

Avulsion of permanent teeth: the knowledge of odontology undergrads**Avulsão em dentes permanentes: conhecimento de acadêmicos de odontologia****Avulsión en dientes permanentes: conocimiento de académicos de odontología****Received: 28/03/2017****Approved: 16/12/2017****Published: 05/04/2018**

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This is a descriptive study aiming to verify the knowledge of undergrads between the 5th and 10th semesters of an odontology course with regards to the avulsion of permanent teeth. The data collection instrument was a previously validated questionnaire with 12 questions, which was applied to 215 undergrads of the Odontology course of a private institution of João Pessoa, PB. The knowledge of Odontology undergrads regarding an injury classified as an avulsion in permanent teeth was deemed satisfactory. However, educational lectures are still recommended, as well as refreshing courses, seminars and improvement of teaching techniques, so that the content is better memorized as to enhance learning.

Descriptors: Students dental; Tooth avulsion; Tooth injuries.

Este é um estudo descritivo que tem como objetivo verificar o conhecimento de acadêmicos do 5^o ao 10^o período de Odontologia frente ao traumatismo do tipo avulsão em dentes permanentes. Foi utilizado como instrumento de coleta dos dados um questionário previamente validado, contendo 12 questões e aplicado a 215 acadêmicos do curso de Odontologia de uma instituição privada de ensino de João Pessoa, PB. O conhecimento dos acadêmicos de Odontologia frente a um traumatismo do tipo avulsão em dentes permanentes foi satisfatório. Embora, seja indicada a prática de palestras educativas, cursos de atualização, seminários, e aprimoramento das técnicas de ensino para uma melhor fixação do conteúdo, e com isso, aprimorar o aprendizado.

Descritores: Estudantes de odontologia; Avulsão dentária; Traumatismos dentários.

Este es un estudio descriptivo que tiene como objetivo verificar el conocimiento de académicos del 5^o al 10^o período de Odontología frente al traumatismo del tipo avulsión en dientes permanentes. Fue utilizado como instrumento de colecta de datos un cuestionario previamente validado, conteniendo 12 preguntas y aplicado a 215 académicos de la carrera de Odontología de una institución privada de enseñanza de João Pessoa, PB. El conocimiento de los académicos de Odontología frente a un traumatismo del tipo avulsión en dientes permanentes fue satisfactorio. Sin embargo, es indicada la práctica de conferencias educativas, cursos de actualización, seminarios, y mejoramiento de las técnicas de enseñanza para una mejor fijación del contenido, y con eso, mejorar el aprendizaje.

Descriptor: Estudiantes de odontología; Avulsión de diente; Traumatismos de los dientes.

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INTRODUCTION

Specialized modern Odontology has been constantly seeking for the maintenance and preservation of the dental element. Until recently, the oral cavity was disassociated from the other organs of the human body when one considered the general health of the individual¹.

The several types of dentoalveolar injuries correspond to a broad variety of injuries/impacts that affect dental elements, as well as their supporting structures and mucous membrane. In the last decades, dental injury has been shown as the most impactful etiological factor when it comes to the loss of high numbers of teeth. That becomes even more crucial when adequate care is not offered to improve the chances of maintaining this element².

The causes of dentoalveolar injuries in permanent teeth are vastly known, the most common being falls, collision against objects, surfaces or people, automotive accidents, sports, violence, and aggressive playing³.

Dental avulsion is characterized by the dislocation of the entire dental element to a place outside of its alveolus⁴. Re-implanting the tooth is the prescribed and most common action to deal with cases of dental avulsion. This procedure should be conducted even if the conditions are not favorable, always seeking to save the element^{5,6}.

This study aimed to verify the knowledge of undergrads between the 5th and 10th semesters of an odontology course with regards to the avulsion of permanent teeth.

METHODS

According to the recommendations of the National Council of Health (CNS), the project was approved by the Research Ethics Committee of the University Center of João Pessoa (UNIPE) under protocol CAAE 44923015.7.0000.5176.

This is a cross-sectional, descriptive and quantitative study. It involves the use of standardized data collection techniques: questionnaire and systematic observation, as well as the translation of data into numbers,

opinions and information, to categorize and analyze them with the use of resources and statistical techniques.

This research was developed in the UNIPE Odontology School-Clinic, with a universe of 459 undergrads between the third and sixth year of the Odontology course, according to data from the course coordination, in 2015.

The sample size was later calculated with a confidence level of 95% and a sampling error of 5%. The sample size obtained was 210 undergrads. However, when the questionnaires were applied, 215 undergrads participated.

After collection and data tabulation, data were organized in a data bank in the software Microsoft Excel 2010, and presented in charts and tables with their absolute and relative distributions.

RESULTS

This study had the participation of 164 females (76%) and 5 males (24%). Regarding the chosen time period, it was found that the students in the 5th semester represented 33.49% of participants, with a total of 72 participants. There were 18 participants each for the 6th and 7th semesters (8.37%), indicating the lowest percentage, and there were 43 undergrads from the last semester, representing 20% of the participants. The age of participants varied from 19 to 46 years of age.

Regarding whether the undergrads had received information about dentoalveolar injuries, 89% said they did, while 11% stated they did not.

From those who stated to have received information, 185 (69.03%) said they learned about it in classes at university, 52 (19.4%) stated to have learned in a book or magazine, and 18 (6.72%) with a dentist or other professional.

When it comes to living with dental injuries, only 38% did. These data, along with the place of the occurrence, are in Table 1.

Table 1. Undergrads according to their experience with dental injuries and place of the occurrence, João Pessoa/PB, 2015.

Variable	Frequency (%)
Experience with dental injury	
Yes	32.0%
No	68.0%
Places of the occurrence of cases	
Internship/college/work	34.38 %
Happened with some family member	20.83%
During sports and/or recreation	13.54%
Other	10.42%
No answer.	20.83%

When questioned about what the most important procedure is to achieve a good result in an avulsion treatment, most participants (139 - 60.97%) chose to look for the teeth who had suffered avulsion.

Another important question was about which professionals must have the acknowledge and the science of odontological conducts when it comes to an avulsion due to injury: 116 (53.7%) undergrads that all professionals mentioned must have this information.

When it comes to the concept of avulsion, the 6th, 7th and 8th semesters had the best results, with 100% of correct answers, although all of them had satisfactory results. When asked about what would be the most important one in a case of avulsion, the 7th semester students had a higher number of correct answers.

Knowing that in avulsion cases the most recommended behavior is immediate re-implantation, it is necessary that not only other professionals know the correct conduct, but the population as a whole.

Considering the importance of this, there was a question about which professionals should know the odontological conduct when facing an avulsion. The 6th semester had the highest percentage of right answers; 66.67%.

Regarding the cleansing of the element after avulsion, the 7th semester had the most correct answers, 33.88% of its participants stating they should put the tooth that suffered avulsion under running water.

When re-implantation is not done in the same place where avulsion happened, the students were asked how to condition the

tooth until arrival at the odontological office. The 8th semester students had the highest percentage of correct answers, with 91.66% - condition the element that suffered avulsion in milk, a result shown in Table 2.

The last two years of course had an average of 82.13% correct answers. The 8th semester students had the highest percentage of correct answers, with 91.66%, as they answered that the best way to manipulate the element is through its crown.

Since time is the factor that determines whether a re-implantation will be successful, students of the 8th semester had the highest percentage of correct answers (75%), having stated that the teeth should stay the least time possible outside of its alveolus.

It was found, when it comes to manipulating the tooth that suffered avulsion and how to re-implant it, that the 10th, 8th and 6th semester students had 100% of correct answers, stating they should manipulate it through the crown and align it according to the teeth on both sides during re-implantation.

It is known that after avulsion the teeth touches external and impure places. It must be re-implanted and cleansed with antibiotic and antitetanic products as to avoid infections and contaminations. It was found that students from the last two semesters had the same number of correct answers: 50%.

The last question was regarding the time during which radiographic follow-up is needed after re-implantation. It is known that follow-up should last for at least 5 years, there being an implication that there is no specific time end to this monitoring. The 6th semester

had the highest percentage of right answers - 44.44%, as Table 3 indicates.

Table 2. Intervention in cases of avulsion according to semester, João Pessoa/PB, 2015.

	5th S	6th S	7th S	8th S	9th S	10th S
	%	%	%	%	%	%
Avulsion - teeth out of its alveolus	94.44	100	100	100	97.5	97.67
Important procedure - look for the tooth	52.5	54.56	72.22	66.67	65.22	71.4
Which professionals - all	53.52	66.67	38.88	25	60.98	65.11
Clean the teeth using running water	8.33	5.56	38.88	20.83	10	27.91
Condition the teeth in milk	58.44	88.89	88.88	91.66	87.8	86.36
The tooth must be manipulated through its crown	76.39	66.67	77.78	91.66	80	79.07
As little as possible time out of the alveolus	61.97	50	55.56	75	58.54	72.08
Hold the crown and align it to neighboring teeth	97.22	100	94.44	100	87.5	100
Antibiotics and antitetanic vaccines are necessary	30.14	27.77	33.33	33.33	50	50
Monitoring for indeterminate time	26.38	44.44	33.33	20.83	22.5	16.28
MEAN	55.93	60.45	59.44	62.49	62	66.59

In table 3, it can be noted that the female public had a higher average of correct answers (61.55%), with better performance in the following questions (6 in toto): concept of avulsion, most important procedure, through what structure should the tooth that suffered avulsion be manipulated, time period outside the alveolus without damage, how to re-implant an element that suffered avulsion,

and for how long must radiographic monitoring take place. The male participants, on the other hand, had a higher number of correct answers in the following questions (4 in toto): all professionals must know the correct conducts, how to clean the tooth that suffered avulsion, where to condition the tooth that suffered avulsion, and about the need of antibiotic and antitetanic protection.

Table 3. Knowledge about avulsion according to sex, João Pessoa/PB, 2015.

	Female	Male
	%	%
Avulsion - teeth out of its alveolus	97.9	94.91
Important procedure - look for the tooth	66.31	50
Which professionals - all	50.07	50.37
Clean the teeth using running water	15.3	19.37
Condition the teeth in milk	76.31	82.5
The tooth must be manipulated through its crown	80.17	73.62
As little as possible time out of the alveolus	68.53	46.5
Hold the crown and align it to neighboring teeth	97.92	91.04
Antibiotics and antitetanic vaccine are necessary	33.65	48.45
Monitoring for indeterminate time	29.36	11.66
Mean	61.55%	56.84%
Correct answers	6	4

Table 4 shows variables according to age group. In the first question, regarding the concept of avulsion, the only correct answers were given by those in the age group from 35 to 46 years of age. When it comes to the most important procedures, all age groups responded correctly, but there was no age group who answered it right in its totality.

In the question about which professionals must know the correct odontological conduct when an avulsion happens, the age group from 39 to 42 years of age was the only one to choose the correct answer in its entirety.

In the question about how to clean the teeth that suffered avulsion, all participants opted, but no age group as a whole selected the correct answer. When asked about where to keep the tooth, and which structure should

be used to manipulate the tooth, all participants of the age group from 31 to 46 responded correctly.

When asked about how long a tooth can stay out of its alveolus without suffering damage, no age group selected the right option as a whole, nor did any individual in the age group from 39 to 42 years of age.

Regarding re-implantation, only the group of participants from 27 to 38 years of age answered correctly as a whole. Considering the recommendation of medicines after re-implantation, no age group answered correctly. With regard to the time of radiographic monitoring after re-implantation, only the group of participants from 19 to 38 years of age answered correctly as a whole.

Table 4. Knowledge according to age group, João Pessoa/PB, 2015.

	19 - 22	23 - 26	27 - 30	31 - 34	35 - 38	39 - 42	43 - 46
Avulsion - teeth out of its alveolus					X	X	X
Important procedure - look for the tooth	X	X	X	X	X	X	X
Which professionals - all						X	
Clean the teeth using running water	X	X	X	X	X	X	X
Condition the teeth in milk				X	X	X	X
The tooth must be manipulated through its crown				X	X	X	X
As little as possible time out of the alveolus	X	X	X	X	X		X
Hold the crown and align it to neighboring teeth			X	X	X		
Antibiotics and antitetanic vaccine are necessary	X	X	X	X	X	X	X
Monitoring for indeterminate time	X	X	X	X	X		
TOTAL	5	5	6	8	9	7	7

The mean of correct answers from Odontology students in the last 5 semesters of the course was 6.11, below the minimum average prescribed by the institution: 7. In

spite of that, the theme Avulsion is explored in the subjects Endodontics, Pediatric Surgery and Epidemiology.

The 10th semester had the best performance, a mean of 6.65 correct answers. The 8th semester followed with a mean of 6.24. The 9th semester had an average of 6.20, the 6th, 6.04, and the 7th, 5.94. Finally, the 5th semester had an average of 5.59 correct answers.

When it comes to gender, female participants had 60% of correct answers, while the male participants had 40%.

Regarding age group, the groups from 31 to 34 and from 35 to 38 years of age had the greatest amount of right answers, at least one member of both answering correctly each of the questions.

DISCUSSION

Dental avulsion is characterized by the dislocation of the entire tooth to a place outside its alveolus⁷⁻⁹.

In this study, 209 graduation students (97.21%) knew what the concept of dental avulsion was, a percentage higher than that of another study⁶, which evaluated the knowledge of odontology undergrads from the 1st to the 10th semester in the Federal University of Santa Catarina, and obtained a result of 71.3% regarding the concept of avulsion.

A study¹⁰ found that knowledge about avulsion is lacking during graduation, when students of Physical Education and Nursing are concerned (51.1%)¹⁰.

Another research¹¹ found that 95.5% of the students of Physical Education did not have any type of class on the subject.

A study that assessed the knowledge of teachers from four public schools in Ribeirão Preto - SP, on the subject of dental injuries, found that, although 40.4% of teachers had at some point witnessed an avulsion, only 26.9% of them had any knowledge about it¹².

A research¹³ carried out in Fortaleza - CE, which evaluated the knowledge of dental surgeons and medical urgency health professionals about dental avulsion, found that medical urgency professionals (18.7% - physicians, nurses and auxiliaries) stated to have, at some point in their professional lives, received information about avulsion.

When asked about how they would clean the tooth that suffered avulsion, 169 graduation students (78.9%) stated they would use delicate jets of water or serum, as protocol suggests^{6,13}.

When inquired, 138 students (62.16%) stated that they would use a recipient with milk, a higher percentage of right answers than that of another study⁶, which had 54.7% of right answers, indicating that milk was the most common way to condition the tooth that suffered avulsion; on the other hand, 26.1% of caretakers said they would quickly clean the element, and 21.7% would keep it in a napkin, handkerchief or cotton until getting to the dentist¹⁴.

Another very important fact for the re-implantation to have a higher chance of success is the manipulation of the element that suffered avulsion, that is, never touching the root of the tooth and always manipulating it through the crown¹⁵.

The students were asked about the way to manipulate the tooth, and 169 of them (78.6%) stated that it should only be manipulated by the crown, corroborating an investigation⁶ in which 68% of graduation students stated that the crown was the adequate structure to manipulate the element.

The period of radiographic monitoring lasts for at least 5 years (in many moments, 7 days, 1 days, 30 days, 90 days, and annually). There is no determined date to end, but a minimum period for its conduction. 25.12% answered this question correctly.

CONCLUSION

Considering the variables associated to the semester, sex and age, the results, albeit unsatisfactory, showed that older graduation students, females, and those who are finishing the 10th semester, had better results.

Therefore, it is necessary to improve knowledge, refine techniques, and teach on about avulsion to larger audiences, through lectures, seminaries and congresses, as well as through refreshing and training courses.

REFERENCES

1. Reisine ST, Fertig J, Weber J, Leder S. Impact of dental conditions on patients' quality of life. *Community Dent Oral Epidemiol.* 1989; 17(1):7-10.
2. Rodrigues TLC, Rodrigues FG, Rocha JF. Avulsão dentária: proposta de tratamento e revisão da literatura. *Rev Odontol Univ Cid São Paulo.* 2010; 22(2):147-53.
3. Mota LQ, Targino AGR, Lima MGGC, Farias JFG, Silva ALA, Farias FFG. Estudo do traumatismo dentário em escolares do município de João Pessoa, PB, Brasil. *Pesqui Bras Odontopediatria Clín Integr.* 2011; 11(2):217-22.
4. Antunes D, Antunes D, Chaoubat A, Paula MV, Salgado I, Coelho L. O conhecimento de cirurgiões-dentistas sobre condutas clínicas nas avulsões e reimplantes dentários: estudo piloto. *HU Rev.* 2012; 38(3/4):135-41.
5. Trope M. Clinical management of the avulsed tooth: present strategies and future directions. *Dent Traumatol.* 2002; 18(1):1-11.
6. Marzola C. *Transplantes e reimplantes.* 2 ed. São Paulo-SP: Pancast; 1997.
7. Oliveira PS. Avaliação do nível de conhecimento sobre avulsão dental de alunos do curso de graduação em Odontologia da Universidade Federal de Santa Catarina. [monografia]. Florianópolis (SC): Faculdade de Odontologia. Universidade Federal de Santa Catarina; 2014. 65 p.
8. Silva EDD, Siqueira MDFG, Gomes MC, Clementino MA, Granville-Garcia AF, Ferreira JMS. Conhecimento de alunos do curso de Educação Física sobre avulsão dentária. *Arq Odontol.* 2013; 49(4):177-83.
9. Antunes DP, Gonçalves MA, Antunes DP, Paula MVQ, Leite FPP, Miranda MDGA. Conhecimento dos cirurgiões-dentistas sobre avulsão dentária. *UNOPAR Cient Ciênc Biol Saúde.* 2013; 15(1):5-8.
10. Santos MESM, Palmeira PTDS, Soares DM, Souza CMDA, Maciel WV. Nível de conhecimento dos estudantes de Enfermagem, Educação Física e Odontologia sobre traumatismo dentoalveolar do tipo avulsão: estudo preliminar. *Rev Cir Traumatol Buco-Maxilo-Fac.* 2010; 10(1):95-102.
11. Monteiro JEDS, Sousa RVD, Firmino R, Granville-Garcia AF, Ferreira JMS, Menezes VA. Conhecimento de acadêmicos de Educação Física sobre a avulsão e o reimplante dentário. *RFO UPF.* 2012; 17(2):131-6.
12. Curylofo PA, Lorencetti KT, Silva SRCD. Avaliação do conhecimento de professores sobre avulsão dentária. *Arq Odontol.* 2012; 48(3):175-80.
13. Araújo RBR. Conhecimento dos cirurgiões dentistas e dos profissionais de saúde de emergência médica sobre avulsão dentária no município de Fortaleza. [Dissertação]. Fortaleza (CE): Faculdade de Farmácia, Odontologia e Enfermagem, Universidade Federal do Ceará; 2008. 82 f.
14. Albuquerque YE, Rosell FL, Tagliaferro EPDS, Silva SRCD. Conhecimento de mães sobre os procedimentos de emergência nos casos de avulsão dentária. *RFO UPF.* 2014; 19(2):159-65.
15. Costa LED, Queiroz FDS, Nóbrega CBC, Almeida ERD, Nóbrega WFS, Leite MS. Trauma dentário na infância: avaliação da conduta dos educadores de creches públicas de Patos-PB. *Rev odontol UNESP.* 2014; 43(6):402-8.
16. Welbury RR, Duggal MS, Hosey MT. *Odontopediatria.* 3 ed. Rio de Janeiro: Guanabara; 2007.

CONTRIBUTIONS

Claudia Meira Ribeiro Salviano took part in the conception, design, analysis and interpretation of data. **Carlus Alberto Oliveira Santos** and **Aparecida Tharlla Leite Caldas** conducted data interpretation and performed the writing of the article. **Fernanda de Araújo Trigueiro Campos** and **Eliane Medeiros Serpa** took part in the conception, design, analysis and interpretation of data, as well as in a critical review of the text.

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