# A nalysis of patients undergoing composite restoration in the anterior teeth with fluorosis - A retrospective study.

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## Abstract

**Background and aim: Endemic fluorosis has been a public health concern in India for quite some time now. Approximately 62 million people including children suffer from fluorosis due to the consumption of water containing high fluoride concentration. Symptoms of fluorosis may range from white specks or streaks to dark brown stains and pitted enamel. The aim of this study is to determine the prevalence of patients undergoing composite restoration in anterior teeth with fluorosis.**

**Methodology: In this study, the dental records of patients that received composite restoration in their anterior teeth in Saveetha Dental College and Hospitals were screened from July 2019 to February 2021. They were filtered for patients who were diagnosed with fluorosis. The data was extracted from the DIAS. The data was processed in SPSS. Descriptive statistics and Chi-square test was done. The results were then presented as graphs.**

**Results: About 32% of the patients that received anterior restorations while having fluorosis belonged to the age group 21-25 years. Out of which 80% were males. Around 4% of the patients with moderate fluorosis had restorations in the lower arch and 36% of the patients had mild fluorosis and restorations in the upper arch.**

**Conclusion: Within the limits of the study we can conclude that mild fluorosis is more prevalent among the patients and most of the patients with fluorosis received restorations in the upper anteriors. Lower anteriors were only involved in patients with moderate fluorosis.**

**Keywords**: Fluorosis, Water, Fluoride concentration, White specks, Dark stains, Innovative technique, Enamel

## Introduction

Fluorosis is one of the major public health problems in India. Approximately 62 million adults out of whom six million are children, suffer from fluorosis due to the consumption of water with high fluoride concentrations [1]. Fluoride is known for its anti-cariogenic properties and hence commercial fluoridated toothpastes, water, salts, etc came into being. Low fluoride intake of less than 1.2-6 ppm results in increased chances of caries. However increased intake of fluoride leads to fluorosis [2,3]. Fluorosis was first reported in a study conducted in 1937 as a public health problem in parts of India [4]. Symptoms of fluorosis may range from just white specks or streaks to dark brown stains and rough-pitted enamel.

Fluoride is strongly electronegative and is attracted to the positively charged calcium present in our teeth and bones. This results in dental and skeletal fluorosis [5]. According to the World Health Organization, the highest prevalence of fluorosis is found in China and India [6]. Another study stated that 10 out of 29 districts in Tamil Nadu have shown evidence of high fluoride content in their water resources [7]. A Few researches have shown that the risk of developing dental fluorosis is higher between the ages of 3 to 6 years because this is when permanent dentition develops [8].

The increased prevalence of dental fluorosis has caused esthetic concerns for many patients. Fluorosis, although not affecting a patient's physiological functions, was still seen as a defect. This is due to more dental awareness and the desire for an aesthetic dental appearance. Patients have been opting for various dental treatments to treat fluorosis [9,10]. Some of the treatments include restorations, vital bleaching, veneering, etc. A study conducted in 2011 showed that out of the 256 composite restorations placed in the patients, 170 were in the anterior teeth and 86 were in the posterior teeth [11]. This shows that aesthetics plays a major role in patients reporting to clinics for dental treatment and restorations.

Our team has extensive knowledge and research experience that has translated into high quality publications [12-31]. The aim of this study was to evaluate the prevalence of composite

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restorations in the anterior teeth of patients having fluorosis.

## Materials and Method

### *Study setting*

This is a Hospital based retrospective study carried out by reviewing the dental records of patients that reported to Saveetha dental college seeking composite restoration in the anterior teeth between July 2019 to February 2021. Data collection was reliable and with evidence.

### *Sampling*

The patients that reported for composite restorations were screened for those who had fluorosis and received restoration in the anterior teeth. The sample consisted of 50 patients.

### *Data collection*

The patient data was collected from the DIAS. It included parameters like Hospital record number, Name, Gender, Age, Tooth number, Arch and Classification of fluorosis. Data collected was exported into Microsoft Excel 2010.

### *Data analysis*

The data obtained was tabulated and statistically analyzed using Statistical Package for Social Sciences (SPSS version 20.0) for Windows. The descriptive data obtained was plotted in bar graphs. The statistical test used for analysis was the Chi-Square test using SPSS software. Age and Gender were considered as independent variables.

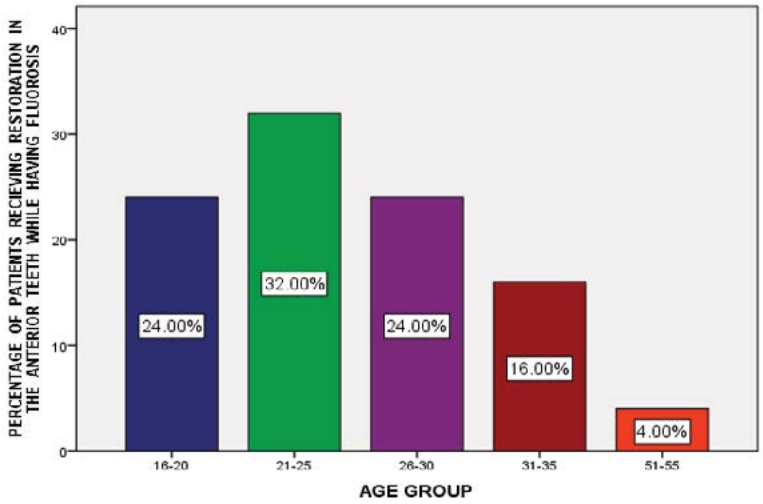


***Figure 1:*** *The bar graph represents the percentage distribution of different age groups of the patients ranging from 16-20 years (blue), 21-25 years (green), 26-30 years (purple), 31-35 years (red) and 51-55 years (orange) It was observed that most of the patients that received composite restorations in the anterior region belonged to the age group 21-25 years (32.00%).*

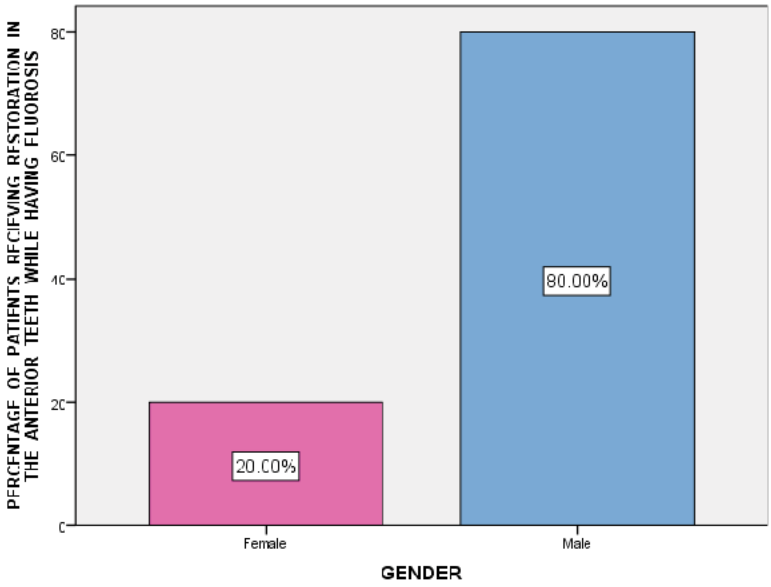


***Figure 2:*** *The bar graph represents the percentage distribution of male (blue) and female (pink) patients that received composite restorations in the anterior teeth. It was observed that most of the patients were males (80.00%).*

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## Discussion

From the graphs we found that most of the patients that received composite restorations in the anterior region belonged to the age group 21-25 years (Figure 1). This can be attributed to the fact that dental awareness and the desire for a good dental appearance has been recently growing in the younger generation. Since the young working class belongs to this age group, we can find most of the patients receiving composite restorations in the anterior teeth in this age group. It was also observed that most of the patients that received composite restorations in the anterior region while having fluorosis were males (Figure 2). A study conducted in Salem revealed that fluorosis was observed in 30.8% children, 31.1% males and 30.3% females [7].

The graphs revealed that most of the patients were diagnosed with mild fluorosis (40%) followed by moderate fluorosis (Figure 3). On analyzing the arches in which the anterior restorations were done, it was observed that 80% of the patients received composite restorations in the upper arch (Figure 4). This can be due to the fact that mostly the upper anteriors are exposed when smiling or talking and hence people give more esthetic importance to the upper arch than the lower arch.

Finally on comparing fluorosis with the arches having anterior restorations we found that only patients that were diagnosed with moderate fluorosis had restorations in the lower arch and the most number of upper arch restorations were observed in patients with mild fluorosis (Figure 5 and Table 1). This shows that as the intensity of the fluorosis increases the patients tend to resort to aesthetic treatments. Not many patients availed treatment for questionable or very mild fluorosis. But in the case of mild fluorosis a large number of patients had reported to the clinic for upper anterior composite restorations. Lower anterior restorations were seen in moderate fluorosis since more staining or discoloration of the teeth will be observed. However the p value was greater than 0.05 hence proving the correlation to be statistically insignificant.

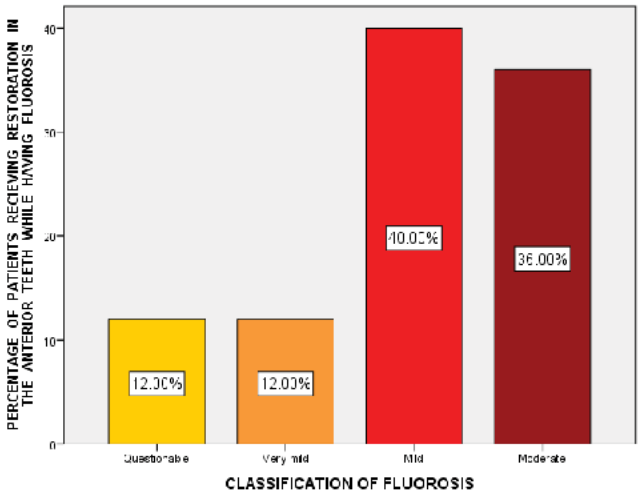


***Figure 3:*** *The bar graph represents the percentage distribution of different classifications of fluorosis. Yellow depicts questionable, Orange depicts very mild, Red depicts mild and Brown depicts moderate. It was observed that most of the patients were diagnosed with mild fluorosis (40%) followed by moderate (36%).*

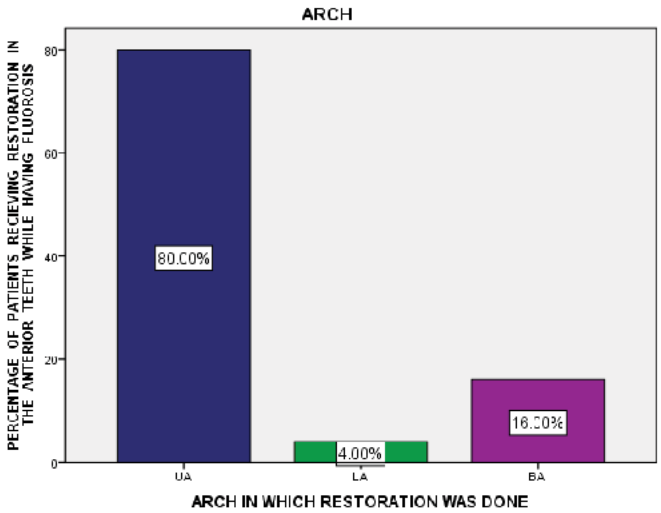


***Figure 4:*** *The bar graph represents the percentage distribution of the arches in which the composite restorations were done. Blue depicts the upper arch, green depicts the lower arch and violet depicts both arches. It was observed that most of the patients received composite restorations in the upper arch (80.00%).*

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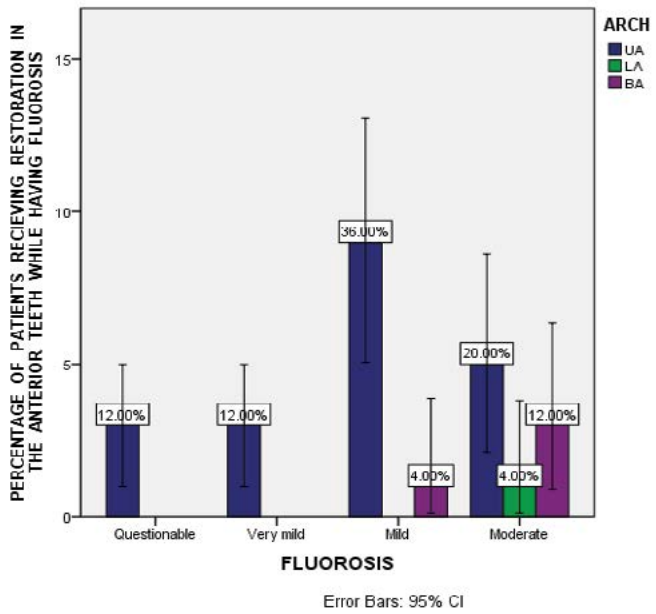


***Figure 5:*** *The bar graph represents the comparison between fluorosis and arches having anterior composite restorations. X axis depicts the type of fluorosis and Y axis depicts the percentage of patients. Blue depicts the upper arch, green depicts the lower arch and violet depicts both arches. It was observed that only patients that were diagnosed with moderate fluorosis had restorations in the lower arch (4%). The most number of upper arch restorations were observed in patients with mild fluorosis (36%). Chi-square test revealed that the P value = 0.452 (p>0.05), hence statistically not significant.*

***Table 1:*** *The table displays the correlation between fluorosis and arch having composite restoration.*

| Fluorosis/ Arch with Restoration | Questionable | Very mild | Mild | Moderate | Total | Level of significance |
|---|---|---|---|---|---|---|
| Upper Anteriors | 3 | 3 | 9 | 5 | 20 | 0.452 |
| Lower Anteriors | 0 | 0 | 0 | 1 | 1 | |
| Both arches | 0 | 0 | 1 | 3 | 4 | |
| Total | | | 25 | | | |

## Conclusion

Within the limits of the study we can conclude that mild fluorosis is more prevalent among the patients and most of the patients with fluorosis received restorations in the upper anteriors. Lower anteriors were only involved in patients with moderate fluorosis. Further studies are required on the prevalence of fluorosis, its effect on patients and the aesthetic treatments available.


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## Conflicts of Interest

Nil

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3. Saveetha University
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## References


1. Susheela AK. Fluorosis management programme in India. Curr Sci. 1999;77(10):1250-6.
2. Zimmer S. Caries-preventive effects of fluoride products when used in conjunction with fluoride dentifrice. Caries Res. 2001;35(Suppl. 1):18-21.
3. Douki Zbidi N, Zouiten S, Hajjami H, et al. Different treatment of fluorosis stains. Dent News. 2003;10(3):45-9.
4. Shortt HE, Pandit CG, Raghavachari RS. Endemic fluorosis in the Nellore district of South India. Ind Med Gaz. 1937;72(7):396.
5. Susheela A, Kumar A, Bhatnagar M, et al. Prevalence of endemic fluorosis with gastro-intestinal manifestations in people living in some North-Indian villages. Fluoride. 1993;26(2):97-104.
6. Bo Z, Mei H, Yongsheng Z, et al. Distribution and risk assessment of fluoride in drinking water in the west plain region of Jilin province, China. Environ Geochem Health. 2003;25(4):421-31.



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7. Ramesh M, Shankar R, Krishnan R, et al. Prevalence of dental fluorosis in the district of Salem, Tamil Nadu, South India: A pilot study. J Orofac Sci. 2014;6(1):37.

8. Cangussu MC, Narvai PC, Castellanos Fernandez R, et al. Dental fluorosis in Brazil: a critical review. Cad Saude Publica. 2002;18(1):7-15.

9. Buzalaf MA, Moraes CM, Olympio KP, et al. Seven years of external control of fluoride levels in the public water supply in Bauru, São Paulo, Brazil. J Appl Oral Sci. 2013;21:92-8.

10. Tiano AV, Moimaz SA, Saliba O, et al. Fluoride intake from meals served in daycare centres in municipalities with different fluoride concentrations in the water supply. Oral Health Prev Dent. 2009;7(3).

11. Moura FR, Romano AR, Lund RG, et al. Three-year clinical performance of composite restorations placed by undergraduate dental students. Braz Dent J. 2011;22(2):111-6.

12. Muthukrishnan L. Imminent antimicrobial bioink deploying cellulose, alginate, EPS and synthetic polymers for 3D bioprinting of tissue constructs. Carbo Poly. 2021;260:117774.

13. PradeepKumar AR, Shemesh H, Nivedhitha MS, et al. Diagnosis of vertical root fractures by cone-beam computed tomography in root-filled teeth with confirmation by direct visualization: a systematic review and meta-analysis. J Endo. 2021;47(8):1198-214.

14. Chakraborty T, Jamal RF, Battineni G, et al. A review of prolonged post-COVID-19 symptoms and their implications on dental management. Int J Environ Res Public Health. 2021;18(10):5131.

15. Muthukrishnan L. Nanotechnology for cleaner leather production: a review. Environ Chem Lett. 2021;19(3):2527-49.

16. Teja KV, Ramesh S. Is a filled lateral canal–A sign of superiority?. J Dent Sci. 2020;15(4):562.

17. Narendran K, MS N, Sarvanan A. Synthesis, Characterization, Free Radical Scavenging and Cytotoxic Activities of Phenylvilangin, a Substituted Dimer of Embelin. Ind J Pharmac Sci. 2020;82(5):909-12.

18. Reddy P, Krithikadatta J, Srinivasan V, et al. Dental caries profile and associated risk factors among adolescent school children in an urban South-Indian city. Oral Health Prev Dent. 2020;18(1):379-86.

19. Sawant K, Pawar AM, Banga KS, et al. Dentinal Microcracks after Root Canal Instrumentation Using Instruments Manufactured with Different NiTi Alloys and the SAF System: A Systematic Review. App Sci. 2021;11(11):4984.

20. Bhavikatti SK, Karobari MI, Zainuddin SL, et al. Investigating the Antioxidant and Cytocompatibility of Mimusops elengi Linn Extract over Human Gingival Fibroblast Cells. Int J Enviro Res Public Hea. 2021;18(13):7162.

21. Karobari MI, Basheer SN, Sayed FR, et al. An In Vitro Stereomicroscopic Evaluation of Bioactivity between Neo MTA Plus, Pro Root MTA, BIODENTINE & Glass Ionomer Cement Using Dye Penetration Method. Mat. 2021;14(12):3159.

22. Rohit Singh T, Ezhilarasan D. Ethanolic extract of Lagerstroemia Speciosa (L.) Pers., induces apoptosis and cell cycle arrest in HepG2 cells. Nutr Cancer. 2020;72(1):146-56.

23. Ezhilarasan D. MicroRNA interplay between hepatic stellate cell quiescence and activation. Euro J Pharmacol. 2020;885:173507.

24. Romera A, Peredpaya S, Shparyk Y, et al. Bevacizumab biosimilar BEVZ92 versus reference bevacizumab in combination with FOLFOX or FOLFIRI as first-line treatment for metastatic colorectal cancer: a multicentre, open-label, randomised controlled trial. Lancet Gastroenterol Hepatol. 2018;3(12):845-55.

25. Raj R K. β-Sitosterol-assisted silver nanoparticles activates Nrf2 and triggers mitochondrial apoptosis via oxidative stress in human hepatocellular cancer cell line. J Biomed Mat Res Part A. 2020;108(9):1899-908.

26. Vijayashree Priyadharsini J. In silico validation of the non-antibiotic drugs acetaminophen and ibuprofen as antibacterial agents against red complex pathogens. J Periodontol. 2019;90(12):1441-8.

27. Priyadharsini JV, Girija AS, Paramasivam A. In silico analysis of virulence genes in an emerging dental pathogen A. baumannii and related species. Archiv Oral Biol. 2018;94:93-8.

28. Uma Maheswari TN, Nivedhitha MS, Ramani P. Expression profile of salivary micro RNA-21 and 31 in oral potentially malignant disorders. Braz Oral Res. 2020;34.

29. Gudipaneni RK, Alam MK, Patil SR, et al. Measurement of the maximum occlusal bite force and its relation to the caries spectrum of first permanent molars in early permanent dentition. J Clini Pediatr Dent. 2020;44(6):423-8.

30. Chaturvedula BB, Muthukrishnan A, Bhuvaraghan A, et al. Dens invaginatus: a review and orthodontic implications. Br Dent J. 2021;230(6):345-50.

31. Kanniah P, Radhamani J, Chelliah P, et al. Green synthesis of multifaceted silver nanoparticles using the flower extract of Aerva lanata and evaluation of its biological and environmental applications. Chem Select. 2020;5(7):2322-31.

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