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Level of awareness and attitudes toward epilepsy in Qassim, Saudi Arabia: A cross-sectional study

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ABSTRACT

Objectives: Reports of poor knowledge about epilepsy in different cities of Saudi Arabia have emphasized the need for a similar study of this issue in the Qassim region. Therefore, we aimed to determine the level of awareness and attitudes toward epilepsy in the population of Qassim, Saudi Arabia.
Method: A cross-sectional study was conducted in the Qassim region. A valid pretested questionnaire was distributed among Qassim residents in public places, such as malls, mosques, and parks. The sample size consisted of 3800 people from multiple cities in the Qassim region. The study was approved by the Qassim committee in Qassim University, and verbal consent was obtained from participants.
Results: Data were obtained from 2253 males (59.3%) and 1544 females (40.6%). A large number of respondents were between 15 and 30 years (59.7%). The data showed that 85.5% of people had heard about epilepsy or read about it and 33% knew a patient with epilepsy while 42.7% had seen or witnessed someone having a seizure. It was also found that 73.2% of parents would allow their child to play with patients with epilepsy, 35.7% would allow their son or daughter to marry a patient with epilepsy, and 74.9% think that patients with epilepsy can be employed in jobs, like other people.
Conclusion: Insufficient knowledge about epilepsy, which is a very common disorder, has a great and negative impact on people with epilepsy, their families and communities, and the healthcare systems. In our study, we found that good knowledge was associated with being a young adult, male, unmarried, and being a university student.

1. Introduction

Epilepsy is a common chronic neurological disorder that is characterized by two or more unprovoked afebrile seizures occurring more than 24 h apart [1]. Worldwide, epilepsy affects more than 50 million people [2]. In China, the prevalence of epilepsy in 2000 was 5.95–8.75 per 1000 people [3], and 3.3–7.8 per 1000 in Europe [4]. In neighboring countries such as Qatar, which is one of the Gulf countries, the prevalence of epilepsy was 147 per 100,000 [5]. In Sudan, which is one of the largest Arab countries, the prevalence ranged from 0.9 to 6.5 per 1000 [5]. In another study, which was done in 2014 in India, the prevalence of epilepsy was 27.3 per 100,000 [6]. When comparing the prevalence of epilepsy with the neighboring countries, Saudi Arabia has an epilepsy prevalence of 6.54 per 1000 [1].

There are numerous misconceptions surrounding epileptic disorders. For example, in a study that was conducted in Majmaah City in Saudi Arabia to examine the attitudes of its residents toward epilepsy, it was found that 10% think that the jinn "fairy" is the major cause of epilepsy, and 23% presume that evil is the drive for epilepsy [7]. Epilepsy is a disorder that requires long periods of treatment and follow-up. Thus, healthcare professionals are required to have adequate knowledge and skills to meet the needs of patients with epilepsy and their families. Nonetheless, insufficient knowledge and inadequate professional support are problems that are faced by people with epilepsy [8].

Several studies have examined the awareness of epilepsy in major cities in Saudi Arabia, which have shown that there is inadequate knowledge [9–12]. However, no study has been conducted to measure the awareness of epilepsy in the Qassim region. Therefore, in our study, we assessed the level of awareness and attitudes toward epilepsy in Qassim, Saudi Arabia.

2. Materials and methods

2.1. Study design and the sample

This cross-sectional descriptive study was conducted over a period of 2 months from May 1, 2018 to July 1, 2018 in multiple public places

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Table 1
Sociodemographic variables of the sample ($n = 3800$).

Demographic variable	Distribution	Percentage
Age	15–30 years	59.7
	30–45 years	26.4
	45–60 years	11.5
	>60 years	2.4
Gender	Male	59.3
	Female	40.6
Marital status	Single	54.8
	Married	42
	Divorced	2.6
Education level	Primary school	2.1
	Secondary school	4.9
	Tertiary school	18.8
	University	69
	Postgraduate studies	5.1
Occupation	Student	37.3
	Government-employed	36.5
	Retired	5.1
	Housekeeper	5.8
	Self-employed	6.2
	Unemployed	9.2
Family income (Saudi Riyal)	≦5000	40.6
	5001–10,000	20.1
	10,001–15,000	19.9
	15,001–20,000	12.6
	>20,001	6.4

in some cities of the Qassim region (Buraydah, Unaizah, Ar Ras, Al-Badayea, Albukairyah, and Al-Mithnab), such as malls, gardens, supermarkets, mosques, and health clubs. Permission from the chosen public places was obtained after explaining the research problem and the aim of the study. A total of 3800 participants were selected by convenience with inclusion criteria of 15 years and older and mentally competent. Only Saudis were involved in the study. Exclusion criteria include those who could not complete the questionnaire for any reason, like did not want to choose an answer regarding their income, age, or not knowing what to choose to make them hesitate to complete the questionnaire. Those were excluded from the data sheet before the total data were analyzed. The participants were informed about the purpose of the research, and verbal consent was obtained prior to completing the questionnaire. Ethical considerations were also taken to ensure the confidentiality and privacy of the collected data.

A self-administered questionnaire was distributed, which was taken, with permission, from a previously validated questionnaire that was introduced by Almutairi et al. [7]. Each participant had 10 to 15 min to complete the survey. The questionnaire comprised two sections. The first section of the survey obtained their personal information (six items) and aimed to identify the participants' demographic data, such as age, gender, marital status, education level, profession, and family income in Saudi Riyal (SR). The second section consisted of 16 questions that explored the study participants' familiarity with epilepsy in order to determine their knowledge about epilepsy, information associated with its social acceptance, and their attitudes toward epilepsy like marriage to someone with epilepsy and whether people with epilepsy can be employed in jobs or not. The questionnaire was initially drafted in English and subsequently translated into Arabic. The answers to the questions were mainly "yes/no/I do not know", but the participants were also allowed to respond to the questions about the sources of information and prior exposure to patients with epilepsy.

2.2. Statistical analyses

The data were analyzed using SPSS version 21 (IBM Corp., Armonk, NY, USA). The value of $p < 0.05$ was considered statistically significant. The chi-square test was used to evaluate the categorical variables.

3. Results

Data were collected from 3800 respondents in different cities in the Qassim region. The sample included 2253 males (59.3%) and 1544 females (40.6%), and a large number of our respondents were between 15 and 30 years (59.7%) (Table 1). The study showed that 85.5% of people had heard about epilepsy or read about it and 33% knew a patient with epilepsy while 42.7% had seen or witnessed someone having a seizure. The study also showed that 73.2% of parents would allow their child to play with patients with epilepsy, 35.7% would allow their son or daughter to marry a patient with epilepsy, and 74.9% think that patients with epilepsy can be employed in jobs, like other people (Fig. 1).

In a comparison between the findings of our study and those of similar articles from different Arab countries, it was found that 91.2% of the Egyptian population had heard about epilepsy and 96.1% of the population in the Aseer region of Saudi Arabia had heard about epilepsy [13, 14], whereas this figure was 85.5% in our study. In a study in Majmaah, 51.3% knew someone with epilepsy and 55.7% had seen a seizure, compared with 33% and 42.7% in our study, respectively [7]. In a study in Sharjah, only 50.2% agreed to let their children interact with people with epilepsy, compared with 73.2% in our study [15]. In Jordan, only 11.50% agreed that they would marry a person with epilepsy, compared with 35.7% in our study [16]. Regarding people's attitudes, 47.4% of the Egyptian study's participants thought that epilepsy is a type of insanity, compared with only 4.1% in our study (Table 2) [13].

When the level of knowledge of epilepsy was measured among 3800 residents of Qassim, Saudi Arabia, it was found that 77.2% had good knowledge, 13.6% had average knowledge, and 9.2% had poor knowledge. The level of knowledge was also examined in relation to the

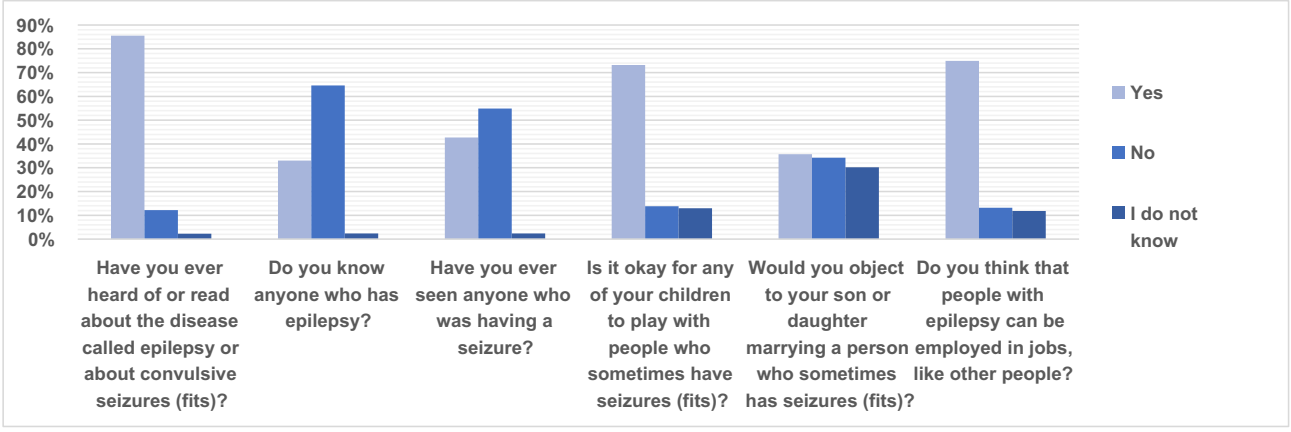

Fig. 1. The sample's familiarity with, and understanding of, epilepsy (n = 3800).

Table 2
Comparison between our study's findings regarding the level of awareness and attitudes toward epilepsy and the findings of other studies in Arab countries.

	Jordan (%)	Egypt (%)	UAE, Sharjah (%)	Saudi Arabia, Majmaah (%)	Saudi Arabia, Aseer (%)	Saudi Arabia, Qassim (%)
Sample size	16.044	840	388	706	1044	3800
Have heard of epilepsy	88.0	91.2	94.3	81.4	96.1	85.5
Know someone with epilepsy	–	24.8	13.4	51.3	66.7	33.0
Have seen a seizure	52.4	30.7	42.3	55.7	59.1	42.7
Agree that their children can interact with patients with epilepsy	47.59	48.1	50.2	49.0	72.1	73.2
Would marry a person with epilepsy	11.50	22.3	18.8	21.1	24.4	35.7
Agree that people with epilepsy should be employed	43.66	41.0	67.8	60.5	77.1	74.9
Agree that epilepsy is a type of insanity	9.3	47.4	44.6	5.5	6	4.1

different sociodemographic factors (Table 3). Good knowledge of epilepsy was significantly associated with being a young adult between 15 and 30 years of age (79.4%), followed by 31–45 years of age (75.7%), 46–60 years of age (73.5%), and 61 years of age or more (54.8%). The female gender was associated with less knowledge compared with the male gender (71% and 81.6%, respectively). University students had the significantly highest percentage of good knowledge (82.8%), followed by secondary school students (68.1%). Poor knowledge was associated with being a primary school student (31.2%) (Fig. 2). Among the occupations, students, including university students, had a higher percentage of knowledge compared with the others. Unmarried individuals had a higher percentage of knowledge compared with married and divorced individuals (80.2%, 75.1%, and 48%, respectively).

The participants' attitudes toward epilepsy were also evaluated. Most of the participants believed that epilepsy is not a type of insanity (85.8%) or a contagious disease (89.1%) while 83.2% believed that a child with epilepsy can be successful in a normal class. The majority of participants would not change their attitudes toward a person they knew with a new development of epilepsy (88.2%), and they would become close friends to him/her (83.1%). Only 35.7% of participants would allow their son or daughter to get married to someone with epilepsy. However, 73.2% would allow their children to play with other children who have epilepsy.

4. Discussion

Our study was conducted in the Qassim region, which is located in the center of Saudi Arabia, with a population of 1,370,727 and an area of 58,046 km^2. Qassim region has been known for its cultural beliefs in evil eyes and spirits. The study sample included respondents from the Qassim region who were in random public places, such as shopping malls, mosques, and parks.

Table 3
The association between the sample's level of knowledge of epilepsy and their sociodemographic factors.

Social factor	Level of knowledge			Total	*p*
	Poor *n* (%)	Average *n* (%)	Good *n* (%)		
Age (years)					
15–30	181 (8.0%)	286 (12.6%)	1801 (79.4%)	2268	<0.001
31–45	99 (9.9%)	144 (14.4%)	759 (75.7%)	1002	
46–60	50 (11.4%)	66 (15.1%)	321 (73.5%)	437	
>60	21 (22.6%)	21 (22.6%)	51 (54.8%)	93	
Gender					
Male	184 (8.1%)	233 (10.3%)	1837 (81.6%)	2254	<0.001
Female	167 (10.8%)	284 (18.2%)	1095 (71.0%)	1546	
Marital status					
Single	163 (7.8%)	252 (12.0%)	1676 (80.2%)	2090	<0.001
Married	157 (9.8%)	243 (15.1%)	1207 (75.1%)	1607	
Divorced	31 (30.4%)	22 (21.6%)	49 (48.0%)	102	
Occupation					
Student	115 (8.2%)	189 (13.4%)	1107 (87.5%)	1411	<0.001
Employee	84 (6.1%)	113 (8.2%)	1189 (85.8%)	1386	
Retired	27 (13.7%)	47 (23.9%)	123 (62.4%)	197	
Housewife	48 (21.9%)	57 (26.0%)	114 (52.1%)	219	
Private work	36 (15.1%)	59 (24.7%)	144 (60.3%)	239	
No work	41 (11.8%)	52 (14.9%)	255 (73.3%)	348	

This study is similar to other studies conducted in other regions of Saudi Arabia, except that it was conducted in the Qassim region. The study involved the measurement of different parameters and analyzed behaviors and attitudes toward epilepsy among participants with variable backgrounds, age groups, and educational and financial levels. This study also enquired about the respondents' points of view regarding marriage, employment, and general interaction with patients with epilepsy. Measuring their awareness is vital in order to determine the type and magnitude of the interventions that are needed regarding epilepsy.

Overall, a good level of knowledge was observed. Nevertheless, myths, “evil eye,” and other misconceptions still exist. When we asked if they had ever heard of or read about epilepsy, the majority answered “yes” (85.5%), which is close to the findings of previous studies conducted in Sharjah (94.3%), Greece (94.5%), and Austria (89%) [15,17,18].

In contrast, less than half (42.7%) reported that they had seen someone having a seizure. This result is similar to that of other studies that found that 42.3% of the respondents from Sharjah, UAE, 42.7% of respondents from Riyadh, and 36% of respondents from Austria reported that they had seen a fit before [10,15,18].

Surprisingly, 73.2% answered that they would permit their children to play with people who sometimes have seizures, which is much higher compared with what is reported in Riyadh (27%) and Majmaah (49%) [7,10]. This finding reflects the degree of discrimination and erroneous concepts of epilepsy in this society, which apparently needs more social and cultural awareness in order to end this stigma.

On the other hand, the majority of respondents showed positive attitudes toward epilepsy; 89.1% answered that epilepsy is not contagious, which is similar to what is reported in Riyadh (85.8%) and Majmaah (84.8%) [7,10]. In addition, 83.2% believed that a child with epilepsy can be successful in a normal class. Reassuringly, 83.1% said that they would easily become close friends with someone with epilepsy.

Despite the increasing awareness about epilepsy in Saudi Arabia, 32.8% of respondents answered that epilepsy is caused by an evil eye (“ain”), and 11.3% think that a jinn is the cause of epilepsy. This misunderstanding about epilepsy can delay the medical treatment. Furthermore, this explains why religious healing is still quite common in Saudi Arabia.

It was also found that only 35.7% would object to their son or daughter marrying a person with epilepsy, which is higher than what is reported in Majmaah (21%) but lower than what is reported in Riyadh (76%) [7,10]. Regarding the treatment of epilepsy, 31.6% of respondents answered that they would suggest that someone with epilepsy consult a doctor, but only 28.9% think that epilepsy is treatable. These findings suggest that the majority of people underestimate the medical treatment for epilepsy and are not aware of its efficacy.

Conducting awareness campaigns can possibly improve the level of knowledge, dissolve false beliefs, and enhance positive behaviors in our community. Such proposed solution was tried in a study that was conducted in Riyadh in 2015, where they determined the subjects'

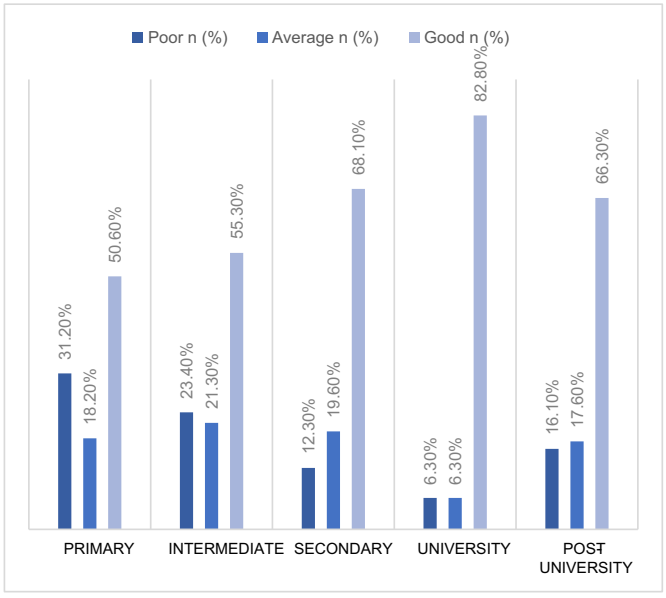

Fig. 2. The association between educational level and knowledge about epilepsy.

knowledge and attitudes before and after an awareness campaign. Significant improvement was attained. For example, 28.3% of participants refused to let their children play with a patient with epilepsy before the campaign, but the number remarkably dropped to 8.2% when the questionnaire was administered after the awareness campaign. The same positive outcome was noticed in the other aspects like marriage, job opportunities, and spiritual misconceptions [19]. Furthermore, a suggestive approach like training programs in schools can have an effective raise in general knowledge and practice. A health education program conducted in Karnataka in India came out with positive desired results. A statistically significant change was attained postintervention, increased knowledge led to positive attitude and practice toward classmates with epilepsy. For example, there was a question whether it is difficult for a person with epilepsy to study. Only 11% of their sample, which consisted of 70 children from the 8th to 10th grades, had adequate knowledge. Postintervention result for this question was 93% and attained a better knowledge. The same improvement goes with other domains of knowledge, attitude, and practice. The program would be beneficial not only to students but also to teachers and administrators, and we encourage adopting such approach in our community [20]. In Jeddah, which is one of the major cities of Saudi Arabia, a study done there regarding epilepsy awareness concluded that although epilepsy is a well-known disorder, still significant improvement regarding awareness in the city is needed [11]. In Madinah, which is one of the holy cities of Saudi Arabia, a study was done and reported that low level of knowledge is also found in the families of patients with epilepsy, and this mandates the need for a strong educational program and even involvement of healthcare personnel in the awareness process for the community [12].

5. Conclusion

Insufficient knowledge about epilepsy, which is a very common disorder, has a large and negative impact on people with epilepsy, their families and communities, and the healthcare systems. Measuring the level of awareness of epileptic disorders in our community and accordingly, performing awareness campaigns can improve the outcome of the disorder. In our study, we recognized that good knowledge was associated with being a young adult, male, unmarried, and being a university student. We aim to raise the level of awareness in our community in the coming years.

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Conflicts of interest

The authors have no conflicts of interest to disclose.

References

[1] Al Rajeh S, Awada A, Bademosi O, Ogunniyi A. The prevalence of epilepsy and other seizure disorders in an Arab population: a community-based study. Seizure 2001;10(6):410–4.
[2] Scott RA, Lhatoo SD, Sander JWAS. The treatment of epilepsy in developing countries: where do we go from here? Bull World Health Organ 2001;79(4):344–51.
[3] Gu L, Liang B, Chen Q, Long J, Xie J, Wu G, et al. Prevalence of epilepsy in the People's Republic of China: a systematic review. Epilepsy Res 2013;105(1–2):195–205.
[4] Abramovici S, Bagić A. Epidemiology of epilepsy. Handb Clin Neurol, 138(1). Elsevier Masson SAS; 2016; 159–71.
[5] Ngugi AK, Bottomley C, Kleinschmidt I, Sander JW, Newton CR. Estimation of the burden of active and life-time epilepsy: a meta-analytic approach. Epilepsia 2010;51(5):883–90.
[6] Satishchandra P, Santhosh N, Sinha S. Epilepsy: Indian perspective. Ann Indian Acad Neurol 2014;17(5):3 [[Internet]. Available from: http://www.annalsofian.org/text.asp?2014/17/5/3/128643].
[7] Almutairi AM, Ansari T, Sami W, Baz S. Public knowledge and attitudes toward epilepsy in Majmaah. J Neurosci Rural Pract 2016;7(4):499–503.
[8] Räty LK, Wilde-Larsson BM. Patients' perceptions of living with epilepsy: a phenomenographic study. J Clin Nurs 2011;20(13–14):1993–2002.
[9] Campaign TG. Epilepsy awareness in Saudi Arabia. 2015;20(11):205–6.
[10] Alaqeel A, Sabbagh AJ. Epilepsy; what do Saudi's living in Riyadh know? Seizure 2013;22(3):205–9 BEA Trading Ltd.
[11] Haneef DF, Abdulqayoum HA, Sherbeni AA, Faheem M, Chaudhary AG, Al-Qahtani MH, et al. Epilepsy: knowledge, attitude and awareness in Jeddah Saudi Arabia. BMC Genomics 2014;15(Suppl. 2):P61 [[Internet]. Available from: http://search.proquest.com/docview/1512429134?accountid=136546%5Cnhttp://by7nn3rg6h.search.serialssolutions.com/?ctx_ver=Z39.88-2004&ctx_enc=info:ofi/enc:UTF-8&rfr_id=info:sid/ProQ:healthcompleteshell&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&rft.genre=art].
[12] Neyaz HA, Aboauf HA, Alhejaili ME, Alrehaili MN. Knowledge and attitudes towards epilepsy in Saudi families. J Taibah Univ Med Sci 2017;12(1):89–95 Elsevier Ltd.. [[Internet]. Available from: https://doi.org/10.1016/j.jtumed.2016.06.007].
[13] Osama A, El Smahy MEF, El Sayed M, Moawad S. Public attitudes and knowledge toward epilepsy in ismailia governorate. Egypt J Psychiatry 2016;37(2):104.
[14] Alhazzani AA, Alqahtani AM, Abouelyazid A, Alqahtani AM, Alqahtani NA, Asiri KM, et al. Public awareness, knowledge, and attitudes toward epilepsy in the Aseer region, Saudi Arabia — a community-based cross-sectional study. Epilepsy Behav 2016;63:63–6 Elsevier Inc.
[15] Abduelkarem AR. Societal problems that patients with epilepsy are facing in Sharjah, UAE. Epilepsy Behav 2016;59:142–6 Elsevier Inc.
[16] Daoud A, Al-Safi S, Otoom S, Wahba L, Alkofahi A. Public knowledge and attitudes towards epilepsy in Jordan. Seizure 2007;16(6):521–6.
[17] Nicholaos D, Joseph K, Meropi T, Charilaos K. A survey of public awareness, understanding, and attitudes toward epilepsy in Greece. Epilepsia 2006;47(12):2154–64.
[18] Spatt J, Bauer G, Baumgartner C, Feucht M, Graf M, Mamoli B, et al. Predictors for negative attitudes toward subjects with epilepsy: a representative survey in the general public in Austria. Epilepsia 2005;46(5):736–42.
[19] Alaqeel A, Kamalmaz H, Abou Al-Shaar H, Alzahrani I, Alaqeel A, Aljetaily S, et al. Evaluating the initial impact of the Riyadh epilepsy awareness campaign. Epilepsy Behav 2015;52:251–5.
[20] Kolar Sridara Murthy M, Govindappa L, Sinha S. Outcome of a school-based health education program for epilepsy awareness among schoolchildren. Epilepsy Behav 2016;57(September 2014):77–81 Elsevier Inc.. [[Internet]. Available from: https://doi.org/10.1016/j.yebeh.2016.01.016].