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\(^1\(^2\). 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\(^3\); thus are crucial for identifying epileptic children, conducting community surveillance and management of epileptic children, and raising community awareness\(^4\).

**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.

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**Table 1. Epilepsy questionnaire**

1. What do you think the cause of a seizure is? (Check all that you think apply)
   - [ ] an abnormal electrical discharge in the brain
   - [ ] demonic possession
   - [ ] divine punishment
   - [ ] an abnormal movement

2. What do you think causes epilepsy? (Check all that you think apply)
   - [ ] an evil spirit
   - [ ] a head injury
   - [ ] brain tumor
   - [ ] divine punishment for reneging on a vow
   - [ ] sleep deprivation
   - [ ] alcohol withdrawal or heavy drinking
   - [ ] stroke
   - [ ] genetic disease
   - [ ] high fever
   - [ ] eating pork

3. What types of seizures exist? (Check all that you think apply)
   - [ ] physical stiffness followed by jerking movements (tonic-clonic seizure)
   - [ ] unusual sensations or abnormal jerking with preserved awareness (simple partial seizure)
   - [ ] lost awareness and physical immobility, repetitive involuntary movements (complex partial seizure)
   - [ ] loss of muscle strength and tone: the person collapses (atonic seizure)
   - [ ] staring spell, sudden mental absence, loss of awareness (absence seizure)

4. Do you think epilepsy can be cured?
   - [ ] Yes
   - [ ] No

5. How often should anti-epileptic drugs be taken?
   - [ ] for life
   - [ ] 2-5 years
   - [ ] only at the full moon
   - [ ] only during an episode
   - [ ] for 3-6 months

6. What limitations do persons with epilepsy face? (Check all that you think apply)
   - [ ] not allowed to drive a motor vehicle
   - [ ] no sexual intercourse
   - [ ] cannot get married
   - [ ] should not work with machinery
   - [ ] cannot get pregnant
   - [ ] abruptly stop anti-epileptic drugs during pregnancy
   - [ ] not able to lactate
   - [ ] should not eat pork
   - [ ] must quit work
   - [ ] should not drink alcoholic beverages

7. What should be done during a seizure? (Check all that you think apply)
   - [ ] place the person in a semi-prone position to prevent choking
   - [ ] place something in the mouth to prevent biting the tongue
   - [ ] administer an anti-epileptic drug during the episode
   - [ ] restrain the person and perform chest compressions (CPR)
   - [ ] take actions to prevent injury during the episode
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?” |
|-----------------------------|-----------------------------|-----------------------------|
|                            | Yes            | Answer (%) | 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?”

<table>
<thead>
<tr>
<th>Results</th>
<th>Yes</th>
<th>Answer (%)</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you think causes epilepsy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonic possession</td>
<td>1.0</td>
<td>99.0</td>
<td></td>
</tr>
<tr>
<td>Head injury</td>
<td>84.3</td>
<td>15.7</td>
<td></td>
</tr>
<tr>
<td>Brain tumor</td>
<td>56.9</td>
<td>43.1</td>
<td></td>
</tr>
<tr>
<td>Divine punishment</td>
<td>1.0</td>
<td>99.0</td>
<td></td>
</tr>
<tr>
<td>Sleep deprivation</td>
<td>15.7</td>
<td>84.3</td>
<td></td>
</tr>
<tr>
<td>Alcohol withdrawal or heavy drinking</td>
<td>34.3</td>
<td>65.7</td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>25.5</td>
<td>74.5</td>
<td></td>
</tr>
<tr>
<td>Genetic disease</td>
<td>74.5</td>
<td>25.5</td>
<td></td>
</tr>
<tr>
<td>High fever</td>
<td>67.6</td>
<td>32.4</td>
<td></td>
</tr>
<tr>
<td>Eating pork</td>
<td>10.8</td>
<td>89.2</td>
<td></td>
</tr>
</tbody>
</table>
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 6. “What should be done during a seizure?”

<table>
<thead>
<tr>
<th>Results</th>
<th>Yes</th>
<th>Answer (%)</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place in semi-prone position to prevent choking</td>
<td>66.7</td>
<td>33.3</td>
<td></td>
</tr>
<tr>
<td>Place an object in the mouth to prevent biting the tongue</td>
<td>63.7</td>
<td>36.3</td>
<td></td>
</tr>
<tr>
<td>Give anti-epileptic drug during the episode</td>
<td>15.7</td>
<td>84.3</td>
<td></td>
</tr>
<tr>
<td>Restrain and perform chest compressions (CPR)</td>
<td>26.5</td>
<td>73.5</td>
<td></td>
</tr>
<tr>
<td>Take actions to prevent injury during an episode</td>
<td>64.7</td>
<td>35.3</td>
<td></td>
</tr>
</tbody>
</table>
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%).

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(5) 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(6). An examination of the general population in Hong Kong revealed that 2% of respondents believed that epileptic disorder is related to demonic possession(7). Similar opinions concerning epilepsy were found in 5.2% of India’s population(8), 6.3% of Sri Lanka’s inhabitants(9), and 30% of rural Ethiopians(9).

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 โรคลมบ้านหมู”, 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(10).

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

<table>
<thead>
<tr>
<th>Table 7. Score of knowledge in each item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items</td>
</tr>
<tr>
<td>What is seizure? (5)</td>
</tr>
<tr>
<td>What are the causes of epilepsy? (5)</td>
</tr>
<tr>
<td>What are the types of seizures? (10)</td>
</tr>
<tr>
<td>Is seizure a curable disease? (5)</td>
</tr>
<tr>
<td>How to take anti-epileptic drugs? (5)</td>
</tr>
<tr>
<td>What is/are the consequence of seizures? (10)</td>
</tr>
<tr>
<td>How to manage acute seizures? (10)</td>
</tr>
<tr>
<td>Total (50)</td>
</tr>
</tbody>
</table>

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%).

The scores of knowledge

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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(11) 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(5). By contrast, Dantas et al found that less than 5% teachers in the West would try to put an object between the teeth(12).

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(13).

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.

Acknowledgments

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References

ความรู้โรคคลิแม็กซ์ของครูจังหวัดขอนแก่น ประเทศไทย

สมศักดิ์ เทียมเก่า, นฤภ, เชื้อวิชญาแพทย์, สุริ.ptr, อรุณพงษ์ไพศาล, อาภรณี, ไข่ย่า, สุทธิพันธ์, จิตพิมลมาศ, วิรินทร, พูธรักษ์, ศิริพร, สมศักดิ์, ณรงค์, อรุณพงศ์ไพศาล, อาทิตยา, มณี, สถิตพันธ์, จิตพิมลมาศ, วรินทร์ธร, พุทธรักษ์, ศิริพร, เทียมเก่า, สุดา, วรรณประสาท

บทนำ: ปัญหาโรคคลิแม็กซ์เป็นปัญหาใหญ่ของสังคม เนื่องจากทัศนคติและความรู้ที่ไม่ถูกต้องของสังคมต่อผู้ป่วยโรคคลิแม็กซ์

วัตถุประสงค์: ประเมินความรู้โรคคลิแม็กซ์ของครูในจังหวัดขอนแก่น

วัสดุและวิธีการ: แบบสอบถามชนิดตอบด้วยตนเองให้ครู 102 ราย ผ่านการทดลองการประยุกต์โรคคลิแม็กซ์ เก็บข้อมูลจำนวนของผู้ตอบถูก การวิเคราะห์ทางสถิติเป็นร้อยละของข้อที่ตอบถูกและค่าเฉลี่ยของคะแนนที่ได้

ผลการศึกษา: ครูจำนวนร้อยละ 78.4 ทราบการคลิแม็กซ์ คือความผิดปกติของกระแสไฟฟ้าในสมอง ร้อยละ 54.9 รู้จักการคลิแม็กซ์ การเคลื่อนไหวที่ผิดปกติรูปแบบหนึ่ง และร้อยละ 1 คิดว่า การคลิแม็กซ์ นี่เข้า ชนิดของการรักษา ครู ร้อยละ 90.2 ทราบการคลิแม็กซ์เกิดจากการสูญหลัก ร้อยละ 23.5 ทราบการขัดแนวคิด แมลงจาก สำหรับกลุ่มโรคคลิแม็กซ์ ครูร้อยละ 1 ตั้งคำถามที่ผิดเพื่อการตัดสิน 84.2.โรคทางสมองกระตุ้นร้อยละ 74.5.3.โรคตับร้อยละ 68.4.โรคเนื้อเยื่อ สมองร้อยละ 57 ครูร้อยละ ยี่กิจการรักษาโรคโรคออกมาทั้งหมด 11 และร้อยละ 2 คิดว่าเกิดจากการทรงเจ้า หรือแมงสำหรับ ร้อยละ 16 ตีความโรคคลิแม็กซ์ยาท้าย ร้อยละ 27 คิดว่าสร้างร่างกายคลิแม็กซ์ ร้อยละ 20 และ 9 คิดว่า รับประทานยา 3-6 เดือน และเฉพาะบางกลุ่มอาการมากกว่าตามลำดับ ร้อยละ 57 รับประทานยา 2-5 ปี ร้อยละ 77 ติดการรักษาด้วยยาคลิแม็กซ์ ไม่ควรรักษาด้วยเครื่องสำหรับ ร้อยละ 79 ติดความรู้ชัดเจน และร้อยละ 63 ควรลดการดื่ม

สรุป: ความรู้โรคคลิแม็กซ์ของครูไม่สมบูรณ์ ซึ่งมีความจำเป็นต้องเร่งด่วนให้ความรู้โดยเฉพาะกรณีคลิแม็กซ์กลุ่มแรก