

# *The Knowledge about Epilepsy Among Dental Students: The Global Campaign Against Epilepsy “Out of Shadows” is Really Necessary*

## **O Conhecimento da Epilepsia entre Estudantes de Odontologia: A Campanha Global Contra Epilepsia “Saindo das Sombras” é Realmente Necessária**

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### **SUMMARY**

Our study aimed to assess the dental students' general knowledge and experiences about epilepsy in Mogi das Cruzes, São Paulo state-Brazil. Seventy seven dental students' answered an 18-item questionnaire concerned knowledge about epilepsy. Those, 62% believe that a seizure is an abnormal electrical discharge of the brain, 92% answered that persons having convulsions will not necessarily present epilepsy and 65% have no information about the incidence of epilepsy in Brazil. Genetic, trauma, tumor and cerebral disease were the most referred causes of epilepsy. Moreover, 83% do not believe that epilepsy is a brain chronic disease and all of the students' do not consider it as a contagious disease. About 45% agree that a patient with epilepsy should drive. Only 6.5% contraindicate physical activities for person with epilepsy and 95% would accept them in their classroom. In addition, 51% of them have seen a seizure, 24% have a friend or relative with epilepsy, and only 40% have access to any kind of information of epilepsy. Our findings reveal a lack of dental students' appropriate information in epilepsy, however, improvement of dental students' knowledge about epilepsy can contribute to the improvement of epilepsy care.

**KEY WORDS:** epilepsy, dental students', seizure, stigma.

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## RESUMO

Nosso estudo teve como objetivo avaliar os conhecimentos gerais e as experiências sobre epilepsia de estudantes de odontologia de Mogi das Cruzes no estado de São Paulo, Brasil. Setenta e sete estudantes de odontologia responderam um questionário de dezoito questões sobre as epilepsias. Destes, 62% acreditam que a crise epiléptica seja resultado de uma descarga elétrica anormal do cérebro, 92% responderam que, pessoas que tiveram convulsão, não têm, necessariamente, epilepsia enquanto 65% não têm nenhuma informação a respeito da incidência de epilepsia no Brasil. Genética, traumas, tumores e doenças cerebrais foram as causas de epilepsia mais referidas. Além disso, 83% não acreditam que a epilepsia seja uma doença cerebral crônica e todos não consideram que ela seja uma doença contagiosa. Aproximadamente 45% concordam que pacientes com epilepsia podem dirigir. Apenas 6,5% contra-indicam a atividade física para pessoas com epilepsia e 95% aceitariam estudar na mesma sala de aula. Ainda mais, 51% dos estudantes já viram uma crise epiléptica, 24% conhecem alguém com epilepsia e 40% já receberam informação a respeito das epilepsias. Nossos resultados mostraram que os estudantes de odontologia têm uma gama de informações apropriadas a respeito das epilepsias, porém, aprimorar os conhecimentos de epilepsia dos estudantes de odontologia pode contribuir para uma melhora no tratamento de pessoas com esta doença.

**PALAVRAS-CHAVE:** Epilepsia, Estudantes de Odontologia, Crises e Estigma.

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## INTRODUCTION

Epilepsy is characterized by chronic recurrent paroxysmal changes in neurological functions caused by abnormalities in the electrical activity of the brain<sup>1</sup>. Approximately two million persons in the United States have epilepsy and each year, 100,000 new cases of epilepsy are diagnosed in the United States<sup>2</sup>. The most commonly reported etiological factors are stroke, tumors, alcohol, head injuries, congenital factors and neuroinfections<sup>3</sup>. In Brazil, neurocysticercosis is the most frequently identified cause of epilepsy<sup>4</sup>. In most developing countries, epilepsy is erroneously believed to be infectious and/or caused by evil spirits<sup>5</sup>, enhancing with this, the social stigma of epilepsy. It seems reasonable to consider that this attitude adversely affects the interpersonal relationships, education, career/employment opportunities and the general health of patients<sup>6</sup>.

With regard to general health, it is important to remember that oral health is an essential aspect of quality of life. Self-care is essential to one's oral

health; however, due to the unsupportive environment of many persons with epilepsy, oral health and hygiene procedures are often neglected<sup>6</sup>. Moreover, it is a general impression that patients with developmental disabilities, including epilepsy, tend to have poorer oral health and receive inadequate dental treatment when compared with nonepilepsy population<sup>6,7</sup>. Accordingly with Hupp<sup>8</sup>, there are two major areas of concern to dentists with patients having seizure disorders. The first is the medical management of the patient who has a seizure while in dental office; the second deals with the side effects of the medications prescribed to control the seizure. It is well known that approximately half of all patients receiving the antiepileptic drug phenytoin (PHT) exhibit enlargement of the gingival<sup>9</sup> and the development of the PHT-induced lesion is positively related to the presence of dental plaque and gingival inflammation<sup>10</sup>.

An important problem of epilepsy management in developing countries is the lack of social and specialized rehabilitation. In countries where

specific dentists' are not commonly observed, an evaluation of the dentist knowledge about epilepsy could help to the additional information for a dentist to contribute to the improvement of epilepsy care. As reported by Surabian<sup>11</sup>, dentists offer their best services when they understand their patients and each new generation of professionals will have greater knowledge and will use it to benefit society. Based on this, the purpose of our study was to contribute to the understanding of Brazilian dental students' knowledge toward epilepsy applying a questionnaire to them in São Paulo state, Brazil. Our first step was to apply a questionnaire to these students in the São Paulo state, Brazil, aiming to verify their basic knowledge and general concepts about epilepsy in order to, in the future, establish a program that would help them to establish adequate attitudes toward people with epilepsy.

## MATERIAL AND METHODS

The study was performed with the collaboration of the Faculty of Dentistry of the Mogi das Cruzes University, received approval from human research ethic committee and all subjects signed an informed consent document. We surveyed 79 dental students from the Faculty of Dentistry of Mogi das Cruzes, in São Paulo State, Brazil. A questionnaire was designed to assess student's

knowledge about epilepsy. The criterion for inclusion to participate the study was: dental students that develop clinical practice under professor guidance. Exclusion criteria were dental graduate students that do not develop clinical practice. Dental students answered the 18-item questionnaire with simple close-end type response scales. Questions concerned: (a) general knowledge of epilepsy (b) previous experience about epilepsy. All the questionnaires were applied by the same subject (one of the authors of this study). Self-administrated questionnaire or any access for information concerning the subject during the questionnaire application was not allowed.

## RESULTS

From 79 interviews, 2 dental students' did not wanted answer the questionnaire. Therefore, 77 dental students' questionnaires were available in our study. The mean age of the 77 dental students' interviewed was 25 (range 18-25) and 27 of them were female. Questions about general knowledge and previous experience about epilepsy were fully answered. The results are shown in **tables 1** and **2** and summarized below.

**Table 1** – Dental students’ general knowledge about epilepsy.

Questions	True %	False%	I do not know %
1. A seizure is an abnormal electrical discharge of the brain	62,34	1,30	36,36
2. All persons that present convulsions have epilepsy.	2,60	92,21	5,19
3. What is the cause of epilepsy?			
Genetic	40,26		
Tumor	3,9		
Malformation	9,09		
Trauma	9,09		
Cerebral disease	38,96		
Possession	0		
Infection	2,6		
Insanity	2,6		
I do not know	27,08		
4. Number of people with epilepsy in Brazil is approximately of 2%.	19,48	15,58	64,94
5. Epilepsy is a brain chronic disease which can not be controlled or cured.	11,69	83,12	5,19
6. Epilepsy is a contagious disease.	0,00	100,00	0,00
7. People with epilepsy have a high incidence of disease mental health.	15,58	80,52	3,90
8. Patients with epilepsy should not be allowed to drive.	45,45	46,75	7,19
9. Patients with epilepsy should not practice physical activities.	6,49	83,12	10,39
10. Are you afraid of a patient with epilepsy in your classroom?	0,00	100,00	0,00
11. All patients with epilepsy should be in a special classroom?	3,90	94,81	1,30
12. Patients with epilepsy should not participate in laboratory experiments.	6,49	62,34	31,17
13. Persons with epilepsy have difficulties of learning.	5,19	80,52	14,29
14. What do you know about the IQ of a person with epilepsy?			
Normal			
high	88,31		
low	3,09		
I do not know	1,3		
	6,49		

**Table 2** – Dental students’ experience in epilepsy.

Questions	Yes %	No %	I do not know %
1. Have you seen a seizure?	50,65	49,35	0
2. Do you have a friend or a relative with epilepsy?	24,68	75,32	0
3. Have you had information concerning epilepsy (books, leaflets, seminars, etc)?	40,26	59,74	0
4. Have you helped a person during a seizure?	16,88	83,12	0

Forty-eight dental students' believe that a seizure is an abnormal electrical discharge of the brain and 28 of them do not know what it means. Most of them (92%) answered that persons having convulsions will not necessarily present epilepsy and surprisingly, 65% have no information about the prevalence of epilepsy in Brazil. Genetic (40.2%), trauma (9.1%), tumor (3.9%) and cerebral disease (39%) were the most referred causes of epilepsy. For our surprise, the majority of dental students' interviewed (83.1%) do not believe that epilepsy is a brain chronic disease that can not be controlled or cured. On the other hand, all of them (100%) do not consider it as a contagious disease. Interestingly, students' opinion was divided regarding whether the patient with epilepsy should drive (46.7%) or not (45.4%). Only few of them (6.5%) consider the practice of physical activities banned for person with epilepsy. Topics concerning person with epilepsy at school showed that if dental students' were teachers should accept them participating in their classroom (100%) as well as they should accept them studying in a normal classroom (94.8%). However, about 62% of them would accept them participating in laboratory experiments. Moreover, the largest part of dental students' (88.3%) judges that persons with epilepsy have a normal IQ and 80% of them are convinced that they do not have learning disabilities. The second part of the questionnaire was related to previous professional experience of dental student's with epilepsy. In these lines, about half of them (50.6%) have seen a seizure, 24.4% have a friend or relative with epilepsy, almost half of them (40%) have access to any kind of information, i.e., books, leaflets, papers, etc. and the minority of dental students' (17%) helped someone during seizures.

## DISCUSSION

Epilepsy is the most common serious neurological disorder<sup>12</sup> and seizures may occur during dental treatment<sup>13</sup>. In agreement with Malamed<sup>14</sup>, we also believe that contemporary dentist must be prepared to manage of predisposing

factors that may induce seizure in their patients and proper precautionary measures could prevent the seizure from occurring or at least reduce its consequences. Unfortunately however, the exploration of dental students' attitudes and knowledge about epilepsy has been extremely limited in Brazil. Our study assessed the dental student's knowledge in epilepsy in Mogi das Cruzes University, Brazil, by a questionnaire.

Although some topics concerning general knowledge of epilepsy such as the definition of a seizure or convulsion were suitably answered by most of responders, dental students' were not confident regarding the different causes of epilepsy and its incidence. Answers from topics including driving and sports were not as we expected. Dental students' opinion was divided whether the patient with epilepsy should drive and 8% of them could not answer it. This is a relevant data showing that not only the general population has a lack of information about this subject but surprisingly dental students' also do not have clearly in mind the correct decision whether a person with epilepsy should be allowed to drive. Conversely, regarding physical exercise, the majority of dental students' believe that physical activity is beneficial for person with epilepsy. Although several studies have shown a low degree of participation in physical activity among people with epilepsy<sup>15,16</sup> a recent work carried out in Brazil by our group has demonstrate that most of patients practice physical activity regularly and believe that sports do not precipitate seizures<sup>17</sup>.

The findings about education and learning differed depending on the subject. Only few dental students' should admit them having special treatment at school such as studying in a special classroom and the minority of responders believe that epilepsy do interfere in learning. Moreover, the largest part of dental students' judge persons with epilepsy with a normal IQ, as well as consider persons with epilepsy with no difficulties of learning. In these lines, our results are in agreement with a recent and elegant study developed by Thompson and Duncan<sup>18</sup>. The researchers explored the relation

between seizure-related variables and cognitive change in patients with severe intractable epilepsy and concluded that seizures can have a direct adverse effect on cognition and that good seizure control even after years of intractability can have a beneficial impact on cognitive prognosis.

Based on the findings above, dental students' general knowledge about epilepsy is incomplete in some aspects. While we have some coherent responses, i.e. notion of seizure and convulsion, others were inconsistent, such as driving or physical activity. In addition, the limitations of our questionnaire-based study do not allow speculating further. For instance, questions concerning diagnosis, antiepileptic drugs and pregnancy should be included. Thapar and colleagues<sup>19</sup> reported through a survey of West Glamorgan General Practitioners (GPs) that the majority of GPs found difficulties in making a diagnosis and starting treatment in the initial stages and the long-term maintenance of treatment once a diagnosis has been made. GPs also felt that a lack of knowledge about epilepsy (34% of responders), unfamiliarity with new drugs (65% of responders) and a lack of time (41% of responders) were perceived barriers to the provision of effective care. Almost all the GPs in that felt that guidelines would be useful and that specialist epilepsy nurses in the community could help for improving the care of people with epilepsy.

Questions concerning to professional experience in epilepsy also demonstrate lack of information or experience among the dental students'. It is surprising that 51% of the students have never observed a seizure. The question whether they had a friend or relative with epilepsy complement the previous question and 75% of responders did not know anyone with epilepsy. Thus, we were expecting that all dental students' have had any kind of information about the subject during their graduation or leaflets available in the university campus, but 60% the students interviewed have never heard about it. Moreover, if we consider that about 2% of Brazilian population has epilepsy and seizure is not a unusual event during dental treatment<sup>4,12,13</sup>, we were also surprised to know that the majority of dental students' (84%) did not help a

person during a seizure. On the other hand, it is important to note that the limitations of questionnaires studies are well known and the problems with attitudes surveys have been previously highlighted<sup>20</sup>. This type of investigation may also provide a guide for more extensive studies.

Finally, it is also important to think about the Global Campaign Against Epilepsy, which is a joint initiative of the World Health Organization (WHO), the International League Against Epilepsy (ILAE), and the International Bureau for Epilepsy (IBE) to bring epilepsy "Out of Shadows" worldwide by improving the diagnosis, treatment, prevention and social acceptability of the disorder<sup>21</sup>. The strategy of the Campaign includes two parallel and simultaneous tracks: it provides a platform for general awareness and understanding of epilepsy, and it will assist Department of Health in identifying the needs and in promotion education, training, treatment, services, research and prevention<sup>21</sup>. Based on these lines, our findings indicate that dental students' would benefit from having theoretical knowledge about epilepsy prior to starting with practical experience. As reported by Surabian<sup>11</sup>, dentists must be aware of the patient's with epilepsy because the trust between the patient and the dentist can help prevent injury in the dental office. In view of the present results, we understand that campaigns promoting greater knowledge about epilepsy to non medical professionals should be evaluated. Similarly, it is important that specific campaigns to inform and stimulate professional and patients to become more active are necessary as well.

## CONCLUSION

Finally, we believe that physicians alone may not be effective enough in dealing with these matters but it may reasonable for them to have the support of health authorities, social workers, nurses, dentists, sports instructors to achieve these goals.

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