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Awareness About Dental Fluorosis Among A Population In Dharmapuri District.

[1]Pooja Sadasivam, [2] Abilasha R, [3]Lakshmi T.A

[1]Saveetha Dental college and hospitals, Saveetha institute of medical and technical sciences Saveetha university,Chennai-600077

E-mail: kssadasivam72@gmail.com

[2]Reader, Department of Oral Pathology, Saveetha Dental college and hospitals, Saveetha institute of medical and technical sciences, Saveetha university,Chennai-600077

E-mail: abilasha@saveetha.com

[3]Senior lecturer, Department of oral Pathology, Saveetha Dental college and hospitals, Saveetha institute of medical and technical sciences Saveetha university,Chennai-600077.

Email ID: lakshmita.sdc@saveetha.com

Abstract:

Background: Dental fluorosis is defined as hypomineralization or hypoplasia and disturbance in the formation of teeth caused by prolonged intake of fluoride during the dentition development stage.

Aim: The aim of the study was to assess the awareness about dental fluorosis among a population in Dharmapuri district.

Material and Methods: A cross sectional questionnaire survey among the population in Dharmapuri district. In this research a total of 107 participants from the general population were included.The data collection was done through google forms and data transfer to MS excel.The statistical analysis was done using SPSS software. The chi square test was performed to assess the correlation ($p<0.05$ is considered statically significant).

Result: In this study the majority of the people's age group was between 20-40 (62.62%). 77.57% of people responded that they are aware of dental fluorosis.

Conclusion: In Tamilnadu Salem, Dharmapuri, Krishnagiri, Kanchipuram, Namakkal and Rameshwaram districts have high fluoride levels in water as compared to other districts in tamilnadu. These districts show the highest prevelance of dental fluorosis in tamilnadu.This problem needs to be addressed and awareness among the people has to be increased.

Keywords: Dental fluorosis,Dharmapuri people's knowledge,Groundwater, fluoride,innovative techniques.

INTRODUCTION:

Dental fluorosis was defined as hypomineralization or hypoplasia and disturbance in the formation of teeth caused by prolonged intake of fluoride during the dentition development stage.(1) The hypomineralization is mainly due to the in situ toxic effect of fluoride on ameloblast. Dental fluorosis was non-carious disease which can be easily detected clinically and characterized by discolouration of teeth ranging from minute white flecks,yellowish, or brown to black irregular spots scattered over the surface of the teeth,crippling and enamel mottle.(2)

Water is the most priceless and precious gift of nature. All activities of man almost depend on water, for example drinking,municipal use,agriculture, navigation and recreation of nature etc.. In both rural and urban regions of India groundwater is the major source of drinking water(Handa, 1975). The demand for water is increasing day by day and this leads to scarcity of water in many regions of the world. In India, the problem of excessive fluoride in groundwater in the state of Andhra Pradesh was first reported in 1937 . Approximately 62 million people in India, including six million childrens suffer from fluorosis because of drinking high fluoride concentration water (3). The fluoride is attracted by calcium because fluoride has strong electronegativity and the calcium is positive charge. In teeth and bones we have calcium, so that fluoride causes dental fluorosis,teeth mottling,skeleton fluorosis and bone deformation in adults as well as children (4) These excessive fluorides affect plants and animals too. The ultimate source and primary reservoir of fluoride are rocks,soil and water in rocks.

The drinking water fluoride permissible limit is 1.0 mg/l (5)and 1.5mg/l (Indian standard). In India some parts have fluoride levels below 0.5 mg/l but in some other places, fluoride levels as high as 30mg/l have been reported(6). In Tamilnadu, groundwater containing high concentration of fluoride is found to be Dharmapuri and Salem district closely followed by Chidambaram,Trichy,Dindigul and Coimbatore district. If the fluoride level is higher in the body,then the calcium level will be decreased.This leads to several disorders like osteoporosis and osteopenia.(7) So bringing about awareness about dental fluorosis is important.Our team has extensive knowledge and research experience that has translate into high quality publications
(8),(9),(10),(11),(12),(13),(14),(15),(16),(17),(18),(19),(20),(21),(22),(23),(24),(25),(26),(27)Therefore this study aimed at assessing the awareness about the dental fluorosis in a population in Dharmapuri district in tamilnadu.

Materials and Methods:
The present study was a cross sectional questionnaire survey carried out in Dharmapuri district,tamilnadu. In this study there are 107 participants. The benefit of this study is done online.This study setting was conducted in the mid month of feb 2021. A suitable sample method was used. The list of independent variables are age and gender and the dependent variable is people's awareness about dental fluorosis. A detailed questionnaire with age,gender,awareness,statistics data and personal opinion were included.

1. What is your age?
2. Gender?
3. Have you done dental consultation earlier?
4. Have you been aware of dental fluorosis?
5. Do you use mouth rinse instead of toothpaste?
6. Did you have sensitive teeth?
7. Is anyone in your Family affected with dental fluorosis?
8. Which source of water do you use for drinking?
9. Did you stop using fluoride toothpaste because of professional advice?

10. Did you use packaged drinking water instead of tap water to avoid dental fluorosis?
11. Did you have frequent gum bleeding /tooth ache?
12. Which will prevent dental fluorosis do you think?
13. Did you have any dental fluorosis symptoms like white spots or discoloured teeth?
14. Do your teeth break/chip during brushing /eating?
15. Have you undergone bleaching (treatment) for discolored teeth?

Statistical Analysis:

The descriptive data was analysed statistically using SPSS software.This statistical data was created and circulated through google forms.To represent the data pie chart will be used. The chi square test was also done to assess the correlation and was represented in the bar charts (p value less than 0.05 was considered to be statistically significant). The list of independent variables were age and gender and the dependent variable is knowledge of dental fluorosis among dharmapuri people.

Result:

In this research a total of 107 participants from the general public were included in the study 58.88%male and 41.12%Female. The response of the survey was collected and represented in the pie charts. In this survey diff age group people are participants 62.62% people between 20-40, 29.92% people age group less than 20 and 7.48% people age group between 40-60%(Fig:1). In this study survey 58.88% participants were male and 41.12% were female(Fig:2) .A question asked to respondents was did they consult dentists earlier 78.64% of the people responded that they consult dentist earlier and 23.68% people said that they did not consult dentist earlier (Fig:3). Next question will be whether they are aware of dental fluorosis 77.57% people replied that they aware of dental fluorosis and 22.43% people said that they not aware of dental fluorosi(Fig 4) .71.96% of the people replied that they have sensitive tooth and 28.04% of the people said that they cannot have sensitive tooth(Fig : 5). Another question asked for the respondents was did anyone of their family members affected with dental fluorosis 69.16% replied that yes and 30.84% replied no one in their family members affected with dental fluorosis (Fig: 6). The chi square test also done between

the gender and whether they consult the dentist earlier the result shows that the p value is 0.002, ($p<0.05$) Hence it is statistically significant (Fig : 7).Both male and female responded that they consulted the dentist earlier. Another chi square test was done between the genders and if they are aware of the dental fluorosis the result said that males were more aware than females and showed p value is 0.52,($p>0.05$) hence it is statistically not significant(Fig: 8). Both males and females was awarded of dental fluorosis. Another chi square test was done between the source of water they have for drinking. The chi square test result showed that p value is 0.305 ($p>0.05$) which is statistically not significant(Fig : 9).

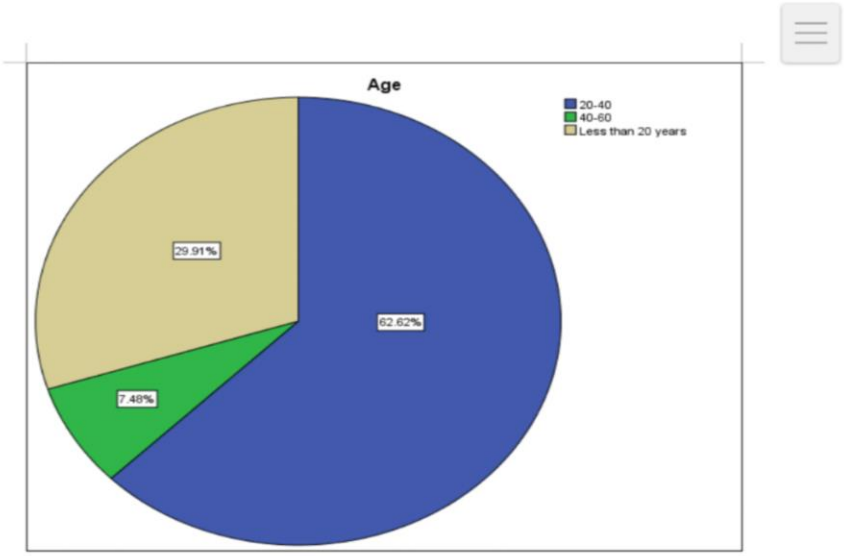

Fig 1: Shows the respondents age group Blue represents age group between 20-40(62.62%),Green represents age group between 40-60 (7.48%) and sandal colour (29.9%) represents age group less than 20 years. Majority of the population belonged to the age group between 20-24 years of age.

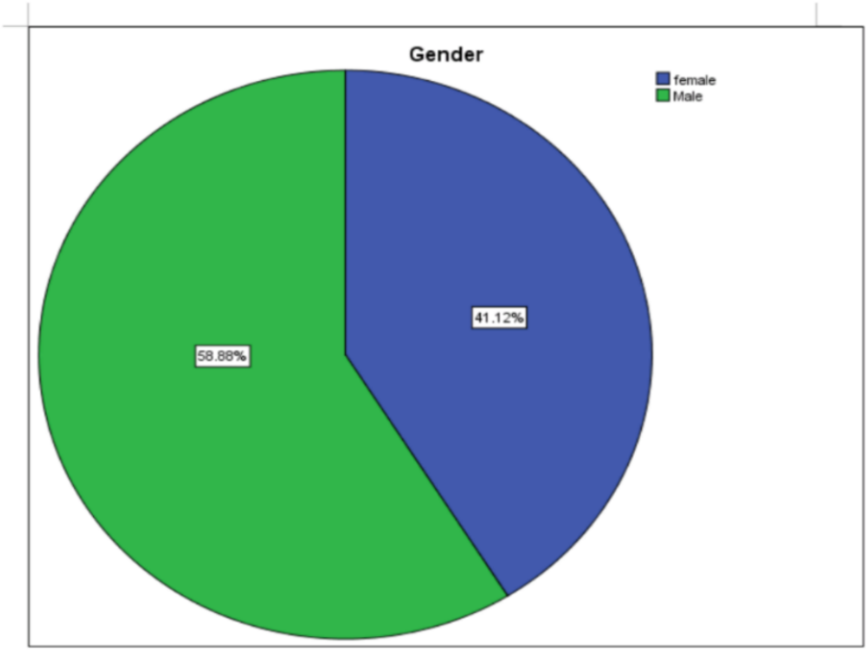

Fig 2: Shows that the gender of the people participated in the study.Blue colour represents Female(41.12%) and green represents (58.88%). Majority of the population was male.

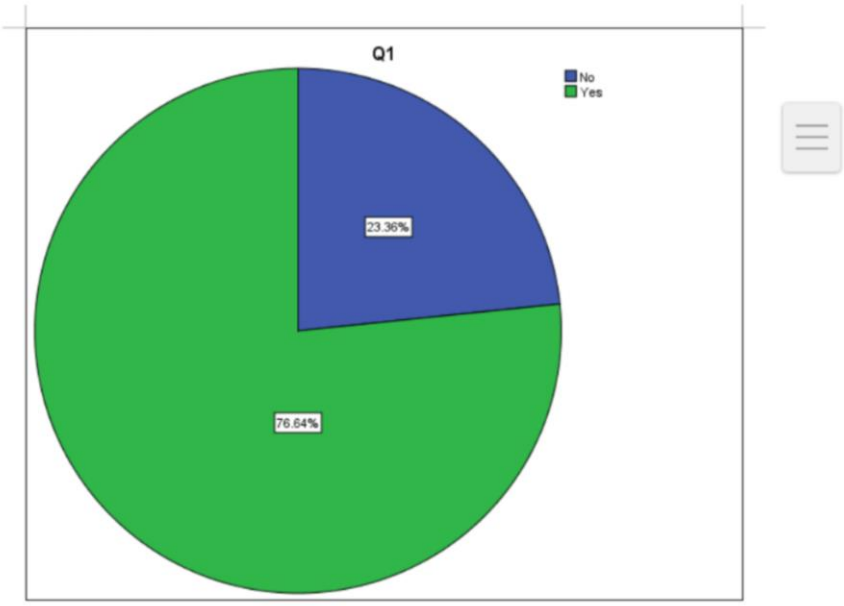

Fig 3: Shows that they already done the dental consultation earlier, 76.64% done dental consultation earlier and 23.36% not done dental consultancy earlier .Green represents yes and blue represents and blue represents no. Majority of the population has done dental consultancy earlier.

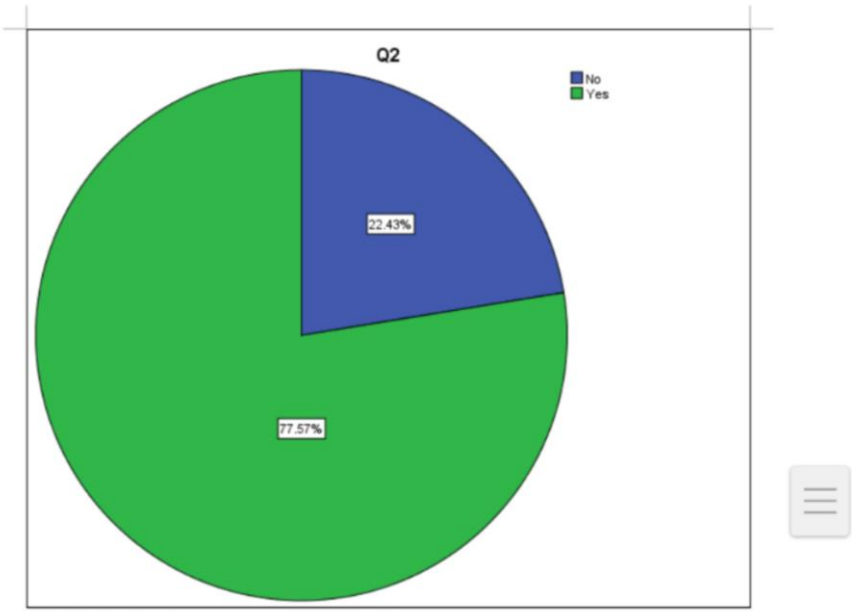

Fig 4: Shows that they were aware of dental fluorosis Green colour represents yes(77.57%) and Blue represents No (22.43%). Majority of the population was aware of dental fluorosis.

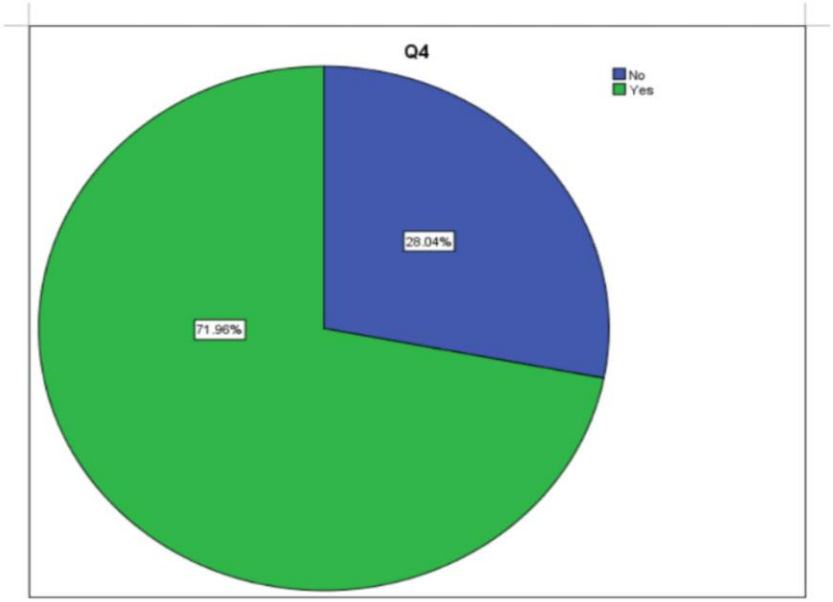

Fig 5:Shows that they have sensitive teeth 71.96% replied yes and 28.04% replied no.Green represents yes and Blue represents no. Majority of the population had sensitive teeth.

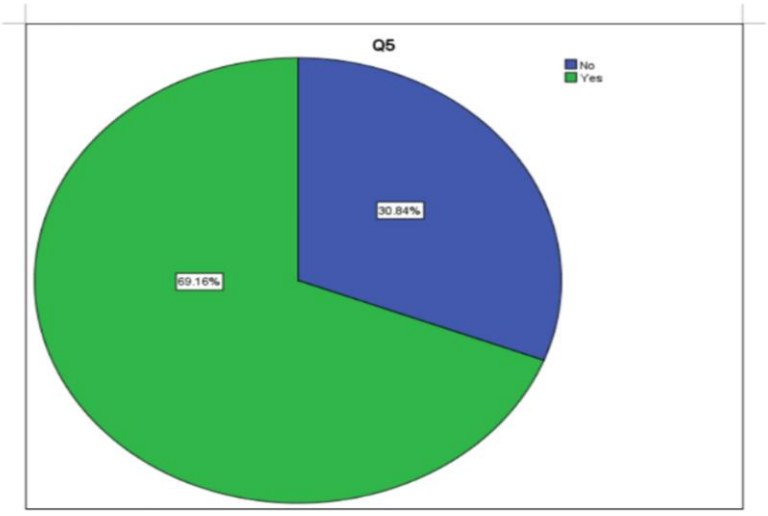

Fig 6: Shows that anyone in their family has dental fluorosis 69.16% replied yes and 30.84% replied no.Green colour represents yes and blue colour represents no. Majority of the population's family members were affected with dental fluorosis.

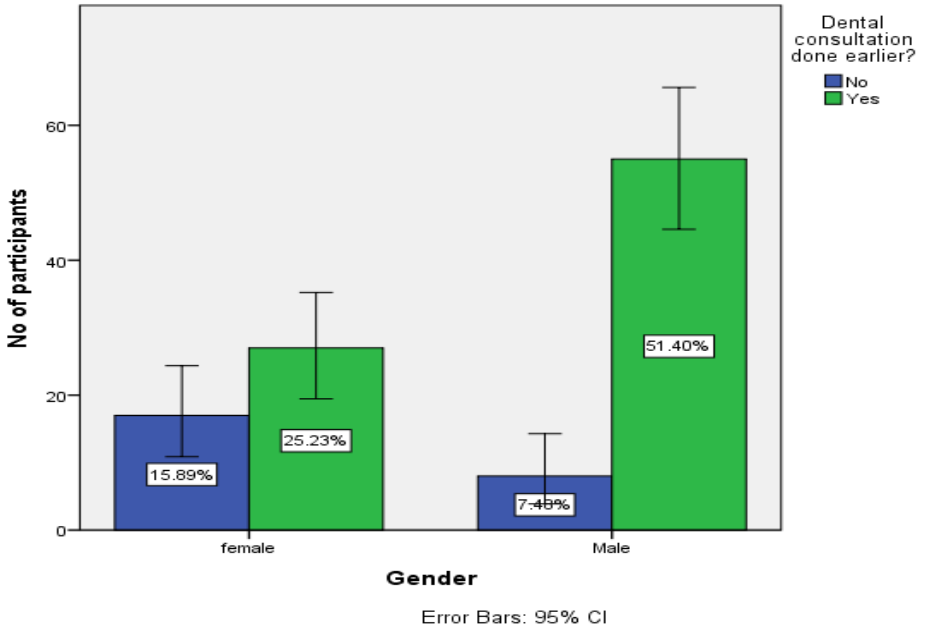

Fig 7: The bar chart represents the association between the gender and whether they consult the dentist earlier. X axis represents the gender and Y axis represents the number of participants for the overall. Green denotes “yes” and Blue denotes “no”. Majority of the male(51.40%) and female (25.23%) responded that they consulted the dentist earlier . Pearson chi square test shows p value is 0.002, ($p<0.05$) Hence it is statistically significant.

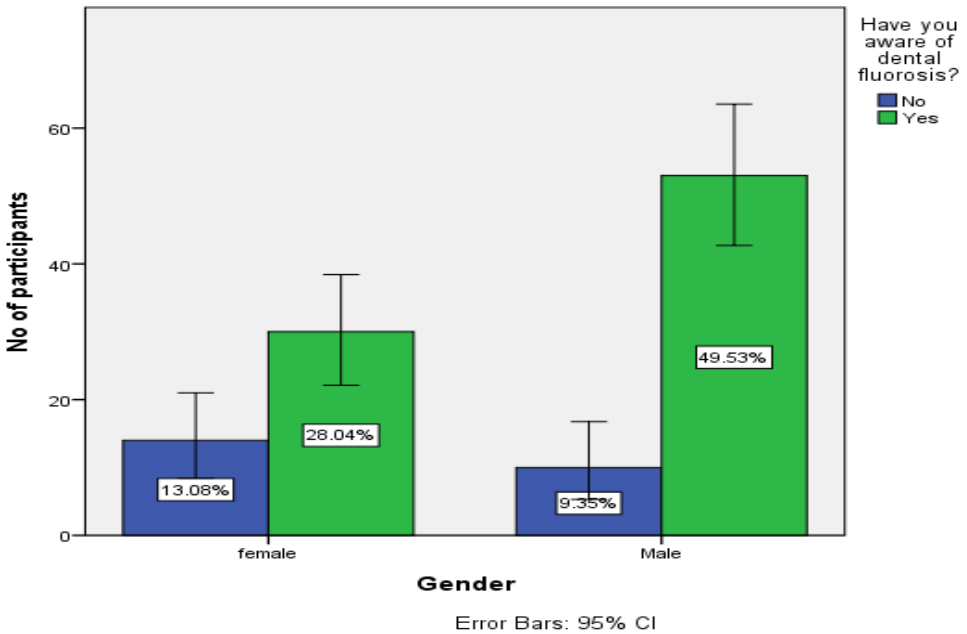

Fig 8: The bar chart represents the association between the gender and whether they are aware of dental fluorosis. X axis represents the gender and Y axis represents the number of participants for the overall . Green denotes “yes” and Blue denotes “no”. Majority of the males(49.53%) and females(28.04%) are aware of dental fluorosis. Pearson chi square test shows p value is 0.52,(p>0.05) hence it is statistically not significant.

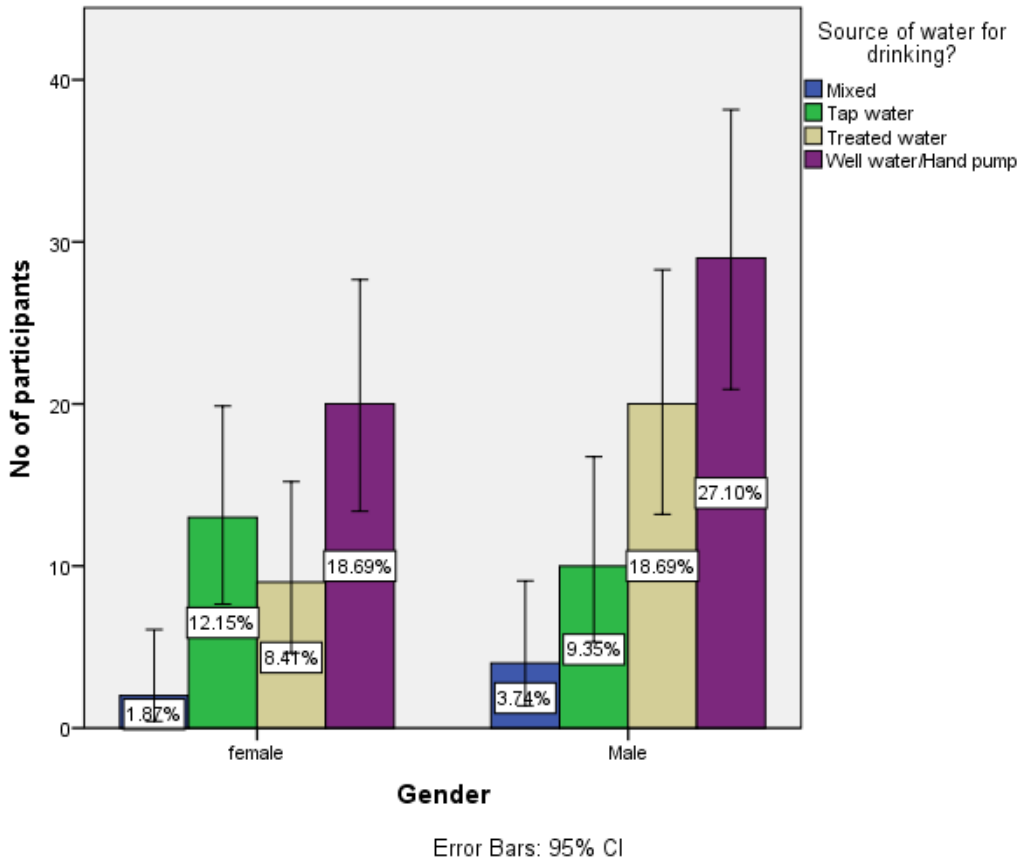

Fig 9: The bar chart represents the association between the gender and the source of water they have for drinking. X-axis represents the gender and y-axis represents the number of participants for the overall. Blue represents mixed water, Green represents tap water, sandal colour represents treated water and violet colour represents well water/ Hand pump. Majority of the male(18.69%) and female(27.10%) responded that the well water or hand pump is the source of water for drinking p value is 0.305 (p>0.05) which is statistically not significant.

Discussion:

In the present study the male respondents were more than female participants. Dental fluorosis is more prevalent in many districts of tamilnadu ,among this population most of the people are exposed to drinking water containing high fluoride concentration which causes teeth manifestation like enamel

mottling,discoloration etc.In the present study 78.64% respondents were done their dental consultancy earlier and 23.68% respondents not done dental consultancy earlier.

Methodology and results of each study was shown in pie charts.Based on that (7),conducted a study in Rameshwaram district in 12 schools,among 2519 boys and 2519 girls of age group between 7-13 years. In this area the water contains the highest fluoride concentration and it shows the higher prevalence of dental fluorosis.

Another cross sectional study conducted in Kanchipuram district among 220,12 years old childrens.In that study they found that 60.6% were affected with dental fluorosis.(28). The present study also showed that 69.16 % respondents' family members were affected with dental fluorosis .

The present study showed that 71.96% of people have sensitive teeth. Another research conducted by Ganesh et al. the survey among 2000 childrens in endemic areas of tamilnadu like krishnagiri,dharmapuri and salem districts. Among that 750 individuals in group one with dental fluorosis, 203 have dental caries ,in group two among 780 individuals with dental fluorosis, 244 have dental caries. In the third group 203 have dental caries and 750 have dental fluorosis.(29).

Maya Ramesh et al . conducted the study in Salem private school . 31.1% of boys and 30.3% of girls have dental fluorosis out of 965 students ,297 showed the presence of dental fluorosis. (30)Dental fluorosis is the most common health problem in india in that the north and southern parts are affected the most,in tamilnadu. Salem, dharmapuri and krishnagiri are the endemic states affected with dental fluorosis the most.(31)

Limitation:

The limitation of the present study is that it involves less number of participants and the study was conducted only in Dharmapuri district.The study must be conducted with a higher number of participants to arrive at a definitive result.

Future scope:

The study will be conducted in different geographical areas.

Conclusion:

Within the limitations of the study it was seen that most of the people were aware of dental fluorosis. In Tamilnadu, Salem, Dharmapuri, Krishnagiri, Kanchipuram, Namakkal and Rameshwaram districts have high fluoride levels in water as compared to other districts in tamilnadu. These districts show the highest prevelance of dental fluorosis in Tamilnadu. This problem needs to be addressed and awareness among the people has to be improved.

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Conflict of interest:- There is no conflict of interest.

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