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Prevalence of Pulp Polyp, Fluorosis and Malocclusion in a Known Population

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ABSTRACT

Background: This study was conducted to assess the Prevalence of Pulp Polyp, Fluorosis and Malocclusion in a Known Population.

Material and methods: This study comprised of total 100 participants. The subjects were explained about the study procedure and they were asked to give consent. All the subjects gave consent and hence all the subjects had been included in the study. The prevalence of pulp polyp, fluorosis and malocclusion was assessed. The type of malocclusion was also assessed in the subjects who had malocclusion and the findings were tabulated. Statistical analysis was conducted using SPSS software.

Results: In this study, there were total 100 subjects of which 36 subjects had pulp polyp, 35 subjects had fluorosis and 29 subjects had malocclusion. Out of 29 cases of malocclusion, 3 cases were of type I malocclusion, 19 cases were of type II malocclusion and 7 cases were of type III malocclusion. There were total 57 males and 43 females in this study, 19 males and 17 females had pulp polyp. 20 males and 15 females had fluorosis. 18 males and 11 females had malocclusion.

Conclusion: From the findings of this study, it can be concluded that the prevalence of pulp polyp, fluorosis and malocclusion was 36%, 35% and 29%, respectively.

Keywords: *Pulp polyp, Fluorosis, Malocclusion, Prevalence*

1. INTRODUCTION

Endemic fluorosis, caused by elevated fluoride levels in groundwater, poses a significant public health challenge in India. Current data indicate that 15 states in India are affected by fluorosis (with fluoride concentrations in drinking water exceeding 1.5 mg/l), among which five states fall under category III (where more than 50% of districts are impacted), including Gujarat.[1]

Additionally, the Assam region in North East India has been identified as an area affected by fluoride. The World Health Organization (WHO) has established a maximum allowable fluoride concentration in drinking water at 1.5 mg/l.[3] Consequently, the Bureau of Indian Standards has set the permissible limit for fluoride in India at 1.0 mg/l, accompanied by the recommendation that “lesser is better”. Furthermore, the WHO's Oral Health Report (2003)[5] identifies fluoride as the most effective agent for preventing dental caries.

Dental pulp is classified as an ‘ecto-mesenchyme’ tissue, originating from the initial interaction between mesenchyme and the neural crest. While dental pulp stem cells (DPSCs) exhibit similarities with BM-MSCs, they appear to be more inclined

towards odontogenic development as opposed to osteogenic pathways.[6]

Numerous efforts have been undertaken to extract stem cells from dental tissues beyond adult pulp, such as from deciduous teeth, periodontal ligament, dental follicle, and apical papilla.[7,8] However, there have been limited studies focusing on the assessment of stem cells in dental tissues impacted by pathological conditions. All of these investigations have concentrated on the presence of stem cells within normal tissues that are influenced by inflammation.

This study was conducted to assess the Prevalence of Pulp Polyp, Fluorosis and Malocclusion in a Known Population

2. MATERIAL AND METHODS

This study comprised of total 100 participants. The subjects were explained about the study procedure and they were asked to give consent. All the subjects gave consent and hence all the subjects had been included in the study. The prevalence of pulp polyp, fluorosis and malocclusion was assessed. The type of malocclusion was also assessed in the subjects who had malocclusion and the findings were tabulated. Statistical analysis was conducted using SPSS software.

3. RESULTS

Table 1: Prevalence of Pulp polyp, fluorosis and malocclusion

Condition	Absent	Present
Pulp polyp	36	36
Fluorosis	35	35
Malocclusion	29	29
Total	100	100

In this study, there were total 100 subjects of which 36 subjects had pulp polyp, 35 subjects had fluorosis and 29 subjects had malocclusion.

Table 2: Type of malocclusion

Type of malocclusion	Number of cases
Type I	3
Type II	19
Type III	7
Total	29

Out of 29 cases of malocclusion, 3 cases were of type I malocclusion, 19 cases were of type II malocclusion and 7 cases were of type III malocclusion.

Table 3: Gender-wise distribution of subjects

Groups	Number of males	Number of females	Total
Group 1(Pulp polyp)	19	17	36
Group 2(Fluorosis)	20	15	35
Group 3(Malocclusion)	18	11	29
Total	57	43	100

There were total 57 males and 43 females in this study, 19 males and 17 females had pulp polyp. 20 males and 15 females had fluorosis. 18 males and 11 females had malocclusion.

4. DISCUSSION

Orthodontics aims to enhance both aesthetic and functional aspects through mechanical interventions that reposition teeth into a more optimal alignment. The determination of the ideal dental alignment for each individual is influenced by various factors, including the facial profile, overall facial balance, and aesthetic considerations.[9]

Beyond addressing facial issues, orthodontics also strives to improve the interaction between the maxillary and mandibular teeth during occlusion and functional activities. The biological and functional synchronization of how teeth align and interact is referred to as occlusion. Over time, a general agreement has been established regarding the characteristics that define an ideal or normal occlusion.[10]

Nevertheless, it is rare to encounter individuals who naturally possess the attributes of an ideal occlusion without undergoing orthodontic intervention. Variations in tooth morphology, including shape and size, as well as the sagittal positioning of the maxilla and mandible, result in a wide array of possible occlusions that a person may exhibit. Only 8% of malocclusion cases have a known origin, while the remaining 92% are of unknown etiology, likely stemming from a combination of environmental and genetic influences.[11]

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In this study, there were total 100 subjects of which 36 subjects had pulp polyp, 35 subjects had fluorosis and 29 subjects had malocclusion. Out of 29 cases of malocclusion, 3 cases were of type I malocclusion, 19 cases were of type II malocclusion and 7 cases were of type III malocclusion. There were total 57 males and 43 females in this study, 19 males and 17 females had pulp polyp. 20 males and 15 females had fluorosis. 18 males and 11 females had malocclusion.

Kotecha PV et al.[12] This study was carried out to measure and compare the prevalence of dental fluorosis and dental caries in the population residing in high and normal level of fluoride in their drinking water in Vadodara district, Gujarat, India. A cross-sectional study was conducted in Vadodara district, six of the 261 villages with high fluoride level and five of 1490 with normal fluoride level in drinking water were selected. The data collection was made by house-to-house visits twice during the study period. The dental fluorosis prevalence in high fluoride area was 59.31 per cent while in normal fluoride area it was 39.21 per cent. The prevalence of dental caries in high fluoride area was 39.53 per cent and in normal fluoride area was 48.21 per cent with CI 6.16 to 11.18. Dental fluorosis prevalence was more among males as compared to females. Highest prevalence of dental fluorosis was seen in 12-24 yr age group. The risk of dental fluorosis was higher in the areas showing more fluoride content in drinking water and to a lesser degree of dental caries in the same area. High fluoride content is a risk factor for dental fluorosis and problem of dental fluorosis increased with passage of time suggesting that the fluoride content in the water has perhaps increased over time. Longitudinal studies should be conducted to confirm the findings.

Das UM et al.[13] The objective of this study was to determine the prevalence of malocclusion among school children of Bangalore city, India during their mixed dentition period. The sample consisted of 745 children (388 males and 357 females) in the age group of 8-12 years randomly selected from twelve different schools in Bangalore city. The subjects were randomly selected, and none had received previous orthodontic treatment. Occlusal anteroposterior relationships were assessed based on the Angle classification. Also various malocclusion features associated with class I malocclusion according to Dewey's modification of Angle's classification were assessed. The results showed that about 71% of the subjects had malocclusion. Class I malocclusion constituted the major proportion of malocclusion which was found in 62% of the studied population. No significant difference was found between boys and girls neither in the overall prevalence of malocclusion nor in various forms of malocclusion. Crowded incisors were found to be most common finding in subjects with class I malocclusion. A number of studies have been conducted to determine the prevalence of malocclusion among Indian children and it has been reported that the results range from a value as low as 19.6% (Miglani DC, Chennai 1961) to as high as 90% (Sidhu SS, Delhi). This varied range emphasizes the need to standardize criteria for assessing malocclusion.

Kumar P et al.[14] This study aimed to use radiography to determine the prevalence of pulp stones in the population of Rajasthan and to evaluate the relationship between pulp stones and tooth status, type, age, and gender. The radiograph data record files collected from the Department of Dentistry, All India Institute of Medical Sciences, Jodhpur, Rajasthan, from September 2018 to October 2019, had a total of 9918 diagnostic quality intraoral periapical radiographs. One examiner examined all the radiographs to identify pulp stones and associated factors. Pearson chi-square test of significance was used for statistical analysis. On screening, a total of 889 intraoral periapical radiographs were found to have pulp stones. The presence of pulp stones was significantly higher in mandibular molars (68%) and was more common in the age group of 31-45 years (37%), followed by 13-29 years (35%). Maximum of pulp stones were of attached type (64%) than free pulp stones. The prevalence of pulp stones in the population of Rajasthan studied was 8.9%, which was much lower than the reported prevalence in the literature. Pulp stones are predominantly attached and found significantly more often in mandibular molars in the age group of 31-44 years.

5. CONCLUSION

From the findings of this study, it can be concluded that the prevalence of pulp polyp, fluorosis and malocclusion was 36%, 35% and 29%, respectively

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