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Paediatrics Section

Knowledge and Attitude of School Teachers toward Epilepsy in Al-Baha City, Saudi Arabia- A Cross-sectional Study

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ABSTRACT

Introduction: Epilepsy is a neurological disorder characterised by recurrent unprovoked episodes of seizures. A seizure is a frightening event, especially when it lasts more than five minutes, known as status epilepticus, which, if not treated promptly, can lead to brain injury. Understanding first aid for a seizure is crucial and may save the patient's life.

Aim: To assess school teachers' knowledge about epilepsy, their attitudes toward epileptic patients, and the factors that affect teachers' knowledge in Al-Baha City.

Materials and Methods: This cross-sectional study was conducted in Al-Baha City, Saudi Arabia, from November 2021 to May 2022. A total of 305 teachers working in various randomly selected schools, equally distributed between male and female schools, were enrolled. Data were collected through an electronic questionnaire to evaluate teachers' knowledge and attitudes toward epilepsy. Statistical analysis was performed using the Chi-square test, with data considered statistically significant when the p-value was less than 0.05.

Results: In the present study, out of 305 subjects, 167 (54.8%) were male, and the majority, 137 (44.9%), were aged between 35-44 years. Of the participants, 214 (70.2%) were found to have poor knowledge about epilepsy, particularly regarding its etiology, impact on learning, and treatment options. There was a positive attitude among 211 (69.2%) participants toward hiring epileptic patients in their businesses and 240 (78.7%) responded positively to allowing their children to play with epileptic patients. However, 125 (41%) participants had a negative attitude toward allowing their offspring to marry an epileptic patient.

Conclusion: The school teachers' knowledge about epilepsy was poor. While their attitudes were positive regarding hiring epileptic patients and allowing their children to play with them, their attitude was negative regarding allowing their offspring to marry an epileptic patient.

Keywords: Awareness, Children, Epileptic seizure, Faculty members, Students

INTRODUCTION

Epilepsy is a neurological disorder that leads to recurrent unprovoked seizures [1], resulting from a sudden and intense surge in brain electrical activity [2]. Status Epilepticus is defined as an unremitting seizure lasting more than five minutes, or successive seizures without regaining consciousness for five minutes. It is a medical emergency that requires significant effort from the attending Emergency Room (ER) physician [3,4]. Seizures can be classified as generalised or partial; generalised seizures are further categorised into generalised tonic-clonic ("grand mal"), tonic, clonic, atonic, myoclonic, and absence seizures. Partial seizures are classified as simple partial, complex partial, and partial seizures with secondary generalisation [5].

According to the World Health Organisation (WHO), 50 million people of all ages worldwide suffer from epilepsy [6], with 80% residing in the developing world [7]. The prevalence of epilepsy in Saudi Arabia is reported to be 6.54 per 1000 [8]. Causes of epilepsy may be idiopathic, acquired, or genetic. Idiopathic epilepsy typically begins in childhood and is not linked to neurological signs such as childhood absence epilepsy and juvenile myoclonic epilepsy. Acquired epilepsy may result from cerebral infections, trauma, or tumours. Other causes include cerebrovascular events, cerebral immunological issues, birth asphyxia or trauma, and infantile causes, such as epilepsy triggered by meningitis, meningioma, open-head surgery, and cerebral infarction [9].

Despite being known since ancient times, epilepsy is still associated with widespread discrimination and stigma, which can be attributed to poor public awareness, as well as myths and misconceptions [10]. In some regions of Saudi Arabia, awareness of epilepsy remains a significant issue, with prevalent beliefs attributing epilepsy to supernatural forces like the influence of the devil (Jinn) and the evil eye [10-12]. This can lead to other consequences, such as reliance on spiritually-based methods rather than medical treatment [13].

Individuals with epilepsy must contend with various psychosocial challenges, including social isolation, stigmatisation, and depression stemming from poor public awareness of epilepsy [14]. Al-Baha is a high-altitude province in the southern region of Kingdom of Saudi Arabia (KSA) with a population of 476,172 in 2017 [15]. No research has been conducted before to gauge the awareness and attitude of teachers towards epilepsy. Given that most cases of epilepsy commence in childhood, the present study focuses on school teachers, addressing their knowledge and attitude towards epileptic patients.

MATERIALS AND METHODS

This cross-sectional study was conducted in Al-Baha City, Saudi Arabia, from November 2021 to May 2022. The study was approved by the Ethical Committee of the Faculty of Medicine, Al-Baha University (IEC No. REC/PEA/BU-FM/2018/0017). Consent was obtained from the regional education authority and the school managers, who were requested to inform and encourage their teachers to participate in the survey. A consent form was included at the beginning of the questionnaire, which participants were required to sign before completing the questionnaire.

Inclusion criteria: Any teacher working in the selected schools was included in the study.

Exclusion criteria: Retired teachers and those who were not willing to participate in the study were excluded.

Sample size calculation: The target minimum sample size (300) was calculated from the website (Sample Size Calculator) at a 95% confidence level and a 5% margin of error. However, the authors endeavored to include as many target respondents as possible who agreed to participate during the study period (3 months).

Study Procedure

In the present study, a total of 18 schools were chosen using a randomised sampling technique, with half being male schools and half being female schools. One-third of these male schools were primary schools, one-third was intermediate schools, and one-third was secondary schools, the same was applied to female schools.

Data were collected using an electronic structured questionnaire that addressed all the specific study objectives, including:

- Socio-demographic characteristics (5 questions).
- Questions focusing on the main study issues, such as:
  a) Knowledge and awareness about epilepsy (13 questions).
  b) Attitude towards epilepsy (3 questions). Two questions were adapted from a previous study [16].

The questionnaire was developed by the principal researcher, reviewed by the research team, prepared in Arabic using Google Forms, and electronically distributed to the target population (primary, intermediate, and secondary school teachers from both selected male and female schools) in the study area with the assistance of the school managers. The teachers had three months to complete the questionnaire using Google Forms. Once the target sample size was achieved, the questionnaire on Google Forms was closed. The data were exported to an Excel file and then converted into an Statistical Package for the Social Sciences (SPSS) file for analysis.

Participants' knowledge was evaluated using a scoring system adapted from a previous study [17], with the cut-off point being 54% due to the variation in the number of knowledge questions. Participants who answered seven or more questions out of 13 questions (53.85% ≈54%) were considered to have good knowledge. A total of 13 items were used to assess participants' knowledge, covering topics such as first aid measures for a convulsing epileptic child, causes of epilepsy and its impact on students' learning, awareness of necessary restrictions for epileptic children (e.g., swimming, driving, watching TV), triggering factors for epileptic seizures, appropriate treatments including medications, dietary adjustments, and the role of surgery if applicable.

Responses were scored as one for correct answers and zero for incorrect ones. Participants' overall knowledge was categorised as good knowledge or poor knowledge, with those scoring < 54% considered to have poor knowledge.

STATISTICAL ANALYSIS

The data was statistically analysed using SPSS software version 25.0 The Chi-square test was employed for statistical analysis. Data was deemed statistically significant when the p-value was less than 0.05.

RESULTS

The authors received 305 responses, all of which were completely filled out. In the present study, male participants numbered 167 (54.8%), while females numbered 138 (45.2%). The largest proportion of participants, 137 (44.9%), fell within the age group of 35-44 years. The majority of participants were primary school teachers, with 115 (37.7%), followed by high school teachers with 112 (36.7%) and intermediate school teachers with 78 (25.6%). The majority of participants held bachelor's degrees, totaling 249 (81.6%), and most of the participating teachers had professional experience exceeding 10 years [Table/Fig-1].

Only 36 (11.8%) of the teachers have a family member or relative with epilepsy. A total of 214 (70.2%) stated that they had witnessed epileptic fits at least once in their lives. A total of 127 (41.6%) reported that they had taught an epileptic student before, whereas 178 (58.4%) did not. Out of those who taught epileptic students, 112 (88.2%) observed them convulsing in school, while 15 (11.8%) did not. A total of 250 (82%) teachers have no experience with first aid for epilepsy, of whom 228 (91.2%) believe that they need training in first aid for epilepsy [Table/Fig-2].

Items	Variables	N (%)
Gender	Male	167 (54.8)
	Female	138 (45.2)
Age (Years)	15-24 years	13 (4.3)
	25-34 years	63 (20.7)
	35-44 years	137 (44.9)
	45-60 years	92 (30.2)
Teacher's school level	Primary school	115 (37.7)
	Intermediate school	78 (25.6)
	High school	112 (36.7)
Teacher's education level	High school	11 (3.6)
	University (Bachelor)	249 (81.6)
	Postgraduate	45 (14.4)
Teacher's professional experience (in years)	0-5 years	33 (10.8)
	5-10 years	73 (23.9)
	>10 years	199 (65.2)

[Table/Fig-1]: Demographic data of all the study subjects (N=305).

No.	Question	Response	
		Yes n (%)	No n (%)
1.	Do you have any cases of epilepsy in your family or relatives?	36 (11.8)	269 (88.2)
2.	Have you attended any epileptic fits before?	214 (70.2)	91 (29.8)
3.	Have you any experience with teaching epileptic student?	127 (41.6)	178 (58.4)
4.	If yes, has he had an epileptic fit in front of you?	112 (88.2)	15 (11.8)
5.	Do you have training experience in epilepsy first aid?	55 (18)	250 (82)
6.	If no: Any need for a training course in epilepsy first aid?	228 (91.2)	22 (8.8)

[Table/Fig-2]: Teachers' experience with epileptic students, N=305.

Regarding the participants' knowledge concerning the causes of epilepsy, the majority, 223 (47.2%) of the participants, believed it was due to increased electrical discharge from the brain, followed by 82 (17.4%) who thought it was caused by an inherited disease, 1 (0.2%) by an infectious disease, 63 (13.3%) by a psychological problem, 65 (13.8%) by the evil eye or evil souls, while 37 (7.8%) attributed it to other causes and 1 (0.2%) didn't know the cause. Factors reported by the participants to trigger epileptic fits were staying up late at night 80 (14.7%), watching TV 56 (10.3%), fever 60 (11%), nervousness 185 (33.9%), noises 78 (14.3%), others 8 (1.5%), and 79 (14.5%) didn't know the triggering factors.

Regarding the impact of epilepsy on the learning ability of the child, 92 (30.2%) believed it has no effect, 129 (42.3%) thought it leads to learning disabilities, 74 (24%) didn't know its impact on learning, while 10 (3.3%) stated that it causes mental retardation.

Approximately, 252 (83%) of the participants believed that epileptic students could learn in regular classes in ordinary schools, while 53 (17%) stated that they need to be educated in special-needs classes [Table/Fig-3].

When asked about the suitable treatment for epilepsy, 242 (49%) believed it to be medical treatment and follow-up, 88 (17.8%) thought it was healing by Ruqia, 127 (25.8%) reported it as psychotherapy, and 36 (7.3%) didn't know about its treatment.

Knowledge item	Participant response	N (%)
Causes of epilepsy	Increased electrical discharge from the brain	223 (47.2%)
	Inherited disease	82 (17.4%)
	Infectious disease	1 (0.2%)
	Psychological problem	63 (13.3%)
	Evil eye or evil souls	65 (13.8%)
	Other causes	37 (7.8%)
	I don't know	1 (0.2%)
Triggering factors for epileptic fit	Staying late up at night	80 (14.7%)
	Watching TV	56 (10.3%)
	Fever	60 (11%)
	Nervousness	185 (33.9%)
	Noises	78 (14.3%)
	Others	8 (1.5%)
	I don't know	79 (14.5%)
Epilepsy impacts on the learning ability of the child	It leads to learning disabilities	129 (42.3%)
	Has no effect	92 (30.2%)
	I don't know	74 (24%)
	It causes mental retardation	10 (3.3%)
Learning of epileptic student	Could be learned in regular classes	252 (83%)
	Should be learned in special-need classes	53 (17%)

[Table/Fig-3]: Participants knowledge regarding causes, triggering factors, and impact of epilepsy N=305.

The sources of the participants' information about epilepsy were as follows: relatives and friends 144 (34.4%), reading 135 (32.2%), media 68 (16.2%), doctors 33 (7.9%), education 32 (7.6%), and other sources 7 (1.7%).

Regarding the teachers' awareness about dealing with epileptic children, 57 (19%) believed it is wise to prevent epileptic students from participating in sports periods, while 172 (56%) thought it is not important and 76 (25%) didn't know. When asked if there is a complete radical treatment for epilepsy, 47 (15.4%) of the participants believed that epilepsy can be cured, 68 (22.3%) said epilepsy cannot be cured, and 190 (62.3%) didn't know the answer. Assessing if there is any role for surgery in treating epileptic patients, 77 (25.2%) said no, 190 (62.3%) didn't know, and only 38 (12.5%) answered yes definitively [Table/Fig-4].

No.	Question	Response		
		Yes n (%)	No n (%)	*IDK n (%)
1.	Is there any radical treatment for epilepsy?	47 (15.4)	68 (22.3)	190 (62.3)
2.	Any role for surgery in treating epilepsy?	38 (12.5)	77 (25.2)	190 (62.3)
3.	Is it wise to prevent epileptic students from sports period?	57 (18.7)	172 (56.4)	76 (24.9)
4.	Is it advisable to prevent epileptic students from swimming?	152 (49.8)	81 (26.6)	72 (23.6)
5.	Is it wise to prevent epileptic students from driving?	187 (61.3)	67 (22)	51 (16.7)
6.	Is it wise to prevent epileptic students from watching TV?	42 (13.8)	208 (68.2)	55 (18)
7.	Is it beneficial to give epileptic students special types of food?	92 (30.1)	124 (40.7)	89 (29.2)

[Table/Fig-4]: Teacher awareness about epilepsy treatment and dealing with an epileptic child. N=305.
*IDK: I don't know

Overall, the teachers' awareness of epilepsy is poor, with 214 (70.2%) having poor knowledge (scored <54%) of all aspects of epilepsy, while good knowledge (scored >54%) was achieved by 91 (29.8%).

Factors that affect teachers' knowledge about epilepsy include gender (p-value=0.038), type of school where the teacher works (p-value=0.019), years of teaching experience (p-value=0.011), having a family member with epilepsy (p-value=<0.01), witnessing an epileptic fit (p-value=<0.01), and teaching an epileptic student (p-value=<0.01). However, teachers' age (p-value=0.688) and education level (p-value=0.507) do not affect their knowledge. Regarding teachers' attitudes towards epileptic patients, the majority of them, 240 (78.7%), showed a positive attitude by allowing their children to play with an epileptic child, while 65 (21.3%) would not let them play (negative attitude). When assessing participants' attitudes regarding hiring epileptic patients in their business, 211 (69.2%) agreed with this idea, 56 (18.4%) did not accept it, and 38 (12.5%) could not decide. However, the majority of teachers, 180 (59%), had a negative attitude towards allowing one of their family members to marry an epileptic patient, while 125 (41%) supported this idea [Table/Fig-5].

No.	Question	Response		
		Yes n (%)	No n (%)	IDK n (%)
1.	Will you employ epileptic patients in your work?	211 (69.2)	56 (18.4)	38 (12.5)
2.	Will you let one of your family marry an epileptic patient?	125 (41)	180 (59)	-
3.	Will you allow your sons to play with epileptic patient?	240 (78.7)	65 (21.3)	-

[Table/Fig-5]: Teacher attitude towards epileptic patient, N=305.

DISCUSSION

Regarding the aetiology of epilepsy, we found that 47.2% of the participants thought it was due to increased electrical discharge from the brain. This finding is inconsistent with a study conducted in Khartoum, Sudan, in which only 10.7% attributed epilepsy to this cause [18]. Unfortunately, there is still a misconception about the etiology of epilepsy among school teachers, as 13.8% of them believed it is caused by the evil eye or evil souls. This belief is somewhat better than what Abulhamail found in Jeddah, where 27% of participants continued to believe that spirit possession or the evil eye are causes of epilepsy [19].

Regarding triggering factors for epileptic fits, participants reported staying up late at night, watching TV, fever, nervousness, and noises as triggers. This finding is somewhat different from the results of a study conducted in Nepal, which reported the triggering factors to be missing medication doses, heavy alcohol use, lack of sleep, flashing lights, and cocaine or other drug use [20].

The present study revealed that 30.2% of the participants thought that epilepsy does not affect the learning ability of the student, while 47% reported that it leads to learning disabilities. This finding is more or less similar to the results of a study conducted in Italy, which found that 22.7% of the participant teachers said that epilepsy has an effect on student learning ability and 54.9% reported that epilepsy impairs children's learning [21].

An 83% of our participant teachers think that epileptic children can be taught in regular classes in ordinary schools, while only 17% stated that they need to be taught in special-needs classes. This finding is similar to Alkhotani's findings, who found that only 12%-14.3% of teachers think that epileptic students should be taught in special schools [22].

Regarding the suitable treatment of epilepsy, 49% of our participants thought it was medical treatment and follow-up, while the remaining 51% reported other inappropriate treatment options such as healing by Ruqia and psychotherapy. This is consistent with the findings of Gebrewold MA et al., who found

that 52.2% of the participants thought that epilepsy should be treated by medical doctors, or by surgeons (6%), while 41.2% believed in other non medical methods as suitable treatments for epilepsy, such as holy water treatment, church healing sessions, and treatment by traditional healers [23].

When assessing teachers' knowledge about the curability of epilepsy, only 15.4% of the respondents believed that epilepsy can be cured, while 22.3% said epilepsy cannot be cured, and 62.3% did not know the answer. This finding is far below the results of a study conducted in Niamey, Niger, in which 79.3% of the participants believed that epilepsy can be treated [24]. The authors found that only 12.5% of the participants knew that surgery may have a role in the treatment of epilepsy. This is comparable to the findings of Mecarelli O et al., who found that only 10.5% of participants were aware that surgery is a therapeutic option [25].

When assessing how to deal with epileptic patients regarding restrictions needed to ensure their safety, 56% believed that it is not necessary to prevent epileptic students from participating in sports periods and that they should continue doing sports normally. This percentage is slightly lower than what Iannone LF et al., found (78.6%) with the exclusion of some sports [26]. A total of 50 percent believed it is advisable to prevent epileptic students from swimming, which is similar to the findings of a study conducted in Khartoum, Sudan, where 53.3% said they would prevent them from swimming [27]. A total of 61 percent believed it is prudent to prevent epileptic children from driving, which is significantly higher than what Al-Hashemi E et al., found, who reported only 15.7% [28]. A total of 30 percent reported that special types of food are beneficial in controlling seizures in epileptic patients, which is more or less similar to what Hussein AA et al., found with 35.8% of respondents believe that dieting could help [29].

When assessing the participants' attitudes towards epileptic patients, the majority of them (78.7%) showed a positive attitude by reporting that they would allow their children to play with an epileptic child. This finding supports the results of studies conducted in Indonesia and Al-Jouf, Saudi Arabia, which found that 75% and 74.2% of participants, respectively, would not mind their children playing with an epileptic child [30,31]. However, this attitude contradicts the findings of Gebrewold MA et al., who reported that only 19.1% would allow their children to play with an epileptic child [23].

Furthermore, 59% of the participants showed a negative attitude by not allowing one of their family members to marry an epileptic patient. This attitude is comparable to the findings of Ahmed KS et al., (56.6%) but is far better when compared with the results of a study conducted in India [32], which reported an 86.8% reluctance to marry an epileptic patient [33]. A total of 96 percent agreed with hiring a patient with epilepsy in their business, reflecting a more positive attitude than what Lee H et al., found with only 37.3% accept to hire a patient with epilepsy [34].

Limitation(s)

Limitations of the present study may include the use of electronic questionnaires for data collection, which may result in some participants not fully understanding certain questions. To minimise this potential issue, the questionnaire was rigorously tested and revised before being distributed electronically to ensure the best possible understanding among participants. Furthermore, the present research was conducted solely in Al-Baha City, and as such, the results may not be generalisable to the broader population of the Al-Baha area.

CONCLUSION(S)

Overall, there is poor knowledge among school teachers (70.2%) regarding epilepsy. Given that most cases of epilepsy start in childhood and are more prevalent in school-age children, the knowledge and awareness of school teachers about epilepsy are of great importance to enable them to deal properly with seizure episodes that may occur during the school day. The poor knowledge of school teachers about epilepsy in Al-Baha raises a red flag and highlights the need to increase their awareness of this serious and potentially life-threatening condition that predominantly affects children. This can be achieved by organising educational programs and workshops, as well as leveraging available media platforms to disseminate the necessary information.

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