

3 ORIGINAL ARTICLE

4 Assessment of the level of general
5 knowledge and awareness of public
6 toward seizure disorders and seizure
7 disorder surgery in Hail city

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11 ABSTRACT

12 **Background:** Seizure disorders create a framework for clinicians, researchers, patients, and their families. The
13 classification of seizure disorders is essential in diagnosis and treatment. This study aimed to assess the aware-
14 ness of population in Hail about seizure disorders and seizure disorders surgery.

15 **Methods:** A cross-sectional study was conducted using an electronic questionnaire that was distributed among
16 residents of Hail. Data collection included personal data, people's beliefs, and level of awareness. The data were
17 analyzed and encoded using Microsoft Excel and inclusion body myositis Statistical Package for the Social Sciences.

18 **Results:** Out of the 525 people who participated in the current study, 80.3% were female and 19.7% were male.
19 The age was classified into four groups; the majority of the participants were university students (78.6%), fol-
20 lowed by 38% aged from 16 to 25, 28% aged from 26 to 40 and above 40 groups, and the last group aged less
21 than 18 years (5.5%).

22 **Conclusion:** There is a low level of awareness, poor knowledge, and a negative attitude regarding seizure dis-
23 orders and seizure disorders surgery. More education about seizure disorders and seizure disorders surgery for
24 the community is required to improve their understanding and approaches toward the disorder and how to
25 treat it. Additionally, more training is crucial for the healthcare workers to educate the community members
26 on seizure disorders and seizure disorders surgery, which in turn will correct the misconceptions about this
27 disorder and significantly reduce the hocus pocus.

28 **Keywords:** Knowledge, general population, seizure disorders, seizure disorders surgery.

29 Introduction

30 Epilepsy is a reflex seizure which has a probability of
31 at least 60% among those having another seizure within
32 the upcoming next 10 years, i.e., at least two unprovoked
33 or reflex seizures more than 24 hours apart [1]. Epilepsy
34 was ranked by the World Health Organization [2] as
35 the second burden neurological disorder that affecting
36 disability-adjusted life. The prevalence of the disease is
37 high, accounting for 50 million around the world, where
38 as its prevalence increased in developing countries
39 [3]. In Saudi Arabia, the prevalence of epilepsy is
40 6.54 for every 1,000 [4]. Epilepsy stigmatization has
41 been widespread worldwide despite different cultures,
42 religions, and countries worldwide; the appearance of

convulsive seizures causes the misunderstanding among 43
people about the nature of the disease in the last decades. 44
Moreover, in Saudi Arabia it was believed that the evil 45

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46 eye or devil was the main cause for epilepsy [5,6].
 47 However, this stigmatization has a psychological effect
 48 on the patients [7].

49 Several studies conducted in different countries, such
 50 as the United States [8], Italy [9], China [10], and Saudi
 51 Arabia [11], have showed that people still have poor
 52 awareness and misunderstanding toward epilepsy. This
 53 stigmatization can be eliminated either by improving
 54 the public awareness toward epilepsy by conducting
 55 awareness campaigns [12] or exploring new treatment
 56 options. Therefore, the current study aimed to assess the
 57 public knowledge and awareness toward epilepsy and
 58 epilepsy surgeries within the Hail community, Saudi
 59 Arabia, and to compare between different regions within
 60 and outside Saudi Arabia.

61 **Material and Methods**

62 A descriptive cross-sectional study was conducted among
 63 533 randomly selected people in Hail, Saudi Arabia.
 64 The data about the population' knowledge and attitude
 65 toward seizure disorders and seizure disorders surgery
 66 was collected using a questionnaire.

67 Data were extracted, revised, coded, and fed into the
 68 statistical software inclusion body myositis Statistical
 69 Package for the Social Sciences (SPSS) version 22
 70 (SPSS, Inc. Chicago, IL). Data were statistically
 71 analyzed using several tests: a *p*-value less than 0.05
 72 was statistically significant and a descriptive analysis
 73 based on frequency and percent distribution for all
 74 variables, including the demographic data, family
 75 history of epilepsy, clinical data of epilepsy, ketogenic
 76 diet awareness, perception, and practice of the
 77 population. The third test was crosstabulation that was
 78 used to assess the distribution of ketogenic diet use
 79 by epileptic patient's bio-demographic data. Finally,
 80 relationships were tested using the exact probability
 81 test in the case of small frequency distributions. This
 82 study has been reviewed and approved by the research

ethics committee at the university of Hail and approved 83
 by university via letter number 23561/5/42. 84

Results 85

Data were analyzed using SPSS version 23.0. The 86
 frequencies and percentages were computed for the 87
 statements and the demographic factors. The chi-square 88
 test (χ^2) was used to test the significant differences in 89
 each statement's answers. In addition, the chi-square 90
 with crosstab was conducted to test the relationship 91
 between the statements and the demographic factors. 92
P-values of 0.01 and 0.05 were considered statistically 93
 significant. As shown in Table 1 and Figure 1, most of 94
 the participants were female (80.3%) and most of the 95
 participants (78.6%) were university students. 96

Table 2 shows that almost 97.7% of the participants 97
 ($\chi^2 = 476.101, p < 0.01$) and 81.9% of their family (χ^2 98
 = 212.893, *p* < 0.01) had no epilepsy, and 80% heard 99
 and read about epilepsy or convulsion ($\chi^2 = 188.160,$ 100
p < 0.01). Approximately 75% agreed that epilepsy is 101
 a treatable condition ($\chi^2 = 420.377, p < 0.01$) and 77% 102
 agreed that an epileptic patient who underwent surgical 103
 intervention needs a long period of recovery after surgery 104
 ($\chi^2 = 151.557, p < 0.01$). 105

Table 3 shows a significant relationship between gender 106
 and having epilepsy, where females reported that they did 107
 not have it more than males ($\chi^2 = 7.40, p < 0.01$). There 108
 were relationships between statements and age; those aged 109
 above 40 years, heard and read more about epilepsy or 110
 convulsion compared to the other groups ($\chi^2 = 8.78, p <$ 111
 0.05). However, those aged above 40 years did not think 112
 that epilepsy is a kind of organic disease other than another 113
 group ($\chi^2 = 44.75, p < 0.01$). There were relationships 114
 between statements and educational level; university 115
 students reported that they did not have epilepsy at another 116
 educational level ($\chi^2 = 9.16, p < 0.05$); and epilepsy is not 117
 a kind of organic disease ($\chi^2 = 8.86, p < 0.05$). 118

119
 120

Table 1. Demographic factors' information of the participants.

Statement	Group	Frequency	Percent
Gender	Male	102	19.7
	Female	417	80.3
Age	<18	29	5.5
	18-25	199	38
	26-40	148	28.3
	>40	147	28.1
Educational level	Elementary school	6	1.1
	Secondary school	19	3.6
	High school	87	16.6
	University	411	78.6

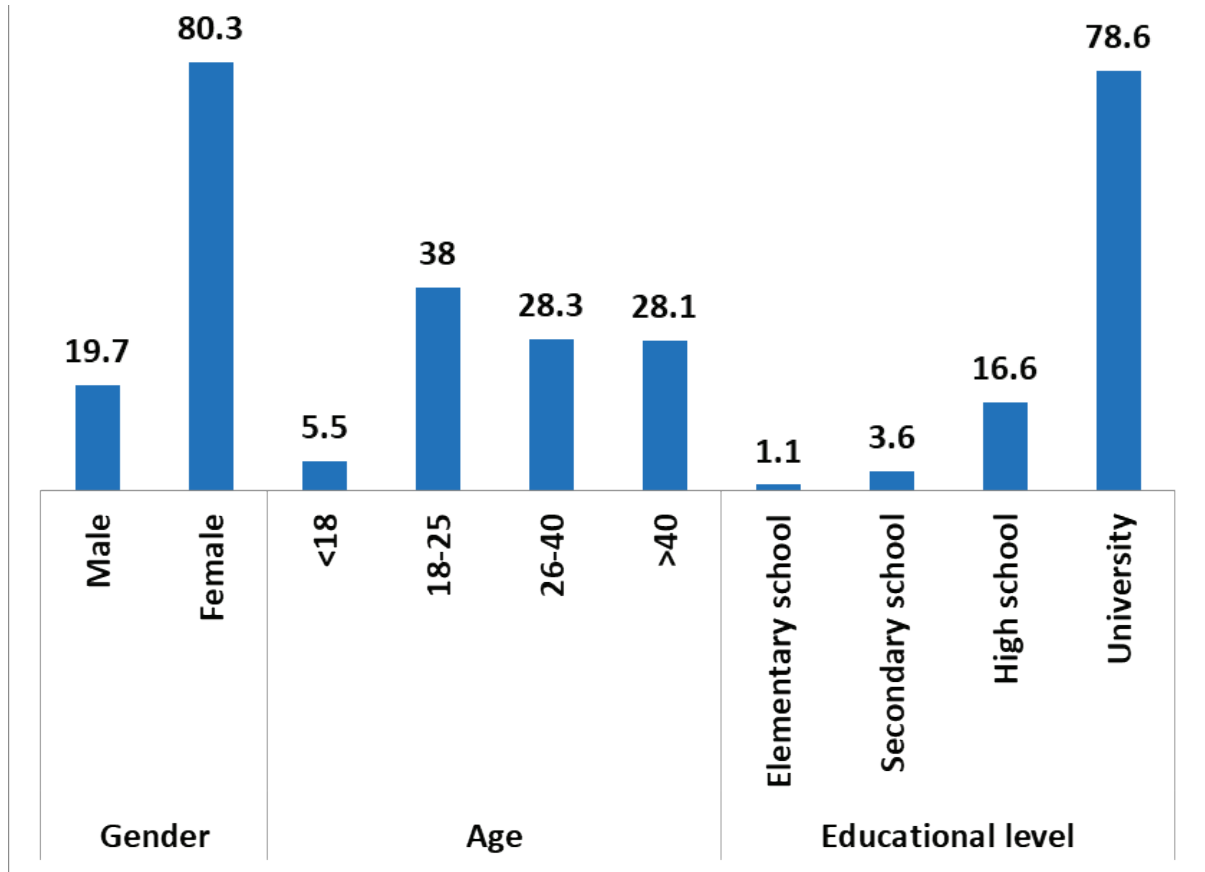


Figure 1. Percentages of the distribution of the demographic factors.

Table 2. Descriptive analysis and chi-square results of the statements. 121

Statement	Answer	Frequency	Percent	χ^2 / p -value
Do you have epilepsy?	No	511	97.7	476.101**/0.001
	Yes	12	2.3	
Have you ever heard and/or read about epilepsy or convulsion?	No	105	20	188.160**/0.001
	Yes	419	80	
Are there any of your family members who have epilepsy?	No	429	81.9	212.893**/0.001
	Yes	95	18.1	
Have you ever seen convulsing person?	No	212	40.5	18.740**/0.001
	Yes	311	59.5	
Do you think that epilepsy is a kind of organic disease?	No	353	67.9	66.531**/0.001
	Yes	167	32.1	
Do you think that epilepsy affects the level of intelligence and school performance?	No	273	52.1	NS
	Yes	251	47.9	
Do you think that there is a relationship between video gaming and epilepsy?	No	133	25.5	125.548**/0.001
	Yes	389	74.5	
Do you think that playing with sand or dust reduces episodes of convulsions?	No	87	16.6	234.669**/0.001
	Yes	438	83.4	
Do you think that evil eye and envy could cause epilepsy?	I do not know	236	45	50.626**/0.001
	No	104	19.8	
	Yes	184	35.1	

Statement	Answer	Frequency	Percent	χ^2 / p-value
Do you think that epilepsy is a treatable condition?	I do not know	94	17.9	420.377**/0.001
	No	37	7	
	Yes	394	75	
Do you think that epilepsy could be treated surgically?	I do not know	205	39	26.926**/0.001
	No	201	38.3	
	Yes	119	22.7	
Do you think that surgical intervention could treat or cure epilepsy?	No	275	52.9	NS
	Yes	245	47.1	
Do you think that surgical intervention suits all epileptic patients?	I do not know	259	49.5	229.644**/0.001
	No	253	48.4	
	Yes	11	2.1	
Do you think that surgery is safe if an epileptic patient is a candidate for it?	No	203	39	25.384**/0.001
	Yes	318	61	
Do you think that functional epileptic surgical intervention could affect patient intelligence and school performance?	No	295	56.5	8.858**/0.003
	Yes	227	43.5	
Do you think that function epileptic surgical intervention could cause paralysis?	No	273	52.3	NS
	Yes	249	47.7	
Do you think that functional epileptic surgical intervention could affect patients' sensations?	No	209	40.4	18.957**/0.001
	Yes	308	59.6	
Do you think that functional epileptic surgical intervention could affect the psychological aspect of an epileptic patient?	No	162	31.3	72.656**/0.001
	Yes	356	68.7	
Do you think that functional epileptic surgical intervention could affect patient awareness and concentration?	No	195	37.5	32.500**/0.001
	Yes	325	62.5	
Do you think that functional epileptic surgical intervention could affect patient memory?	No	243	47.2	NS
	Yes	272	52.8	
Do you think that epileptic patients who underwent surgical intervention need a long period of recovery after surgery?	No	120	23	151.557**/0.001
	Yes	401	77	
NS = Not significant. **Significant at the 0.01 level.				

122 Discussion

123 An attempt was made to assess the general population
 124 with a seizure disorder and seizure disorder surgery
 125 in Hail among patients with a seizure disorder and to
 126 compare the data with five published studies. The current
 127 study recruited 525 people, 80.3% were female, 19.7%
 128 were male, the main age was 18-25 years, and the most
 129 common educational level was university. Our results
 130 showed that majority of the participants (97.7%) did
 131 not have a seizure disorder, while the percentage of
 132 people with a seizure disorder was 2.3%. No difference
 133 in awareness based on educational levels in this
 134 community-based study was reported. The results of this
 135 study are in line with a previously published study by
 136 Macit et al .[13], while it disagreed with [14]. In Delhi,
 137 the same result was reported and the awareness of seizure

disorders was 94.2% and only 5.8% of the participants
 had poor awareness, which is in agreement with other
 studies [15,16].

In our study, it was found that 67.9% of the participants
 answered no and 59.5% of the participants answered yes
 because epilepsy is a kind of organic disease, which is in
 disagreement with another study [13]. The result showed
 that 58.9% of the participants answered no and 19.6%
 participate answered no idea that epilepsy is from mental
 illness, which was in agreement with a previous study
 [14], where 81.3% of the participants answered no and
 18.7% answered yes for that epilepsy is from mental
 illness. These results are similar to another study [15],
 where 76.7% of the participants answered no and 14.2%
 of the participants answered yes for that epilepsy is from
 mental illness. In the present study, 75% of the participants

Table 3. The relationship between statements and demographic factors. 154

Statement	χ^2 / p -value		
	Gender	Age	Educational level
Do you have epilepsy?	7.40**/0.007	NS	9.16*/0.025
Have you ever heard and/or read about epilepsy or convulsion?	NS	8.78*/0.032	NS
Are there any of your family members who have epilepsy?	NS	NS	NS
Have you ever seen convulsing person?	NS	NS	NS
Do you think that epilepsy is a kind of organic disease?	NS	44.75**/0.001	8.86*/0.03
Do you think that epilepsy affects the level of intelligence and school performance?	NS	12.29**/0.006	NS
Do you think that there is a relationship between video gaming and epilepsy?	NS	16.01**/0.001	NS
Do you think that playing with sand or dust reduces episodes of convulsions?	NS	12.39**/0.006	NS
Do you think that evil eye and envy could cause epilepsy?	NS	26.06**/0.001	NS
Do you think that epilepsy is a treatable condition?	NS	16.73*/0.01	NS
Do you think that epilepsy could be treated surgically?	NS	NS	NS
Do you think that surgical intervention could treat or cure epilepsy?	NS	8.37*/0.039	NS
Do you think that surgical intervention suits all epileptic patients?	NS	18.06**/0.006	NS
Do you think that surgery is safe if an epileptic patient is a candidate for it?	NS	NS	NS
Do you think that functional epileptic surgical intervention could affect patient intelligence and school performance?	NS	NS	NS
Do you think that function epileptic surgical intervention could cause paralysis?	NS	NS	NS
Do you think that functional epileptic surgical intervention could affect patients' sensations?	NS	NS	NS
do you think that functional epileptic surgical intervention could affect the psychological aspect of an epileptic patient?	NS	12.078**/0.001	NS
Do you think that functional epileptic surgical intervention could affect patient awareness and concentration?	NS	NS	NS
Do you think that functional epileptic surgical intervention could affect patient memory?	NS	NS	NS
Do you think that epileptic patients who underwent surgical intervention need a long period of recovery after surgery?	4.95*/0.026	NS	NS

156 NS = Not significant.
 157 *Significant at the 0.05 level.
 158 **Significant at the 0.01 level.

159 answered yes, 7% answered no, and 17.9% did not know
 160 for that epilepsy is a treatable condition. These results
 161 are in line with another study [14], where 65.8% of the
 162 participants answered yes and 43.2% answered no, but
 163 these results are in disagreement with another study [13].
 164 In our study, 38.3% of the participants answered no, 39%
 165 did not know, and 22.7% answered yes that epilepsy could
 166 be treated surgically. These results are similar to another
 167 study [14], where 81% of the participants answered no
 168 and 19% answered yes.

169 In our study, 61% of the participants answered yes
 170 and 39% answered no because surgery is safe if an
 171 epileptic patient was a candidate for it. Also, 56.5% of
 172 the participants answered no and 43.5% answered yes
 173 because functional epileptic surgical intervention could
 174 affect patient intelligence and school performance. These
 175 results agreed with [15], at which 80.8% of the participants
 176 answered yes and 18.3% answered no for “Can a child with
 177 epilepsy study?” Also, the same study reported that 31.3%
 178 of the participants answered no that functional epileptic
 179 surgical intervention could affect the psychological aspect
 180 of an epileptic patient, 62.5% answered yes, and 195

(37.5%) participants answered no that functional epileptic
 181 surgical intervention could affect patient awareness and
 182 concentration, 52.8% answered yes, and 47.2% of the
 183 participants answered no think that functional epileptic
 184 surgical intervention could affect patient memory.
 185

186 Conclusion and Recommendations

187 In conclusion, there are some disadvantages of our
 188 study; it was a questionnaire-based study, and it was
 189 applied only to a small sample size according to a recent
 190 systematic review, which included all electronic literature
 191 databases until March 2021. There was no study carried
 192 out to measure the awareness about Kawasaki disease
 193 (KD) among the epileptic patients. Therefore, to measure
 194 the awareness about KD among epileptic patients, more
 195 studies should be carried out on a large sample size.

196 List of Abbreviations

197 Conflict of interest

198 The authors declare that there is no conflict of interest
 199 regarding the publication of this article.

200	Funding		
201	None.		
202	Consent to participate		
203	Written informed consent was obtained from all the		
204	participants.		
205	Ethical approval <AQ1>		
206	This study is approved by the research ethics committee		
207	(REC) at the University of Hail via letter number 23561/5/42.		
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	approval date is must. Hence, please provide	293	
	ethical approval date for this article.	294	