



Prevalence And Comparison of Dental Caries Experience Among 12- To 17-Year-Old School Children of Shamli Using DMFT and Sic Index: A Cross-Sectional Study.

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KEYWORDS

Prevalence,
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ABSTRACT:

INTRODUCTION : Dental Caries is a major, multifactorial most common chronic disease that causes demineralization of tooth enamel and interferes with normal nutrition intake, speech and daily routine activities.

AIM: To evaluate the dental caries experience among 12 to 17 years old School children in Shamli.

OBJECTIVES: The main objective of this Study is to assess the Prevalence and Severity of Dental Caries and to Compare the dental caries experience using DMFT and SiC index.

METHODOLOGY: This Descriptive Cross – Sectional study was conducted among 288 School Children aged 12 to 17 years. The subjects were selected from four Randomly selected schools in Shamli. Independent t-test and one way analysis of variance were used to compare the mean difference at 5% significance level ($P < 0.05$).

RESULTS: Out of 288 students 181 were Males making approximately 63% of the participants while 107 were Females making 37% of the Participants.

The mean DMFT Score of 0.81 and 0.85 were found in Males and Females respectively.

The Overall Score of DMFT was found to be 0.83 ± 1.44

The SiC index score for Males and Females were 2.56 and 2.48 respectively.

The Overall SiC index score is 2.53 ± 1.93

CONCLUSION: The Caries experience among students aged 12 to 17 years in Shamli Schools was Low as compared to the WHO – Recommended Values.

Comparison between DMFT and SiC indices indicated there is a subgroup that presented with a Higher Caries Rate.



INTRODUCTION: Dental Caries is a major multifactorial most common chronic Disease that causes Demineralization of tooth enamel and interferes with normal nutrition intake, speech and Daily Routine activities.

Dental Caries affects people of all ages with the highest priority risk group being School going children.

Children who have poor Oral Health are subjected to have 12 times more limited activity days including missing Schools than those who do not have poor oral health.

The U.S Department of Health and Human services 2014 report stated that Dental Caries is the most common chronic disease among children and it is Five times more

common than Asthma and Seven times more common than Seasonal Allergies.

According to the National Oral Health Survey 2002-2003, Caries Prevalence in India was 53.8% (mean DMFT = 1.8) and 63.1% (mean DMFT = 2.4) at ages 12 and 15 respectively.

SHAMLI is a District & comes in NCR(National Capital Region) of India, and is going through a rapid phase of Westernisation with changing Lifestyles and Dietary Habits.

Dental Caries Prevalence is expressed as the mean DMFT value which does not correctly reflect the skewed distribution, leaving high caries subgroups unidentified in the Population.

Hence, a new index called "Significant Caries Index" (SiC) was proposed by WHO which enables to identify individuals with the highest Caries Scores in each Population.

The SiC Index gives the mean DMFT of one-third of the study group with the highest Caries Score.

This present study was conducted to assess the Prevalence & Comparison of Dental Caries experience among 12 to 17 years old School going Children of Shamli using DMFT & SiC Index.

NEED FOR THE STUDY: In developing countries, the Prevalence of caries is high due to the oral health-care systems in these countries mostly focus on curative care, whereas oral health promotion and community-

based prevention have not been systematically implemented.

12 to 17 years is the last age at which a reliable sample may be obtained easily through the School system.

Furthermore, it is likely that by this age all the permanent teeth except the third molars would have erupted.

On analyzing the available literature for similar studies in the indian population, only few studies were available.

Hence, This study was planned to assess the recent trends and to achieve a baseline data for further health - care services planning and research purposes.

AIM: To evaluate the dental caries experience among 12 to 17 years old School children in Shamli.

OBJECTIVES: The main objective of this Study is to assess the Prevalence and Severity of Dental Caries and to Compare the dental caries experience using DMFT and SiC index.

METHODOLOGY: The present Cross Sectional study was conducted to create awareness about Oral Health among School Children in Shamli.

Four Schools were randomly selected from Shamli City.

School Children in the age group of 12 to 17 years were included in the study and were randomly selected.

Children who were under long-term medication that affect the Oral Health, who were physically or mentally challenged, who were not willing to participate were excluded from the Study.

Written Permission was obtained from the Principals of the School.

Data Collection was scheduled in the month of April 2025.

Clinical Examination included the assessment of Dental Caries using DMFT Index by Klein, Palmer and Knutson for Permanent Dentition recorded on a Structured Format.

The Tooth was considered Carious (D Component) if there was visible evidence of a Cavity including untreated Dental Caries.



The Missing (M component) included teeth with indications of extraction or teeth extracted due to Caries.

The Filled (F component) included filled teeth.

The Structured Format consisted of 2 Sections.

The First section collected Demographic information of the Participants such as Name, Age, Gender, Class, School.

The Second Part consisted of Data regarding Dental Caries experience which was recorded using DMFT Index.

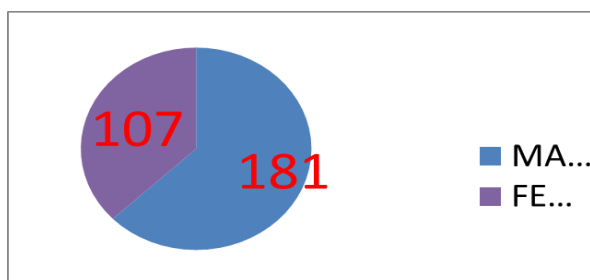
SiC Index was calculated by sorting the individuals according to their DMFT scores & selecting the one-third of the Population with the highest caries values.

Descriptive Statistics were used for Data Summarisation and Presentation.

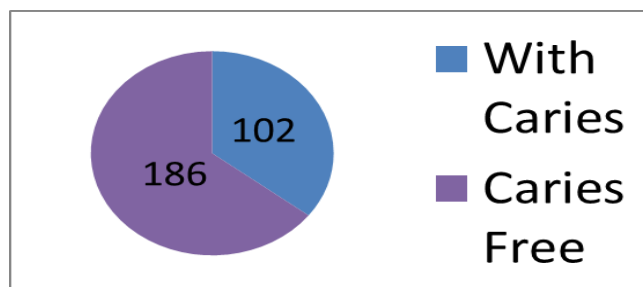
Independent T-Test and One-way ANOVA were used to compare the mean difference. The level of significance was set at a value of $P < 0.05$.

RESULTS:

The Study Sample consisted of 288 subjects, of which 181 (63%) were Males & 107 (37%) were Females.

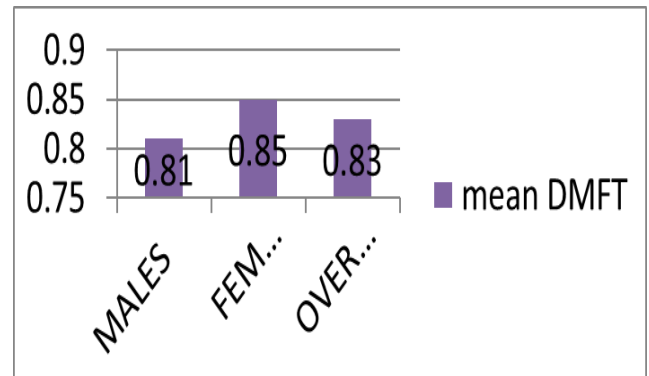


Out of 288 study subjects 102 (35.4%) had Caries & 186 (64.6%) were Caries Free.



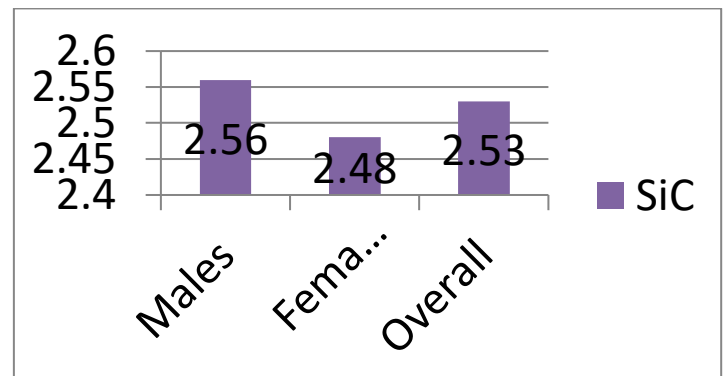
The mean DMFT Score of 0.81 were found in Males, and of 0.85 were found in Females.

The Overall mean Score of DMFT was found to be 0.83 +- 1.44.

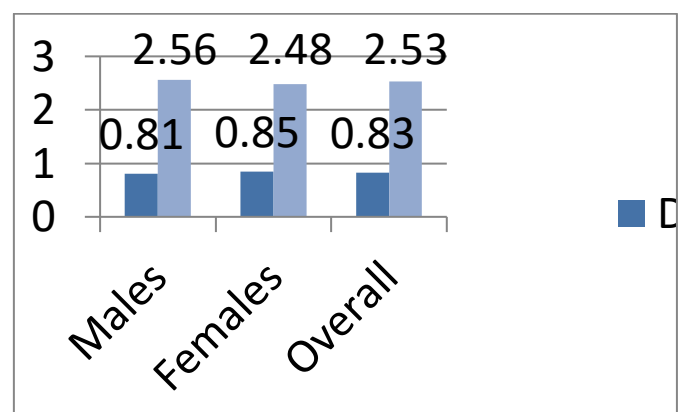


The SiC Index mean score for Males and Females were found to be 2.56 and 2.48 respectively.

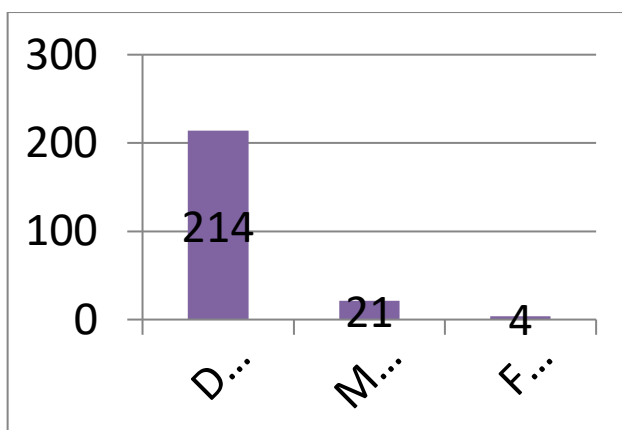
The Overall SiC index Score is 2.53 +- 1.93.



Comparison of mean DMFT Score and mean SiC Score.

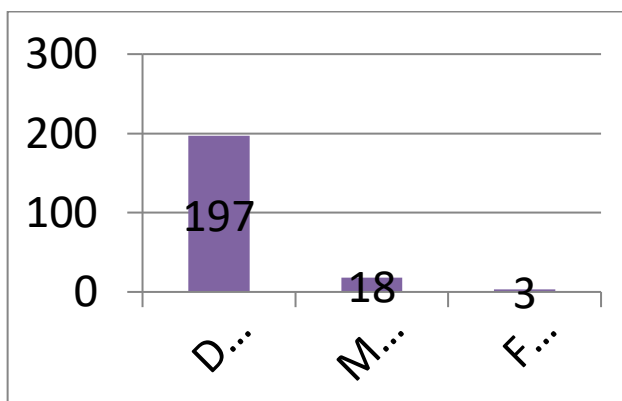


The Total Score of DMFT is 239, Out of which D Component Contributed 214 (89.5%), F component contributed 21 (8.8%) and M component contributed 4 (1.7%)



The Total SiC Score is 218, in just 86 subjects.

The D Component contributed 197 (90.4%), The F Component contributed 18 (8.3%), The M Component contributed 3 (1.3%)



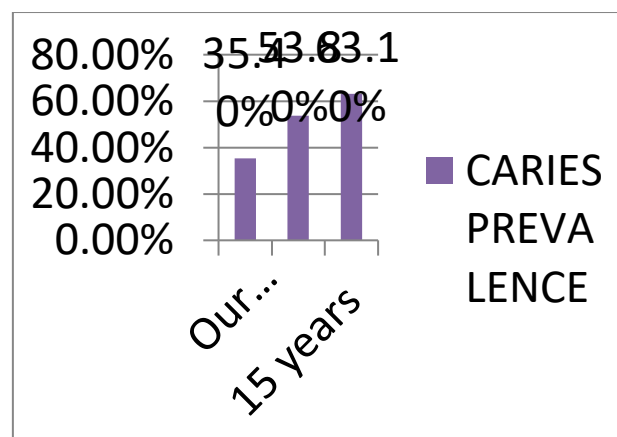
DISCUSSION: The WHO has ranked Dental Caries as number Three among all chronic non – communicable diseases that require world wide attention for Prevention & Treatment.

The use of DMFT has been an accepted practice for assessing the Prevalence & Severity of Caries in a Population.

Hence, an attempt has been made in the present study to assess the Prevalence & to compare the Dental Caries experience among 12 to 17 year old School going Children of Shamli using DMFT and SiC index.

In this Study, the overall Prevalence of Dental caries was 35.4%.

However, our values are low as compared to 53.8% at age 12 & 63% for age 15 as reported by Pan Indian National Health Survey 2004.



It is likely that low level of Prevalence in this study might be due to less frequent consumption of cariogenic food along with good oral hygiene Practices.

Girls showed slightly higher mean DMF Score than Boys, this can be attributed to the early eruptions of teeth among them, leading to a longer period of exposure to the oral environment as compared to males.

Similar Results were obtained by R Vel Murugan, Sri Sakhti in their study in 2016.

Decayed component constituted a major part of the DMFT Scores.

The WHO Classified the mean DMFT of 12 year old Children in worldwide into four categories:

- Very Low : 0.0 – 1.1
- Low : 1.2 – 2.6
- Moderate : 2.7 – 4.4
- High : 4.5 – 6.5
- Very High : 6.6 and more.

In our study the mean DMFT was 0.83, similar results were obtained by studies conducted by R Vel murugan & Sri Sakhti, Naidu et al, Peterson & Kaka, and Bajamo et al.

As expected, the SiC Index score was higher in all comparisons with DMFT which is agreed with other studies.

A comparison between DMFT and SiC indices indicated a subgroup that presented with a higher Caries rate.



PUBLIC HEALTH SIGNIFICANCE: With reference to the above findings, it would be expected that the relative stability of the subgroups with a high Caries Pattern could be used to conduct an Oral Health Awareness initiative for early identification of the children with the highest Caries Prevalence, as they would be considered as a special group for ending up in late adolescence with considerably higher caries rate than the remainder of the Population.

Public Health Solutions for Oral Diseases are most effective when they are integrated with those for other NCDs & with national Public Health Programs.

CONCLUSION: The mean DMFT in 12 to 17 year old Children in Shamli City, as revealed by the Study, falls within the “Very Low” category as per the WHO classification, but most of the decayed teeth were untreated.

WHO/FDI proposed that the SiC index should be less than DMFT 3 by year 2015.

In the Present study, the SiC score for the mean DMFT among one-third population with the highest Caries score was found to be 2.53 +/- 1.93.

Therefore the WHO/FDI target level of SiC Index is achieved in Shamli City.

Still, as Public Health Professionals, we still aim at achieving Zero SiC score for all School Going Children in Shamli City.

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