



Makkah female teachers' knowledge of seizure first aid

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ABSTRACT

Background: Epilepsy is a common disorder in Saudi Arabia, with a prevalence of 6.54/1000 people. Most patients with epilepsy in the country are younger than 19 years of age, and thus, many occurrences of epileptic seizures can occur in schools. As such, teachers are often faced with the challenge of responding to the attack and providing first aid and post-event care to the child with epilepsy.

Objectives: The objective of this study was to assess the knowledge school teachers in the Makkah region possess about seizure first aid.

Methods: A self-administered questionnaire was distributed electronically among school teachers in the Makkah region, with the aim to assess basic demographic data about the teachers as well as their knowledge about epilepsy, seizure first aid, and postseizure care.

Results: Out of the teachers who responded to the questionnaire ($n = 426$), 89% were female teachers; 85.7% recognized epilepsy as a neurological disease. The majority (55%) stated that they would open a patient's mouth and insert an object during a seizure. Those with less teaching experience (1–10 years) correctly identified how to ensure safety in comparison with the more experienced teachers ($\gg 10$ years) (P value $\ll 0.001$), and 45% of the overall participants recognized when to transfer patients to a medical facility. Both teachers with postgraduate degrees and the more experienced teachers recognized when to transfer students to hospital.

Conclusion: Female school teachers in the Makkah region significantly lack adequate training and knowledge of seizure first aid. A health education policy targeting teachers may improve this.

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1. Introduction

Seizures are one of the most common neurological emergencies, and result from abnormal excessive synchronous neuronal discharges. It is estimated that around 10% of all people may experience a seizure in their lifetime, and individuals who do so might exhibit different clinical manifestations depending on whether the seizure started focally or is generalized.

Patients experiencing seizures are considered to have epilepsy if they meet one of the criteria in Table 1 [1].

Within Saudi Arabia, epilepsy has a prevalence of 6.54/1000 people [2]. Of these patients diagnosed as having epilepsy, the majority are younger than 19 years of age [2]. School children with epilepsy are at risk of social isolation, learning problems, and stigmatization [3,4], and as such, school teachers are a vital influence on student development. Several studies have shown the misperception of teachers toward child with epilepsy [5,6]. So, their knowledge and attitude toward such students will directly influence their performance, development, and self-esteem.

In addition to such challenges, children with epilepsy are also at risk of experiencing epileptic fits while at school, and thus, teachers are often the first responders tasked with ensuring the safety of the child. They will be the most responsible person to provide first aid to the patient. During an epileptic seizure, the main duties of a bystander, such as a teacher, are to prevent the patient from self-harm, to provide adequate postseizure care, and to recognize when the patient should be transferred to a medical facility. Inappropriate action may result in secondary injuries [7]. One of the most common misconceptions of seizure treatment is the need to open the patient's mouth to prevent the tongue from being swallowed, which can result to the loss of teeth because of inappropriate action. Seizure commonly is self-limiting, and usually stops without intervention within 3 min.

Seizures that do not abort spontaneously within 5 min, or the presence of recurrent seizures or a persistent unconscious state, are indications that the patient may have status epilepticus, which needs to be recognized early and treated promptly in order to prevent serious systemic and neurological complications. A patient with possible status epilepticus should be transferred to a medical facility as soon as possible.

Although schools in Saudi Arabia are separated between male and female, they are supervised by the same ministry and share the same rules. Each school in Saudi Arabia has a teacher acting as a health

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Table 1
Definition of epilepsy.

A person is considered to have epilepsy if he/she has one of the following:
<ul style="list-style-type: none"> • At least two unprovoked (or reflex) seizures occurring more than 24 hours apart; • One unprovoked (or reflex) seizure and the probability of further seizures similar to the general recurrence risk after two unprovoked seizures (e.g., ≥60%), occurring over the next 10 years. This may also be the case with remote structural lesions such as stroke, central nervous system infection, or certain types of traumatic brain injury; or • Diagnosis of an epilepsy syndrome [1].

supervisor. The Ministry of Education provides basic first aid courses to schools' health supervisors. The first aid course includes seizure first aid teaching.

However, the health supervisor has his own teaching time and responsibilities. In case of a child had a seizure in class, each teacher should be able to provide first aid measurements while calling the supervisor.

The aim of this study was to assess the knowledge of school teachers in the Makkah region about seizure first aid and post-event care.

2. Method

This is a cross-sectional descriptive study conducted in the Makkah region of Saudi Arabia.

Ethical approval was obtained from Umm Al-Qura University's ethics and research committee. An electronic self-administered questionnaire with a cover letter explaining the purpose of the study was written in English then translated into Arabic, before being back translated to English to check for discrepancies. The questionnaire was also reviewed by two independent physicians and two independent school teachers, before being distributed electronically to school teachers in the Makkah region. The data collected include demographic information on the teachers, including their years of experience and educational levels, as well as their knowledge of epilepsy, seizure first aid, post-event care, and when a patient should be transferred to a medical facility. Sample size was calculated using the following formula:

$$\text{Sample Size} = (Z\text{-score})^2 \text{StdDev} (1 - \text{StdDev}) / (\text{margin of error}) = 384.16$$

= 385 subjects. Total of 426 teachers responded.

Data were collected in Excel sheets, and statistical analyses were performed using SPSS-21 package software (SPSS Inc., Chicago, IL, USA). Descriptive analyses were performed, and the variables were examined using the Pearson chi-squared (χ^2) test for normal distribution. Statistical significance will be defined as *P* values of less than 0.05.

Table 2
Demographic and baseline characteristics.

	Male	Female	Total
School:			
Primary	26	179	205 (48%)
Intermediate school	7	89	96 (22.5%)
High school	13	112	125 (29%)
Academic degree:			
Bachelor	43	359	402 (94%)
Master	2	15	17 (4%)
Doctoral	1	6	7 (1.6%)
Experience in years:			
1–5 years	13	128	141 (33%)
6–10 years	6	65	71 (17%)
>>10 years	27	187	214 (50%)

Table 3
Knowledge about epilepsy.

Etiology of epilepsy	
Psychological	33 (7.75%)
Supernatural	28 (6.6%)
Neurological disease	365 (85.7%)
Treatment available	
Yes	314 (73.7%)
No	112 (26.3%)
Medication dependency	
Yes	169 (39.7%)
No	257 (60.3%)
Training on first aid for seizure	
Yes	34 (8%)
No	392 (92%)
Previously witnessed a seizure	
Yes	147 (34.5%)
No	279 (65.5%)

3. Results

Table 2 shows the teachers' demographic data. A total of 89% of the responders were female. The majority of teachers had a bachelor's degree (94%) (graduate group), with the remainder having either a master's degree or a PhD (6%) (postgraduate group). Half of the responders had more than 10 years of experience (50%); 17% had between 5 and 10 years of experience; and 33% had less than five years of experience.

3.1. Knowledge of epilepsy

Among the teachers (n 426), 85.7% recognized epilepsy as a neurological disease, while 7.7% thought it was a psychological disease and 6.1% attributed its symptoms to supernatural causes (e.g., jinn possession) (Table 3).

A total of 314 (73.7%) of the responders knew that treatments are available for epilepsy, and 257 (60.3%) knew that epilepsy medications do not cause dependency. Additionally, 34.5% had witnessed a seizure attack, although only 8% had received training on seizure first aid (Table 3).

3.2. Knowledge of first aid and post-event care

The majority of the teachers (55%) responded that if faced with a seizing child, they would open the patient's mouth and insert an object

Table 4
Seizure first aid.

	Ensure safety and ask for help	Read Quran	Open mouth and insert object	Total
Degree:				
Graduate	151 (37.5%)	31 (8%)	220 (54.5%)	402
Postgraduate	8 (33.3%)	1 (4.2%)	15 (62.5%)	24
Total	159 (37.3%)	32 (7.7%)	235 (55%)	426
Experience in years:				
1–5 years	69 (48.9%)	6 (4.3%)	66 (46.8%)	141
5–10 years	35 (49.3%)	4 (5.6%)	32 (45.1%)	71
>>10 years	55 (25.7%)	22 (10.3%)	137 (64%)	214
Total	159 (37.3%)	32 (7.5%)	235 (55.2%)	426

In relation to the correct answer, no significance (*P* = 0.151) was observed between the undergraduate (37.5%) and postgraduate (33.3%) groups. However, there was a significant difference (*P* < 0.001) between the 1–5 years group (48.9%) and the 6–10 years group (49.3%) when compared with the >>10 years group (25.7%).

Table 5
Post-event care.

	Put patient in the recovery position	Wake patient up	Read Quran	Give patient water	Total
Degree:					
Graduate	192 (47.9%)	58 (14.3%)	15 (3.8%)	137 (34.0%)	402
Postgraduate	12 (50%)	3 (12.5%)	1 (4.2%)	8 (33.3%)	24
Total	204 (47.9%)	61 (14.3%)	16 (3.8%)	145 (34%)	426
Experience in years:					
1–5 years	60 (42.6%)	22 (15.6%)	6 (4.3%)	6 (4.3%)	141
5–10 years	34 (47.9%)	6 (8.5%)	2 (2.8%)	2 (2.8%)	71
>10 years	110 (51.4%)	33 (15.4%)	8 (3.7%)	8 (3.7%)	214
Total	204 (47.9%)	61 (14.3%)	16 (3.8%)	16 (3.8%)	426

In relation to the provision of a correct answer, no significant ($P = 0.374$) difference was observed between the undergraduate (47.9%) and postgraduate (50%) groups. However, a significant difference ($P < 0.01$) was observed between the >10 years group (51.4%) and the other two groups.

during the seizure. Only 37.3% of teachers responded correctly in relation to ensuring student safety. There was no statistical significance between the academic degree and the correct answer. However, the less experienced teachers (1–10 years) had the correct response of ensuring safety in comparison with the more experienced teachers (P value $\ll 0.001$) (Table 4).

For post-event care, 47.9% of teachers responded by saying they would put the patient in the recovery position. There was no statistical significance between the correct post-event care and academic degree, although it was observed that the more experienced teachers had a significant tendency toward offering the correct answer of putting the patient in the recovery position (51.4%) (Table 5).

3.3. Knowledge of when to transfer to hospital, and recognition of status epilepticus

In their ability to recognize status epilepticus, there was a significant difference ($P = 0.013$) between the teachers with a postgraduate qualification (54.2%) and those in the undergraduate group (44.5%). Furthermore, there was also a significant difference ($P < 0.001$) between the more experienced teachers (>10 year group) (50.9%) and the other informants (Table 6).

4. Discussion

Although our study intended to study the knowledge of seizure first aid in both male and female teachers, the majority of responders (89%) were female teachers. Thus, our results represent female teacher's knowledge about seizure first aid and post-event care. In our study, 85.7% of responders knew that epilepsy is a neurological disease, while only 6.1% of the study population attributed epilepsy to a supernatural cause (e.g., possession by a jinn). This result is different from a 2012 study, which reported that between 27% and 40% of teachers attributed epilepsy to jinn possession [8,9]. This difference may be related

to improved teacher knowledge about epilepsy over the last few years. Around 73% of teachers knew that treatments are available to patients with epilepsy. It has been observed elsewhere that teachers are more knowledgeable about the availability of treatment in comparison with the general population in Saudi Arabia. In a study conducted in the Riyadh region, a total of 7078 participants were evaluated regarding their knowledge about epilepsy, with 49.3% being aware of medical treatments, 16.2% thinking no treatments are available, and the remaining 34.5% believing in the efficacy of other traditional treatments, including reading the Quran [10]. Although there have been improvements in teachers' knowledge about epilepsy, in our study, only 8% had received training in seizure first aid, resulting in a significant lack of ability among teachers to provide first aid to a child experiencing a seizure. Such a lack of knowledge was not related to the educational level of the teachers, although a statistically significant difference was found between informants with less than 10 years of teaching experience and those with more experience. This likely indicates that the younger generation had better knowledge in comparison with more experienced teachers. Conversely, however, we found that the more experienced responders provided better post-event care and were more able to recognize when a student should be transferred to hospital than the less experienced teachers. The results of our study are comparable with those of national and international studies. In a study from Khamis Mushate (southern Saudi Arabia), around 68.3% of male teachers have witnessed an epileptic seizure. However, only 35.9% were able to give seizure first aid [11]. A study from Riyadh showed that around 31.8% of female primary school teachers are able to provide first aid to the child [12]. Although the two studies were done in different parts of Saudi Arabia, they showed similarity of response between male and female teachers. This may indicate no gender difference in the teacher's knowledge. However, another study focusing on the knowledge of the other gender in the same region will be better for comparison. In an Italian analysis, only 24% of teachers were able to provide first aid to students experiencing epilepsy [13], whereas a study

Table 6
When to transfer the patient to hospital?

	Immediately	More than 5 min	More than 10 min	More than 20 min	If recurrent	Immediately and if recurrent	After 5 min and if recurrent
Degree:							
Graduate	53 (13.2%)	27 (6.7%)	17 (4.2%)	12 (2.8%)	27 (6.7%)	87 (21.6%)	179 (44.5%)
Postgraduate	1 (4.2%)	2 (8.3%)	0	0	2 (8.3%)	6 (25%)	13 (54.2%)
Total	54 (12.7%)	29 (6.8%)	17 (4%)	12 (2.8%)	29 (6.8%)	93 (21.8%)	192 (45%)
Experience in years:							
1–5 years	19 (13.5%)	14 (9.9%)	5 (3.5%)	5 (3.5%)	11 (7.8%)	31 (22%)	56 (39.8%)
5–10 years	14 (19.8%)	1 (1.4%)	2 (2.8%)	2 (2.8%)	5 (7%)	20 (28.2%)	27 (38%)
>10 years	21 (9.8%)	14 (6.5%)	10 (4.7%)	5 (2.3%)	13 (6.2%)	42 (19.6%)	109 (50.9%)
Total	54 (12.7%)	29 (6.8%)	17 (4%)	12 (2.8%)	29 (6.8%)	93 (21.8%)	192 (45.1%)

The correct answer was a significant difference ($P < 0.001$) in the >10 year group (50.9%) when compared with the other questioners' group.

The correct answer was a significant difference ($P = 0.013$) in the postgraduate group (54.2%) when compared with bachelor's group (44.5%).

in Senegal found that around 53% of teachers are likely to intervene harmfully when faced with a child with epilepsy experiencing a seizure [14]. Around 55% of our responders reported that they would need to put an object into the patient's mouth, which was also the most likely action reported in an Iranian study [15]. The significant improvement in the knowledge of teachers likely related to the awareness program held by the Ministry of Health and Saudi Epilepsy Society. Every year during the epilepsy awareness day, there are a public awareness campaign targeting patients with epilepsy, their families, and the general populations [16]. However, specific training for teachers in first aid measurements is lacking. Eze and his group have shown that epilepsy health education could increase teacher knowledge and facilitate correct first aid management [17,18]. As teachers may be first-line responders in dealing with a child suffering from an epileptic seizure, proper education is required to prevent failure to act or inappropriate action that may result in harm. Education should include first aid management, post-event care, and recognition of when a child should be transferred to a medical facility.

5. Limitation of the study

This study mainly evaluated female teachers, and it is difficult to generalize our results to male teachers as well. A second study aiming to evaluate specifically male teachers will be carried out.

6. Conclusion

Epilepsy is one of the most common neurological diseases in Saudi Arabia. The women teachers in Makkah region significantly lack training and knowledge of adequate seizure first aid, and thus, we propose a health education program that targets teachers in order to improve their first aid awareness and ability.

Declaration of Competing Interest

All authors disclose no conflict of interest related to this study.

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