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Epilepsy first aid awareness among healthcare workers in Saudi Arabia: A cross-sectional study

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Abstract

Objectives: Epilepsy is a neurological disorder affecting more than 50 million human lives of all ages, its social, physical and psychological implications is of huge concern. The current study and as a continuation of epilepsy knowledge assessment projects conducted by our research team is aimed to assess the knowledge of healthcare workers regarding epilepsy first aid in Saudi Arabia.

Methods: A cross-sectional questionnaire-based study was carried out from 2020 to 2021.

Results: During the study period, 272 healthcare workers were recruited; participants were males and females from different nationalities in various Saudi Arabian cities, possess diverse qualifications, and belong to several healthcare-related professions. The question, "Did you witness an epileptic seizure"? was answered as "Yes" by 42% of participants, and in response to the question "If you know that this patient struggles during seizure attacks," 58% of respondents stated that they would not call an ambulance. Moreover, the question "Put something in his/her mouth to prevent tongue biting" was incorrectly answered as "Yes" by 42% of respondents, and the question "Try to catch him/her and stop his/her movement" in order to control the attack was answered "Yes" by 21% of respondents. Furthermore, almost 90% of healthcare participants do not know how to use the Vagus Nerve Stimulation device. The mean knowledge score among participants was 23.7; sex, as well as type of higher qualification obtained, was found to be significantly associated with the score of knowledge.

Conclusion: Knowledge toward epilepsy and epilepsy first aid among healthcare workers in Saudi Arabia was found fragile. Further research is appreciated to support the current findings.

Keywords

Awareness, first aid, seizure

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Introduction

Epilepsy is a neurological disorder affecting more than 50 million human lives of all ages, according to World Health Organization (WHO) estimates; more than 85% of people with epilepsy are living in developing countries.[1] The pathophysiology of the disease suggests transient dysfunction in the brain. The social, physical, and psychological impact of epilepsy is of huge concern; social stigma and discrimination dominate social attitudes toward epilepsy. These socio-cultural dilemmas are important determinants of epilepsy clinical course and often limit proper treatment. In developing countries, it is reported that up to 90% of people with epilepsy may not obtain the treatment they require, adding insult to an injury, this treatment related indifference behavior is believed to be a reason for further individual, family, social, and economic consequences.[2–4]

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There is an obvious lack of knowledge and awareness with reference to epilepsy reported in the general population and even among healthcare professionals. This knowledge level directly affects epilepsy patients, as they face many troubles regarding employment, education as well as their general social standing. Moreover, it is documented that the worldwide healthcare burden related to the cost of epilepsy is almost similar to that of breast cancer.[5–8]

Fear and stigma of epilepsy are common among the general population and are reported to be among almost 40% of healthcare workers. There is substantiation that attitude toward people with epilepsy is predisposed by the level of knowledge a person possesses regarding the disease. Moreover, higher level of education is reported to be positively interrelated with awareness, knowledge, and attitude toward persons with epilepsy. Several misconceptions about epilepsy such as being an evil spirit "possession by Jinn" that are prevalent in the local population have been also reported among healthcare workers.[4,9,10]

Regarding healthcare workers' knowledge of epilepsy first aid, the current study—to our knowledge is the first attempt in Saudi Arabia. A similar study conducted in China observed that out of 226 nurses; the majority of participants were able to correctly answer first aid related questions. For example, they knew to "remove sharps around the patient," "to make certain the airway is not obstructed," and to "not control movements." However, 48% of their respondents stated they would use artificial respiration and external cardiac compression and 37% would open the patient's mouth to administer anti-epileptic drugs.[11]

The current study is aimed to assess healthcare workers' knowledge of epilepsy first aid in the Saudi Arabian health sector. Dataset used in the current study is part of neurology program held by several Saudi neurologists to build a strategy aiming to reduce epilepsy burden and fill its related knowledge gap in Saudi society. To build and develop strategy implementation specifically designed for each sector, thousands of participants were further categorized into general population, healthcare workers, school teachers, or university teachers; findings related to participants from general population category were published,[12] others are to follow.

Materials and methods

Study design

A cross-sectional study was carried out between July 2020 and February 2021 in Saudi Arabia. Study participants were approached using web-based questionnaire as described previously.[12]

Study population

Only healthcare workers were included in the current study. The only excluded participants were participants reporting their occupation as medical students or their age was below 18 years. All healthcare workers participated in the study duration were recruited in the study. All included participants were asked to agree on their participation early before opening the questionnaire. The study was designed to follow Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines,[13] STROBE checklist is depicted in (Supplemental Table 1).

Data collection

An online questionnaire composed of 46 different questions was developed regardless of demographic characteristics. Three domains of awareness of seizure were introduced: general information regarding seizure attacks, standard first-aid measures during and after the seizure attack, and circumstances that require calling an ambulance. The content of the seizure first-aid measures was obtained from standard sources.[12,14,15] The questionnaire was reviewed by three experts in neurology and epidemiology to assess validity. The questionnaire was initially designed in English and then translated into Arabic by two professional translators assuring characteristics of psychometrics are not affected and questions were reviewed to prevent any source of bias. A pilot study was conducted on 20 individuals (≈7% of the targeted population) to check the applicability and clarity of the questions. The pilot study showed a positive feedback to the questions that covered the main objectives of the study. However, the pilot study resulted in the removal of an extra segment of the questionnaire covering the symptomatic manifestations of seizure, as previously described.[12] Questionnaire is depicted as a Supplemental file.

Statistical analysis

Data was presented as frequencies or percentages for categorical data and mean and standard deviation (SD) for continuous data. Each right answer was considered as one point, the overall knowledge score was then calculated for each participant out of 46, and association between overall score and other categorical variables was examined using Mann–Whitney or Kruskal–Wallis tests. Whenever p-value was found to be less than 0.05, the null hypothesis was rejected and variables examined were concluded to be associated. All entries with missing values were excluded and removed. All statistics and visualizations were established using Python (version 3.12.0).

Ethical considerations

The study obtained all required ethical approvals from the institutional review board at Prince Sattam Bin Abdulaziz University at Al-Kharj, Saudi Arabia, protocol No: PSAU/COM/RC/IRB/P/84. Informed consent was waived from the institutional review board at Prince Sattam Bin Abdulaziz University at Al-Kharj, Saudi Arabia.

Table 1. General characteristics of healthcare workers participated in the study.

Occupation	Sex	Bachelor	High school	Master	PhD	All
Physician	Female	27	1	1	8	37
	Male	62	10	0	15	87
Specialist*	Female	27	1	2	0	30
	Male	39	1	5	0	45
Nurse	Female	8	2	2	0	12
	Male	11	3	1	0	15
Pharmacist	Female	3	0	1	0	4
	Male	14	0	4	0	18
Technician**	Female	7	2	0	0	9
	Male	10	1	0	0	11
Social worker	Male	2	0	0	0	2
Administration	Male	0	1	0	0	1
Intern	Male	1	0	0	0	1
All		211	22	16	23	272

*MD degree holder.
**Laboratory or radiology technical staff.

Results

General characteristics of participants

During the study period, 272 healthcare workers were recruited, 180 (66%) males and 92 (34%) females. Moreover, 253 (93%) of recruited participants were Saudi nationals, other healthcare workers were Yemeni (5 participants), Egyptian (3 participants), and Syrian (3 participants), while only one participant was recruited from each of these nationalities; Sudanese, Kenyan, Somali, Bahraini, Jordanian, Omani, Bengali, and Kuwaiti. Moreover, healthcare workers who participated were 164 (60%) from Riyadh City, followed by Mecca City as 35 participants (13%); all results are depicted in Table 1 and Figure 1.

Respondents were physician 124 (45%), specialist 75 (27%), nurse 27 (10%), pharmacist 22 (8%), technician 20 (7%), social worker 2 (0.7%), intern 1(0.3%) and administration staff 1 (0.3%). The age of participants ranged from 18 to 57 years with their mean as 27 years old ± SD = 6 years. Furthermore, the educational level of respondents is reported to be PhD degree holders among 23 (8%) participants, master's degree holders among 16(7%) participants, 211 (77%) bachelor's degree holders and 22 (8%) high school graduates, all results are depicted in (Table 1 and Figure 2).

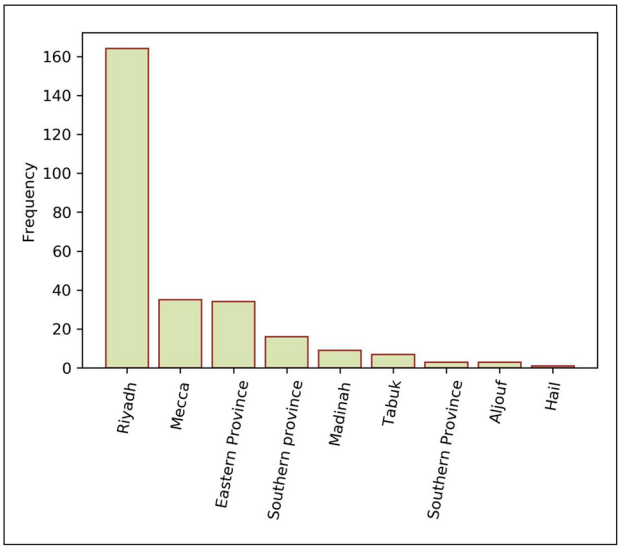

Figure 1. Healthcare workers participated in the current study based on their location.

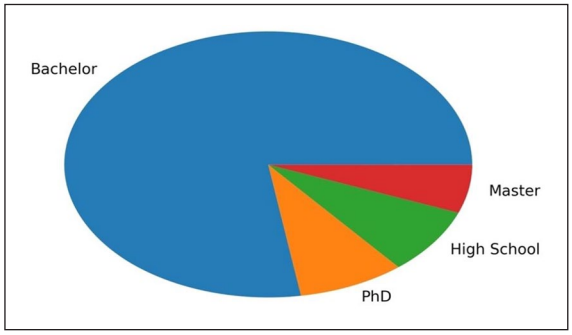

Figure 2. Educational level of healthcare workers participated in the current study.

General knowledge of epilepsy

Almost 99% of healthcare respondents have heard of epilepsy, and they are not a person with epilepsy. Moreover, the question "Did you witness an Epilepsy seizure?" was answered "No" by 33% of participants, and the question "Attended any Epilepsy first aid related workshop" was answered "No" among 35%. Furthermore, the question "Do

Table 2. Responses of healthcare participants toward epilepsy-related questions.

Assessment	Responses % ($N = 272$)		
	Yes	No	I do not know
General related knowledge			
Heard of epilepsy	99	1	
Are you a person with epilepsy	1	99	
Do you know any person with epilepsy	48	52	
Did you witness an epileptic seizure	67	33	
Attended any epilepsy first aid related workshop	65	35	
Did you watch any epilepsy first aid-related video material	52	48	
Do you have basic life support certificate	69	28	3
Knowledge regarding during seizure attack			
Prevent him/her from falling	80*	15	5
Gather people around him/her to help	90	6*	4
Try to move him/her	8	87*	5
Empty the place of dangerous equipment	93*	5	2
Measure the attack duration	82*	14	4
Provide strong a scent to him/her	60	31*	9
Remove any tight material around his/her neck	88*	7	5
Remove his/her glasses	78*	14	8
Spray water on his/her face	73*	16	11
Awake him/her by speaking loudly and moving him/her	12	76*	12
Give him/her anti-epileptic drug	16	63*	21
Give him/her water to drink	5	81*	14
Give him/her food to eat	1	88*	11
Put something in his/her mouth to prevent tongue-biting	42	47*	11
Put something in his/her mouth to prevent tongue swallowing	41	44*	15
Put a pillow under his/her head	72*	13	15
Try to catch him/her and stop his/her movement	21	66*	13
Stop him/her if he tries to walk during the seizure	54*	20	26
Observe his/her breathing and his/her chest movement	85*	3	11
Initiate CPR	6	72*	21
You can give for prolonged or recurrent seizures			
Rectal benzodiazepine	32*	16	52
Buccal benzodiazepines	15*	33	52
Nasal benzodiazepines	21*	23	56
Knowledge about after-seizure attacks			
You should leave the patient alone	9	84*	7
You tell him/her what happened	52*	33	15
You carefully make him/her lie on his/her lateral position	74*	17	9
You should call the ambulance	96*	0.3	3.7
Knowledge in regard to contacting an ambulance			
If it is the first seizure episode for the patient	82*	8	8
If the patient has difficulty in breathing or the episode continues for a long time	92*	4	4
If the patient experienced another seizure attack	89*	4	7
If the seizure attack happens during swimming	72*	7	21
If the patient has other chronic conditions or was a pregnant woman	78*	10	12
If the you know that this patient struggles during seizure attacks	29*	58	13
If you do not know what to do	89*	3	8
If the seizure attack continues for more than five minutes	85*	4	11
If the patient accidentally injured him/herself or bleed	96*	1	3
You should stay with the patient until the ambulance arrives	99*	0.5	0.5

(Continued)

Table 2. (Continued)

Miscellaneous questions	%
Capture in video the seizure to show to the medical crew later?	
I should have prior permission	49*
Yes	19
No	18
I do not know	14
f the patient has a Vagus Nerve Stimulation device during the seizure episode, what should you do?	
I do not know the device	78
Nothing	10.4
You should pass the magnet from the left side of the chest	10*
I do not know	1
Valsalva maneuver	0.6

*This is the right answer.

you have Basic Life Support certificate?" was answered "No" by 28% of participants. All results are depicted in Table 2.

Knowledge of epilepsy first aid measures

The question "Put something in his/her mouth to prevent tongue biting" was incorrectly answered as "Yes" by 42% of respondents. Moreover, the question "Try to catch him/her and stop his/her movement" in order to control the attack was incorrectly answered "Yes" by 21% of respondents. Furthermore, almost 90% of healthcare participants do not know how to use the Vagus Nerve Stimulation device. All results are depicted in Table 2.

Knowledge of circumstances that require calling an ambulance

Regarding the question "If you know that this patient struggles during seizure attacks," 58% of respondents answered incorrectly and stated that they would not call an ambulance. However, the question "If it is the first seizure episode for the patient" 82% of respondents correctly answered that they would call an ambulance. All related results are depicted in Table 2.

Overall epilepsy first aid knowledge score

All entries of respondents were calculated to provide a final score for each participant. Participant scores ranged from as low as 3 points up to 40 points, with their mean score as 23.7 points ± SD = 4,7. All residence, specific occupations in the healthcare industry as well as age was not found to be statistically associated with the overall knowledge score. However, Sex and the type of higher qualification obtained were found to be significantly associated with the overall knowledge score, p-value = 0.021 and 0.00, respectively (Figure 3).

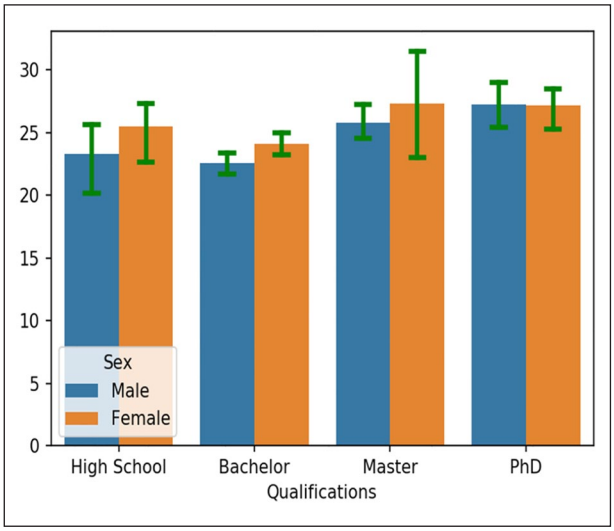

Figure 3. Differences in knowledge score regarding qualifications and sex among participants.
*The highest point in a bar is the mean knowledge score in points out of 48 points; the green small projecting bars represent confidence interval estimates.

Discussion

The current study examined the awareness of first-aid management of seizures among healthcare workers in Saudi Arabia; this research is the first which address and investigate knowledge gaps related to epilepsy first aid among a wide range of workers in the Saudi healthcare sector.

The overall knowledge score was found to be very modest, 23.7 out of 46, indicating that more than 50% of healthcare workers may lack related knowledge. Several studies reported in literature have been found investigating epilepsy-related knowledge among the general population as well as the medical interns and students in Saudi Arabia.[12,16–20]

It is to be noted that even lower estimates have been reported in the literature, a recent study published in 2020 conducted among nurses in Nigeria concluded that more than 77% of participants did not hear about epilepsy before, and almost 20% believed epilepsy was contagious.[21] However, an important limitation in the latter study is that despite the fact that all participants were healthcare workers, 74% of them were not bachelor degree holder nurses.

On the other hand, higher knowledge estimates have been reported as well; a study published in 2017 titled "Awareness, attitudes toward epilepsy, and first aid knowledge of seizures of hospital staff in Henan, China" investigated the knowledge of seizures among Chinese healthcare workers, their study indicated much higher knowledge score as 7.48 ± 1.7 in a score of 10 among 219 participants of different qualifications and professional titles.[11] These differences may be attributed to the social demographic variations among participants as well as different research settings.

A significant relationship was found in the current study between epilepsy-related knowledge and sex as well as qualifications. Females significantly score higher than males; moreover, as indicated in Figure 3, female participants have higher knowledge mean compared to their related males in the same qualification category (high school, bachelor's, and master's degree holders) while both males and females scored almost the same mean score in the PhD qualification category. A study conducted in China concluded almost similar findings.[11] Moreover, a very recently published-2023 research article titled "Assessing the knowledge of staff nurses about epilepsy in Taif City of Saudi Arabia: A descriptive study" was conducted among 305 staff nurses in Taif City, Saudi Arabia, their study indicated that sex and qualifications are scientifically related to epilepsy knowledge score among healthcare workers. Furthermore, the latter study did not investigate specific healthcare profession impact on the overall knowledge score of epilepsy as their participants were only nurses, but they concluded that the knowledge and attitudes of healthcare providers toward epilepsy are different in the same profession according to department, and knowledge should be determined in each department rather than just professions. Zhao and colleagues in their research published in 2017 also indicated similar findings.[11,22]

One significant limitation to be considered when discussing the current study findings is that although strengths such as healthcare workers from different Saudi Arabian cities, possessing different educational levels, and belonging to different health professions participated, the sample size was limited as the finding cannot be generalized and representative to the whole healthcare community in the country.

Conclusion

There is a gap of knowledge regarding to epilepsy first aid among healthcare workers in Saudi Arabia. Both sex, as well as qualification degrees obtained, were found to be significantly contributing to epilepsy-related knowledge among the population under study. Further research using larger sample sizes to strengthen and support the current findings is recommended.

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Author's contribution

Study design: Anas M Albarrak and Ali A AlAseeri. Data Collection: Anas M Albarrak, Saleh A Algarni, Abdullah S Al-Dosary and Ibrahim Abdulrahman I Alquwaiz. Analysis and interpretation: Mohammed Saad Alqahtani, Daifallah M Almalki. Review the paper: Ahmed A Albadrani. All authors read and approved the final paper.

Declaration of conflicting interests

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Ethics approval

The study obtained all required ethical approvals from the institutional review board at Prince Sattam Bin Abdulaziz University at Al-Kharj, Saudi Arabia, protocol No: PSAU/COM/RC/IRB/P/84.

Informed consent

Informed consent was waived from the institutional review board at Prince Sattam Bin Abdulaziz University at Al-Kharj, Saudi Arabia.

Trial registration

Not applicable.

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Supplemental material

Supplemental material for this article is available online.

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