0
Superstitious causes				
eye or envy	356	71.2	144	28.8
Insanity	223	44.6	277	55.4
Witchcraft	303	60.6	197	39.4
Demonic possession	329	65.8	171	34.2
Seizure triggers				
Taking drugs irregularly	385	77.0	115	23.0
Anger	430	86.0	70	14.0
Anxiety	307	61.4	193	38.6
Sleep deprivation	430	86.0	70	14.0
Alcohol consumption	398	79.6	102	20.4
Drug abuse	379	75.8	121	24.2
Physical exertion	352	70.4	148	29.6
Smoking	270	54.0	230	46.0
Studying too much	313	62.6	187	37.4

Analysis of participants' total awareness score

Female participants had a considerably higher mean (SD) awareness score than male ones: P0.001 for 32.58(7.67); 95% CI: 31.34-33.68 versus 29.94(8.79); 95% CI: 28.93-30.95. The mean (SD) score of divorced and never-married participants was considerably higher than that of married people: P0.001 for 37.50 (5.29); 95% CI: 34.69-40.31 and 31.55(8.64); 95% CI: 30.49-32.61 versus 29.79(8.24); 95% CI: 28.65-30.90. Participants with a primary school or master's degree and a Ph.D. had a considerably higher mean (SD) score than those with a middle school or high school and diploma: P0.001 for 38.00 (4.58); 95% CI: 33.00-42.00 versus 28.22 (7.43); 95% CI: 22.78-33.20. There were no significant differences in participants' awareness scores based on their nationality or occupation.

Table 4: Analysis of participants' total awareness score

Variable	N	M	SD	F	95% CI		sig
					lower	upper	
Sex							
Male	304	29.94	8.79	10.91	28.93	30.95	**.00***
Female	174	32.58	7.67		31.41	33.68	
Marital status							
Married	223	29.79	8.24	7.01	28.65	30.90	**.00***
Never Married	241	31.55	8.64		30.49	32.61	
Divorced	14	37.50	5.29		34.69	40.31	
Nationality							
Saudi	468	30.87	8.44	.31	30.16	31.59	**.57**
Non-Saudi	10	32.40	10.91		23.89	39.30	

Variable	N	M	SD	F	95% CI		sig
					lower	upper	
Literacy							
Primary school	3	38.00	4.58	5.70	33.00	42.00	**.00***
Middle school	9	28.22	7.43		22.78	33.20	
High school and diploma	111	28.37	8.32		26.93	30.01	
Bachelor	327	31.39	8.54		30.42	32.25	
Master and PhD	28	35.43	5.78		33.11	37.55	
Occupation							
Managers	50	31.80	6.84	1.25	29.95	33.56	**.27**
Professionals	117	30.64	8.33		29.06	32.12	
Technicians	37	28.86	10.93		25.31	32.22	
Services and sales	11	28.73	12.08		20.00	35.28	
Machine operators	2	30.50	12.02		22.00	39.00	
Unemployed	26	30.62	6.50		28.09	33.17	
Student	168	31.71	8.17		30.50	32.94	
Housewife	38	32.21	7.96		29.79	34.65	
Other	29	27.76	10.03		24.09	31.56	

Independent sample t test and 2-way ANOVA. * Significant at 0.05.M= Mean, SD= Standard Deviation, 95% CI= Confidence Interval.

Attitudes

Participants' attitudes towards PWE were mainly favorable, with 482 (96.4%) reporting that they would not be embarrassed if someone in their family had epilepsy, and that PWE should not hide their condition. The vast majority of respondents, 483 (96.6%), claimed that PWE can cope with daily activities and live a normal existence. However, 41.0% said they would not marry someone who has epilepsy. Almost 26.2% said society does not discriminate against people with epilepsy; nevertheless, only 12% said they cannot be fearful of being alone with someone who has epilepsy. In terms of PWE carrier life, 94.2% would work with them, and 84% claimed that epilepsy does not impede hiring a qualified candidate. The most negative attitudes against PWE were related to their marriage and having kids (Table 7).

Table 5: Attitudes of participants towards epilepsy (N=500)

Statements about attitudes towards epilepsy	Agree		Disagree	
	n	%	n	%
PWE should inform partners before marriage	490	98.0	10	2.0
Epilepsy is not a health condition to be ashamed of	437	87.4	63	12.6
I would not be embarrassed if someone in family had epilepsy	482	96.4	18	3.6
PWE should not hide their condition	480	96.0	20	4.0
PWE can cope with everyday life	483	96.6	17	3.4
PWE can have a normal life	474	94.8	26	5.2
PWE can be as successful in carriers as other	341	68.2	159	31.8
I would let my child play with a kid with epilepsy	431	86.2	69	13.8
Epilepsy is not a type of insanity	476	95.2	24	4.8
I would work with a person with epilepsy	471	94.2	29	5.8
PWE is as intelligent as others	478	95.6	22	4.4
PWE can achieve high levels of education	484	96.8	16	3.2
As an employer, I would hire a person with epilepsy	420	84.0	80	16.0
I am not afraid of being alone with a person with epilepsy	439	87.8	61	12.2
PWE has the same life quality as others	454	90.8	46	9.2
PWE can have kids	481	96.2	19	3.8
I would allow my son or daughter to marry someone with epilepsy	335	67.0	165	33.0
The society doesn't discriminate against PWE	369	73.8	131	26.2
I would marry a person with epilepsy	295	59.0	205	41.0

Table 6: Total awareness score of respondents (N= 478)

Total awareness score	n	%	Mean	Std. Deviation	Range
Low	36	7.5	30.90	8.48	.00- 50.00
Average	295	61.7			
High	147	30.8			
General awareness			6.78	1.74	.00- 10.00
Awareness about causes of Epi			4.94	2.66	.00- 12.00
Awareness about symptoms of Epi			6.33	1.70	.00- 8.00
Awareness about seizure trigger			3.53	2.70	.00- 9.00
Awareness about first aid measures			9.32	2.91	.00- 14.00

DISCUSSION

Awareness

The current study was conducted in Taif, Saudi Arabia, to evaluate the knowledge and attitudes of individuals about epilepsy. The study findings revealed that 38.8% of the participants exhibited a high degree of awareness, while 61.7% showed an average level of awareness. Additionally, a minority of 7.5% had a low level of awareness. These proportions align with the expected distribution and are deemed suitable within the context of the study. Significant statistical relationships were observed between the individuals' knowledge of epilepsy and their respective genders, marital status, and educational backgrounds. In contrast, previous research conducted in Saudi Arabia has shown that a significant proportion of the population lacks awareness and understanding of epilepsy (Kangevari *et al.*, 2019, Alkhotani *et al.*, 2019). A study conducted in Debre Berhan, located in the North Shoa region of the Amhara Region, had comparable findings, indicating that 55.4% of participants exhibited a profound understanding of epilepsy (Wubetu *et al.*, 2019). The findings from the research conducted in East Gojjam, Northern Ethiopia, revealed that a comparable proportion (52.5%) of the community had enough information about epilepsy (Zeleke *et al.*, 2016). Hence, these results demonstrate a similarity between the two studies. In contrast to the findings of a previous survey conducted in Ile-Ife, Nigeria, which reported that only 15.3% of respondents had a satisfactory level of awareness on the illness (Fehintola *et al.*, 2019), the current study reveals a higher proportion of participants exhibiting a commendable level of knowledge. The observed differences in the outcomes might potentially be attributed to factors such as geographical location and study year. The level of education among participants had an impact on their awareness of epilepsy. Individuals that possess varying levels of education, including elementary, secondary, or tertiary education, show superior performance in terms of information acquisition compared to individuals without any formal education. There exists a positive correlation between higher education and a more extensive understanding of epilepsy, as shown by previous studies conducted in Ile-Ife, Nigeria (Fehintola *et al.*, 2019) and Goncha Siso Enese Woreda, EastGojjam, Ethiopia (Zeleke H *et al.*, 2016). This phenomenon might perhaps be attributed to the fact that persons with higher levels of education possess more access to a wider range of information sources, such as books and the internet. In addition, schools may provide information about epilepsy.

In our study, a significant proportion of individuals (65.8%) attribute their seizures to demonic possession. The prevalence of individuals ascribing their seizures to possession was much higher in the present investigation compared to a previous study done in Saudi Arabia (Tayeb *et al.*, 2019). The findings of our study indicate that a mere 1.7% of the participants in our sample agreed with the notion that epilepsy is attributed to demonic possession. This aligns with the results of a survey conducted in the eastern area of Saudi Arabia. Potential factors that might contribute to this phenomenon include disparities in societal standards and levels of literacy across different research sites. According to the findings of our survey, a significant majority of respondents (86%, 79.6%, 54.0%, and 62.4% respectively) claimed that individuals with epilepsy are more prone to have seizures while they are experiencing anger, sleep deprivation, alcohol use, smoking, or difficulties in maintaining concentration on their academic pursuits. Given that a significant proportion of respondents provided inaccurate responses, it may be inferred that they had little knowledge on the various stimuli that might elicit epileptic seizures. Nevertheless, it is possible for individuals to have a seizure under certain circumstances, such as instances of acute dehydration or elevated body temperature. Regarding the aspect of committed partnerships, it was found that only 41.0% of the respondents in our study expressed their disinclination to marry an individual who is diagnosed with epilepsy. In contrast to a study done in Ghana, whereby 93.1% of participants expressed their disinclination to not participate in an intimate relationship with an individual diagnosed with epilepsy, the findings of the present survey demonstrate a notably reduced proportion. The findings of this study indicate

that, if the spouse is well informed about the disease, epilepsy does not seem to have a substantial impact on marital stress levels. Couples of this kind have a higher propensity for demonstrating increased levels of caring and support towards one other. In response to this contention, it is noteworthy that a significant majority of respondents, specifically 85.1%, expressed their support for marrying an individual who is afflicted with epilepsy (Richard *et al.*, 2020).

However, a significant majority of respondents, including 476 individuals (accounting for 95.2% of the overall sample), expressed the view that epilepsy should not be classified as a kind of insanity. The findings of this research align with those reported in a referenced publication, which indicated that 10% of participants held the belief that epilepsy was indicative of mental derangement. According to some studies, those who possess less awareness and knowledge of epilepsy tend to exhibit more unfavorable attitudes and harbor misconceptions about the condition. One such misconception is the assumption that epilepsy is a kind of mental illness (insanity). The findings of this study are in direct opposition to a previous study which concluded that individuals with higher levels of education do not see individuals with epilepsy as mentally ill (Richard *et al.*, 2020).

CONCLUSIONS

The purpose of this study was to assess the levels of public awareness and attitude toward persons living with epilepsy and its associated factors in Taif. According to this study, more people are aware of epilepsy and have a good attitude toward it. Furthermore, the study discovered a link between the three variables of interest and sociodemographic parameters such as gender, level of education, and marital status. The total awareness scores, on the other hand, indicate a need for purposeful epilepsy education, as failing to do so may have a significant influence on the quality of life of PLWEs and their families. Future research should look into whether contextualized epilepsy education can improve attitudes, awareness, and behaviors regarding epilepsy. Furthermore, future research should look into the relationship between attitudes and behaviors regarding PLWE.

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