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### ASSESS THE LEVEL OF AWARENESS OF EPILEPSY AND FIRST AID IN SEIZURE ATTACK AMONG TEACHERS OF CHILDREN AGE GROUP (6-18YR), TABUK CITY, KINGDOM OF SAUDI ARABIA

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#### ABSTRACT

**Background:** Epilepsy is a common neurological disease, around 50 million people worldwide had epilepsy. In Saudi Arabia, with prevalence of 6.45/1000 people, and among school children (6-18 years) is 5.5%. Seizures were the third most common school emergency. As such, the teachers are often faced with challenge of responding to the attack and providing first aid and post attack care to child with epilepsy.

**Objectives:** To assess the knowledge of teachers of children age group (6-18 years) in Tabuk city about epilepsy. To assess the knowledge of teachers of children age group (6-18 years) in Tabuk city regarding seizure first aid.

**Method:** A cross-sectional study was applied in Tabuk city, Saudi Arabia. 391 female and male teachers were included in the study, by using an electronic questionnaire distributed among teachers in Tabuk city. Data entered and analyzed by Microsoft Excel.

**Results:** Out of the teachers who responded to the questionnaire, 70% were female teachers and 30% were male teachers; 97% recognized epilepsy as a neurological disease, The majority (52%) stated that they would open the child's mouth and insert an object during seizure, and 91% of the overall participants recognized when should be transferred to the hospital.

**Conclusion:** Female and male teachers in Tabuk city significantly lack of knowledge about seizure first aid, an educational program for the teachers is recommended to improve the seizure outcome.

**Keywords:** Tabuk city, epilepsy, seizure first aid, school teachers, children.

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## INTRODUCTION

Epilepsy is a common neurological disorder, affects people of all ages. It results from abnormal excessive or synchronous neuronal activity in the brain, it characterized by chronic recurrent involuntary movement known as seizure. Up to 10% of people worldwide have one seizure during their life time [1], approximately 4-10% of children experience at least one seizure (febrile or afebrile) in the 1<sup>st</sup> 16 years of life, the cumulative lifetime incidence of epilepsy is 3% and more than half of the cases start in the childhood [2]. This indicate the diagnosis of epilepsy usually requires occurrence of at least 1 unprovoked epileptic seizure with either a second seizure or enough EEG and clinical information to convincingly demonstrate to develop recurrence. People with epilepsy have risk of premature death three times higher than general population[1]. Epilepsy is the most common neurological diseases globally around 50 million people worldwide had epilepsy[1], and in Saudi Arabia with prevalence 6.54/1000 population (95% confidence interval 5.48-7.60), the majority are younger than 19 years of age[3]. In Turaif city in southern area of Saudi Arabia among children age (6-18yr) about 5.5% had epilepsy, 68.2% of them were males, 31.8% female[4]. Seizures were the third most common school emergency[5]. Several studies one in Asser region and one in AL Madinah Munawara have shown the misperception of Saudi population about epilepsy [6], [7]. Therefore, as the teachers part of the population, their knowledge toward student with epilepsy will directly influence their performance, and self-esteem.

In most circumstances, many people harbor misconception about how to respond to a seizure. Lack of knowledge increase the potential for inappropriate responses by parents, teachers, coworkers, and the public at large repetitive or prolonged seizure[8]. And may result in secondary injuries[9]. Appropriate training for seizure first aid in the workplace, schools is needed, lack of knowledge about basic steps may harm the epileptic patient, as one of the most common misconceptions of seizure treatment is opening the patient's mouth to low the risk of swallowing tongues, others misconceptions as insert object in his/her mouth, strain the patient, no adequate knowledge about recovery position where is the patient on either sides. School teachers the most responsible person to provide the first aid in case of child experiences a seizure attack in the school, teacher responsibilities are to prevent the patient from self-harm during the attack by putting the patient in his/her side and to ensure the safety of the place, and timing the attack duration to recognize when should transfer the patient to medical facility, if seizure not abort spontaneously within 5min, or had recurrent attack it indicates that the patient have status epilepticus which need to be early recognize and transfer to a medical facility as soon as possible. Also teacher responsibility is to provide post-seizure care, as an epileptic patient may be drowsy after the attack and may injure him/her self. In a recent Saudi study, AL Qahtani, reported that approximately 64.1% of the teachers who were exposed to cases of seizures were not able to provide first aid to student having epileptic fits[10]. Additionally, Alkhotani, et.al., reported that female school teachers in

Makkah region significantly lack adequate training and knowledge of first aid [11]. Life-threatening emergencies can happen at any school, at any time. In the other hands a study investigating the effect of education on seizure response showed that a short educational program improved the knowledge, first aid practices of parents who had children with the condition [12].

Regarding the studies mentioned, epilepsy is common in our society therefore there is need for assessment the level of awareness of seizure first aid in children among the school teachers.

### **Ethical Consideration**

Ethical approval was granted from Tabuk University's ethics and research committee. An electronic self-administrated questionnaire with a cover letter explained of the purpose of the study, with keeping privacy.

## **MATERIAL AND METHODS**

### **Study Design and Setting**

A population-based, cross-sectional study was conducted in Tabuk city over a one-month period, applied among female and male teachers. It included teachers of children aged 6-18 years in all primary, intermediate and high schools in Tabuk city. Excluding the physician.

### **Study Participant And Sample Size**

Our participants were female and male teachers of children age group (6-18 years) in Tabuk city. Sample size was calculated using the following formula:

$$\text{Sample Size} = (Z - \text{score})^2 \text{ StdDev} (1 - \text{StdDev}) / (\text{margin of error}) = 384.16$$

Z-score: The number of standard deviations above or below the mean.

Standard deviation: A measure of the amount of variation or dispersion of a set of values.

Margin of error: A statistic expressing the amount of random sampling error in the results of a survey.

Total of 391 Teachers responded. An online questionnaire was sent to all of them.

### **Data Collection Tool**

The data was collected through electronic self-administrated questionnaire, it was distributed through social networking sites.

The Questionnaire consist of three sections, of 21 close ended questions regarding:

-First section concern the (background data) sociodemographic data: age, gender, nationality.

-The second section measured the knowledge about epilepsy: general knowledge about epilepsy, its etiology, if can swallow his/her tongue during the seizure attack.

-The third section discuss the practical part in seizure attack, were two questions with answer (multiple choices /I don't know) include: first aid, period of seizure indicate transfer to hospital, post seizure care.

### **Data Management And Analysis:**

Data were compiled and analyzed using Microsoft Excel version 16.30, number and percent were used to represents data in tables and figures.

## **RESULTS**

Among of the total teachers 391, 98% were Saudi, 70% were female while 30% were male teachers. Half of teachers were between 40-51 year old age, 37% were (31-40), and 10% were (20-30 ).(Table 1)

Among the teachers, 91% know about epilepsy disease, 86% of them recognized that epilepsy is recurrent seizure while 9% said it once seizure attack. That 97% of the responders recognized epilepsy as a neurological disease, while 2% known as hematological diseases, and 1% known as immunodeficiency. That 28% recognized epilepsy as a hereditary disease.

And regarding to if epilepsy is a contagious disease, 97% said no, and regard to if epileptic patient is a mental retard 94% said no.

For if the patient may swallow tongue during the attack, the majority 86% responded by yes, and 9% they don't know.

Additionally, 46% had witnessed a seizure attack and were not able to do the first aid. (Table 2).

Regard to the cause of epilepsy, total of 385 responders, 79% knew that epilepsy is due to an electrical discharge (neuronal electricity), while 4% recognize as neuronal electricity and due to jinn, charm, and envy. And 12% they don't know, and 4% thought it is unknown cause. (Fig 1)

**Table 1: Demographic Data**

Demographic data:	
Age (years):	
20-30	39(10%)
31-40	144(37%)
41-50	208(53%)
Gender:	
Female	275(70%)
Male	116(30%)
Nationality:	
Saudi	385(98%)
Other	6(2%)

Total of 357 who responded, about half (52%) respond that if faced with a seizing child, they would insert an object in patient's mouth during the seizure attack, and 13% they would hold and restrain the patient. only 26% of teachers responded correctly in relation to ensuring student safety, and 17% of teachers they don't know what to do if they faced a seizing child.

That the majority 83% of teachers responded by they should timing the seizure attack, and

**Table 2: General Epilepsy Knowledge**

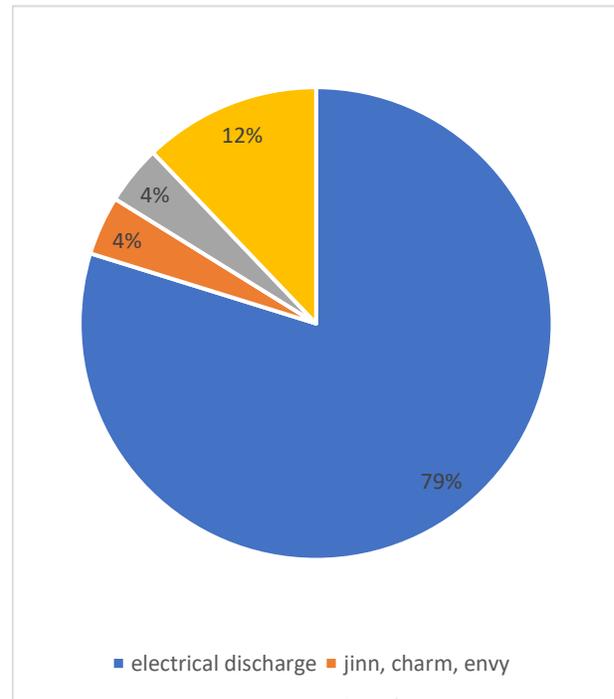
Do you know what is epilepsy?	
Yes	357(91%)
No	34(9%)
Epilepsy is known by how many attacks? (for those answered 'yes' in previous question)	
Recurrent attack	336(86%)
One attack	19(9%)
I don't know	34(5%)
Epilepsy is a disease of?	
Neurological diseases	379 (97%)
Hematological disease	8(2%)
Immunodeficiency diseases	4(1%)
Is Epilepsy hereditary?	
Yes	108(28%)
No	166(42%)
I don't know	117(30%)
Is Epilepsy infectious?	
No	379(97%)
I don't know	12(3%)
Is Epileptic patient mentally retarded?	
No	94%
I don't know	6%
Can the patient with epilepsy swallow his tongue?	
Yes	336(86%)
No	18(5%)
I don't know	37(9%)
Did you witness a seizure attack?	
Yes	181(46%)
No	210(54%)

**Table 3: General Seizure first aid Knowledge**

General Knowledge of Seizure first aid?	
-Ensure safety	12(3%)
-Ensure safety, and put the child on either side	82(23%)
-Open child's mouth and insert object as towel	158(44%)
-Restrain the child while he/she is in the attack	18(5%)
-Restrain the child while he/she is in the attack, and insert an object into child's mouth	28(8%)
-I don't know what to do for a seizing child	59(17%)
Should timing the seizure attack?	
Yes	323(83%)
No	15(4%)
I don't know	53(14%)
Post-attack care?	
Yes	298(76%)
No	56(14%)
I don't know	37(9%)

for the post-attack care there is slight improvement regarding post-ictal and the recovery position. (Table 3)

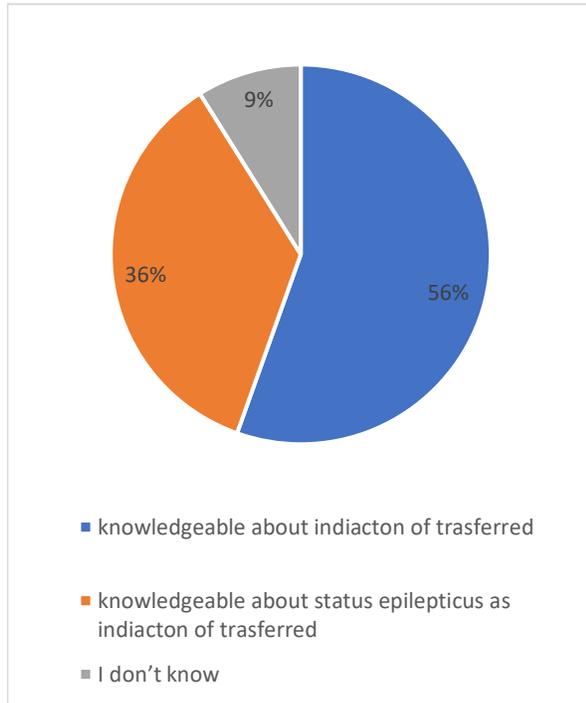
The knowledge of when should transfer to the hospital, and recognition of status epilepticus (we offered multi answered; if patient's breath doesn't return to normal, if seizure attack last more than 5mins, if had recurrent attack, if the child's body is harmed), Among 385 of teachers who responded, 91% they knew when to transfer to hospital, and only 14% of the 92% they recognize characteristic of status epilepticus (as it last more than 5mins) and it is indication for transfer, while 9% didn't know either when to transfer or recognition of status epilepticus.(Fig2)

**Figure 1: The Cause of Epilepsy**

## DISCUSSION

Epilepsy is a common neurological disease globally[1], this is the first study that focused on the level of awareness, knowledge, and first aid of seizure among non-medical person in Tabuk city, Saudi Arabia. In this study, the majority of responders (70%) were female teachers where 97% of responders knew that epilepsy is a neurological disease, only 2% knew is a hematological disease (blood disorder) and 1% as immunodeficiency. In contrast to the 2016 study which reported that 40% of participant Saudi population recognize epilepsy as a blood disorder [6].

In regards to the cause of epilepsy, 66% knew that it is a neuronal electricity, while 4% recognized it is neuronal electricity and supernatural causes (e.g., possession by a

**Figure 2: Knowledge of Transfer to Hospital**

jinn). While the result of 2017 study in AL Madinah Munawara, demonstrated that 44.7% of Saudi female attributed epilepsy to jinn possession[7], and the result of 2019 study in Makkah region, showed 6.1% of teachers participant attributed epilepsy to jinn[ 11]. This different may be related to improved knowledge about epilepsy over last few years. and there was improvement in the knowledge about epilepsy, in our study 97% reported that epilepsy isn't contagious and 94% reported that epileptic patients were not mental retard. This result different from a 2016 study, which reported that 21.2% of participant Saudi population believed it was a contagious[6], and 17.5%[10], and 5.7%

believed that epileptic patients were mentally retard[10].

In our study showed that 46% had witnessed an epileptic fits were not able to provide first aid, which is slightly improved compare to a study from a 2015 in Khamis Mushate, around 64.1% of male teachers who had witnessed an epileptic fits were not able to provide first aid to student that had an epileptic fits[10], and a study from 2018 in Riyadh showed that around 31.8% of female primary school teachers are able to provide first aid to the child [13].

Similarly, our study and Makkah study[11] showed no improvement in the practicing the seizure aid by put an object into the patient's mouth by 49%, 55% respectively.

The significant improvement in the teacher's knowledge about epilepsy in general is most likely related to the awareness program held by Ministry of Health and Saudi Epilepsy Society. The yearly purple epilepsy awareness day on the 26<sup>th</sup> of March is held in many cities in Saudi Arabia, there are a public awareness campaign targeting patient with epilepsy, their families, and the general populations, in addition several epilepsy awareness public media. However, specific training for teachers in first aid measurements is lacking. Eze and his groups have shown that epilepsy health education could increase teacher knowledge and facilitate correct first aid management[15],[16].

## CONCLUSION

The female and male teachers in Tabuk city, were generally knowledgeable about epilepsy but significantly lack training and knowledge of adequate seizure first aid, this

lacking has negative impact on epileptic student, this study could provide a nucleus for a health education program for a greater awareness of epilepsy first aid in the workplace that target the teachers in order to improve their first aid awareness and ability and diffusing discomfort with the condition.

### Limitations And Recommendations

The study has many limitations that should be addressed. It was carried out in Tabuk city only, therefore, it cannot be used as a proxy to the whole country. It was an online questionnaire, therefore lacking of a trained interviewer can lead to less reliable data.

We recommend, multi-location studies over the Saudi Arabia to assess the knowledge and seizure first aid, interviewing and interventional studies.

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