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Original Article

Paediatrics Section

Knowledge, Attitude and Self-efficacy of School Teachers towards Students with Epilepsy in Haryana, India: A Cross-sectional Study

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ABSTRACT

Introduction: Epilepsy is the commonest childhood neurological disorder mostly affecting children in the first decade of life. Globally, school teachers have many false beliefs and misinformation about epilepsy. The knowledge and attitude of teachers towards students with epilepsy have a huge impact on their future life.

Aim: To evaluate the knowledge, attitude and self-efficacy of school teachers towards students with epilepsy.

Materials and Methods: A cross-sectional study was conducted from 20 August 2022 to 31 October 2022 at BPS GMC for women, Khanpur Kalan, Sonepat, Haryana, India, using self-administered questionnaire including randomly selected 427 school teachers from 15 schools of Haryana (India). The questionnaire included the scale of Attitude Towards Persons with Epilepsy (ATPE), a summated rating scale for measuring knowledge and attitude. Several additional knowledge and attitude items were also evaluated. Effect of socio-demographic characteristics of participants were also evaluated as a predictor of knowledge and attitude. Data was collected and statistics were applied using Statistical Package for the Social Sciences (SPSS) software and p-value <0.05 was considered as statistically significant.

Results: The mean age of teachers in the present study was 37.7±8.8 years (range=23-58 years). Among the total participants, 79.4% were female teachers. They had approximately two times higher probability of getting a good knowledge and attitude score. Age group 30-50 years had higher chances of getting a good knowledge score. Teaching experience has a positive effect on the knowledge score. Awareness about epilepsy was quite high (85%). Only 14% teachers had previous or current contact with persons with epilepsy. A total of 10.7% teachers had performed first aid management of seizures and 9% of teachers thought that epilepsy is contiguous. The median score for knowledge and attitude were 6 (range=-21 to +26) and 25 (range=-19 to +62), respectively showing overall good knowledge and attitude score. But there were deficits in individual items score and first aid management of seizures.

Conclusion: The overall result of study indicated a good knowledge and attitude towards students with epilepsy, among the participant teachers. Although there were some deficient areas which need to be improved regarding knowledge and attitude and first aid management of seizure episodes. There is a pressing need for integration of educational training courses about epilepsy in the teachers training curriculum.

Keywords: Attitude towards people with epilepsy, Children, Neurological disorder, School teachers, Seizure episodes

INTRODUCTION

Epilepsy is a brain disorder characterised by abnormal brain activity causing seizures or unusual behaviour, sensations and sometimes loss of awareness. It carries neurological, cognitive, psychological and social consequences [1]. Epilepsy affects approximately 0.5-1% of all children through the age of 16 years and the median age of seizure onset is between 5-6 years [2]. Epilepsy affects around 70 million people worldwide out of which 12 million reside in India, so India holds one-sixth of the global burden of epilepsy [3]. Children with epilepsy are at increased risk of a number of education related problems such as learning disabilities, mental health problems, poor self-esteem and social isolation [4]. Epilepsy is a major public health concern associated with strong social stigma and discrimination against people with epilepsy in developing countries especially in school environments [5]. Social discrimination is largely due to misconceptions about the disease. It affects school children much as they are in their age with interaction at multiple levels [6]. Knowledge about epilepsy is an important issue in determining teachers' attitude towards children with epilepsy. In general teachers do not receive any formal training or instructions on epilepsy during their educational training despite the fact that about 40% of children developing life is spent at school [7]. Teachers' attitude towards epilepsy is their tendency to respond positively or negatively towards various issues related to students with epilepsy. Their approach towards students with epilepsy varies with the accuracy of their knowledge which is often inadequate, limited or even erroneous [8].

School teachers play a vital role in the development of attitude towards any disease on the children with strong bearing on their mind. So, the school teacher's knowledge and attitude about epilepsy reflects the real magnitude of the social problem against epilepsy. In the present study, the authors aim to access the knowledge, attitude and self-efficacy of school teachers towards students with epilepsy in India. This will help to identify the areas, in which further training and education are required.

MATERIALS AND METHODS

This cross-sectional study was conducted from 20 August 2022 to 31 October 2022 at BPSGMC for women, Khanpur Kalan, Sonepat, Haryana, India after getting Institutional Ethical approval (Registration no. BPSGMCW/RC762/IEC/22). The target population were school teachers teaching at public and private schools of Haryana. Fifteen schools were selected from five blocks according to proximity and convenience. Administrative authorities of concerned schools were contacted personally by investigators (authors) for permissions and recruitment of teachers for the study.

Sample size calculation: After taking verbal permission from school authorities 450 eligible school teachers were randomly selected from

the list of teachers of these 15 schools. The maximum sample size for the study was calculated to be 384 based on a proportion formula using prevalence of knowledge of teachers regarding epilepsy as 50% and 95% confidence intervals (the authors used expected prevalence as 50% because actual prevalence of knowledge and attitude of school teachers towards student with epilepsy in Indian scenario is not known).

Formula: $n=\frac{Z^2P(1-P)}{d^2}$

where, n=Sample size,

Z=Statistic for a level of confidence (1.96 for 95% confdence level),

P=Expected prevalence or proportion, and d=Precision.

Inclusion criteria: The participants who gave written informed consent for voluntary participation.

Exclusion criteria: Participants already diagnosed with epilepsy and teachers who refused to give consent, were excluded from the study.

Study Procedure

The authors received back 427 forms from the participants and they used a self-administered, slightly modified and standardised questionnaire based on ATPE scale [9]. It is a summated rating scale which is a psychometrically sound instrument for measurement of knowledge and attitude towards person with epilepsy. The item contents were developed, modified and validated through extensive literature review including previous published analysis by an expert group of paediatricians. Modifications were made keeping in mind local cultural beliefs, language clarity and practical relevance. The English version of the questionnaire was translated to local language (Hindi) using simple and clear words that would convey the same meaning as the English version. The questionnaire was then pretested among 20 volunteers to test readability, comprehension and estimation of time needed to complete the questionnaire (20 minutes).

Construct validity was tested using Pearson's correlation. This tests the extent of linear association between variables. Pearson's 'r' correlation coefficient ranges from -1 to 1 depending on direction of the correlation [10]. For a significant correlation at $p<0.05$, the calculated value of 'r' must be greater than Pearson's 'r' critical value at $p<0.05$ (i.e., 0.195). In the present study, questionnaire most of the questions had the calculated 'r' value greater than the Pearson's 'r' critical value of 0.195. However, few questions (Attitude question no 4,10,13,19; Additonal knowledge and attitude question no 8,9) had no significant correlation. Reliability for the questionnaire was confirmed by Cronbach's correlation (Cronbach's alpha value of 0.73).

The study questionnaire was divided into six sections:

Section 1: Socio-demographic characteristic (question 1 to 9) contained information regarding respondents age, gender, location of school, religion, marital status, number of children, level of education of teachers, level school teaching and their teaching experience.

Section 2: It included 13 questions related to sources of information about epilepsy, personal experience and self-reported knowledge about epilepsy.

Section 3: It contained 21 attitude items based on ATPE scale to measure the attitude of teachers towards students with epilepsy. Teachers were asked to respond by one of the six options, based on a six point fully anchored likert scale ranging from "I disagree very much" to "I agree very much". The Likert scale was used to elicit a graded response of participants ranging from term 'very much' representing strongest response to term 'a little' representing weakest possible response. The possible scores of 21 items range from -63 to +63. Each correct response for every attitude statement was awarded a score ranging from +3 to +1 depending upon degree of correctness (+3 being most correct). Incorrect responses were similarly awarded scores ranging from -3 to -1 depending upon degree of incorrectness (-3 being most incorrect). The weighted sum of all responses was used to calculate the attitude scale score.

Section 4: This section included 11 knowledge items based on the ATPE scale to measure the level of knowledge of teachers. Total possible score of 11 items range from -33 to +33. Similar scoring method as used for attitude scores was used to measure the knowledge score of teachers. The weighted sum of all responses was used to calculate the knowledge scale score.

Both knowledge and attitude scale score were categorised into good knowledge and poor knowledge and attitude score considering 50th percentile score taken as cut-off score. Teachers having scores above 50th percentile were considered to have good knowledge and attitude scores and those having scores below 50th percentile were considered to have poor scores.

Section 5: This section included 10 additional knowledge and attitude questions. The teachers were asked to respond by any of three options, "agree", "Disagree" and "not sure" for each item. The responses were evaluated as proportions.

Section 6: It contains questions to assess the self-efficacy of the teachers regarding 1st aid management of seizure episodes.

STATISTICAL ANALYSIS

Data was entered in excel sheet and imported to SPSS software, version 20.0 for statistical analysis. Qualitative variables were expressed as percentages while median and range were used as measures of central tendency and variability respectively. As likert scale data is an ordinal data, median or mode is most appropriate measures of central tendency. The authors preferred to use median in the present study. However, while calculating overall knowledge and attitude scores, mean and median scores were calculated (being quantitative measure). Logistic regression analysis was used to estimate the association of independent variables (socio-demographic and personal experience) with binary dependent variables (good and poor knowledge or attitude score). The p-value <0.05 was considered as statistically significant.

RESULTS

Out of 450 voluntary participant teachers, 427 returned survey forms giving a response rate of 94.6%. The study population had female dominance with 339 (79.4%) female teachers. Mean age of teachers in present study was 37.7±8.8 years (range=23-58 years). Most participants were married 347 (81.3%) and Hindu 410 (96%) by religion. With respect to level of education 224 (52.5%) teachers had Master's degree or above and 160 (37.5%) had Bachelor's degree showing high level of education among teachers. Average teaching experience was 10.2±6.3 years (range=1-26 years). Majority of the schools were located in the urban 318 (74.5%) compared to rural 109 (25.5%) region. The detailed socio-demographic characteristics and teaching experience are given in [Table/Fig-1].

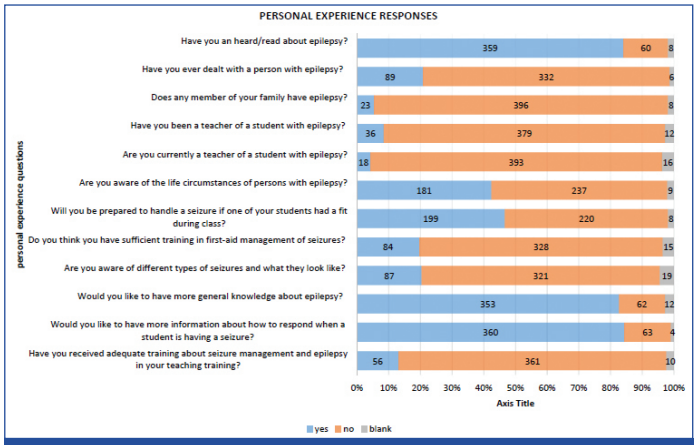
Self-reported personal experience: Teachers in the present study showed a good level of awareness about epilepsy as 359 (84%) participants reported that they have heard or read about epilepsy.

Socio-demographic characteristics of participants	n	Percentage (%)
Age (in years)		
<30	100	23.4
30-39	155	36.3
40-49	129	30.2
50 and above	43	10
Gender		
Male	88	20.6
Female	339	79.4
Location of school		
Rural	109	25.5
Urban	318	74.5

Religion		
Hindu	410	96
Muslim	6	1.4
Sikh	7	1.6
Christian	3	0.7
Others (Jains, Parsis, Buddhist)	1	0.2
Marital status		
Single	70	16.4%
Married	347	81.3%
Divorced	4	0.9%
Widow	6	1.4%
Number of children		
None	102	23.9%
Upto 2	303	71.0%
3-4	21	4.9%
>4	1	0.2%
Level of education of teachers		
Diploma (JBT)	43	10.1%
Bachelor's degree	160	37.5%
Master's degree	224	52.5%
Level of school teaching		
Primary	116	27.2%
Middle	75	17.6%
High	72	16.9%
Senior secondary	164	38.4%
Teaching experience (in years)		
<5	104	24.4%
5-9	115	26.9%
10-14	92	21.5%
15-19	64	15.0%
≥20	52	12.2%

[Table/Fig-1]: Socio-demographic characteristic and teaching experience.

A 118 (31.5%) teachers reported media as source of information and 104 (27.8%) got information about epilepsy from their friends. Only 60 (16%) reported to have got information from a health professional. On evaluation of data the authors found 39% reduction in probability of getting a good attitude score (p-value=0.003). Data showed a poor frequency of contact of teachers with persons with epilepsy as only 89 (20.8%) teachers had ever dealt with any epileptic person. Only 36 (8%) teachers had taught an epileptic student in the past and merely 18 (4%) are currently teaching an epileptic student. Teachers who had taught students with epilepsy got 31% reduction of probability of getting a good knowledge score (p-value=0.02). Among the participants 84 (19.7%) thought that they had sufficient training in first aid management of seizure episodes. Similar proportion 85 (20%) reported that they are aware of different types of seizures but had 48% reduction in probability of getting good attitude score (p-value=0.01). Only 56 (12.4%) teachers reported that they had received adequate training about seizure management and epilepsy in their teacher training. Most of the teachers responded that, they would like to have more general knowledge about epilepsy and its first aid management. On analysis they were found to have 2.3 times higher probability of getting a good attitude score (p-value=0.01). [Table/Fig-2] shows self-reported and personal experience responses.



[Table/Fig-2]: Showing self-reported and personal experience.

ATPE attitude scale score: The mean and median attitude score of teachers in the present study were 25±15 and 25 (range=-19 to +62), respectively. It provided an estimate of teacher's global attitude which showed a positive trend. List of individual attitude item responses percentage-wise given in [Table/Fig-3] and score for attitude items shown in [Table/Fig-4].

S. No.	Attitude questions responses	I disagree very much	I disagree pretty much	I disagree a little	I agree a little	I agree pretty much	I agree very much	No response	Total
1	Epileptic students should not attend normal classrooms.	184	60	95	47	17	18	6	427
2	Epileptic persons should have same rights as other normal individuals.	28	6	11	34	71	273	4	427
3	Epileptics can operate machinery safely.	44	35	78	103	87	69	11	427
4	Epileptics should not be denied insurance.	66	24	41	47	57	154	38	427
5	Epileptics should be prevented from having children.	171	62	55	52	22	40	25	427
6	Epileptics should be prohibited from driving.	68	18	61	143	57	69	11	427
7	Epileptics should be allowed to attend regular public schools.	25	7	20	90	102	175	8	427
8	Onset of epilepsy is enough reason for divorce.	210	72	61	43	12	18	11	427
9	Epileptics are a danger to the public.	238	84	55	23	5	9	13	427
10	Educating individuals with epilepsy is the responsibility of community.	51	28	59	76	85	92	36	427
11	Individual with epilepsy are more accident prone.	65	44	81	117	64	36	20	427
12	Other children need protection from epileptics in classrooms.	107	68	69	92	26	48	17	427
13	Parents should expect similar performance from epileptic children like other normal children.	54	37	92	80	70	67	27	427
14	Epileptics have higher criminal tendency as compared to other individuals.	289	59	44	15	4	7	9	427
15	Epileptics should not marry.	276	54	55	22	4	7	9	427
16	There should be laws for stopping adoption of epileptic children.	179	56	82	50	19	26	15	427
17	Conditions of persons with epilepsy deteriorates over time.	71	66	107	87	37	31	28	427

18	Epileptics should have equal employment opportunities.	22	9	23	56	97	210	10	427
19	Well treated epileptics are just like normal person.	21	32	42	71	72	184	5	427
20	Families of epileptics should not be provided with social support.	267	54	40	23	18	18	7	427
21	Epileptic children in regular classes adversely affect other children.	159	68	54	101	24	12	9	427

[Table/Fig-3]: List of individual attitude item responses percentage-wise.

S. No.	Attitude questions	Median response	Mean score (SD)
1.	Epileptic students should not attend normal classrooms.	2	1.48 (1.76)
2.	Epileptic persons should have same rights as other normal individuals.	3	2.67 (1.68)
3.	Epileptics can operate machinery safely.	1	0.48 (1.9)
4.	Epileptics should not be denied insurance.	1	0.78 (2.23)
5.	Epileptics should be prevented from having children.	2	1.11 (2.06)
6.	Epileptics should be prohibited from driving.	-1	-0.38 (1.98)
7.	Epileptics should attend regular public schools.	2	1.66 (1.65)
8.	Onset of epilepsy is enough reason for divorce.	2	1.67 (1.74)
9.	Epileptics are a danger to the public.	3	2.05 (1.41)
10.	Educating individuals with epilepsy is the responsibility of community.	1	0.59 (2.0)
11.	Individual with epilepsy are more accident prone.	-1	0.5 (1.9)
12.	Other children need protection from epileptics in classrooms.	1	0.55 (2.05)
13.	Parents should expect similar performance from epileptic children like other normal children.	1	0.22 (1.97)
14.	Epileptics have higher criminal tendency as compared to other individuals.	3	2.3 (1.28)
15.	Epileptics should not marry.	3	2.2 (1.35)
16.	There should be laws for stopping adoption of epileptic children.	2	1.38 (1.88)
17.	Conditions of persons with epilepsy deteriorate over time.	1	0.48 (1.87)
18.	Epileptics should have equal employment opportunities.	2	1.8 (1.67)
19.	Well treated epileptics are just like normal person.	2	1.4 (1.89)
20.	Families of epileptics should not be provided with social support.	3	1.95 (1.73)
21.	Epileptic children in regular classes adversely affect other children.	2	1.12 (1.88)

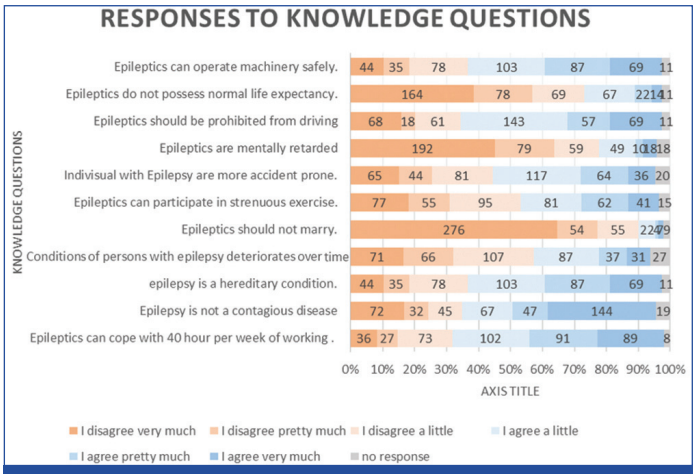
[Table/Fig-4]: Median and Mean±SD score for attitude items.
1=I disagree very much; 2=I disagree pretty much; 3=I disagree a little; 4=I agree a little; 5=I agree pretty much; 6=I agree very much

To evaluate the relationship of socio-demographic characteristics and personal experience with attitude scale scores, logistic regression analysis was conducted. Female teachers were found to have 1.9 times higher probability of getting a good attitude score (p-value=0.017), compared to male counterparts. [Table/Fig-5] showing results of regression analysis on association of socio-demographic and personal experience variables with a good attitude score.

S. No.	Variables		β	SE β	Wald's χ^2	p-value	eβ (odds ratio)
1.	Gender	Male (vs female)	-0.658	0.277	5.63	0.018	0.52
2.	Have you heard/ read about epilepsy?	Yes (vs no)	-0.944	0.317	8.883	0.003	0.39
3.	Are you aware of different types of seizures and what they look like?	Yes (vs no)	-0.761	0.296	6.630	0.01	0.46
4.	Would you like to have more general knowledge about epilepsy?	Yes (vs no)	0.843	0.340	6.137	0.013	2.32

[Table/Fig-5]: Logistic regression analysis on the association of socio-demographic and personal experience variables with a good attitude score.

ATPE knowledge scale score: Median and mean of the knowledge scores of teachers was 6 (range=-21 to +26) and 6.3±7.23, respectively. The results showed overall good knowledge score of school teachers. [Table/Fig-6] showing list of individual knowledge item responses and [Table/Fig-7] shows median score for knowledge items.



[Table/Fig-6]: Responses to individual knowledge items percentage-wise.

S. No.	Knowledge questions	Median response	Mean (SD)
1.	Epileptics can operate machinery safely.	2	0.48 (1.9)
2.	Epileptics do not possess normal life expectancy.	3	0.47 (1.93)
3.	Epileptics should be prohibited from driving.	1	1.11 (2.06)
4.	Epileptics are mentally retarded.	1	1.32 (1.80)
5.	Individuals with epilepsy are more accident prone.	2	0.5 (1.9)
6.	Epileptics can participate in strenuous exercise.		-0.25 (1.98)
7.	Epileptics should not marry.	-1	2.3 (1.35)
8.	Conditions of persons with epilepsy deteriorate over time.	2	0.48 (1.87)
9.	Epilepsy is a hereditary condition.	2	0.6 (1.8)

10.	Epilepsy is not a contagious disease.	3	0.62 (2.2)
11.	Epileptics can cope with 40 hours per week of working.	1	0.74 (1. 9)

[Table/Fig-7]: Median and Mean±SD score for knowledge items.
1=I disagree very much; 2=I disagree pretty much; 3=I disagree a little; 4=I agree a little; 5=I agree pretty much; 6=I agree very much

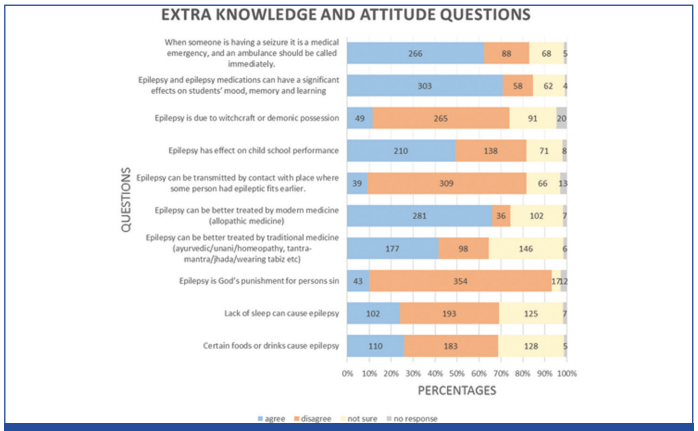
To assess the relationship of socio-demographic characteristics and personal experience of teachers with their knowledge scores, another logistic regression analysis was done. Female teachers have two times greater probability of getting a good knowledge score (p-value=0.016). Teachers with higher age (p-value=0.02) and more years of teaching experience (p-value=0.001) also had higher probability of getting a good knowledge score. Previous contact with epileptics had a negative effect on the knowledge score of teachers (p-value=0.02). [Table/Fig-8] shows logistic regression analysis on socio-demographic and personal experience with a good knowledge score.

S. No.	Variables		β	SE β	Wald's χ^2	p-value	eβ (odds ratio)
1.	Gender	Male (vs female)	-0.713	0.297	5.773	0.016	0.49
2.	Have you been a teacher of a student with epilepsy?	Yes (vs no)	-1.159	0.5	5.362	0.021	0.31
3.	Age	30-39 y (vs <30 y)	0.82	0.35	5.25	0.02	2.3
		40-49 y (vs <30 y)	1.56	0.46	11.69	0.001	4.8
		>50 y (vs <30 y)	1.26	0.69	3.33	0.068	3.5
4.	Teaching experience	5-9 y (vs <5 y)	0.97	0.34	8.10	0.004	2.65
		10 -14 y (vs <5 y)	0.481	0.394	1.491	0.222	1.61
		15-19 y (vs <5 y)	-1.910	0.515	13.751	0.001	0.15
		>20 y (vs <5 y)	-1.183	0.596	3.943	0.047	0.31

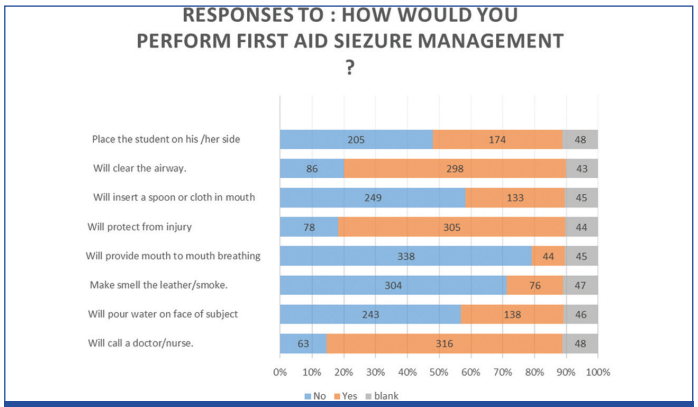
[Table/Fig-8]: Logistic regression analysis on the association of socio-demographic 49 (12%) teachers still thought that epilepsy is and personal experience variables with a good knowledge score.

Additional knowledge and attitude items: A total of 192 (38%) of teachers agreed that epilepsy is a mental illness. Among the respondents 303 (71%) teachers were of the opinion that epilepsy and epileptic medicines affect mood, memory, and learning of students. Unfortunately, 49 (12%) teachers still thought that epilepsy is due to witch craft or demonic possession. A total of 104 (24%) teachers agreed that epilepsy is contagious and 43 (10%) thought that it is due to god's punishment for the sins. A total of 79 (18%) teachers consider it to be a hereditary condition. Of the total participants 210 (49%) agreed that epilepsy affects school performance of students. A significant proportion 102 (23%) of teachers agreed that lack of sleep may cause epilepsy. Among all the participants 281 (66%) agreed that epilepsy can be better treated by allopathic medicines and surprisingly 177 (34%) still believe that, epilepsy can be treated by traditional medicine or tantra-mantra, jhara or wearing tabeez. [Table/Fig-9] shows response to extra knowledge and attitude questions.

Self-efficacy: Among all the participants 316 (74%) prefer to call a doctor or nurse if they witnessed a student with epilepsy in the classroom. Only 46 (10.7%) teachers had ever performed first aid management of seizures. The most common first aid measure response in the present study was to protect persons with epilepsy from injury 305 (71.4%) and clearing the airway 298 (69%). Unfortunately 205 (48%) did not prefer to place the epileptic student on his or her side and 44 (10%) provided mouth to mouth breathing. Certain absurd practices like inserting a spoon or cloth in mouth 133 (31%), smelling leather or smoke 76 (17.8%) and pouring water on face 138 (32.3%) were also observed in the present study which is very discouraging [Table/Fig-10].



[Table/Fig-9]: Responses to extra knowledge and attitude questions percentage-wise.



[Table/Fig-10]: Teacher's responses to question "how would you perform first aid seizures management?"

DISCUSSION

As in developing countries, people have many myths, misbelieves and superstitious thoughts about epilepsy, that lead to social stigma and discrimination which affects the quality of life of people with epilepsy. The present study was conducted to assess various general and specific aspects of teachers' knowledge and attitude towards students with epilepsy and also teachers' self-efficacy. As teachers have a lot of influence on their students who spend a critical part of their social, educational, psychological and physical development at school under their tutelage. Students with epilepsy are at increased risk of low school performance, intellectual and learning disabilities and poor self-esteem [11,12]. Teachers play a pivotal role in a student life, that's why they were specifically chosen as study subjects.

In the present study, the awareness about epilepsy among the teachers was high, around 85% but quite a low proportion (16%) received information from health professionals. Moreover, the teachers who reported that they were aware of different types of seizure and how they look like had a negative correlation with attitude. A plausible explanation for this may be receiving information from unscrupulous, unqualified persons who gave advertisements in public media often regarding non scientific, therapeutic modalities to increase their business. This reflects that the medical fraternity has to participate with a great vigour in health education. Similar high level of awareness about epilepsy was seen in studies from developing countries like Iran (97%), India (99%) and South Korea (92%) [13-15]. The reason for high awareness in the present study might be due to overpopulation and close interpersonal relationships in our community. In contrast, the awareness about epilepsy among school teachers in Thailand was just 57.8% [16].

The present study showed female dominance reflecting a common trend in most public schools in India, as well as, in the world [17]. Female teachers were found to have two times higher probability of getting a good knowledge score as well as a good attitude score. It might be due to better communications among female teachers and epileptic students. Moreover, females may be considered more kind and sympathetic as compared to male counterparts. Similarly significantly higher attitude scores of female teachers (p=0.042 on regression analysis) were reported by Bishop M and Boag EM, [17]. Owolabi LF et al., also reported a significantly higher attitude scores (Odds ratio=3; p=0.011) in females [18]. Contrary to these findings Mustapha AF et al., found males to have a higher knowledge scores (p=0.034 on regression analysis) [19]. In the present study, teachers with the age between 30-49 years had higher probability of getting a good knowledge score compared to the younger teachers below 30 years of age. This finding was in contrast to the results from studies by and Bishop M and Boag EM, and Mustapha AF et al., who found no association of age with the knowledge or attitude score [17,19]. Also, teachers with teaching experience of 5-9 years had 2.5 times greater chances of getting a good knowledge score compared to very less experienced teachers. Bishop M and Boag EM, and Al-Hashemi E et al., also reported a significantly higher attitude scores (p=0.015; p=0.023, respectively) and knowledge scores (p=0.001; p=0.042, respectively) for teachers with more years of teaching experience [17,20]. It may be due to gaining additional knowledge in their advancing teaching career and time to time in service training and educational programmes conducted by the administration or school authorities.

In terms of attitude scale score the overall attitude of the teachers towards students with epilepsy in the present study was positive as shown by a mean attitude score of 25±15 for a 21-item scale with scores ranging from -63 to +63. Results of knowledge score in the present study also suggest a positive trend with a mean knowledge score of 6.3±7.23 for 11-item scale with scores ranging from -33 to +33. Results of the present study were encouraging and consistent with other similar studies. A study conducted by Mustapha AF et al., showed mean knowledge and attitude scores as 38±18.83 (ranging from 11 to 66) and 70.20±35.40 (ranging from 21 to 126), respectively showing overall positive trend [19]. Bishop M and Boag EM, reported mean knowledge and attitude score as 54±7.60 (ranging from 11 to 66) and 109.85±11.04 (ranging from 21 to 126), respectively showing overall positive results [17]. Researchers have found that, the attitude towards people with epilepsy has been consistently improving since almost half a century [21,22]. Investigators using indirect methods of attitude measurement have shown contradictory results for example Baumann RJ et al., concluded in their study that the prejudices against persons with epilepsy are still prevalent [23]. Further, the Bishop M and Salvin B study (2004) conducted in the USA, which used indirect measures suggested a less positive attitude than that was found in the present study [24]. Analysis of Individual items of attitude has some troubling issues. Majority of teachers were of the opinion that, persons with epilepsy are more prone to accidents and should be prohibited from driving. Also, many had poor attitudes regarding having similar expectations from children with epilepsy. These findings are consistent with those, shown by Bishop M and Boag EM, [17]. Some individual items suggest poor knowledge among the participant teachers. For example, when asked about participation of children with epilepsy in strenuous exercise, majority of teachers answered negatively. This may lead to restrictions of student's participation in sports or other physical activities such as school trips. Similar findings were given by Bishop M and Boag EM, and Mustapha AF et al., [17,19]. [Table/Fig-11] shows comparison of similar studies using ATPE-based scale, as a measure of knowledge and ATPE [8,17,19,20].

In the present study, only 89 (20.8%) teachers had contact with persons or students with epilepsy. A similar study by Mustapha AF et al., also reported that 88% teachers had infrequent contact with epileptic persons [19]. Surprisingly, the majority of them had poor knowledge scores compared to the rest of the teachers who had no previous contact with a person with epilepsy. This finding was in contrast to those from other similar studies by Lee SA et al., Bishop M and Boag EM, and Al-Hashemi E et al., with p-value=0.001, 0.01, and 0.05, respectively which reported improved knowledge scores [8,17,20]. As only 12.4% of the teachers had reported to have adequate training about seizure management and epilepsy in their teaching curriculum, this has a significant effect on their self-efficacy in first aid management of seizure episodes and also their preparedness for the same. This also has a significant effect on practices exercised by the teachers when they witnessed a student with epilepsy in classrooms. Only 10% of teachers in the present study had ever performed first aid management of seizure episodes; this is in contrast with 45% teachers attempting the same in a study from Thailand [16]. This leads to performing some wrong practices like inserting hard objects or clothes in the mouth, smelling leather or smoke and pouring water over face. The strong urge of teachers to call doctors or nurses is noted in the present study, which reflects the amount of panic a seizure generates. These findings were similar to those of Thaker AK et al., [25]. Unfortunately, 10% teachers still have superstitious thoughts about epilepsy like witchcraft or demonic possession or God's punishment for sins. These findings are In contrast to study conducted in Thailand, where only 0.9% teachers were found to be superstitious [16]. Majority of teachers in present study did not think epilepsy to be contagious;

Studies	Country/ Region	Urban/ Rural	Sampling method	Sample size/ Female/ Response rate	Survey instrument used	Data analysis	Variables with correlations to knowledge and attitude	
							Knowledge	Attitude
Bishop M and Boag EM, [17]	USA	Both	Random	512/86%/26%	ATPE	Descriptive and linear regression	Teaching experience^{+}, female gender^{+}, previous or current contact with epileptic person^{+}, younger age^{+}.	Teaching experience^{+}, previous or current contact with epileptic person^{+}
Mustapha AF et al., [19]	Nigeria (Osogbo)	Both	Random	269/66%/87%	ATPE	Descriptive, t-test, Chi-square, linear regression.	Male gender^{+}, younger age^{+}.	No correlations
Al-Hashemi E et al., [20]	Kuwait	Urban	Random	824/45%/97%	ATPE	Mann-Whitney, Kruskal Wallis, Spearman's correlation, logistic regression test.	Teaching experience^{+}, previous or current contact with epileptic person^{+}, married teachers^{+}.	Teaching experience^{+}, previous or current contact with epileptic person^{+}
Lee SA et al., [8]	South Korea (Seoul)	Urban	Random	604/87%/94%	ATPE	Descriptive and chi-square	Previous or current contact with epileptic person^{+}.	Previous or current contact with epileptic person^{+}, knowledge score^{+}.
Present study	India (Haryana)	Both	Random	427/79.4%/94.6%	ATPE	Descriptive and logistic regression.	Female gender^{+} age^{+}, teaching experience+Previous contact with epileptics @	Female gender^{+}, heard/read about epilepsy @ willingness to have more Knowledge+

[Table/Fig-11]: Comparison of similar studies using ATPE as a measurement instrument. [8,17,19,20].
Positive correlation is represented with a superscript sign of+ and negative with @

figures are comparable to similar study by Mustapha AF et al., (72%) and South Korean study, where only 13-18% persons felt it to be contagious [19,26]. In the present study, most teachers agreed to keep the students with epilepsy in regular classrooms which seems encouraging and impressive. Mustapha AF et al., also reported that 78% teachers agreed to keep epileptic students in regular classrooms [19]. On contrary 32% teachers were afraid and 20% felt the need of special classrooms in some previous studies in India [14,25]. Relation of mental retardation or insanity with epilepsy has been since ancient times. Despite scientific evidence to the contrary, majority teachers in the present study did not relate mental retardation with epilepsy. Similar negative relations were also reported by Mustapha AF et al., [19]. Two third teachers in the present study agreed that epilepsy is better treated by modern medicine. Similar results were shown by South Indian study (77%) from Kerala [14]. In the study, sample size of the study was good. To assess teachers' knowledge and attitude we used a slightly modified ATPE-based summated rating scale which is a psychometrically sound instrument with good reliability and validity, to measure the knowledge and attitude of the school teachers towards students with epilepsy. Additional items were also developed to assess teachers' knowledge and attitude towards epilepsy, having its potential impact in educational settings.

Limitation(s)

As, the present study was a cross-sectional study, the results of the study cannot be generalised, moreover, the authors are relying on self-reported data, it may be susceptible to information bias. Social desirability bias may have influenced the median attitude score of the participant teachers. To address the limitations of the study, supplemental qualitative studies are needed to bridge the gap inherent to search questionnaire-based cross-sectional studies.

CONCLUSION(S)

The results of the study reflect globally positive attitudes of teachers towards students with epilepsy except for few prevalent stigmatising and other misbeliefs. The overall knowledge score was also impressive being on the positive side of the quantum except for some deficits regarding awareness about life circumstances of persons with epilepsy and first aid management of seizure episodes were among the few, to be taken care of.

To address these issues it is essential to increase the awareness of teachers through various measures such as public awareness campaigns. Right information through social media and print media may also be used to improve the quality of life of the students with epilepsy and reduce myths and wrong perceptions, thereby improving teacher's knowledge and attitude. This will enhance the confidence of the teachers, which in turn improve the attitude and due care for children with epilepsy. Materials like pamphlets and posters etc., having basic information on childhood diseases may be provided to the schools for sensitisation of teachers as well as educating students. Religious leaders should also be educated about epilepsy to reduce myths and superstitions. Policymakers should incorporate the awareness related and workshop oriented programmes in teachers training curriculum. School health services should be there, in order to make sure that teachers have adequate knowledge about the disease. Physicians should be part of the school health services mandatorily. These issues may be well-addressed in Indian context through school health programs, already running throughout the country.

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