

# Knowledge of Epilepsy among Teachers in Khon Kaen Province, Thailand

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**Introduction:** Epileptic patients face social stigmatization due to negative attitudes and incorrect knowledge on epilepsy.

**Objectives:** To evaluate knowledge of epilepsy among teachers in Khon Kaen province.

**Material and Method:** A self-administered questionnaire distributed to 102 teachers who attended the training lectures on epilepsy. The number of correct responses for each item were collected. The statistical analysis included the percentage of correct response and the means of the total scores.

**Results:** Most (78.4%) respondents understood that a seizure is an abnormal electrical discharge in the brain, while 54.9% thought it included a form of abnormal movement and 1% demonic possession. The generalized tonic-clonic seizure (GTCs) was the type of seizure with which most respondents were familiar (90.2%), while 23.5% had knowledge of absence seizures. The respondents identified the following as causes for epilepsy: 1) head injury (84%); 2) genetic disease (74.5%); 3) high fever (68%); and, 4) brain tumor (57%). A small minority associated epilepsy with eating pork (11%) and even fewer (2%) with a non-organic/non-physical cause. Only 16% of respondents thought epilepsy was incurable, and a quarter (27%) of the teachers thought epileptics required anti-epileptic drugs (AEDs) life long, while 20 and 9 percent believed patients would take AEDs for 3-6 months and only for episodes, respectively. About 57% of the teachers thought epileptics needed AEDs for 2-5 years. Most (77-79%) respondents thought epileptics were prohibited from using machinery or driving, and 63% thought alcohol would be prohibited. Almost two-thirds of the teachers (64%) thought they should try to place an object between the teeth of a person having an episode in order to prevent a biting injury to the tongue and 27% would restrain the person and perform chest compressions (CPR). The average total score for correct answers on the questionnaire was about 60% (29.26/50). Respondents generally understood that epilepsy is controllable (82%) and were able to identify a seizure (78.4%). The lowest scores were found in the section on identifying the types of seizures (37.8%).

**Conclusion:** Teachers' knowledge of epilepsy was incomplete; thus, an epilepsy education campaign is needed and should emphasize the types of seizures, the causes of epilepsy, and management.

**Keyword:** Knowledge, Epilepsy, Teacher

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In many developing countries, persons with epilepsy face social stigmatization, for fear the condition may be infectious or transmissible through contact with saliva<sup>(1,2)</sup>. As a consequence, school administrators commonly expel children presenting symptoms of epilepsy. These negative attitudes and incorrect understandings can only be combated through education of the community. After family, school (both primary and secondary) and teachers constitute the second most important socializing environment<sup>(3)</sup>;

thus are crucial for identifying epileptic children, conducting community surveillance and management of epileptic children, and raising community awareness<sup>(4)</sup>.

### Objectives

The authors' ultimate aim was to design an epilepsy education programme for teachers in Khon Kaen province in Northeast Thailand. As a first step, the level of knowledge among the target group (teachers working at primary schools) was evaluated.

**Table 1.** Epilepsy questionnaire

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<p>1. What do you think the cause of a seizure is? (Check all that you think apply)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> an abnormal electrical discharge in the brain</li> <li><input type="checkbox"/> demonic possession</li> <li><input type="checkbox"/> divine punishment</li> <li><input type="checkbox"/> an abnormal movement</li> </ul> <p>2. What do you think causes epilepsy? (Check all that you think apply)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> an evil spirit</li> <li><input type="checkbox"/> a head injury</li> <li><input type="checkbox"/> brain tumor</li> <li><input type="checkbox"/> divine punishment for reneging on a vow</li> <li><input type="checkbox"/> sleep deprivation</li> <li><input type="checkbox"/> alcohol withdrawal or heavy drinking</li> <li><input type="checkbox"/> stroke</li> <li><input type="checkbox"/> genetic disease</li> <li><input type="checkbox"/> high fever</li> <li><input type="checkbox"/> eating pork</li> </ul> <p>3. What types of seizures exist? (Check all that you think apply)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> physical stiffness followed by jerking movements (tonic-clonic seizure)</li> <li><input type="checkbox"/> unusual sensations or abnormal jerking with preserved awareness (simple partial seizure)</li> <li><input type="checkbox"/> lost awareness and physical immobility, repetitive involuntary movements (complex partial seizure)</li> <li><input type="checkbox"/> loss of muscle strength and tone: the person collapses (atonic seizure)</li> <li><input type="checkbox"/> staring spell, sudden mental absence, loss of awareness (absence seizure)</li> </ul> <p>4. Do you think epilepsy can be cured?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes</li> <li><input type="checkbox"/> No</li> </ul>	<p>5. How often should anti-epileptic drugs be taken?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> for life</li> <li><input type="checkbox"/> 2-5 years</li> <li><input type="checkbox"/> only at the full moon</li> <li><input type="checkbox"/> only during an episode</li> <li><input type="checkbox"/> for 3-6 months</li> </ul> <p>6. What limitations do persons with epilepsy face? (Check all that you think apply)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> not allowed to drive a motor vehicle</li> <li><input type="checkbox"/> no sexual intercourse</li> <li><input type="checkbox"/> cannot get married</li> <li><input type="checkbox"/> should not work with machinery</li> <li><input type="checkbox"/> cannot get pregnant</li> <li><input type="checkbox"/> abruptly stop anti-epileptic drugs during pregnancy</li> <li><input type="checkbox"/> not able to lactate</li> <li><input type="checkbox"/> should not eat pork</li> <li><input type="checkbox"/> must quit work</li> <li><input type="checkbox"/> should not drink alcoholic beverages</li> </ul> <p>7. What should be done during a seizure? (Check all that you think apply)</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> place the person in a semi-prone position to prevent choking</li> <li><input type="checkbox"/> place something in the mouth to prevent biting the tongue</li> <li><input type="checkbox"/> administer an anti-epileptic drug during the episode</li> <li><input type="checkbox"/> restrain the person and perform chest compressions (CPR)</li> <li><input type="checkbox"/> take actions to prevent injury during the episode</li> </ul>
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## Material and Method

The EPilepsy REsearch Group (EPREG) at Srinagarind Hospital, Faculty of Medicine, Khon Kaen University was established in 2003 to provide public education on epilepsy. In order to assess the knowledge of epilepsy among school teachers in Khon Kaen, a self-administered questionnaire was prepared and distributed to 102 teachers prior to the training course (Table 1).

The number of correct responses for each item (max = 50) was calculated: 1) What is a seizure? (5); 2) What are the causes of epilepsy? (5); 3) What types of seizures exist? (10); 4) Is epilepsy curable? (5); 5) How should anti-epileptic drugs be taken? (5); 6) What are the consequences of seizures? (10); and, 7) How should acute seizures be managed? (10).

The statistical analyses included the percentage of correct responses and the means of the total scores.

## Results

All of the teachers that attended the epilepsy lecture gave informed consent. The return rate for the completed questionnaire (before attending the lectures) was 100%. Tables 2 through 6 present the questions and answers.

### *What is a seizure and what types are there?* (Table 2)

Most (78.4%) respondents understood that a seizure is an abnormal electrical discharge in the brain, while 54.9% thought it included a form of abnormal movement and 1% demonic possession. The generalized tonic-clonic seizure (GTCs) was the type of seizure with which most respondents were familiar (90.2%) and what they thought was associated with epilepsy, while 23.5% had knowledge of absence seizures. Approximately two-thirds of the group was capable of recognizing atonic seizures.

**Table 2.** "What is an epileptic attack?" and "What types of seizures exist?"

Results	Answer (%)	
	Yes	No
What do you think an epileptic attack is?		
An abnormal electrical discharge in the brain	78.4	21.6
Demon possession	1.0	99.0
An abnormal movement	54.9	45.1
What types of seizures exist?		
Generalized tonic-clonic seizures	90.2	9.8
Simple partial seizures	44.1	55.9
Complex partial seizures	26.5	73.5
Atonic seizures	62.7	37.3
Absence seizures	23.5	76.5

**Table 3.** "What causes epilepsy?"

Results	Answer (%)	
	Yes	No
What do you think causes epilepsy?		
Demonic possession	1.0	99.0
Head injury	84.3	15.7
Brain tumor	56.9	43.1
Divine punishment	1.0	99.0
Sleep deprivation	15.7	84.3
Alcohol withdrawal or heavy drinking	34.3	65.7
Stroke	25.5	74.5
Genetic disease	74.5	25.5
High fever	67.6	32.4
Eating pork	10.8	89.2

**Cause of epilepsy** (Table 3)

The respondents identified the following as causes for epilepsy: 1) head injury (84%); 2) genetic disease (74.5%); 3) high fever (68%); and, 4) brain tumor (57%). A small minority associated epilepsy with eating pork (11%) and even fewer (2%) with a non-organic/non-physical cause. The latter attributed epilepsy to ‘demonic possession’ because epileptics commonly make unusual sounds during seizures which some witnesses describe as the ‘voice’ of an evil spirit expressing itself through the victim.

**Treatment and prognosis** (Table 4)

Only 16% of respondents thought epilepsy was incurable, and a quarter (27%) of the teachers thought epileptics required anti-epileptic drugs (AEDs) for the entirety of their lives, while 20 and 9 percent believed patients would take AEDs for 3-6 months and only for episodes, respectively. About 57% of the teachers thought epileptics needed AEDs for 2-5 years.

**Consequences of epilepsy** (Table 5)

Most (77-79%) respondents thought epileptics were prohibited from using machinery or driving,

and 63% thought alcohol would be prohibited. One-quarter of the respondents thought that being an epileptic would affect one’s marriage, sexual performance or ability to have a healthy pregnancy.

**Helping epileptics during an attack** (Table 6)

Almost two-thirds of the teachers (64%) thought they should try to place an object between the

**Table 4.** “Do you think epilepsy is a curable disease?” and “How long are anti-epileptic drugs required?”

Results	Answer (%)
	Yes
Do you think epilepsy is a curable disease?	
Yes	82.4
No	15.7
How long are anti-epileptic drugs required?	
Life-long	26.5
2-5 years	56.9
During an episode	8.8
3-6 months	19.6

**Table 5.** “What are the consequences of epilepsy?”

Results	Answer (%)	
	Yes	No
What are the consequences of epilepsy?		
Not allowed to drive	79.4	20.6
Sexual intercourse	2.0	98.0
Cannot marry	2.0	98.0
Should not work with machinery	76.5	23.5
Cannot become pregnant	9.8	90.2
Must stop taking anti-epileptics while pregnant	24.5	75.5
Not able to lactate	6.9	93.1
Cannot eat pork	5.9	94.1
Must quit work	7.8	92.8
Cannot drink alcoholic beverages	62.7	37.3

**Table 6.** “What should be done during a seizure?”

Results	Answer (%)	
	Yes	No
What should be done during a seizure?		
Place in semi-prone position to prevent choking	66.7	33.3
Place an object in the mouth to prevent biting the tongue	63.7	36.3
Give anti-epileptic drug during the episode	15.7	84.3
Restrain and perform chest compressions (CPR)	26.5	73.5
Take actions to prevent injury during an episode	64.7	35.3

**Table 7.** Score of knowledge in each item

Items	Score (mean $\pm$ SD)
What is seizure? (5)	3.92 $\pm$ 2.07
What are the causes of epilepsy? (5)	2.26 $\pm$ 0.92
What are the types of seizures? (10)	3.78 $\pm$ 2.55
Is seizure a curable disease? (5)	4.12 $\pm$ 1.92
How to take anti-epileptic drugs? (5)	2.84 $\pm$ 2.49
What is/are the consequence of seizures? (10)	5.56 $\pm$ 2.43
How to manage acute seizures? (10)	6.79 $\pm$ 2.85
Total (50)	29.26 $\pm$ 7.93

teeth of a person having an episode in order to prevent a biting injury to the tongue and 27% would restrain the person and perform chest compressions (CPR).

#### **The scores of knowledge** (Table 7)

The average total score for correct answers on the questionnaire was about 60% (29.26/50). Respondents generally understood that epilepsy is controllable (82%) and were able to identify a seizure (78.4%). The lowest scores were found in the section on identifying the types of seizures (37.8%).

#### **Discussion**

Hippocrates (~460-375 BC) identified the brain as the centre of this affliction. However, this basic understanding has not remained constant; for throughout history various groups have believed that epilepsy was caused by demonic possession or was some sort of divine punishment.

Kankirawatana<sup>(5)</sup> found that 0.9% of school teachers in Thailand believed the cause of epilepsy was due to demonic possession. A similar view was held by 0.6% of school teachers in Zimbabwe<sup>(4)</sup>. An examination of the general population in Hong Kong revealed that 2% of respondents believed that epileptic disorder is related to demonic possession<sup>(6)</sup>. Similar opinions concerning epilepsy were found in 5.2% of India's population<sup>(7)</sup>, 6.3% of Sri Lanka's inhabitants<sup>(8)</sup>, and 30% of rural Ethiopians<sup>(9)</sup>.

Modern medical science has shown that epilepsy arises from a transient dysfunction in the brain. In the late 1800s, a British neurologist *John Hughlings Jackson* defined a seizure as "an occasional, an excessive, and a disorderly discharge of nerve tissue on muscles". Jackson also recognized that seizures can alter consciousness, sensation, and behavior. For the

last 100 years, the study of epilepsy has progressed extensively.

The national standardized medical dictionary introduced by the Thai government in 1982 defines epilepsy as "a medical condition characterized by periods of unconsciousness, mental absence, body rigidity, and/or jerking movements that suddenly arises within individuals and eventually subsides with time".

The local Thai term for epilepsy is "rok lom ba mu โรคลมบ้าหมู", which, in English, roughly translates to 'wild pig syndrome' or 'wind of the wild pig'. The exact etymology origin of this term is unknown. Eating improperly cooked pork may cause cysticercosis, which in turn can result in epileptic seizures; nonetheless, the local terminology has nothing to do with eating pork. This same phrase is used to describe a 'dust devil'-a minor local whirlwind. Children often like to jump into the middle of these windstorms-standing still while the wind swirls around them. The association of this word and its use as the term for epilepsy may possibly be related.

Importantly, 78% of the teachers understood that an epileptic episode is caused by an abnormal electrical discharge in the brain. Half (54.9%) of the respondents understood that an epileptic attack might include abnormal movements and nearly half (44.1%) could identify simple partial seizures.

The lack of knowledge of the types of seizures explains why most of the respondents only knew about GTCs (90.2%) while 73.5% and 76.5% did not know about complex partial seizures (CPS) and absence seizures, respectively. The limited understanding of the range of epileptic presentations was the most important finding of the present survey since most absence seizures occur in children or teenagers. As a consequence, the teachers would not recognize the symptoms nor have parents sought proper medical management. Sixty-three percent of respondents could identify atonic seizures, but these are not common among children; moreover, atonic seizures can look like GTCs (including falling and losing consciousness), so the teachers' ability to differentiate these two types of seizures was not discovered by the questionnaire.

It is of interest that two-thirds of the teachers (65.7%) did not know that alcoholic withdrawal or heavy drinking can cause epilepsy. Three-quarters of the respondents thought that epilepsy was a genetic disease; in fact, single-gene disorders underlying epilepsy is no more than 1-2% of cases<sup>(10)</sup>.

As for epilepsy management, 56.9, 19.6 and 8.8 percent of the teachers thought that epileptics

should take AEDs for 2-5 years, for 3-6 months and only for resolution of an episode, respectively. About a quarter of the teachers (28.4%) had an incorrect knowledge on AEDs-taking, perhaps a result of observing poor compliance. Most (82.4%) of the teachers thought epilepsy was preventable. In fact, all epileptics must take AEDs for at least 2 to 5 years.

The proper management during epileptic attack includes<sup>(11)</sup> 1) make the sufferer as comfortable as possible lying down. If seated, ease them to the floor; 2) the head should be protected and tight clothing or neckwear released; 3) avoid seizure-related injury (*e.g.* from drowning, falling down stairs, burns from hot water or fire, automobile accidents); 4) no attempt should be made to open the mouth or force anything between the teeth; and 5) check that the airway is not obstructed and that there are no injuries. Short-lived convulsive seizures do not require emergency drug treatment.

Contrary to standard first aid treatment of epileptics, 64% of the teachers would try to place an object in the mouth to prevent biting the tongue, 16% would give AEDs during the episode, and 26.5% would restrain the sufferer and/or perform chest compressions (CPR). These managements are incorrect and potentially harmful. Similar responses were reported from a 1999 Thai study conducted by Kankirawatana<sup>(5)</sup>. By contrast, Dantas *et al* found that less than 5% teachers in the West would try to put an object between the teeth<sup>(12)</sup>.

Prpic *et al* reported that one-third of teachers do not feel competent to work with children with epilepsy. More than 90% of teachers seek additional education about epilepsy. More accurate knowledge about the disease would certainly improve teachers' approaches and the way they work with children with epilepsy<sup>(13)</sup>.

### Conclusion

Teachers' knowledge of epilepsy was incomplete; thus, an epilepsy education campaign is needed and should emphasize the types of seizures, the causes of epilepsy, and management. Such programming would increase knowledge among teachers, create understanding among the classmates and community of epileptics, and improve the quality of life for all.

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## ความรู้โรคลมชักของครูจังหวัดขอนแก่น ประเทศไทย

สมศักดิ์ เทียมเก่า, ณรงค์ เอื้อวิชาแพทย์, สุวรรณ อรุณพงศ์ไพศาล, อภรณ์ ไชยาคำ,  
สุทธิพันธ์ จิตพิมลมาศ, วรินทร์ธร พุทธรักษ์, ศัชรินทร์ ภูนิคม, เจียมจิต แสงสุวรรณ, สุรินทร์ แซ่ตั้ง,  
ศิริพร เทียมเก่า, สุดา วรรณประสาท

**บทนำ:** ผู้ป่วยโรคลมชักเป็นที่รังเกียจของสังคม เนื่องจากทัศนคติและความรู้ที่ไม่ถูกต้องของสังคมต่อผู้ป่วยโรคลมชัก  
**วัตถุประสงค์:** ประเมินความรู้โรคลมชักของครูในจังหวัดขอนแก่น

**วัสดุและวิธีการ:** แบบสอบถามชนิดตอบด้วยตนเองให้ครู 102 ราย ก่อนเข้าร่วมฟังการบรรยายโรคลมชัก เก็บข้อมูล  
จำนวนข้อที่ตอบถูก การวิเคราะห์ทางสถิติเป็นร้อยละของข้อที่ตอบถูกและค่าเฉลี่ยของคะแนนที่ได้

**ผลการศึกษา:** ครูจำนวนร้อยละ 78.4 ทราบว่าการชัก คือความผิดปกติของกระแสไฟฟ้าในสมอง ร้อยละ 54.9  
รู้จักว่าการชักคือ การเคลื่อนไหวที่ผิดปกติรูปแบบหนึ่ง และร้อยละ 1 คิดว่า การชักคือ ผีเข้า ชนิดของการชัก ครู ร้อยละ  
90.2 ทราบการชักชนิดเกร็งกระตุกทั้งตัว ร้อยละ 23.5 ทราบการชักชนิดนิ่ง เหมือนลอย สาเหตุของโรคลมชัก ครูคิดว่า  
เกิดจาก 1.อุบัติเหตุที่ศีรษะร้อยละ 84 2.โรคทางพันธุกรรมร้อยละ 74.5 3.ไข้สูงร้อยละ 68 4.โรคเนื้องอก สมองร้อยละ  
57 ครูส่วนน้อยคิดว่าเกิดจากการรับประทานเนื้อหมูร้อยละ 11 และร้อยละ 2 คิดว่าเกิดจากการทรงเจ้า หรือผีเข้า  
ร้อยละ 16 คิดว่าโรคลมชักรักษาไม่หาย ร้อยละ 27 คิดว่าต้องรับประทานยาตลอดชีวิต ร้อยละ 20 และ 9 คิดว่า  
รับประทานยานาน 3-6 เดือน และเฉพาะช่วงเกิดอาการชักตามลำดับ ร้อยละ 57 รับประทานยานาน 2-5 ปี ร้อยละ  
77 คิดว่าผู้ป่วยโรคลมชักไม่ควรทำงานกับเครื่องจักร ร้อยละ 79 คิดว่าไม่ควรขับรถ และร้อยละ 63 ควรงดการดื่ม  
แอลกอฮอล์ ร้อยละ 64 ของครูจะนำวัสดุใส่เข้าปากผู้ป่วยในขณะชักเพื่อป้องกันการกัดลิ้น ร้อยละ 27 จะทำการกด  
ยัดและบีบหน้าอกผู้ป่วย ค่าคะแนนความรู้ที่ได้เฉลี่ย 29.26 จากคะแนนเต็ม 50 คะแนน ความรู้ส่วนที่ได้คะแนนสูงคือ  
โรคลมชักรักษาหายและการชักคืออะไร ร้อยละ 82 และ 78.4 ตามลำดับ ค่าคะแนนที่ต่ำสุด คือชนิดของการชักร้อยละ  
37.8

**สรุป:** ความรู้โรคลมชักของครูไม่สมบูรณ์ ซึ่งมีความจำเป็นต้องรณรงค์ให้ความรู้โดยเฉพาะชนิดการชักสาเหตุ  
และการให้ยารักษา

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