ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 14, Issue, 12, pp.23116-23119, December, 2022
DOI: https://doi.org/10.24941/ijcr.44488.12.2022

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

ASSESSMENT OF CARIES OCCURRENCE AMONG DIFFERENT AGE GROUPS AND COMPARING IT AGAINST SWEET SCORE: AN OBSERVATIONAL STUDY

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ARTICLE INFO

Article History:
Received 09th September, 2022
Received in revised form
25th October, 2022
Accepted 18th November, 2022
Published online 30th December, 2022

Key words:

Dental caries, DMFS,
DMFT, Sugar,
Sweet score.

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ABSTRACT

Introduction: The increasing opportunities for medical students to participate in international, supervised and structured electives have been evidenced to enhance medical students' professionalism, cultural competence and clinical reasoning (CR) skills in preclinical years. Evidence is scant in achieving the specific learning objectives and improving CR during senior-years. This study evaluates how supervised elective can improve medical students' CR skills through bedside demonstration, case presentation and reporting. Methods: This qualitative pilot study recorded daily bedside discussions and cases collections with six students during international elective in a focus-group style. The recorded CR discussions and case collections form the students' reflective themes including CR learning, journal case report writing and impact on ongoing learning. The individual interview design is based on SNAPPS feedback tool and PICO framework. We also collected6-months/18-months/30-months post-elective reflections for evaluating longer-term academic impact of the elective. Results: The five domains of CR learning identified in daily students-supervisors discussions were reflected in-depth by students, and pedagogically evaluated by supervisors in a focus-group style and individual interview. The SNAPPS feedback tool and PICO framework enabled students' completion of case reports for successful journal publication. Students' reflections on their learning at the time of the exchange, 6-months, 18-months and 30-months post-exchange have demonstrated that the elective can improve CR skill learning, case report writing skill, clinical competency. Conclusions: This study demonstrated through students' reflections that SNAPPS feedback tool and PICO framework are most valuable for CR learning, case presentation and reporting. The students' reflections have provided insight into how this elective can improve students' CR learning, enhance academic writing skills and facilitate competent clinical practice as junior doctors.

Citation: ***Renuka Nagarale, Mandar Todkar, Azka Ansari, Zoya Khot, Aamena Tahereem and Aakifa Mirza.*** **2022.** "Assessment of caries occurrence among different age groups and comparing it against sweet score:an observational study*". International Journal of Current Research*, 14, (12), 23116-23119

INTRODUCTION

Dental caries is one of the most prevalent diseases afflicting human beings.[1]It is a major public health problem globally and is the most widespread non transmissible disease.[3] It is reported to be one of the oldest disease which persists till date as a challenge to the medical and dental profession in particular and the society in general. Dental caries can be described as a chronic infectious disease resulting from tooth adherent cariogenic bacteria that metabolise sugars to produce acid, which over time demineralises the tooth structure.[4] The aetiology of dental caries is an active process that involves a susceptible tooth, cariogenic bacteria in dental plaque and the deleterious effects of cariogenic carbohydrates.[2] Free sugars such as glucose, dextrose, fructose, etc. are the crucial dietary factor in the occurrence of dental caries.[3]

Although oral diseases threaten all age groups, some age groups are more vulnerable. Caries is common in very young children and teenagers. [5]Older adults are also at higher risk.[6] Although oral diseases threaten all age groups, some age groups are more vulnerable. More than 50% of the older population who have natural teeth are afflicted by caries. An upward drift in the dental caries is witnessed recently in the majority of the developing nations world over. This has been attributed to modernisation and the growing consumption of dietary sugars. The association of sugar consumption and dental caries is well established by variety of research, and a reduction in caries scores has been observed with lower consumption of sugars. Knowledge about sugar intake in early life is keyfor caries inhibition in adulthood due to children's affinity towards sweet foods and beverages. The purpose of this study was to find the correlation between dental caries and sweet consumption and create awareness regarding the same.

MATERIALS AND METHODS

An observational study was conducted among general population of Pune city, Western Maharashtra, India with the aim of assessing the occurrence of caries among young age, middle age and old age groups and comparing it against the sweet score. The young age group consisted of individuals ranging from 18 to 30 years of age, whereas the middle age and the old age groups consisted of those ranging from 31 to 45 years of age and 46 to 60 years of age respectively. A total of 15 individuals were taken from each age group for the study among which males and females were selected in random numbers with no equal distribution between them. The caries occurrence was calculated using the WHO modification of DMFT and DMFS indices. Diet history of previous day was recorded for each individual based on which the sweet score was calculated. Comparison was done between the DMFT, DMFS and sweet scores of different age groups as well as between those of males and females using descriptive statistics.

RESULTS

On average prevalence of dental caries based on the DMFT scores, DMFS Scores and Sweet Scores as obtained from individuals of different age groups is shown in Table 1, Table 2 and table 3respectively.

It shows that on average the DMFT and DMFS scores were highest in the older age group whereas the average DMFT scores were nearly the same in the young and middle age groups as shown in graph 1&2.

Table No: 1. Age Group: 18 to 30 years

Patient No.	Sex	DMFT Score	DMFS Score	Sweet Score
1	M	1	3	10
2	F	5	9	5
3	M	2	2	10
4	F	2	2	0
5	F	7	11	15
6	F	5	9	10
7	F	9	6	10
8	M	10	22	5
9	F	5	17	0
10	F	6	19	30
11	F	7	23	15
12	F	3	3	5
13	F	3	8	10
14	F	2	6	10
15	F	7	8	20

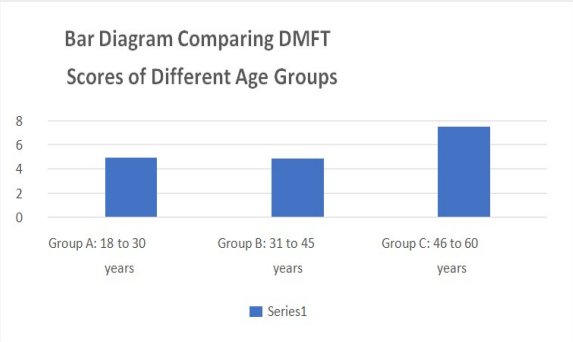
Table No: 2. Age Group: 31 to 45 years

Patient No.	Sex	DMFT Score	DMFS Score	Sweet Score
1	M	7	15	15
2	M	4	13	15
3	F	2	6	5
4	M	3	10	10
5	F	1	1	10
6	M	4	8	85
7	M	4	15	5
8	F	6	17	20
9	F	10	30	20
10	F	6	26	30
11	F	9	13	5
12	F	1	4	5
13	F	5	25	15
14	M	8	30	25
15	M	3	15	20

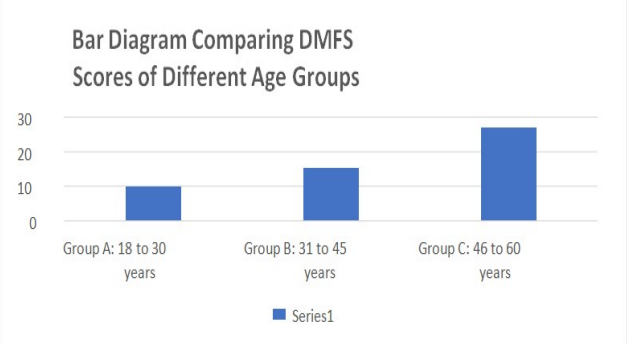
Table No: 3 Age Group: 46 to 60 years

Patient No.	Sex	DMFT Score	DMFS Score	Sweet Score
1	F	7	19	0
2	F	5	21	10
3	M	7	29	15
4	F	7	19	10
5	M	10	36	10
6	F	8	39	10
7	F	6	30	10
8	M	4	8	5
9	F	14	46	15
10	M	7	31	20
11	M	5	8	25
12	F	7	31	35
13	F	8	28	25
14	F	14	52	30
15	F	4	7	10

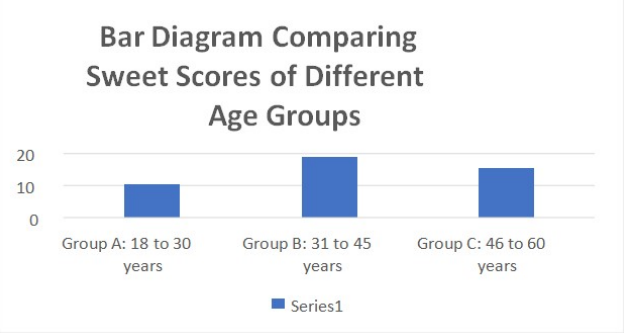
Sweet Score:
0 to 5: Excellent
10: Good



Graph 1.

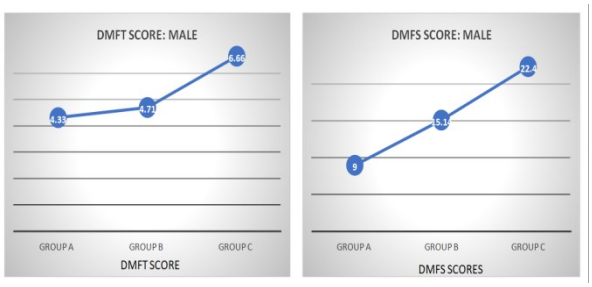


Graph 2.

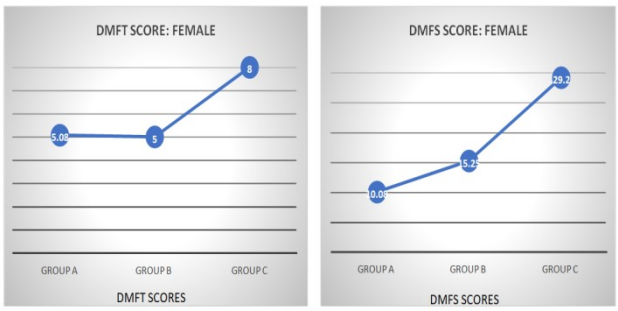


Graph 3.

The middle age group was second highest in terms of the DMFS scores whereas the young age group showed the lowest DMFS score on average as shown in graph 2.



Graph 4.



Graph : 5

Graph: 6

On average the sweet scores of the middle age group was found to be the highest followed by the older age group with the young age group showing the lowest sweet score on average as shown in graph 3. Prevalence of dental caries according to DMFT in young, middle and old age groups were 4.93, 4.86 and 7.53 respectively whereas according to DMFS index it was 9.86, 15.2 and 26.93 respectively using average mean values. According to the average mean value it is seen that DMFT and DMFS score were highest in females DMFT: 6.03, DMFS: 17.63 as compared to males DMFT: 5.2, DMFS: 16.33 as shown in the graph5 & 4 respectively. On average the Sweet score was found to be highest in males which is 18.33 as compared to females 13.16 as shown in graph 6 respectively. It is seen that the sweet score was highest among males and the DMFT, DMFS score was found to be highest in females. According to the study despite of highest sweet score in males (18.33) DMFT and DMFS score is less in males (21.53) while in females the DMFT and DMFS score is more despite the lowest sweet score (13.16) as compared to males. The study shows that females (DMFT: 6.03 and DMFS: 17.83)are more prone to caries as compared to males.

DISCUSSION

Dental caries is a dynamic disease resulting in net mineral loss of dental hard tissues. It is the most common noncommunicable disease worldwide. While multiple factors contribute towards the occurrence of dental caries, sugar consumption is believed to be one of the major contributors for the disease. The purpose of this study is to find the association between dental caries and sugar consumption and to create awareness regarding the same. According to the study reported by Thomson WM, the caries experience of older people over time exceeded those of adolescents,[8] and according to our study the caries experience is found to be highest in the older age group, which states both studies give the same result which suggests that older people are at a higher risk of dental caries. According to the study conducted by Anusavice KJ, the prevalence of dental caries in adults upto age 40 has markedly decreased while the overall risk of caries in elder age groups (>45 years) has increased,[9] and our study also shows similar results in terms of caries being highest in older people above 45 years of age and decreasing with decrease in age as our study suggests. Also this study by Anusavice KJ states that caries risk factors analogues with a significant proportion of older population like reduced salivary flow, inadequate oral hygiene, frequent sugar intake and the presence of partial dentures,[9] which supports the finding of our study that there is no significant correlation between sweet score and dental caries as dental caries is multifactorial and caused by many other factors other than sugar consumption. According to the study conducted by Lopez, R.; Smith, P.C.; Gostemeyer, G.; Schwendicke, F. on Ageing, dental caries and periodontal diseases, higher caries score with increasing age is an established factor,[10] and the study by Bernabe, E.; Sheiham, A. on Age, period and cohort trends in caries of permanent teeth, states that the finding that DMFT increases with age may not be surprising because caries are cumulative and chronic,[11] both of these statements are relatable to our study which states that caries incidence increases with increase in age. The study conducted by Touger-Decker R, Van Loveren C. on Sugars and dental caries, states that although sugars, both naturally occurring and added, and fermentable carbohydrates stimulate bacteria to produce acid and lower the pH, several dietary factors affect the caries risk associated with fermentable carbohydrates. These includes eating patterns, nutrient composition, duration of exposure, food form, saliva, and supplemental use of fluoride in drinking water, toothpastes, and other agents all interact and affect caries development.[12] This further validates the results obtained from our study regarding there being no significant correlation between sugar consumption and dental caries as other factors play a part in governing caries occurrence alongside sweet score. Integration of oral hygiene instructions into diet and oral health education will help to reduce caries risk.[12]The limitation of this study was the small sample size; the study can be conducted using a larger population size which will possibly increase the accuracy of the results.

CONCLUSION

The dental caries was found to be highly prevalent among older age group and females despite the fact that the sweet score was highest among middle aged males, showing insignificant correlation between the sweet score and the caries experience of the participants.

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