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Gender, Age And Demographic Related Data In Patients Presenting With Fluorosis For Vital Bleaching In University Setup

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ABSTRACT:

Introduction:

Dental fluorosis is the developmental disturbance of enamel that results from ingestion of high amounts of fluoride during tooth mineralization. Drinking water remains the main source of fluoride. Other sources of fluoride are infant formula, vegetables ,canned fish,sea foods,improper utilisation of fluoride toothpaste in children.

Aim:

The present study was conducted to analyse gender,age and demographic related data in patients presenting with fluorosis for vital bleaching in university.

Materials and method:

A total of 84 patients were retrospectively reviewed from June 2020 March 2021 and included in the study. Demographic details like age, gender and dental status of all the patients were recorded. All the data were entered in the excel sheet. Data was analysed by SPSS software. Chi square test was used to find association between the study variables, where P<0.05 was considered statistically significant.

Results:

A total of 84 patients of the 10 to 65 year age group were examined to find out the demographic related data of fluorosis patients undergoing vital bleaching. Among 84 study subjects, 75% were males and 25% were females and the frequency distribution of the most commonly affected age group by fluorosis belonged to 10 to 25 years of age. .The prevalence of fluorosis patients undergoing vital bleaching was more in 10 to 25 years among all age groups with p value = 0.001 which is statistically significant.

Conclusion:

The present retrospective analysis indicates vital bleaching was a more favored line of treatment in fluorosis patients. More commonly treated in males than in females and severe fluorosis was more prevalent among the 10 to 25 years age groups. Upper arch and sextant 2 were the most frequently done vital bleaching sites.

Keywords: Vital bleaching, fluorosis, demographic data, Dental innovation

INTRODUCTION:

Fluoride is an essential element, beneficial for the development of bone and teeth [1].World Health Organisation and Indian Council of Medical Research described the drinking water quality guideline value for fluoride is 1.5 milligram per litre. intake of large quantities of fluoride through drinking water than the optimal safe level is the primary reason for prevalence of dental fluorosis in various parts of the world. Fluorosis is a slow progressive, crippling disease, which affects every organ in the body and results in health complaints along with overlapping manifestations with several other diseases [2]. Dental fluorosis is characterized by lustreless, opaque white patches in the enamel, which may become stained yellow to dark brown, and in more severe cases causes marked pitting and brittleness of teeth. Dental fluorosis is seen as sensitive to even small changes in fluoride exposure from drinking water , and this sensitivity is greater at young age than at an older age. Fluoride is present in water and has almost completely dissociated fluoride ions from the parent compounds occurring in the natural or in the form of added salts[3]. Dental fluorosis is the hypomineralization of tooth enamel resulting from chronic, excessive ingestion of fluoride during tooth development, particularly during the pre-eruptive enamel maturation period [4]. Dental fluorosis of primary teeth is uncommon as primary tooth development occurs predominantly in IntraUterine Life; however, if dental fluorosis does occur in primary teeth, it is most commonly observed in the gingival third of the second primary molars. The development of the anterior permanent tooth bud, in general, begins at approximately 5th month IUL. Therefore, this is a critical time to avoid excess fluoride exposure for the aesthetic appearance of the anterior teeth [5].The degree of dental fluorosis severity is dose dependent. Mild dental fluorosis generally appears as barely visible opacities at the incisal or cuspal edges of teeth; [12]it can also appear as white striations or lacy markings following the enamel perikymata.[6] Severe dental fluorosis can have a heavily stained, pitted, friable enamel appearance.Generally, the opacities associated with fluoride exposure are symmetrical on contralateral teeth, although post-eruptive staining and attrition of friable enamel associated with severe fluorosis can result in dissimilar appearances of contralateral teeth[7].

Many of the previous studies, from various parts of the world, reported that the development of dental fluorosis even if the people consuming drinking water with fluoride less than 1 milligram per litre, which implies that the optimal fluoride dose level in drinking order may vary with various features like local climatic conditions, methods of food processing and cooking, amount of food and water intake and its fluoride and other nutrients level and dietary habits of the community as a whole.[8] The prevalence of dental fluorosis in humanis reported from 22 states of India, affecting more than 40 million people [9].

It is important that Dentists handle the peroxides with the essential knowledge, because it is demonstrated that satisfactory final results of this technique depend on the correct diagnosis of stains, management of the substrates (enamel and dentin) and as well sensitivity. Both the bleaching technique and abrasion procedures could be employed only for mild to moderate grade fluorosis [10,11]. Most of the time, a combined treatment regimen of bleaching and abrasion procedures is employed to produce the desired aesthetic result in patients with yellowish discoloration due to fluorosis. Vital bleaching is more successful for fluorosis in younger patients presenting with opaque to orange colour stains rather than older patients with darker type of brown stains. Composite veneers are used when time restriction is given by the patient[12]. There are various invasive therapies that have been used to correct the discolouration of teeth such as crowning or the placement of veneers but whitening of teeth using a

bleaching technique is a non-invasive alternative which also conserves dental hard tissue [13–15]. Vital teeth are whitened by nightguard vital bleaching technique(NGVB) utilizing carbamide peroxide gels which acts as the bleaching medium.

Hydrogen and carbamide peroxides have been successfully used for many years; in the past century the dental bleaching technique suffered several changes and almost 10 years before the new millennium the technique was finally recognized by the international agencies of regulation[12].
Our team has extensive knowledge and research experience that has translate into high quality publications[16–25],[26–29],[30–34] [35]

Hence, the present study conducted to analyse gender,age and demographic related data in patients presenting with fluorosis for vital bleaching in university setup

MATERIALS AND METHOD:
The study was designed as a retrospective cross clinical study analysing all the vital bleaching patients with fluorosis. The data of 86000 patient records were reviewed and analysed between June 2020 and March 2021 from which 84 vital bleaching patients with fluorosis were identified. The records with Incomplete medical documentation, replication of results, improper clinical photographs or diagnosis were excluded from the study.

Inclusion criteria:

- Patients who underwent vital bleaching
- 10 to 65 year age grouped patients
- Vital bleaching due to fluorosis

Exclusion criteria:

- Patients below the age of 10 years
- Non vital bleaching

Data collection: Patient details like age, gender, site, fluorosis grade were recorded. The collected Data was described as frequency distribution and percentile. Statistical analysis was performed using Statistical Package for the Social Sciences ,version 22(SPSS).Descriptive analysis was based on quantitative variables and frequencies for categorical variables.A Chi square test was applied to determine the significance between groups. p value< 0.05 was considered to be statistically significant with a confidence interval of 95%.

RESULTS:
A total of 84 patients of the 10 to 65 year age group were examined to find out the demographic related data of fluorosis patients undergoing vital bleaching. Among 84 study subjects, 75% were males and 25% were females as illustrated in figure 1. Figure 2 depicts the frequency distribution of the most commonly affected age group by fluorosis belonging to 10 to 25 years of age. Figure 3 infers that 85.71% patients with severe fluorosis underwent vital bleaching. The mean age group of all the participants was found to be 20.75±1.935. Upper arch and sextant 2 were the most frequently replaced sites with 54.76% and 33.33% respectively (figure 4). The prevalence of fluorosis patients undergoing vital bleaching was more in 10 to 25 years among all age groups with p value = 0.001 which is statistically significant (Figure 6).

DISCUSSION:

Bleaching is a conservative method for restoring the colour of the intrinsic discoloration of teeth[36]. In Vital bleaching, dentist prescribed and home applied bleaching are the two most commonly utilized whitening procedures. In-office bleaching uses different concentrations of a hydrogen peroxide (15-38%) formulation directly on the tooth surface [37]. McInnes solution has been successfully used for treating fluorosis. Advantage of this procedure is that it is relatively non-invasive compared to other restorative procedures and also it could be done with minimum chair side time[10,38]. The main disadvantage of this procedure is the postoperative sensitivity it produces. Vital bleaching is more successful for fluorosis in younger patients presenting with opaque to orange colour stains[10].

Among a total of 84 patients, the most commonly affected age group was 66.67% belonging to 10 to 25 years of age followed by 25 to 40 years of age , 40 to 55years of age and above 55 years of age . The study results are in concordance with the study done byAjayi et al[15], in which patients aged 21 to 25 years reported that the prevalence of fluorosis was 63.2%. There is a slight Male prediction of dental fluorosis than females.males being 75% and females being 25%. Severe dental fluorosis is more prevalent in males, whereas moderate dental fluorosis in females. Mild form of dental fluorosis is seen more in males compared to females. In both genders, the younger age that is 10 to 25 years, is more prone to dental fluorosis compared to elderly group that is above 55 years[10] There is a peak of incidence of dental fluorosis in 10 to 25 years in males. This result of the study has been supported by Apurva K Srivastava, et al who stated that prevalence of dental fluorosis is more in young age[39].Abid Mohsin,et al(2014) in their study observed that males have high prevalence of dental fluorosis compared to females[40].Dental fluorosis is a not only a cosmetic problem that impairs social well-being but also affects the oral health-related quality of life[41–44]. The maintenance of oral health requires an informed public as well as self-awareness of the disease to motivate the sufferer into playing a role in the prevention and control of the disease through self-care and professional assistance[45].

Limitations & Future Scope :

The limitation of the study is that it was a single centered study with small sample size and doesn't represent ethnic groups. The future scope of the study focuses on a study for a large population. Preventive measures need to be taken in future to decrease fluorosis.

CONCLUSION:

The present retrospective analysis indicates vital bleaching was a more favored line of treatment in fluorosis patients. More commonly treated in males than in females and severe fluorosis was more prevalent among the 10 to 25 years age groups. Upper arch and sextant 2 were the most frequently done vital bleaching sites. Whereas, vital bleaching has some advantages and disadvantages, hence it is in the interest of both patient and dentist that the dentist be aware of all the treatment modalities available to us. Newer treatment options which combine these various treatment modalities are emerging for treating fluorosis such as laser assisted bleaching, abrasion employing abrasive pastes, veneers and crowns.

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CONFLICT OF INTEREST: None

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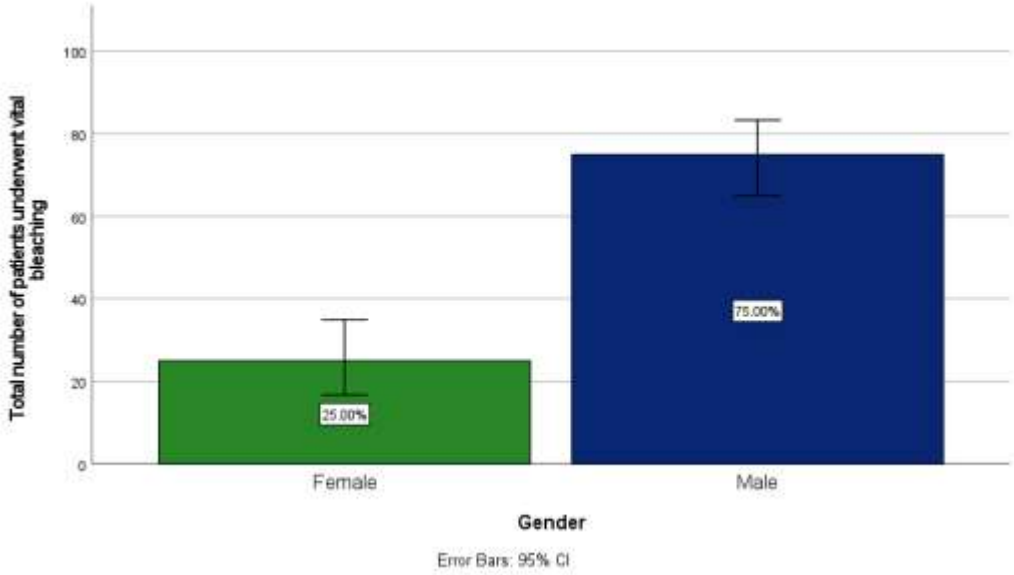

Figure 1: Shows the distribution of the population based on gender . The X axis depicts the gender -Male and Female and Y axis is the percentage of vital bleaching patients. Male patients were predominant with 75%.

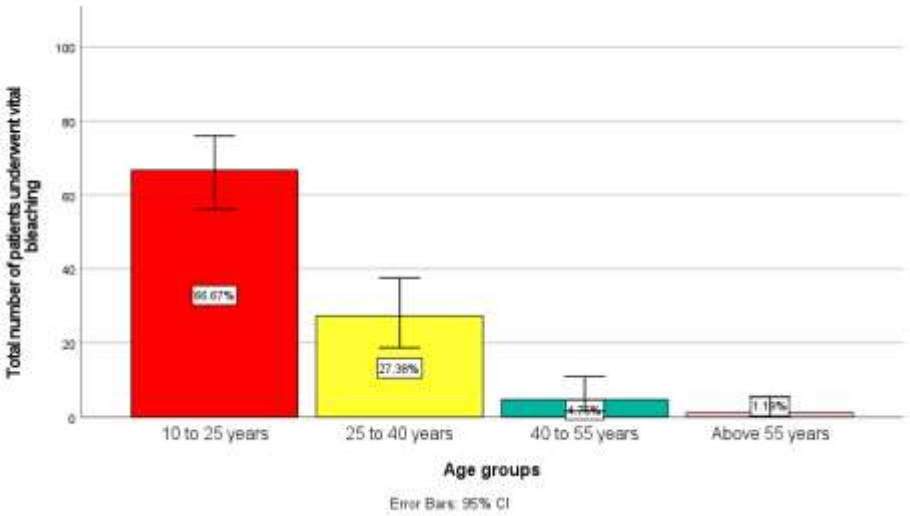

Figure 2: Shows the distribution of the population based on age . The X axis depicts the age group-10 to 25 years, 25 to 40 years, 40 to 55 years and above 55 years and Y axis is the percentage of the patients with fluorosis who underwent vital bleaching. There were higher patients with fluorosis among 10 to 25 years with 66.67%.

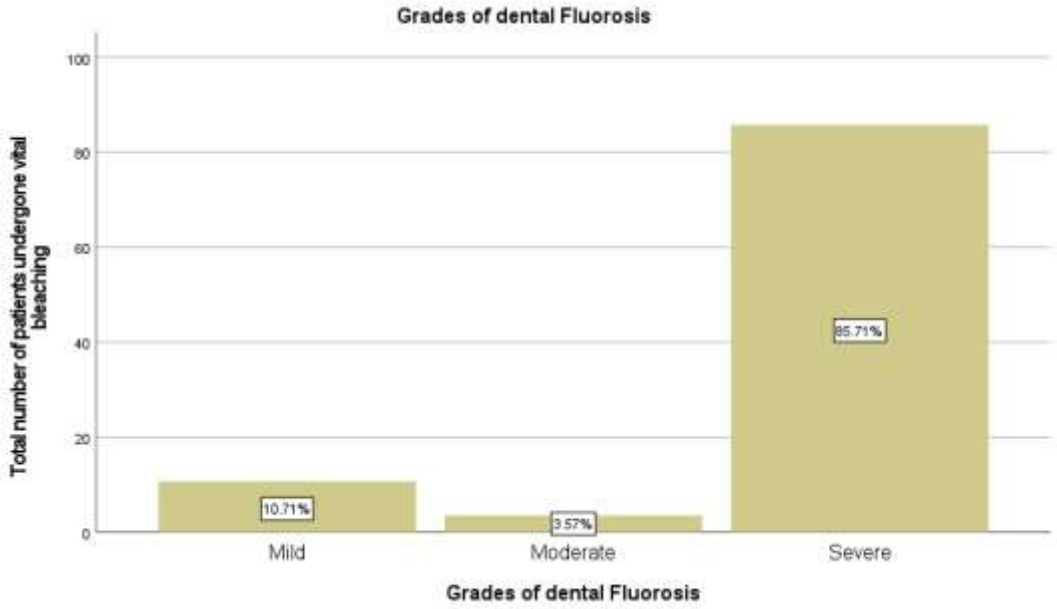

Figure 3: Bar graph represents the frequency of the grades of dental fluorosis . The X axis depicts the grades of dental fluorosis such as mild,moderate and severe and Y axis is the percentage of the patients with fluorosis who underwent vital bleaching. 85.71% of patients with severe fluorosis underwent vital bleaching.

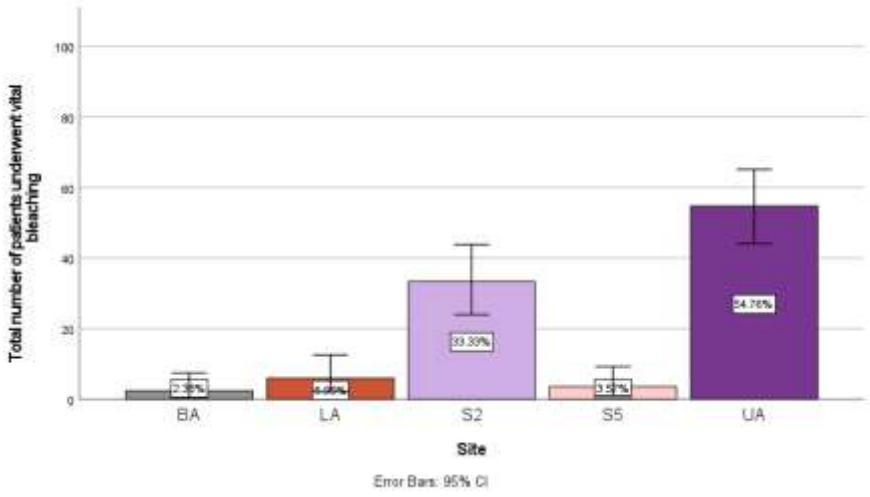

Figure 4: Bar graph shows the distribution of the fluoride based on the site .The X axis represents the site and the Y axis is the percentage of the patients with fluorosis who underwent vital bleaching. . Upper arch and sextant 2 were the most frequently replaced sites with 54.76% and 33.33% respectively.

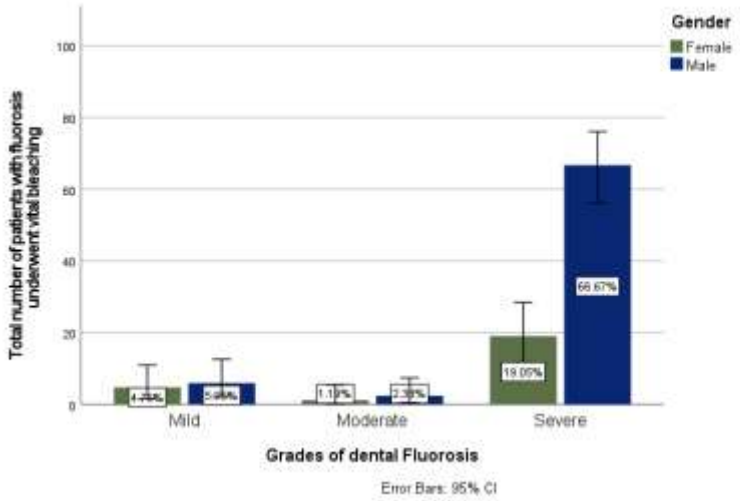

Figure 5: Bar graph showing the association between gender and grade of fluorosis . The X axis depicts the grades of dental fluorosis such as mild,moderate and severe and Y axis is the percentage of the patients with fluorosis who underwent vital bleaching. Blue represents females and green represents males. Severe fluorosis patients was the most common type of fluorosis associated with males (43.9%). This was found to be statistically significant. Pearson Chi square,p= 0.02(P<0.05,statistically significant).

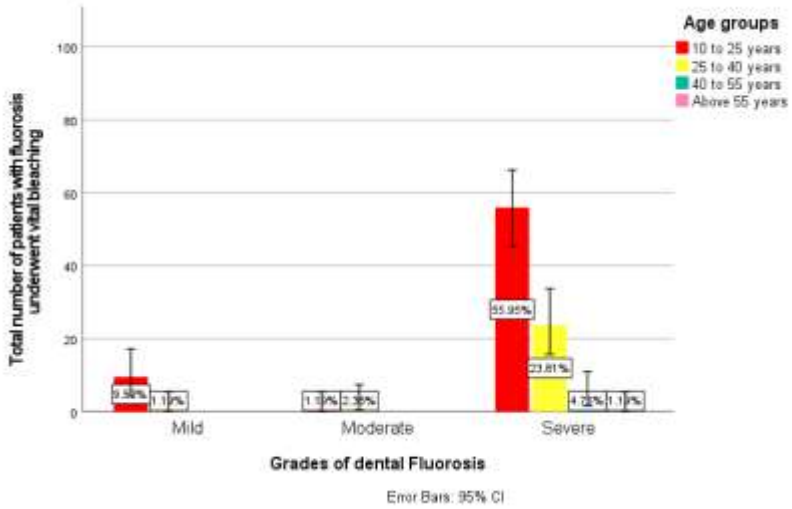

Figure 6: Bar graph showing the association between age and grades of dental fluorosis. The X axis depicts the grades of dental fluorosis such as mild,moderate and severe and Y axis is the percentage of the patients with fluorosis who underwent vital bleaching.Red represents 10 to 25 years, yellow represents 25 to 40 years, sea green represents 40 to 55 years and pink represents above 55 years. Severe grade was the most common type of fluorosis among 10 to 25 yrs with 21.52% whereas moderate fluorosis was higher among 25 to 40 years. This was found to be statistically significant. Pearson Chi square,p=0.001(P>0.05,statistically significant).