

## A Questionnaire Survey of General Awareness Toward Epilepsy in a Cohort of Medical and Paramedical Students: A Statistical Analysis

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### Abstract

**Purpose:** University students pursuing medical and paramedical courses represent a relatively better-educated section of society and it is naturally imperative that they possess the correct knowledge and attitude toward healthcare issues. The aim of this study was to determine the current level of awareness and knowledge of epilepsy in this cohort of students.

**Materials and Methods:** A survey was conducted within the main campus of the Maharana Pratap College of Dentistry and Research Center, Gwalior, India. A total of 251 participants who had collected to celebrate the National Epilepsy Day on November 17<sup>th</sup>, 2016 were required to answer a series of questions on awareness about epilepsy. A self-administered questionnaire on general awareness about epilepsy was completed at the very beginning before the celebrations and the data, thus, collected was statistically analyzed.

**Results:** A total of 251 respondents (102 males and 149 females) in the age group of 17 - 31 years completed the survey. All the respondents had heard about epilepsy. One hundred fifty-eight participants were from medical and dental institutes whereas 93 participants were from paramedical institutes. In general, the medical students performed significantly much better than their paramedical counterparts.

**Conclusion:** The results indicate a reasonable degree of awareness about epilepsy especially in the medical students. However, awareness still needs to be enhanced even in the studied cohort of students through various knowledge campaigns apart from their academic curriculum. This preliminary data should stimulate further larger population-based awareness programs in various sections of the society depending upon their level of education.

**Keywords:** Patients with Epilepsy; Misconceptions about Epilepsy; Medical Students; Paramedical Students; National Epilepsy Day

### Introduction

Epilepsy is a chronic neurological disease that is widely prevalent worldwide, affecting nearly 1% of the total global population [1]. Epilepsy is more common in socioeconomically poor and developing countries in comparison to the developed ones. In India also, epilepsy is more common in rural areas (1.6 - 1.9%) in comparison to urban areas (0.6%) [2,3].

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Despite awareness programs on epilepsy conducted periodically especially on National and International Epilepsy Days, unfounded prejudices and ignorance about the disease continue to exist even among the educated sections of the society, especially in developing and underdeveloped countries [4]. Even today, epilepsy bears a social stigma in developing and to some extent even in developed countries and patients tend to hide their disease for fear of being socially rejected [5]. However, in the developed nations, public attitude towards epilepsy has greatly improved over the years resulting in a more favorable social environment and, therefore, a positive psychosocial impact on the patients with epilepsy (PWE) [6,7].

The two most significant features about epilepsy that PWE are concerned and anxious about are the uncertainty and unpredictability of the seizure attacks and the resultant embarrassment that is likely to ensue from such incidence. This fear lingers in the minds of PWE despite being on adequate antiepileptic treatment and largely accounts for their limited social interaction and life [7], resulting in confinement to homes for most of the time and accentuating their state of anxiety and/or depression resulting in a compromised quality of life.

Santhosh., *et al.* have attributed lack of knowledge of antiepileptic drugs, poverty, cultural beliefs, stigma, poor health infrastructure, and shortage of trained professionals contribute to the large treatment gap in India (22% in urban compared to 90% in rural regions) [8]. On the other hand, Amudhan., *et al.* have observed differential distribution of epilepsy among various sociodemographic and economic groups with higher rates reported for the male gender, rural population, and low socioeconomic status [9].

In yet another survey, teachers in five primary schools were surveyed for their knowledge and attitudes about epilepsy; disappointingly, more than two-thirds of the teachers believed that children with epilepsy have academic problems; misconceptions about first aid treatment also prevailed in their minds [10].

This survey was conducted on medical and paramedical undergraduate students, a section of the society that is most likely to encounter PWE not only in their professional career, but even during their study-period. Furthermore, they represent the future primary and responsible health caretakers in the society especially in rural areas afflicted with acute paucity of specialists.

The study was conducted on National Epilepsy Day (November 17, 2016) and the results were based on the responses obtained on a questionnaire. The respondents were undergraduate students from medical, dental and paramedical institutes in Gwalior region who had collected to celebrate the National Epilepsy Day in Maharana Pratap College of Dentistry and Research Center, Gwalior.

## **Materials and Methods**

A total of 251 subjects registered for the study, the number of students registered not being defined before the study. The subjects were classified according to their institute (medical and paramedical categories), age and gender; the medical category included students from medical and dental institutes (n = 158; 50 males and 108 females) while the paramedical category comprised of students from paramedical institutes (n = 93; 52 males and 41 females). All the participants were further grouped into two age groups, namely 17 - 20 and 21 - 31 years of age. The mean age of males was 20.53 years and that of females 20.86 years.

All the 251 subjects completed the survey through a self-administered questionnaire that was distributed to them on the occasion of National Epilepsy Day (November 17<sup>th</sup>, 2016) for which they had gathered to attend and celebrate. The survey was completed before the celebrations were begun. The questionnaire consisted of 50 questions based on four parameters of epilepsy awareness, namely misconception, superstition, myth and general knowledge about epilepsy related to popular false beliefs and misunderstandings in the society.

The responses were marked 1 and 0 for each correct and incorrect answer.

The data of responses on all the four parameters of epilepsy awareness was statistically analyzed stepwise as follows:

1. Data was first tested for its normality (Table 1).
2. Next, comparisons of responses on all the four parameters of epilepsy awareness was analyzed using Statistical Package for the Social Science (SPSS) software as follows:
  - a. Medical versus paramedical category of students (Tables 2, 3) irrespective of their gender and age.
  - b. Female participants of medical versus paramedical institutes (Tables 4, 5) irrespective of their age.
  - c. Male participants of medical versus paramedical institutes (Tables 6, 7) irrespective of their age.
  - d. The students in the age group 17 - 20 years of medical versus paramedical institutes (Tables 8, 9) irrespective of their gender.
  - e. The students in the age group 21 - 31 years of medical versus paramedical institutes (Tables 10, 11) irrespective of their gender.

**Results and Discussion**

Table 1 shows that the Shapiro statistic is significant for misconception, superstition and myth hence the distribution of these three variables is not normal. On the other hand, the Shapiro statistic is not significant for general knowledge; hence, this variable is normally distributed. Violation of normality indicates that the prevalence of responses on the variable is not a normal phenomenon. Thus, some specific trends are indicative in case of the subjects’ responses on three parameters namely, misconception, superstition and myth.

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Misconception	.117	251	.000	.977	251	.000
Superstition	.403	251	.000	.615	251	.000
Myth	.300	251	.000	.766	251	.000
General Knowledge	.068	251	.007	.991	251	.128

**Table 1:** Testing normality of each of the four parameters of epilepsy awareness.

*Sig.:* Significance; *df:* Degree of Freedom

In order to apply ‘t’ test, its associated assumption of homogeneity of variances was checked by using the Levene’s test as shown in the tables below.

Tables numbered 3, 5, 7, 9 and 11 show the results of ‘t’ tests for comparing the responses of the participants on each of the four parameters of epilepsy awareness, the participants being classified into subcategories as below:

- a. Medical and paramedical students irrespective of gender and age (Table 3).
- b. Female participants of medical and paramedical institutes irrespective of their age (Table 5).
- c. Male participants of medical and paramedical institutes irrespective of their age (Table 7).
- d. Participants of the age group 17 - 20 years (Table 9).
- e. Participants of the age group 21 - 30 years (Table 11).

	Institute	N	Mean	SD
Misconception	Medical Institute	158	7.18	2.323
	Paramedical Institute	93	6.02	2.106
Superstition	Medical Institute	158	.77	.421
	Paramedical Institute	93	.37	.484
Myth	Medical Institute	158	1.44	.752
	Paramedical Institute	93	.96	.765
General Knowledge	Medical Institute	158	19.84	5.555
	Paramedical Institute	93	15.41	4.426

**Table 2:** Descriptive statistics of responses on each of the four parameters of epilepsy awareness in medical and paramedical students irrespective of gender and age.

*N:* Number; *SD:* Standard Deviation

F		Levene's Test		t-test			
		Sig.	t	df	Sig. (2-tailed)	Mean Difference	
Misconception	Equal variances assumed	3.868	.050	3.939	249	.000	1.156
	Equal variances not assumed			4.040	208.341	.000	1.156
Superstition	Equal variances assumed	18.670	.000	6.986	249	.000	.407
	Equal variances not assumed			6.737	172.046	.000	.407
Myth	Equal variances assumed	2.036	.155	4.849	249	.000	.480
	Equal variances not assumed			4.828	190.425	.000	.480
General Knowledge	Equal variances assumed	5.759	.017	6.565	249	.000	4.433
	Equal variances not assumed			6.958	227.222	.000	4.433

**Table 3:** Results of 't' test of the data on epilepsy awareness parameters: Comparing the responses of medical and paramedical students irrespective of gender and age.

Sig.: Significance; df: Degree of Freedom

	Institute	N	Mean	SD
Misconception	Medical Institute	108	7.40	2.174
	Paramedical Institute	41	6.29	2.077
Superstition	Medical Institute	108	.84	.366
	Paramedical Institute	41	.29	.461
Myth	Medical Institute	108	1.50	.730
	Paramedical Institute	41	.85	.760
General Knowledge	Medical Institute	108	20.55	5.133
	Paramedical Institute	41	16.34	3.877

**Table 4:** Descriptive statistics of responses on each of the four parameters of epilepsy awareness in female participants of medical and paramedical institutes irrespective of age.

N: Number; SD: Standard Deviation

F		Levene's Test		t-test			
		Sig.	t	df	Sig. (2-tailed)	Mean Difference	
Misconception	Equal variances assumed	.945	.333	2.805	147	.006	1.105
	Equal variances not assumed			2.864	75.348	.005	1.105
Superstition	Equal variances assumed	11.815	.001	7.610	147	.000	.550
	Equal variances not assumed			6.866	60.164	.000	.550
Myth	Equal variances assumed	.044	.834	4.773	147	.000	.646
	Equal variances not assumed			4.685	69.695	.000	.646
General Knowledge	Equal variances assumed	4.237	.041	4.752	147	.000	4.205
	Equal variances not assumed			5.381	95.185	.000	4.205

**Table 5:** Results of 't' test of the data on epilepsy awareness parameters: Comparing the responses of female participants of medical and paramedical institutes irrespective of age.

Sig.: Significance; df: Degree of Freedom

	Institute	N	Mean	SD
Misconception	Medical Institute	50	6.70	2.573
	Paramedical Institute	52	5.81	2.124
Superstition	Medical Institute	50	.62	.490
	Paramedical Institute	52	.42	.499
Myth	Medical Institute	50	1.30	.789
	Paramedical Institute	52	1.04	.766
General Knowledge	Medical Institute	50	18.32	6.156
	Paramedical Institute	52	14.67	4.723

**Table 6:** Descriptive statistics of responses on each of the four parameters of epilepsy awareness in male participants of medical and paramedical institutes irrespective of age.

N: Number; SD: Standard Deviation

F		Levene's Test		t-test			
		Sig.	t	df	Sig. (2-tailed)	Mean Difference	
Misconception	Equal variances assumed	3.426	.067	1.913	100	.059	.892
	Equal variances not assumed			1.906	95.038	.060	.892
Superstition	Equal variances assumed	.749	.389	2.010	100	.047	.197
	Equal variances not assumed			2.010	99.950	.047	.197
Myth	Equal variances assumed	1.687	.197	1.699	100	.092	.262
	Equal variances not assumed			1.698	99.524	.093	.262
General Knowledge	Equal variances assumed	3.934	.050	3.365	100	.001	3.647
	Equal variances not assumed			3.348	91.880	.001	3.647

**Table 7:** Results of 't' test of the data on epilepsy awareness parameters: Comparing the responses of male participants of medical and paramedical institutes irrespective of age.

Sig.: Significance; df: Degree of Freedom

	Institute	N	Mean	SD
Misconception	Medical Institute	63	6.90	2.175
	Paramedical Institute	61	5.92	2.147
Superstition	Medical Institute	63	.78	.419
	Paramedical Institute	61	.36	.484
Myth	Medical Institute	63	1.30	.775
	Paramedical Institute	61	.93	.772
General Knowledge	Medical Institute	63	18.60	5.091
	Paramedical Institute	61	15.52	4.117

**Table 8:** Descriptive statistics of responses on each of the four parameters of epilepsy awareness in participants of medical and paramedical institutes in the 17 - 20 years age group irrespective of gender.

N: Number; SD: Standard Deviation

F		Levene's Test		t-test			
		Sig.	t	df	Sig. (2-tailed)	Mean Difference	
Misconception	Equal variances assumed	.807	.371	2.541	122	.012	.987
	Equal variances not assumed			2.542	121.954	.012	.987
Superstition	Equal variances assumed	11.324	.001	5.134	122	.000	.417
	Equal variances not assumed			5.122	118.352	.000	.417
Myth	Equal variances assumed	1.034	.311	2.642	122	.009	.367
	Equal variances not assumed			2.642	121.905	.009	.367
General Knowledge	Equal variances assumed	2.956	.088	3.695	122	.000	3.079
	Equal variances not assumed			3.708	118.282	.000	3.079

**Table 9:** Results of 't' test of the data on epilepsy awareness parameters: Comparing the responses of the subjects in the age group of 17 - 20 years of medical and paramedical institutes irrespective of gender.

Sig.: Significance; df: Degree of Freedom

	Institute	N	Mean	SD
Misconception	Medical Institute	92	7.39	2.376
	Paramedical Institute	26	5.96	1.949
Superstition	Medical Institute	92	.77	.422
	Paramedical Institute	26	.31	.471
Myth	Medical Institute	92	1.53	.718
	Paramedical Institute	26	1.00	.800
General Knowledge	Medical Institute	92	20.80	5.752
	Paramedical Institute	26	15.04	5.288

**Table 10:** Descriptive statistics of responses on each of the four parameters of epilepsy awareness in participants of medical and paramedical institutes in the 21 - 31 year age group irrespective of gender.

N: Number; SD: Standard Deviation

F		Levene's Test		t-test			
		Sig.	t	df	Sig. (2-tailed)	Mean Difference	
Misconception	Equal variances assumed	3.595	.060	2.810	116	.006	1.430
	Equal variances not assumed			3.139	48.090	.003	1.430
Superstition	Equal variances assumed	2.279	.134	4.826	116	.000	.464
	Equal variances not assumed			4.538	37.123	.000	.464
Myth	Equal variances assumed	.003	.960	3.256	116	.001	.533
	Equal variances not assumed			3.064	37.146	.004	.533
General Knowledge	Equal variances assumed	.457	.500	4.591	116	.000	5.766
	Equal variances not assumed			4.813	43.189	.000	5.766

**Table 11:** Results of 't' test of the data on epilepsy awareness parameters: Comparing the responses of the subjects in the age group of 21 - 31 years of medical and paramedical institutes irrespective of gender.

Sig.: Significance; df: Degree of Freedom

Now, referring to tables numbered 2, 4, 6, 8 and 10, it can be inferred that:

- a. The responses of medical students on misconception, superstition, myth and general knowledge about epilepsy are higher than that of the paramedical students.
- b. The responses of females of medical institutes on all the four parameters are higher than that of the females of paramedical institutes irrespective of their age.
- c. The males of medical institutes possess more knowledge about epilepsy than the male participants of paramedical institutes, but at the same time they are also more superstitious.
- d. In the age category of 17 - 20 years, the responses of medical students on all the four parameters of epilepsy awareness are higher than that of the paramedical students in this age group, irrespective of their gender.
- e. In the age category of 21 - 30 years also, the responses of medical students on all the four parameters of epilepsy awareness are higher than that of the paramedical students in this age group, irrespective of their gender.

Furthermore, in general, medical students performed better than paramedical students; an expected feature. Statistically, 72/158 (45.57%) participants from medical institutes scored more than 60% and 11/158 (6.96%) scored more than 80% correct answers in comparison to 8/93 (8.6%) participants from paramedical institutes who scored more than 60% and none of the paramedical students scored more than 80% correct answers. A limitation of our study is that we analyzed data from a small group of young subjects living in a localized metropolitan geographic area and therefore, the observed findings cannot be extrapolated to the whole country.

### Conclusion

In conclusion, students from paramedical institutes in Gwalior still know far too little about epilepsy than that may be expected of them. They still regard it as an untreatable illness and one that creates social problems especially in finding employment and life partner. Information campaigns designed to improve the general public's knowledge of epilepsy should be encouraged at schools, educational institutes and universities so that future generations no longer consider epilepsy at least a stigma. Our findings in this preliminary study should stimulate future in-depth population-based surveys, designed on the basis of level of education of the participating cohort/section(s) of the society.

To the best of our knowledge, this survey of epilepsy awareness among medical and paramedical students (regarded and viewed as primary healthcare personnel) is the first predominantly statistically-analyzed study of its kind.

Although the survey reveals a reasonable degree of awareness about epilepsy, it can be enhanced by educating primary school teachers, especially in rural regions as they are a trustworthy and influential source to disseminate knowledge about epilepsy at ground level. Also, there is a strong need for life-course approach in prevention and management, and also the need for focused and targeted programs. Lastly, empowering primary healthcare workers to diagnose and initiate early treatment might significantly reduce the treatment gap and the disparities between rural and urban areas.

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