ORIGINAL ARTICLE

Dentist perspective on knowledge and practice toward Ellis class 3 tooth fracture: A survey

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ABSTRACT

Traumatic dental injuries otherwise referred to as dental trauma is common in dental practice. The etiology of dental trauma is mostly falls and accidents in case of children and young adults. The treatment provided should be quick and effective which depends on the extent of the dental trauma, the injury might expose enamel, dentine and pulp of the affected teeth. Ellis class 3 involves all the 3 layers mentioned, so there should be quick measures taken. A survey was conducted among dental practitioners to assess their knowledge and practice experience about Ellis class 2 fracture. Detailed questionnaire was created with questions about Ellis class 3 tooth fracture and was circulated to 100 dental practitioners in Chennai, Tamilnadu through google forms. The collected data was analyzed using SPSS software. The knowledge and practice of Ellis class 3 trauma was 85%, the dental practitioners have adequate knowledge about the various clinical, diagnostic aids used and are aware to provide the correct treatment for each case. Based on the responses from the dental practitioners there is not much practice of Ellis class 3 dental trauma in their dental practice. Thus the present study concludes that the knowledge and practice of Ellis class 3 teeth fracture is good among dental practitioners and the various aspects are well known by dentists.

Key words: Dental trauma, diagnostic aid, Ellis class 3, innovative technique, practice, treatment

INTRODUCTION

Traumatic dental injuries otherwise referred to as dental trauma is common in dental practice. It is a physical injury which involves the teeth and the surrounding hard and soft tissues. The etiology of dental trauma is mostly falls and accidents in the case of children and young adults.[1] Some special cases of dental trauma involve the other orofacial structures leading to a more dangerous treatment modality.[2] The treatment provided should be quick and effective which depends on the extent of the dental trauma, the injury might expose enamel, dentin, and pulp of the affected teeth. Hence, the onset of the treatment measures should be rapid to fix the injured teeth.[3] At the basic level, dental trauma was divided into fractures and luxations.[4] However, it came into consideration that WHO classified dental trauma in 1978 giving an elaborate specification on the layers of the teeth affected.[5]

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The official classification was called the Ellis classification of dental trauma. Class 1 involves the enamel of the teeth, class 2 involves the enamel and dentin of the teeth, and class 3 involves the enamel, dentin, and pulp of the teeth, these three were elaborately stated in.[6] Further practice using the classification made treatment of the dental trauma. The classification is still used for a descriptive purpose in dental practice for the treatment of traumatic dental injuries.[7]

Ellis class 3 dental trauma involves the enamel, dentin, and pulp of the tooth and it frequently affects the maxillary anterior teeth of children below the age of 14.[8] It is crucial to provide a rapid treatment in case of Ellis class 3 fracture due to exposed pulp which will lead to a decrease in pulp vitality.[9] Treatment protocols should be given wisely by assessing the division of the tooth fracture. Mostly the treatment protocol with the exposed pulp was pulpotomy and partial pulpotomy was also preferred.[10] Pulpotomy is usually preferred in young adults based on their ability to facilitate the process of apexogenesis.[11] Thus, each classification of dental trauma needs unique treatment for the betterment and quick recovery of the patient. Our team has extensive knowledge and research experience that has translated into high-quality publications.[12-26]

The present study full fills the lack of exploration on the perspective of dentists on Ellis class 3 tooth fracture during their dental practice. The exposure of dentists to frequent dental trauma cases in their practice period is assessed. Hence, the present study aims to check the knowledge, practice, and attitude about Ellis class 3 tooth fracture among dentists.

MATERIALS AND METHODS

Study design

An online survey in the form of a cross-sectional study was conducted among dental practitioners.

Study subjects

The study participants were picked by simple randomized sampling. All the dentists who were willing to participate were included in the study.

Ethical considerations

Returning the filled questionnaire was considered implicit consent as a part of the survey. The institutional clearance certificate number (IHEC/SDC/ENDO/21/276) and ethical approval for the study were obtained from the Institutional Review Board, Saveetha Dental College.

Study methods

Self-administered questionnaire of close-ended questions with demographic details was prepared and distributed among dentists through the online survey "Google Forms".

Table 1: *P* values of the study conducted using Chi-square test

Figure no	*P*
Figure 1	0.444
Figure 2	1.000
Figure 3	0.321
Figure 4	0.306
Figure 5	0.189
Figure 6	0.530

The obtained data were routinely examined for validity, accuracy, consistency, competence, and clarity.

Statistical analysis

Data were examined using the Statistical Package for Social Sciences (SPSS) version 17 (IBM Software Company, USA) was used to analyze the data. To summarize qualitative data, descriptive statistics expressed as percentages were produced. Chi-square analysis was performed. Bar charts, pie charts, and percentage tables were used to display the outcome.

RESULTS

There were 260 responses that were collected and analyzed, among which 37% female and 63% male dentists participated. The results are depicted as pie charts for the graphical analysis, and to obtain *P* value, the Chi-square test was performed. The significance of the study is shown in Table 1. About 65% of the dental practitioners have encountered Ellis class 3 fractures and 35% of them have not encountered Ellis class 3 fractures in their practice. Results in this study show males 75% are more prone to Ellis fracture than females 25%. Among the 75% of the male population, about 40% of them are young school-aged children, which involves mostly the anterior teeth 85% than posterior teeth 15%. Proper diagnosis is important to treat the fractures, so dentists prefer pulp sensibility tests are important to further continue treatment, that being partial pulpotomy 60% than reattachment of fractured teeth 30% and RCT 10%. Dentists accept treating Ellis fractures have a good prognosis of 55%.

DISCUSSION

Figure 2 the most common population of Ellis class 3 fracture, in which 75% of the dental practitioners have encountered Ellis class 3 fracture more in males and the rest 25% of them have encountered Ellis class 3 fracture in females in their practice. Comparative studies reveal similar findings that state the occurrence of Ellis class 3 fracture was common in the male population.[27] The pie chart in Figure 3 represents the practice on the most commonly encountered age group of Ellis class 3 fracture, in where 40% of the dental practitioners have encountered Ellis class 3 fracture in school-aged children, 25% in adolescents, 20% in

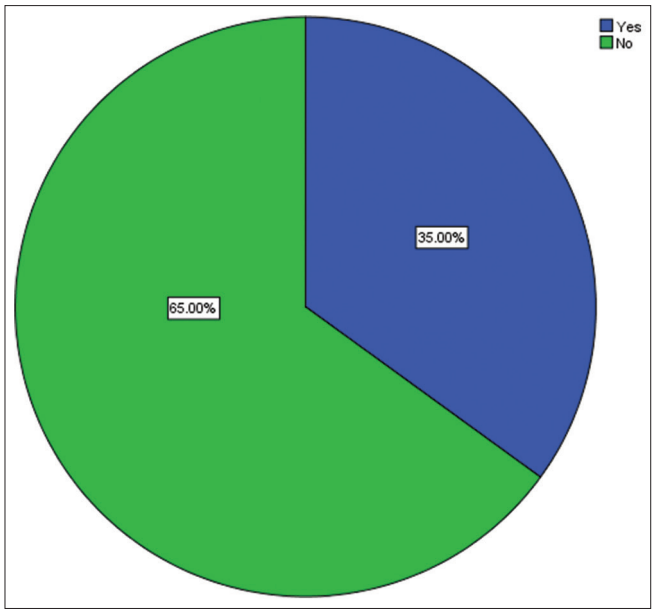

Figure 1: The pie chart represents the practice of Ellis class 3 fracture, in which 65% of the dental practitioners have encountered Ellis class 3 fracture (green) and the rest 35% of them have not encountered Ellis class 3 fracture in their practice (blue)

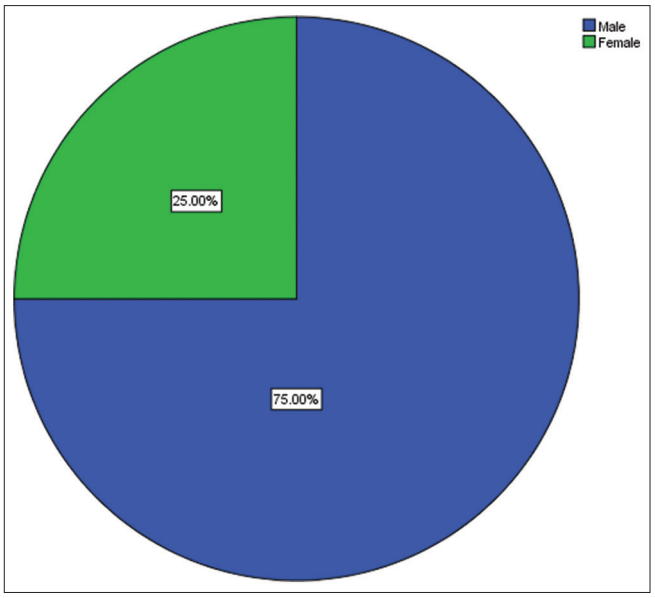

Figure 2: The pie chart represents the practice on the most common population of Ellis class 3 fracture, in which 75% of the dental practitioners have encountered Ellis class 3 fracture more in males (blue) and the rest 25% of them have encountered Ellis class 3 fracture in female in their practice (green)

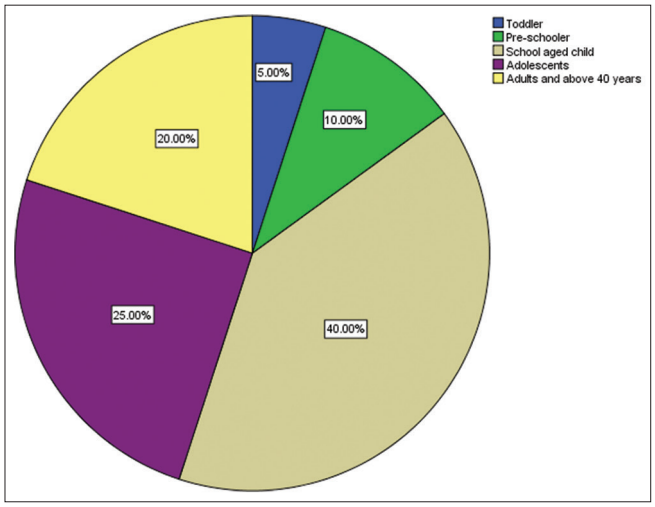

Figure 3: The pie chart represents the practice on most commonly encountered age group of Ellis class 3 fracture, in where 40% of the dental practitioners have encountered Ellis class 3 fracture in school-aged children (beige), 25% in adolescents (purple), 20% in adults (yellow), 10% in preschoolers (green), and the rest 5% in toddlers (blue) their practice

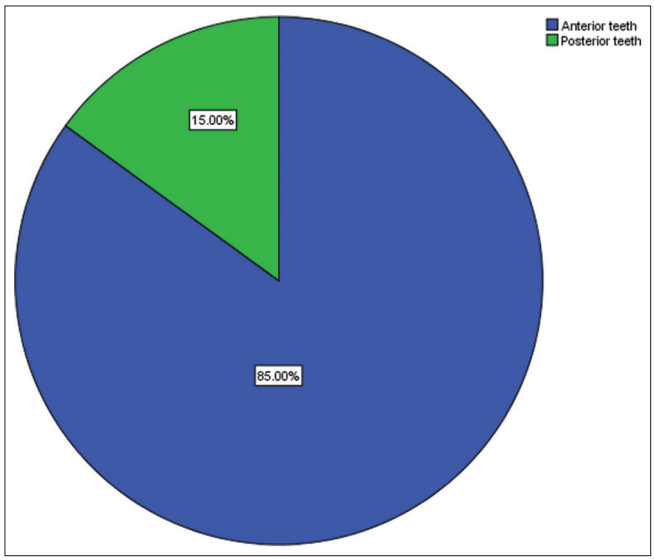

Figure 4: The pie chart represents the practice on the most common teeth involved in Ellis class 3 fracture, in where 85% of the dental practitioners have encountered Ellis class 3 fracture more in anterior teeth (blue) and the rest 15% of them have encountered Ellis class 3 fracture in posterior in their practice (green)

adults, 10% in preschoolers, and the rest 5% in toddlers their practice. Accidents and falls are common in childhood, but extreme cases are seen frequently in school-aged children. A similar study depicts the clumsy attitude of children.[28]

The maxillary anterior teeth are prone to get injured the most. Figure 4 represents the practice on the most common teeth involved in Ellis class 3 fracture, in which 85% of the dental practitioners have encountered Ellis class 3 fracture more in anterior teeth and the rest 15% of them have encountered Ellis class 3 fracture in posterior in their practice. Maxillary central incisors are commonly affected, and maxillary lateral incisors are also injured in some cases.[8-29] Opposing findings reveal maxillary premolars are also affected by tooth fracture.[30] In Figure 5, the knowledge of dental practitioners on the most effectively employed clinical assistance in Ellis class 3 fracture was tested., in

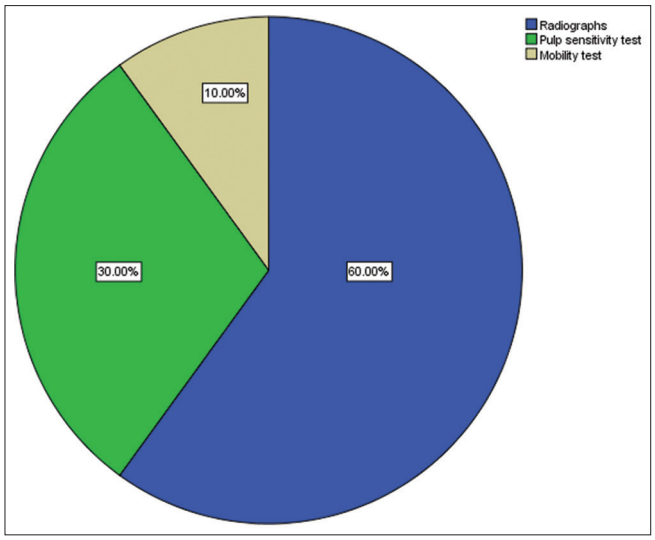

Figure 5: The pie chart represents the knowledge on the most efficiently used clinical aid in Ellis class 3 fracture, in where 60% of the dental practitioners have responded the use of radiographs are efficient (blue), 30% of them responded for pulp sensitivity test (green) and the rest 10% of them have responded mobility test is efficient in Ellis class 3 fracture (beige)

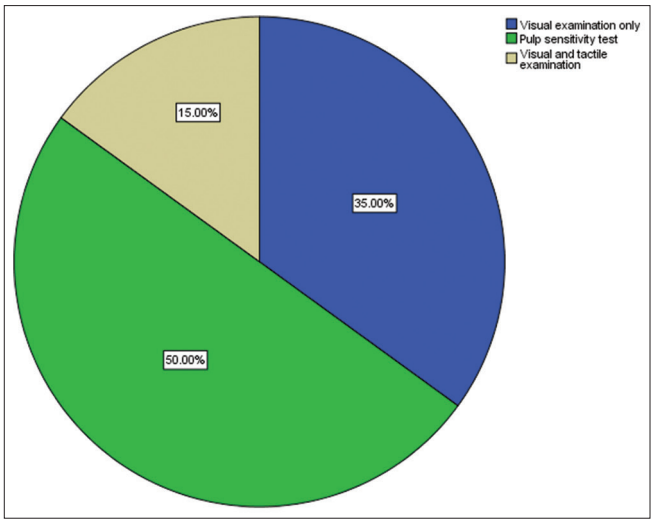

Figure 6: The pie chart represents the knowledge on the most commonly used diagnostic aid in Ellis class 3 fracture, in where 50% of the dental practitioners have responded visual examinations are common (green), 35% of them responded for pulp sensitivity test (blue) and the rest 15% of them have responded visual and tactile test is common in Ellis class 3 fracture (beige)

where 60% of the dental practitioners have responded the use of radiographs is efficient, 30% of them responded for pulp sensitivity test, and the rest 10% of them have responded mobility test is efficient in Ellis class 3 fracture. Figure 6 shows the pie chart which represents the knowledge on Ellis class 3 fractures, the most widely utilized diagnostic aid, in where 50% of the dental practitioners have responded visual examinations are common, 35% of them responded for pulp sensitivity test, and the rest 15% of them have responded visual and tactile test is common in Ellis class 3 fracture. Tooth radiographs are quick and highly efficient in determining the classification of the tooth injured,[31] stated the useful capabilities of these radiographs in case of tooth fractures and other injuries.

Another important clinical and diagnostic aid is the pulp screening test, that is the pulp sensitivity to and pulp vitality test to check whether the underlying pulp has been affected in the tooth fracture.[32] The most preferred treatment with an exposed pulp is pulpotomy, but in cases, where pulpotomy cannot be performed like when the pulp loses its vitality, other treatmentive options are explored. Sometimes, RCT can be expensive, in those cases where the pulp is vital and slightly affected pulpotomy procedures are preferred.[33]

The sample population of only 100 dental practitioners was one of the study's drawbacks. The comments gathered may be skewed due to a lack of understanding and experience with the Ellis class 3 tooth fracture. Slight discrepancies and inaccuracies in the study may occur due to the participant's varying levels of comprehension ability.

According to the present study, the knowledge and practice about Ellis class 3 tooth fracture, their clinical and diagnostic aids used were assessed and were found to be radiographs commonly used and pulp vitality test to identify whether there is pulpal exposure. Most of them preferred pulpotomy as a treatment for exposed pulp in children. Further studies are needed to create more awareness about the various other aspects of Ellis class 3 fracture and other sourcing fields. More studies should be conducted on exploring this topic of knowledge to gain information about it as it plays a major role in the aspects of any dental expertise.

CONCLUSION

Thus, the present study concludes that the knowledge and practice of Ellis class 3 teeth fracture is good among dental practitioners and the various aspects are well known by dentists. Dental practitioners are aware of the importance of different aids used to provide the correct treatment to patients based on different dental traumas. Further studies are required to explore more on the same to gain knowledge about the other modalities and possibilities of treating dental trauma.

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Conflicts of interest

There are no conflicts of interest.

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