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FREQUENCY OF CRACKED TOOTH AMONG PATIENTS ATTENDING TERTIARY DENTAL CARE HOSPITAL JAMSHORO

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ABSTRACT

Objective: To determine frequency of cracked tooth among patients attending tertiary dental care hospital Jamshoro.

Material and Methods: This descriptive study was carried out in Liaquat University of Medical & Health Sciences (LUMHS), Jamshoro. Patient history was taken including demographic data, gender, age, residential status (urban or rural) and severity of pain, duration of pain, complain of pain, cracks in teeth were seen by transillumination using fiber optic light and was marked in proforma.

Results: Males and females were 62% and 38% respectively. In current study, the mean age of participants was 36.58 ± 11.09 years. Mean disease duration was 1.87 ± 1.03 months and 60% had extent of illness greater than 1 month. Of these 93 participants, 64% had moderate pain while 36% had severe pain. Cracked Tooth was observed in 17% participants.

Conclusion: Increased incidence of cracked tooth was observed in current investigation in patients attending dental outdoor. Cracked tooth were significantly associated with gender.

Keywords: Cracked Tooth, Fracture, Frequency, Pain severity.

Introduction

Nowadays, dental caries and periodontal disease are the two most common causes of tooth loss, with tooth cracks coming in third[1]. An incomplete critical tooth fracture that affects the dentine, enamel, and sometimes the pulp is referred to as a cracked tooth[1]. Cracks on the crown and/or root can occur in both horizontal and vertical directions, and they can come from either the coronal tooth structure or the root[1-3]. Tooth cracks can be classified into five categories by the American Association of Endodontists: split teeth, craze lines, fractured cusps, cracked teeth, and vertical root fractures[4, 5]. The frequency is highest in older persons and nearly equal in both sexes. It primarily affects posterior teeth, with a preference for mandibular teeth[3-7].

The reasons behind cracked teeth is complex, with 2 main predisposing factors: iatrogenic causes (such as chewing betel nuts, using rotary instruments, preparing cavities, and the cavity depth and width) and natural features (like the lingual cusp lingual inclination of the mandibular molars and the maxillary premolar steep cusp/fossa, abrasion, clenching, bruxism, attrition, and extensive attrition) [3,8,9,13]. A patient's medical history, a clinical examination, exploratory excavation, a biting test, trans-illumination, and radiography are all necessary for diagnosing a broken tooth[6]. Early diagnosis and treatment of a fractured tooth improves the prognosis since it can stop the crack from getting worse. Depending on the direction and depth of the fracture, there are many treatment options that may include restoration[3,10-13],

Since no local data is available, the objective of current study is to ascertain the frequency of broken teeth. Because of our modern lifestyles, many people have cracked teeth. These can cause severe discomfort and issues for patients, and because it can be challenging to read cracks, dentists frequently misdiagnose patients. Tooth loss is often the effect of this. This study is to assist in the design of techniques for routinely screening high-risk populations, enabling timely intervention and enhancing the quality of life for these patients. This will be accomplished by estimating the prevalence of fractured teeth.

Materials and Methods

This Descriptive Cross-sectional study was carried out in the Operative Dentistry Department, Institute of Dentistry, Liaquat University of Medical & Health Sciences (LUMHS), Jamshoro from 05-10-2019 to 04-04-2020.

Raosoft sample size calculator was used to calculate the sample size by taking statistic for frequency of crack tooth as 13.4%[4] and margin of error 7%, the sample size calculated was 93. Non probability consecutive sampling technique was utilized patient selection. Inclusion criteria were all teeth including upper and lower Jaw. Adults of both genders having age form 16-60 years. Symptomatic patients with complain of pain (mild to severe) of minimum one week. Patient with the history of hot and cold sensitivity. Exclusion criteria were known diseases like amelogenesis imperfecta. Cracked teeth due to maxillofacial trauma. Fractured teeth.

DATA COLLECTION:

Approval was sought from ERB of LUMHS, Jamshoro. The patient was informed and signed an informed consent document for clinical research. Patient history was taken including demographic data, gender, age, residential status (urban or rural) and severity of pain, duration of pain, complain of pain, cracks in teeth was seen by transillumination using fiber optic light and was marked in the proforma.

Analysis of the data was done by SPSS V.21.0. For quantitative variables i.e., number of involved teeth, age, and complain duration, mean and standard deviation were calculated. Frequency and percentage were calculated for the qualitative variable for involved tooth, severity of pain, gender, and residence (i.e., urban/rural). The Chi square test was applied between genders. The ≤ 0.05 value was considered as significant.

Results

Current study consists of 93 participants according to the inclusion criteria. Among all participants, 62% were males while 38% were females. (Table No. 1).

The mean age of participants was 36.58 ± 11.09 years, with maximum and minimum age were 60 and 21 years, respectively. In male participants, the mean age was 36.66 ± 12.73 years while that female participants was 36.46 ± 7.79 years (p=0.934). The investigation has shown that most of the participants were above 40 years of age, i.e. 66% (Table No. 1).

Among all participants, the percentage for rural and urban residence was 41% and 59%, respectively. Poor socioeconomic status was noted in 37% while 63% were middle income. Mean disease duration was 1.87 ± 1.03 months and 60% had duration of illness more than 1 month. (Table No. 02). Of these 93 study cases, 62% had moderate pain while 38% had severe pain. (Table No. 02).

Cracked Tooth was noted in 17% and it was stratified with regards to gender. (Table No. 03).

Table 1: Descriptive statistics of demographic variables (n = 93)

Variable	Frequency	Percentage
Gender		
Male	58	62.4
Female	35	37.6
Age Distribution		
Age upto 40 years	61	65.6
Age above 40 years	32	34.4
Residential Status		
Urban	38	40.9
Rural	55	59.1
Socioeconomic status		
Poor income	34	36.6
Middle Income	59	63.4

Table 2: Descriptive statistics of pain duration, severity and cracked tooth syndrome (n = 93)

Variable	Frequency	Percentage
Disease duration among study cases		
Up to 1 month	37	39.8
More than 1 month	56	60.2
Pain severity among study cases		
Moderate	58	62.4
Severe	35	37.6
Distribution of cracked tooth among study cases		
Yes	16	17.2
No	77	82.8

Table 3: Stratification of cracked tooth with regards to gender (n = 93)

Gender	Cracked Tooth		P – value
	Yes (n=16)	No (n=77)	
Male (n=58)	04	54	0.002
Female (n=35)	12	23	
Total	93		

Discussion

An incomplete fracture that begins at the crown and spreads subgingivally, usually in a mesiodistal orientation, is referred to as a cracked tooth. The fracture could stay inside the crown or spread outward to the proximal root. As a crack advances apically, it usually results in periapical and pulpal pathosis because it is more centralized and apical than a cracked cusp. Ellis describes a crack as "a fracture plane of unknown depth and direction passing through the tooth structure that may progress to communicate with the pulp and periodontal ligament[16]."

Acute pain during chewing and transient pain when exposed to cold can result from cracked teeth. Cracks often do not exhibit discernible cusp movement with an explorer and are linked to normal to deep periodontal probing. Teeth may have restorations, and in order to provide a definitive diagnosis of the crack, it may be required to remove any existing restoration. Dentinal fluid flow brought on by movement at the fracture sites is the source of pain experienced while loading on the cusp[18].

The degree of the crack and the length of the symptoms determine the pulpal and periapical diagnoses[14]. Microleakage can cause the pulp of a broken tooth to inflame, which can cause thermal sensitivity and perhaps lead to irreparable pulpitis. When the fissure widens and reveals the pulp, there is severe pulp and periapical pathosis[8, 11,12,15,19].

The current investigation consists of 93 participants, with male predominance (62%) as compared to females (38%). Yu et al. conducted a study in China which stated a predominance of females (59.5%), which is not agreement with current results of the our study.[20] Though, our results are unlike findings from investigation conduceted by Siddiqui et al. who described equivalent gender distribution.[21] Likewise, Mafla et al. testified increased female prevalence (75%) which is also not in agreement with the results of current investigation.[22]

In our study, the mean age of the participants was 36.58 ± 11.09 years. The results have highlighted that most of the participants i.e. 66 % were of age more than 40 years. Similar findings were observed in a research by Ye et al.[20] Additionally, the current results showed most than half participants (e.g., 55%), were aged between 26-50 years. Similar findings were highlighted by Siddiqui et al.[21]

The finding of mean disease duration of this study was in compliance with study results of Pradeepkumar AR and Subbiya A. Cracked Tooth was noted in 17% which is also comparable with the study results of Pradeepkumar AR and and Subbiya A who has reported a prevalence of 13.4% of Vertical root fracture after reviewing 460 endodontically treated teeth for 3 years[4].

Conclusion

Increased frequency of cracked tooth was observed among patients visiting dental outdoor.

Cracked tooth were significantly associated with gender. All clinicians treating such patients should anticipate cracked tooth for early diagnosis and timely management to enhance quality of life of such patients.

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