



# Awareness and Attitude among Nonmedical University Students on Epilepsy in Lebanon: A Cross-Sectional Study

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## Abstract

**Background** Several studies addressed the awareness and knowledge of epilepsy among students and teachers that indicated unfavorable levels of awareness, but none in Lebanon.

**Aim** The aim of this study is to determine the level of awareness and attitude toward epilepsy among nonmedical university students.

**Methods** A survey-based questionnaire was conducted among 1,000 nonmedical students. SPSS was used for data analysis.

**Results** Participants claimed 78.5% having some knowledge about epilepsy (78.5%), with only 20.1% of the participants attaining their knowledge through university courses. Alarming, negative beliefs were noticed in our study such as considering person with epilepsy (PWE) as disabled (34.9%), epilepsy is a genetic disorder (40.9%), and it would lead to insanity (43.1%). Moreover, participants think that a PWE is unable to get married (29.5%), nor have children (25.2%), and they would even refuse to marry someone with epilepsy (35.7%). On the other hand, participants showed some positive behaviors such as the fact that epilepsy is not contagious (81%), would accept to accompany a colleague with epilepsy (72.1%), and believing that PWE can succeed at jobs (82.2%). When it comes to providing first aid, wrong practices were reported such as believing that something should be placed in the mouth during a seizure to avoid biting their tongue (58.1%).

**Conclusion** Lack of knowledge, acceptance, and first aid practices have been observed in our study. Thus, efforts in including epilepsy within university curriculums, as well as raising awareness different platforms and campaigns should be done, as the social burden is even higher on PWE.

## Keywords

- epilepsy
- awareness
- behavior
- belief

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## Introduction

Epilepsy, one of the commonest chronic neurological disorders, affects around 50 million people globally, with 80% being from low-middle income countries.<sup>1</sup> In Lebanon, no data has been reported on the prevalence of epilepsy.<sup>2</sup> Epilepsy is defined by the International League Against Epilepsy (ILAE) as either of the following: (1) the occurrence of at least two seizures separated by at least 24 hours apart, (2) at least 1 unprovoked seizure and a probability of recurrence of at least 60% after 2 unprovoked seizures within the following 10 years, and (3) an established diagnosis of epilepsy syndrome. Moreover, resolved epilepsy is defined as a person who have been seizure-free for the past 10 years, and who have been off medications for the past 5 years. by episodes of unprovoked seizures (insert ILAE citation).<sup>3</sup> Epilepsy affects both genders, with a slight prevalence among men than females.<sup>4</sup> In addition, people of all ages are affected, with an increased risk in both infants and older age groups.<sup>5</sup>

As epilepsy is of major public health concern globally, a wide range of misconceptions circulate among the general population regarding epilepsy that further influences people's attitude toward persons with epilepsy (PWE).

To date, several studies were conducted on the awareness and knowledge of epilepsy among students and teachers, and relatives of PWE, which indicated unfavorable levels of awareness, such as misconceptions and a lack of knowledge on how to handle a PWE.<sup>6,7</sup> Moreover, a study was conducted among PWE themselves to assess the attitude, knowledge, and awareness toward their own illness that showed favorable results and an adequate knowledge.<sup>7</sup> In addition, when a similar study was done among healthcare workers, it showed positive attitudes in general aspects, yet some negative beliefs on the personal domain were reported.<sup>8</sup>

In Lebanon, similar studies have been conducted targeting school teachers and pharmacy students specifically.<sup>9,10</sup> Yet none has been reported assessing the knowledge of nonmedical university students from different majors.

University students are the targeted group of the population chosen since they are the changing future. Besides, university students represent the educated group of society; they can help in changing the false belief by which they will possess the correct knowledge and attitude toward our studied group population.<sup>11</sup>

The aim of this study is to determine the level of awareness and attitude toward epilepsy among nonmedical university students.

## Methods

### Study Area/Setting

The survey was conducted among five universities in Beirut, Lebanon (public and private). The universities are Lebanese University, Beirut Arab University, Lebanese International University, Global University, American University of Science and Technology, and Lebanese American University.

### Study Subjects

University students from all majors but excluding medical students who can read and speak Arabic and are currently enrolled in different universities in Lebanon were invited to participate by filling up the provided questionnaire.

### Study Design

A cross-sectional study using an online or paper-based survey was conducted. Data was collected using a questionnaire developed by authors who are neurologists. The development of the questionnaire was established after carefully reviewing the literature, and taking into consideration the cultural aspects of the population being studied. The online version was sent via social media platforms and distributed to all major Lebanese universities through WhatsApp, Facebook, and Instagram after obtaining a verbal consent from the participants using the snowball technique. Data collection was completely anonymous as the questionnaire was sent via Microsoft forms, and no personal data (name, phone number, nor emails) were collected.

Incomplete questionnaires were considered not eligible, and hence nullified and excluded from the data analysis phase.

### Sample Size

The World Bank organization estimates that the total Lebanese population is approximately 6,848,952 (*Population, Total – Lebanon*, 2018).<sup>12</sup>

Sample size was calculated using the following formula:  $n = ((Z \alpha/2)^2 (p) (1-p))/\delta^2$ , with a confidence interval of 95%, and level of significance “ $\alpha$ ” equal to 5%, which corresponds to  $Z \alpha/2 = 1.96$ .<sup>13</sup>

The estimation of the knowledge among the population “ $p$ ” due to lack of literature was unknown, so an estimate of 50% was considered.

Therefore, a sample of 384 participants was required.

To attain better representability and better results, 1,000 responses were considered.

### Sampling Technique

Invitations to fill in the questionnaire were sent through social media platforms to nonmedical university students enrolled in the following majors (health sciences, arts, social sciences, engineering, sciences, and computer) who attend within the mentioned universities above.

### Data Collection Methods, Instruments Used, and Measurements

A custom-designed questionnaire in Arabic composed of five sections was answered by the students participating in this study. Section A encompassed on the sociodemographic data of the participants; Section B assessed the participants experience with epilepsy cases; Section C assessed the general knowledge of epilepsy; Section D evaluated the social aspects and behaviors (sports, marriage, having children, school inclusion, job offers, and driving), and Section E assessed the participants knowledge about epilepsy treatment.

A pilot questionnaire was conducted among 15 students to make sure that it is accurate and comprehensible.

### Feasibilities and Limitations

The use of online survey contributes to lack of transparency. In addition, response rate is unknown due to the undetermined spread of the message. Absence of the interviewer could also be a limitation to the understanding of the survey.

### Data Management and Analysis Plan

The Statistical Package for Social Sciences (SPSS, version 24) program was used for data entry, management, and analysis (descriptive).

### Ethical Considerations

The Institutional Review Board (IRB) approval was obtained on the 28th of February, 2019, with the IRB code: 28022019

Data was deidentified and accessible only to data collectors on a locked computer.

## Results

### Sociodemographic Data of the Participants

A total of 1,000 participants who are currently enrolled at universities in Lebanon consented to participate in this research. Medical students were excluded from this study. The participants were above 17 years of age, with higher participation from females (76.9%) than males (23.1%). The majority of participants were in the first and second year of their university studies (53.6%), studying healthcare-related majors (34.4%) and sciences (31.4%). Around 54.3% attended private universities, while 45.7% attended public ones. Moreover, almost half of the participants reported knowing PWE (50.3%), and (64.9%) reported seeing someone experiencing a seizure. Out of the total number of participants, (78.5%) reported knowing how to provide first aid when a seizure occurs.

The source of knowledge regarding epilepsy among the participants comes from social discussions (33.5%), social media (22.1%), university courses (20.1%), and from PWE themselves (25.3%). On the other hand, some reported having no knowledge related to epilepsy at all (21.5%; ► **Table 1**).

### General Knowledge about Epilepsy

An adequate number of participants expressed proper knowledge regarding epilepsy, such as epilepsy not being contagious (81.0%). Yet, most participants showed false beliefs regarding epilepsy as follows: epilepsy is a genetic disorder (40.9%), all PWE have the same signs and symptoms (60.5%), all PWE experiencing generalized seizures definitely have epilepsy (40.0%), minor seizures would not occur without being noticed (48.6%), and epilepsy is a psychological disease (42.4%; ► **Table 2**).

### Social Behavior Regarding Epilepsy

Alarming, negative attitudes were noted in our population. For instance, around 34.9% of the participants believed that a PWE is considered disabled (34.9%), is less intelligent than others (30.5%), cannot learn in a regular classroom (43.7%),

cannot get married (29.5%), cannot have children (25.2%), and that they should not stop social activities to avoid a seizure (44.4%). Moreover, participants believed that epilepsy would lead to insanity (43.1%) and that they refuse to hire a PWE (36.7%). In addition, the majority were unaware whether PWE might live less than others (54.9%).

On the other hand, some positive behaviors were noted among the participants, such as accepting to accompany a colleague with epilepsy (72.1%) and believing that PWE can succeed at jobs (82.2%).

When it comes to knowledge of sports activities, majority are aware that a PWE can perform sports activities (45.3%). Yet, majority believe that a PWE should avoid swimming and diving (51.8%; ► **Table 3**).

### Knowledge about Epilepsy Treatment

When asked about the treatment options, majority of the participants stated that every PWE must take treatment (73.5%). Moreover, the majority of the students are aware that epilepsy can be treated with medications (67.4%), but most of them are not knowledgeable about surgical treatment options (97.3%).

When it comes to providing first aid, the majority of the participants reported that something should be placed in the mouth during a seizure to avoid biting their tongue (58.1%). Moreover, the majority of the participants are uncertain whether they should let them smell onion or perfume to end the seizure (64.2%), and whether they should provide oral medications when the seizure persists for more than 5 minutes.

On the other hand, the participants are aware that if a seizure persists for more than 5 minutes, they must not wait for it to stop on its own (38.4%), and they must be taken to the nearest hospital (85.3%; ► **Table 4**).

## Discussion

University students play a major and vital role in keeping our society inclusive, yet lack of awareness could impede this inclusivity. Our study assesses the estimated level of knowledge and awareness among university students, and provides some suggestions on how the present gaps could be amended. The majority of the participants included in this study were females (76.5%); this could probably be explained because females are usually more engaged and willing to participate in filling out surveys.

While the majority of the students reported attaining proper adequate knowledge on epilepsy (78.5%), only few of them actually received these information through formal education as part of their university curriculum (20.1%), which is alarming as several students in our study are enrolled within healthcare related majors such as nursing, pharmacy, and physical therapy (34.4%). This can only be explained by the lack of epilepsy-related courses taught within the curriculums, where similar results have been reported in different studies conducted in other countries such as Jordan, Libya, Malaysia, Saudi Arabia, Kuwait, and Canada.<sup>11,14-18</sup> Moreover, awareness sessions made up only

**Table 1** Demographic characteristics and experience with epilepsy

		Overall, n (%)
Age	17–19 years	415 (41.5)
	20–22 years	394 (39.4)
	>22 years	191 (19.1)
Gender	Male	231 (23.1)
	Female	769 (76.9)
Academic year	First or second	536 (53.6)
	Third	214 (2.14)
	Fourth	102 (10.2)
	Fifth or higher	148 (14.8)
University	Private	543 (54.3)
	Public	457 (45.7)
Major	Healthcare field	344 (34.4)
	Sciences	314 (31.4)
	Engineering or computer	127 (12.7)
	Arts or social sciences	87 (8.7)
	Others	128 (12.8)
Source of knowledge about epilepsy	Do not have knowledge	215 (21.5)
	Social discussions	335 (33.5)
	Media (TV, radio)	110 (11.0)
	Social media	221 (22.1)
	Awareness sessions	73 (7.3)
	Physician	46 (4.6)
	Person with epilepsy	253 (25.3)
	During university education	201 (20.1)
Know someone with epilepsy	No	503 (50.3)
	Yes	497 (49.7)
Saw someone experiencing seizure	No	649 (64.9)
	Yes	351 (35.1)
Knowledge of providing first aid when seizure occurs	No	785 (78.5)
	Yes	215 (21.5)

**Table 2** General knowledge about epilepsy

	True	False	Do not know
It is not a genetic disorder	203 (20.3%)	409 (40.9%)	388 (38.8%)
It is not a contagious disease	810 (81.0%)	92 (9.2%)	98 (9.8%)
It is not a psychological disorder	329 (32.9%)	424 (42.4%)	247 (24.7%)
All patients with epilepsy do not have the same signs and symptoms	87 (8.7%)	605 (60.5%)	308 (20.8%)
Minor seizures can occur without being noticed	169 (16.9%)	486 (48.6%)	345 (34.5%)
Any person who experiences generalized seizures might not have epilepsy	304 (30.4%)	400 (40.0%)	296 (29.6%)

7.3% as the source of information on epilepsy, and this reflects the truth that almost no awareness sessions are being conducted in the country to tackle epilepsy.

University life plays a major role in building the student's personality. For PWE, their quality of life may be greatly

affected either negatively or positively depending on their colleagues' behavior, attitude, and level of understanding about epilepsy.<sup>19</sup>

For instance, misconceptions surrounding PWE intelligence such as believing that they are less intelligent than

**Table 3** Social behavior regarding epilepsy

	True	False	Do not know
Person with epilepsy is not considered disabled	507 (50.7%)	349 (34.9%)	144 (14.4%)
Epilepsy does not lead to insanity	264 (26.4%)	431 (43.1%)	305 (30.5%)
Person with epilepsy is not less intelligent than others	501 (50.1%)	305 (30.5%)	194 (19.4%)
Person with epilepsy can learn in a regular classroom	396 (39.6%)	437 (43.7%)	167 (16.7%)
Person with epilepsy can succeed at a job	822 (82.2%)	57 (5.7%)	121 (12.1%)
Person with epilepsy can get married	587 (58.7%)	295 (29.5%)	118 (11.8%)
Person with epilepsy can have children	573 (57.3%)	252 (25.2%)	175 (17.5%)
Person with epilepsy should not stop social activities to avoid seizure	401 (40.1%)	444 (44.4%)	155 (15.5%)
Person with epilepsy must avoid driving a car	747 (74.7%)	49 (4.9%)	204 (20.4%)
Person with epilepsy must not avoid sports	247 (24.7%)	453 (45.3%)	300 (30.0%)
Person with epilepsy must avoid swimming and diving	518 (51.8%)	123 (12.3%)	359 (35.9%)
Person with epilepsy does not live less than others	393 (39.3%)	58 (5.8%)	549 (54.9%)
Accept to accompany a colleague with epilepsy	721 (72.1%)	203 (20.3%)	76 (7.6%)
If you were a director, would you accept to employ a person with epilepsy	502 (50.2%)	367 (36.7%)	131 (13.1%)
Accept to marry a person with epilepsy	356 (35.6%)	357 (35.7%)	287 (28.7%)
Accept to join a person with epilepsy during activities	281 (28.1%)	647 (64.7%)	72 (7.2%)
Accept to have a person with epilepsy at the classroom	674 (67.4%)	236 (23.6%)	90 (9.0%)

**Table 4** Knowledge about epilepsy treatment

	True	False	Do not know
Epilepsy can be treated with medications	674 (67.4%)	326 (32.6%)	–
Epilepsy can be treated with surgery	27 (2.7%)	973 (97.3%)	–
Epilepsy can be treated with medications and surgery	202 (20.2%)	798 (79.8%)	–
Every patient with epilepsy must take treatment	735 (73.5%)	55 (5.5%)	210 (21.0%)
Every patient with epilepsy must receive life-long treatment	355 (35.5%)	196 (19.6%)	449 (44.9%)
When a generalized seizure occurs, nothing must be put in the mouth of the person to avoid biting tongue	85 (8.5%)	581 (58.1%)	334 (33.4%)
When a generalized seizure occurs, smelling perfume or onion would not stop the seizure	161 (16.1%)	197 (19.7%)	642 (64.2%)
If the seizure persists for more than 5 minutes, the person must be taken to the nearest hospital	583 (85.3%)	216 (21.6%)	201 (20.1%)
If a seizure persists more than 5 minutes, we must not wait till it stops on its own	384 (38.4%)	285 (28.5%)	331 (33.1%)
If a seizure persists more than 5 minutes, the person must not be given oral medications	161 (16.1%)	241 (24.1%)	598 (59.8%)

others and even thinking that they are insane would actually affect negatively their self-esteem, and make them doubt themselves. In addition, some aspects regarding a lack of inclusive attitudes were noticed, such as believing that PWE are not able to attend a regular classroom, refusing to join PWE during activities and even refusal to marry PWE. A study conducted in Kuwait showed an unfavorable tendency from university students to share their classrooms with PWE, and hence, preferring them to join special schools.<sup>18</sup> Also in

the same study, refusal in hiring and offering jobs, as well as marrying PWE were noted. For instance, a study conducted in Poland showed that approximately 30% of the students believe PWE should not be allowed to have a job.<sup>20</sup> In additional studies conducted in other countries such as Ghana, participants reported negative behaviors toward marrying and employing PWE.<sup>21</sup> All these acts and stigmatization go against the social inclusion that all societies aim to achieve. In fact, in a study conducted in Slovenia where PWE



were interviewed to better understand the status of their social inclusivity, participants reported fear, loneliness, self-confinement as well as some sort of social isolation as consequences of epilepsy and social factors.<sup>22</sup>

On the other hand, a certain level of social acceptance toward PWE was noticed among the students surveyed, where some of them would actually accept to study in the same classroom with a colleague having epilepsy, believing that a PWE can succeed at a job and being welcoming to accompany a colleague with epilepsy.

When it comes to performing sports and swimming, PWE are allowed and capable of participating in all sorts of activities. In fact, sports are known to be beneficial for convulsive disorders. A study published by Nakken et al showed that exercise ensued a decrease in epileptiform discharges noted on electroencephalogram conducted during cycle ergometer exercise in some patients.<sup>23</sup>

As for swimming, the students in our study had a misconception that PWE must avoid swimming due to the risk of drowning, while in fact, swimming is allowed to PWE, only if they are with a specialized trainer or trustable companion who is an expert in swimming, to ensure their safety in case a seizure attack occurs.<sup>14</sup>

When it comes to driving, laws vary across countries. In Lebanon, no clear laws have been established that are specified toward PWE driving; however, the Lebanese Traffic Law states that drivers should be both physically and mentally fit to attain a driving license, and they should be free from any medical condition that could impair their ability to drive safely.<sup>24</sup>

Similarly, as per the Indian Motor Vehicle Act 1939, a PWE must not be designated a driving license as long as this person has had at least a single seizure during his/her life. Current regulations require all applicants to fill up an "application cum declaration of physical fitness" form; if declared as having epilepsy, the applicant is required to undergo a medical examination. Even in the case of positive medical recommendations, there is no provision to issue a driving license if the person has epilepsy.<sup>25</sup>

Another important alarming finding in our study is the lack of knowledge on how to perform first aid when encountering someone having a seizure attack. Despite the majority claiming knowledge of how to provide first aid during a seizure (78.5%), most of their approaches were medically inappropriate. For instance, incorrect first aid actions perceived to be beneficial by the participants included placing something in the mouth during a seizure attack (58.1%), to prevent swallowing of the tongue. The likelihood of this occurrence is impossible and has long been disproven, and this action could lead to the injury of the teeth or jaw.<sup>17</sup> Another wrong action perceived as true is having them smell onion or perfume, as 19.7% agreed to perform it, and 64.2% were uncertain whether it works or not. Such wrong practices have been reported in other studies. For example, in a study conducted in Turkey, participants reported inserting something in the mouth during a seizure attack (63.1%), and that they would make them smell onions and garlic to stop the seizure (20.6%).<sup>18</sup>

## Recommendations

Universities should teach and include epilepsy courses within university curriculum at least to all health-related majors, and hold regular awareness sessions and programs to students enrolled in nonhealth-related majors. In addition, universities should teach students about inclusion for all.

First aid training on epilepsy should be provided for all students to ensure a safer environment for PWE.

Awareness through social media, such as television programs hosting neurologists specialized in epilepsy, holding conferences tackling a variety of epilepsy topics, and creating safe platforms for PWE to share their experiences in coping with the society, would help in enhancing the knowledge and changing the false beliefs regarding the topic, as the social burden is even higher on PWE.

Moreover, creating epilepsy certification programs for high school and university students, as well as for the general public, would be of great importance in training the public on how to perform first aid and better understand what epilepsy is from the medical point of view.

## Conclusion

University students in Lebanon still lack appropriate awareness on epilepsy, and express some rejection toward PWE in several societal aspects such as refusal to marry or employ a PWE. Moreover, they lack appropriate training on first aid essentials, which could actually do harm to their colleagues with epilepsy.

Greater efforts in facilitating inclusion as well as and raising awareness on epilepsy should be done at universities.

Lastly, further studies should be done to assess the impact of social media and its effect, and the impact of awareness programs and campaigns in advancing the education and understanding of epilepsy.

### Data Availability Statement

Data available upon request.

### Ethical Approval

We confirm that we have read the journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines. The Institutional Review Board (IRB) approval was obtained on February 28, 2019 with the IRB code: 28022019.

### Funding

None.

### Conflict of Interest

None declared.

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