

# Knowledge, attitude and practices of schoolteachers toward epilepsy and students with epilepsy

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**Abstract. – OBJECTIVE:** This study aimed to estimate and evaluate teachers' knowledge, attitudes, and practices toward students with epilepsy and to determine the association between selected demographic factors.

**SUBJECTS AND METHODS:** This cross-sectional study was approved by the ethical committee of King Saud University, Riyadh, Saudi Arabia. The study was conducted at the department of physiology, King Saud University, from October 2020 until October 2021. The data was collected through anonymous online self-administered 44-item questionnaires. The sampling technique used was Snowball sampling from ten randomly selected schools in Riyadh.

**RESULTS:** The total sample size was 456 participants. The mean age of the respondents was  $41.5 \pm 8.52$ , and a male to female ratio of 1.4:1. The mean years of experience of the respondents is  $16.14 \pm 8.85$ . Almost all teachers knew that epilepsy is a neurological disorder (97.8%). However, females were more likely to know the cause of epilepsy ( $p=0.003$ ). The majority of public-school teachers (80.2%) thought that epileptic students have normal intelligence ( $p=0.004$ ). A considerable proportion of public-school teachers (82.8%) do not mind having a student with epilepsy in their classes ( $p=0.012$ ). The vast majority of schoolteachers (95.4%) have not had any training on how to deal with an epileptic student during a seizure.

**CONCLUSIONS:** This study shows that schoolteachers have very good knowledge about epilepsy but poor practice towards it. Well-directed training programs are needed to qualify teachers in providing first aid to epileptic students during seizures.

*Key Words:*

Attitude, Awareness, Epilepsy, Knowledge, Practice, Teachers.

## Introduction

Epilepsy is a relatively common neurological disease that has been surrounded by social stigma and discrimination for a long time. The prevalence of epilepsy worldwide and in Saudi Arabia was 6.38 per 1,000 and 6.5 per 1,000 people, respectively<sup>1,2</sup>. The burden of the disease is not only attributable to the unpredictability of seizures but also the social stigma toward people with the disease<sup>3,4</sup>. School teachers and staff are essential in all communities and crucial to their development, especially for students with disorders that may require others' support and intervention. It has become apparent that the social stigma and the lack of knowledge about epilepsy in society and, specifically, among those who interact most with school-age children may contribute to the lower academic scores achieved by children with epilepsy compared to healthy children<sup>5,6</sup>. Many other elements were found to contribute, including the seizures themselves, the medications, and the psychosocial difficulties that cause children with epilepsy to feel as if they have poorer abilities in comparison to their peers, but the knowledge and attitudes of teachers toward them remain significant<sup>6,7</sup>. The social stigma and discrimination surrounding epilepsy can be attributed to a lack of knowledge about the cause of this disease. Many people still believe epilepsy is caused by an evil eye, spirit possession, or magic, according to previously conducted local studies. The general population's attitude toward people with epilepsy has demonstrated positive results, which could be attributed to many factors<sup>8,9</sup>. Only one-third of teachers felt they could provide first aid to students during seizures<sup>10</sup>.

Despite the high prevalence of epilepsy in Saudi Arabia, few local studies<sup>9-11</sup> have explored the level of awareness and attitude among schoolteachers towards epilepsy and their ability to provide first aid if they observed a seizure. This study aims to estimate and evaluate schoolteachers' knowledge, attitudes, and practices toward students with epilepsy in Riyadh. Further, determine the association, if any, between selected demographic factors such as educational level, and marital status with their knowledge, attitudes, and practices.

## Subjects and Methods

### *Study Design and Setting*

This cross-sectional study was conducted in Riyadh, Saudi Arabia from October 2020 until October 2021. All primary, middle, and high school teachers in public and private schools supervised by the Ministry of Education in Riyadh, Saudi Arabia were considered as the target population. Data collection was performed through anonymous, online, self-administered questionnaires directed to private and public primary, middle, and high school teachers. The protocol of this study was approved by the College of Medicine Institutional Review Board with No. E-20-5209, King Saud University, Riyadh, Saudi Arabia. This study maintained the privacy and confidentiality of all participants' information. Informed consent was obtained from all individual participants included in the study. Participants' anonymity was assured as no personal identifiers were requested.

The minimum sample size required to conduct this study was 384 participants. Snowball sampling technique was used, an initial group was randomly selected from ten schools in Riyadh, Saudi Arabia. Teachers were asked to share and distribute the online survey to their colleagues. Subsequent respondents were selected based on referrals. The research tool was a self-administered questionnaire that was reviewed and edited by experts in neurology after the initial design, which was adopted with the permission of Abulhamail et al<sup>11</sup>. To establish the face and content validity of the instrument, a pilot study was conducted with 50 participants for a reliability check, any issues identified in any of the questions were rectified, and the final, modified version was validated. The questionnaire consists of 44 questions categorized into four sections: demographic

data, questions assessing participants' knowledge of epilepsy, questions to assess their attitudes towards students with epilepsy, and questions to determine their practices and preparedness when witnessing a student during an epileptic seizure.

### *Reporting Guidelines*

We used the STROBE cross-sectional reporting guidelines<sup>12</sup>.

### *Statistical Analysis*

The data were analyzed with SPSS version 27.0 statistical software (IBM, Armonk, NY, USA). Descriptive statistics (frequencies and percentages) were used to express the categorical variables and quantitative data were expressed as mean  $\pm$  SD. Bivariate statistical analysis was conducted with appropriate (Chi-square, Fisher's exact) statistical tests for the data and outcome variables. For different categories of knowledge, attitude, and practice, comparisons were made based on age, gender, years of experience, educational stage, marital status, and type of school. A  $p$ -value of  $<0.05$  was considered statistically significant.

## Results

The demographic characteristics are shown in Table I. The respondents' mean age is  $41.5 \pm 8.52$ . Out of 456 respondents, 410 (90.6%) were aged 31 years or more, with a male-to-female ratio of 1.4:1. The majority of respondents were married (87.7%) and had children (85.6%). Most respondents worked in public schools (82.9%). The respondents' mean years of experience is  $16.14 \pm 8.85$ .

The respondents' selected demographic characteristics and their answers to questions indicating their familiarity with epilepsy are shown in Table II. Almost all the teachers knew that epilepsy is a neurological disorder (97.8%). However, females were more likely to know the cause of epilepsy compared to males ( $p=0.003$ ). Table III highlights the association between selected demographic characteristics and schoolteachers' knowledge of epilepsy. On the other hand, schoolteachers aged 30 or less were more likely to recognize that some types of epilepsy involve no apparent symptoms during attacks ( $p=0.014$ ). In terms of the intelligence of epileptic students, 80.2% of public-school teachers believed that they had normal intelligence ( $p=0.004$ ).

**Table I.** Demographic characteristics and distribution of the respondents (n = 456).

Variable	Frequency (%)
Age	
30 or less	43 (9.4)
31-40	186 (40.8)
4-50	161 (35.3)
51 or more	66 (14.5)
Gender	
Male	266 (58.3)
Female	190 (41.7)
Marital status	
Single	56 (12.3)
Married	400 (87.7)
No. of children	
Zero	66 (14.5)
1-3	179 (39.3)
≥ 4	211 (46.3)
Type of school	
Public	378 (82.9)
Private	78 (17.1)
Educational stage	
Primary school	68 (14.9)
Middle school	190 (41.7)
High school	198 (43.4)
Years of experience	
10 or less	155 (34.0)
11-20	160 (35.1)
21-30	124 (27.2)
31 or more	17 (3.7)

Data are reported as the number and percentage of participants.

Tables IV and V highlight the association between selected demographic characteristics and schoolteachers' attitudes toward epilepsy. The majority of public-school teachers (82.8%) do not mind having a student with epilepsy in their classes ( $p=0.012$ ). However, 25% of schoolteachers thought that students with epilepsy should be placed in special schools. Primary school teachers ( $p=0.004$ ) and those over 51 years of age ( $p=0.042$ ) were more likely to think that students with epilepsy had limited careers compared to other groups.

The majority of teachers aged 51 years or more felt sympathy toward students with epilepsy ( $p=0.003$ ).

Table VI shows teachers' practices toward students during epileptic attacks. Around 40.4% of schoolteachers thought they knew how to handle an epileptic student during a seizure. Furthermore about 35.7% (n=163) of respondents had encountered students with epilepsy. However, the vast majority of schoolteachers (95.4%) have not had any training on how to deal with an epileptic student during a seizure.

## Discussion

Almost all the participants knew that epilepsy is a neurological disorder (97.8%). These results are consistent with the findings of studies in India<sup>13</sup> (97%) and Egypt<sup>14</sup> (100%) and higher than those of a study conducted in Nigeria<sup>15</sup> (70%). Compared to a local study<sup>16</sup> which estimated Riyadh's community's knowledge of epilepsy (95.5%). The study findings were almost identical (97.2%) in estimating the community's knowledge. Furthermore, these results suggest that schoolteachers are more knowledgeable about epilepsy's cause (76.8%) than Al-Harbi et al's study<sup>10</sup> results (60.1%).

This study reports that 56.1% of schoolteachers felt sympathy toward students with epilepsy. This is much higher than a study conducted in Egypt (22.8%)<sup>14</sup> but similar to the finding of a local study (63.1%)<sup>10</sup>. Approximately 75% of teachers thought that students with epilepsy should not be placed in a special school, which was similar to reports from Jeddah (73%)<sup>11</sup>, Egypt (72.5%)<sup>14</sup>, and India (75.5%)<sup>13</sup> but higher than in a study conducted in Kuwait (46%)<sup>17</sup>. The percentage of schoolteachers who thought that students with epilepsy would not experience limitations in their future career was 76.5%. This is more than the study conducted in Jeddah (58%)<sup>11</sup>. In addition, around 79.2% of teachers thought that students with epilepsy could participate in sports activities. Similar results were reported in the previously mentioned study (82%), but higher than the Nigerian study (24.8%)<sup>15</sup>.

Around 40.4% of teachers believed themselves able to provide first aid during a seizure, which is an alarmingly low number despite being higher than previous studies<sup>10,14</sup>. Similar studies<sup>10,14</sup> reported (31.8% and 23.8%). When teachers were asked about the most appropriate way to manage a student during a fit, approximately 91% answered incorrectly, which is even more worrisome. Considering only 4.6% of respondents have had training in the provision of first aid to an epileptic student, these numbers are no surprise.

### Limitations

There are several limitations to our study. First, due to the lack of strength in the sampling technique used, the results cannot be generalized to all schoolteachers. Second, the distribution of the sample was not equal between the previously selected demographic factors which may have resulted in biased results when comparing

**Table II.** Teachers' responses to questions regarding their familiarity with epilepsy.

Variables	No. of respondents	Q1	p-value	Q2	p-value	Q3	p-value
Age			0.127		0.684		0.530
30 or less	43	37 (86.0%)		36 (83.7%)		32 (74.4%)	
31-40	186	176 (94.6%)		143 (76.9%)		128 (68.8%)	
41-50	161	143 (88.8%)		122 (75.8%)		106 (65.8%)	
51 or more	66	58 (87.9%)		49 (74.2%)		48 (72.7%)	
Gender			0.108		0.003		0.095
Male	266	236 (88.7%)		191 (71.8%)		181 (68.0%)	
Female	190	178 (93.7%)		159 (83.7%)		133 (70.0%)	
Marital status			0.623		0.503		0.361
Single	56	50 (89.3%)		41 (73.2%)		43 (76.8%)	
Married	400	364 (91.0%)		309 (77.3%)		271 (67.8%)	
Years of experience			0.379		0.030		0.045
10 or less	155	144 (92.9%)		125 (80.6%)		114 (73.5%)	
11-20	160	147 (91.9%)		124 (77.5%)		102 (63.7%)	
21-30	124	109 (87.9%)		85 (68.5%)		84 (67.7%)	
31 or more	17	14 (82.4%)		16 (94.1%)		14 (82.4%)	
Educational stage			0.431		0.481		0.426
Primary school	68	63 (92.6%)		56 (82.4%)		48 (70.6%)	
Middle school	190	175 (92.1%)		145 (76.3%)		129 (67.9%)	
High school	198	176 (88.9%)		149 (75.3%)		137 (69.2%)	
Type of school			0.491		0.071		0.487
Public	378	340 (89.9%)		284 (75.1%)		262 (69.3%)	
Private	78	74 (94.9%)		66 (84.6%)		52 (66.7%)	

Values below the question columns represent numbers and percentages of participants who answered with “yes” or those who chose the correct answer to the question; a Pearson Chi-square test was used to calculate *p*-values. Q1: What is epilepsy? Q2: What do you think the cause of epilepsy is? Q3: Do you think epilepsy is a lifetime disorder?

**Table III.** Teachers' responses to questions regarding their knowledge about epilepsy.

Variables	No. of respondents	Q5	p-value	Q6	p-value	Q7	p-value
Age			0.013		0.014		0.256
30 or less	43	33 (76.7%)		28 (65.1%)		31 (72.1%)	
1-40	186	158 (84.9%)		104 (55.9%)		147 (79.0%)	
41-50	161	146 (90.7%)		88 (54.7%)		126 (78.3%)	
51 or more	66	50 (75.8%)		24 (36.4%)		49 (74.2%)	
Gender			0.320		0.066		0.066
Male	266	222 (83.5%)		152 (57.1%)		199 (74.9%)	
Female	190	165 (86.8%)		92 (48.4%)		154 (82.6%)	
Marital status			0.314		0.396		0.965
Single	56	45 (80.4%)		27 (48.2%)		44 (78.6%)	
Married	400	342 (85.5%)		217 (54.3%)		309 (77.3%)	
Years of experience			0.482		0.266		0.007
10 or less	155	128 (82.6%)		92 (59.4%)		119 (76.8%)	
11-20	160	140 (87.5%)		83 (51.9%)		132 (82.5%)	
21-30	124	106 (85.5%)		62 (50.0%)		90 (72.6%)	
31 or more	17	13 (76.5%)		7 (41.2%)		12 (70.4%)	
Educational stage			0.881		< 0.001		0.685
Primary school	68	59 (86.8%)		21 (30.9%)		54 (79.4%)	
Middle school	190	160 (84.2%)		105 (55.3%)		148 (77.9%)	
High school	198	168 (84.8%)		118 (59.6%)		151 (76.3%)	
Type of school					0.948		0.004
Public	378	319 (84.4%)	0.532	202 (53.4%)		303 (80.2%)	
Private	78	68 (87.2%)		42 (53.8%)		50 (64.1%)	

Values below the question columns represent numbers and percentages of participants who answered with “yes” or those who chose the correct answer to the question; a Pearson Chi-square test was used to calculate *p*-values. Q5: Do you think there are different types of epilepsy? Q6: Do you think a student can have a seizure/attack and not be recognized? Q7: What do you think is the intelligence level of students with epilepsy?

**Table IV.** Teachers' responses to questions regarding their attitude towards students with epilepsy. (1/2)

Variables	No. of respondents	Q8	<i>p</i> -value	Q9	<i>p</i> -value	Q10	<i>p</i> -value	Q11	<i>p</i> -value
Age			0.940		0.323		0.560		
30 or less	43	9 (20.9%)		13 (30.2%)		9 (20.9%)		10 (23.3%)	0.042
31-40	186	31 (19.4%)		52 (28.0%)		44 (23.7%)		43 (23.1%)	
41-50	161	32 (19.9%)		37 (23.0%)		28 (17.4%)		30 (18.6%)	
51 or more	66	11 (16.7%)		12 (18.2%)		14 (21.2%)		24 (36.4%)	
Gender			0.748		0.913		0.076		
Male	266	50 (18.8%)		67 (25.2%)		63 (23.7%)		63 (23.7%)	0.896
Female	190	38 (20%)		47 (24.7%)		32 (16.8%)		44 (23.2%)	
Marital status			0.310		0.742		0.198		
Single	56	8 (14.3%)		15 (26.8%)		8 (14.3%)		14 (25.0%)	0.772
Married	400	80 (20%)		99 (24.8%)		87 (21.8%)		93 (23.3%)	
Years of experience			0.169		0.055		0.365		
10 or less	155	26 (16.8%)		34 (21.9%)		28 (18.1%)		37 (23.9%)	0.052
11-20	160	38 (23.8%)		52 (32.5%)		36 (22.5%)		28 (17.5%)	
21-30	124	19 (15.3%)		25 (20.2%)		25 (20.2%)		35 (28.2%)	
31 or more	17	5 (29.4%)		3 (17.6%)		6 (35.3%)		7 (41.2%)	
Educational stage			0.140		0.364		0.281		
Primary school	68	16 (23.5%)		19 (27.9%)		19 (27.9%)		26 (38.2%)	0.004
Middle school	190	42 (22.1%)		52 (27.4%)		36 (18.9%)		35 (18.4%)	
High school	198	30 (15.2%)		43 (21.7%)		40 (20.2%)		46 (23.2%)	
Type of school			0.012		0.003		0.146		
Public	378	65 (17.2%)		84 (22.2%)		74 (19.6%)		82 (21.7%)	0.049
Private	78	23 (29.5%)		30 (38.5%)		21 (26.9%)		25 (32.1%)	

Values below the question columns represent numbers and percentages of participants who answered with “yes” or those who chose the correct answer to the question; a Pearson Chi-square test was used to calculate *p*-values. Q8: Do you mind having a student with epilepsy in your classroom? Q9: Do you think that students with epilepsy should be placed in a special school? Q10: Do you think that students with epilepsy should not participate in sports activities? Q11: Do you think that there are limitations in future careers for students with epilepsy?

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**Table V.** Teachers' responses to questions regarding their attitude towards students with epilepsy. (2/2)

Variables	No. of respondents	Q12a	p-value	Q12b	p-value	Q12c	p-value	Q12d	p-value	Q12e	p-value
Age			0.326		0.022				0.045		
30 or less	43	4 (9.3%)		17 (39.5%)		18 (41.9%)	0.003	3 (7.0%)		1 (2.3%)	0.603
31-40	186	9 (4.8%)		77 (41.4%)		93 (50.0%)		2 (1.1%)		5 (2.7%)	
41-50	161	9 (5.6%)		49 (30.4%)		98 (60.9%)		2 (1.2%)		3 (1.9%)	
51 or more	66	1 (1.5%)		15 (22.7%)		47 (71.2%)		3 (4.5%)		0 (0.0%)	
Gender			0.856		0.665				0.234		
Male	266	13 (4.9%)		90 (33.8%)		152 (57.1%)	0.610	4 (1.5%)		7 (2.6%)	0.232
Female	190	10 (5.3%)		68 (35.8%)		104 (54.7%)		6 (3.2%)		2 (1.1%)	
Marital status			0.591		0.023		0.015		0.084		
Single	56	2 (3.6%)		27 (48.2%)		23 (41.1%)		3 (5.4%)		1 (1.8%)	0.914
Married	400	21 (5.3%)		131 (32.8%)		233 (58.3%)		7 (1.8%)		8 (2.0%)	
Years of experience			0.241		0.024		0.001		0.622		
10 or less	155	10 (6.5%)		66 (42.6%)		71 (45.8%)		4 (2.6%)		4 (2.6%)	0.628
11-20	160	10 (6.3%)		55 (34.3%)		89 (55.6%)		2 (1.3%)		4 (2.5%)	
21-30	124	2 (1.6%)		31 (25.0%)		86 (69.4%)		4 (3.2%)		1 (0.8%)	
31 or more	17	1 (5.9%)		6 (35.3%)		10 (58.8%)		0 (0%)		0 (0.0%)	
Educational stage			0.293		0.248		0.081		0.336		
Primary school	68	1 (1.5%)		21 (30.9%)		46 (67.6%)		0 (0.0%)		0 (0.0%)	0.075
Middle school	190	12 (6.3%)		60 (31.6%)		107 (56.3%)		4 (2.1%)		7 (3.7%)	
High school	198	10 (5.1%)		77 (38.9%)		103 (52.0%)		6 (3.0%)		2 (1.0%)	
Type of school			0.545		0.018		0.120		0.546		
Public	378	18 (4.8%)		140 (37.0%)		206 (54.5%)		9 (2.4%)		5 (1.3%)	0.028
Private	78	5 (6.4%)		18 (23.1%)		50 (64.1%)		1 (1.3%)		4 (5.1%)	

Values below the question columns represent numbers and percentages of participants who answered with "yes" or those who chose the correct answer to the question; a Pearson Chi-square test was used to calculate *p*-values. Q12: How do you feel about students with epilepsy? a – Neutral; b – Receptive; c – sympathetic; d – intimidated; e – confused.

different demographic categories. Thus, further studies with better sampling techniques and larger sample sizes are still warranted to better define the level of knowledge, attitude and practices of schoolteachers towards epilepsy.

## Conclusions

This study shows that schoolteachers have very good knowledge about epilepsy but poor practice towards it. This is due to the fact that most of the teachers did not receive training, this could have led to teachers not knowing how to handle or what to do when their students experience an epileptic seizure in school. Well-directed training programs are needed to qualify teachers in providing first aid to epileptic students during seizures. Therefore, efforts should be made to prepare the teachers to provide appropriate care if they witness an epileptic student having a seizure.

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### Conflict of Interest

The Authors declare that they have no conflict of interests.

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### Acknowledgements

None.

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### Availability of Data and Materials

The data set analyzed to generate the findings for this study are available from the corresponding author upon reasonable request.

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### Informed Consent

Informed consent was obtained from all individual participants included in the study. Participants' anonymity was assured as no personal identifiers were requested.

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### Authors' Contribution

Conceptualization, Syed Shahid Habib, Jihad Alorainy, Mashal AbaAlkhail, Nawaf Albhijan, Mohammed Alhumud, Abdulaziz Alshoumar; Data curation, Jihad Alorainy, Mashal AbaAlkhail, Nawaf Albhijan, Mohammed Alhumud, Abdulaziz Alshoumar; Formal analysis, Jihad Alorainy, Mashal AbaAlkhail; Investigation, Syed Shahid Habib, Jihad Alorainy, Mashal AbaAlkhail, Nawaf Albhijan, Mohammed Alhumud, Abdulaziz Alshoumar; Methodology, Syed Shahid Habib, Jihad Alorainy, Mashal AbaAlkhail, Nawaf Albhijan, Mohammed Alhumud, Abdulaziz Alshoumar; Project administration, Syed Shahid

Habib; Software, Jihad Alorainy, Mashal AbaAlkhail, Nawaf Albhijan, Mohammed Alhumud, Abdulaziz Alshoumar; Supervision, Syed Shahid Habib; Visualization, Syed Shahid Habib; Writing – original draft, Jihad Alorainy, Mashal AbaAlkhail, Nawaf Albhijan, Mohammed Alhumud, Abdulaziz Alshoumar; Writing – review & editing, Syed Shahid Habib, Jihad Alorainy, Mashal AbaAlkhail.

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### Ethics Approval

The protocol of this study was approved by the College of Medicine Institutional Review Board with No. E-20-5209, King Saud University, Riyadh, Saudi Arabia.

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