IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Prevalence and distribution of recession of gingiva and its association with caries of root in patients attending a rural dental college in Maharashtra state.

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Abstract:

Aim: The study aims to investigate the prevalence and distribution of recession of gingiva and its association with caries of root in older patient.

Materials and methods: The study included 227(128 males and 99 females) who were examined according to criteria of Miller: small recession (less than 3mm of root surface exposed, moderate recession (3 to 4mm of root surface exposed, advanced recession (more than 4mm of root surface exposed) were recorded in this participant. Measurement of root caries was done using caries index (RCI).

Results: The results showed significant correlation between gingival recession and caries root in majority of patients visiting to Rural Dental College.

Conclusion: It is evident from our study that root caries prevalence is higher in older population and it is associated with gingival recession.

Keywords: Root caries index (RCI), Gingival recession (GR), Cemento-enamel junction (CEJ), Logistic regression (LR).

Introduction

Demographic ageing, a global phenomenon has hit Indian shores as well. The combination of increased birth rate and decline mortality during 20th century has resulted large increase in elderly population [1)]. Many risk factors can compromise and older adult's systemic health such as socio-demographic variables, nutrition /diet and weaken immune system [2)].

Recession of gingiva, also known as gingival recession(GR) is one among the most common and unwanted illness of gingiva. Gingival recession means exposure of root surface on which the gingival margin situated [3)].Gingival recession also describes the condition of periodontal tissues and mainly clinical displacement of gingival margin along teeth root surface, and as a result, some investigator do not consider it as a disease. Among the oral illnesses observed by dentists in old age people, root caries is important. Hazen et al. defined root caries as, a soft, irregular progressive lesion that is found anywhere on the root surface that has lost connective tissue attachment and is exposed to the oral environment [(4)]. Tooth loss is a chief oral health- related negative variable to quality of life in old age population and root caries is the major cause of tooth loss in them [(5)]. With respect to increase in the rate of gingival recession in adults and old age population which is also considered as a risk factor for caries of root. Here, we tried to estimate the prevalence and distribution of gingival recession and caries of root among a patients visiting the dental OPD in said period [(6)].

Nowadays, with increasing oral health consciousness in advanced treatment options many people able to maintain their natural teeth into old age [(7)]. With increasing age susceptibility to periodontal issues increases, which leads to recession of gingiva and root surfaces getting exposed to oral cavity making them vulnerable for caries of root [(8)].

Studies related to prevalence of caries of root in rural population of India are less. Hence, there is a need to have a baseline data for knowing the issues of caries of root in old people and factors which affects its prevalence.

Materials and methods:

The study included total 227 elderly dentate and consenting individuals (128 males and 99 females) attending a Rural Dental college in Maharashtra state. The age of study group was from 50 years and above. Demographic and health behaviour were collected through personal interviews using a structural and validated questionnaire. (Annexure I).

Total 4 surfaces were examined in each tooth: mesial, distal, buccal/labial, and lingual /palatal. Measurement of the gingival recession was obtained from the cemento-enamel junction (CEJ) upto the gingival margin in the affected teeth, three categories were established according to apico-coronal dimension of the root surface exposed, this was done according to criteria suggested by Miller [(9).]

1. Small recession – less than 3mm of root surface exposed.
2. Moderate recession – 3 to 4mm of root surface exposed.
3. Advanced recession – more than 4mm of root surface exposed to the dental environment.

The subject were examined for root caries using mouth mirror and exploratory probe on dental chair by a single examiner. Root caries was assessed using Root caries index (RCI) by Katz (10).

$$RCI = \frac{(R\text{-}D) + (R\text{-}F)}{(R\text{-}D) + (R\text{+}F) + (R\text{-}N)} \times 100$$

R-N = Recession present (root surface normal or sound)

R-D= Recession present (with a decayed root surface)

R-F= Recession present (with a filled root surface)

Measurement will be decided according to age group and gender. The association between root caries and gingival recession will be evaluated using logistic regression (LR).

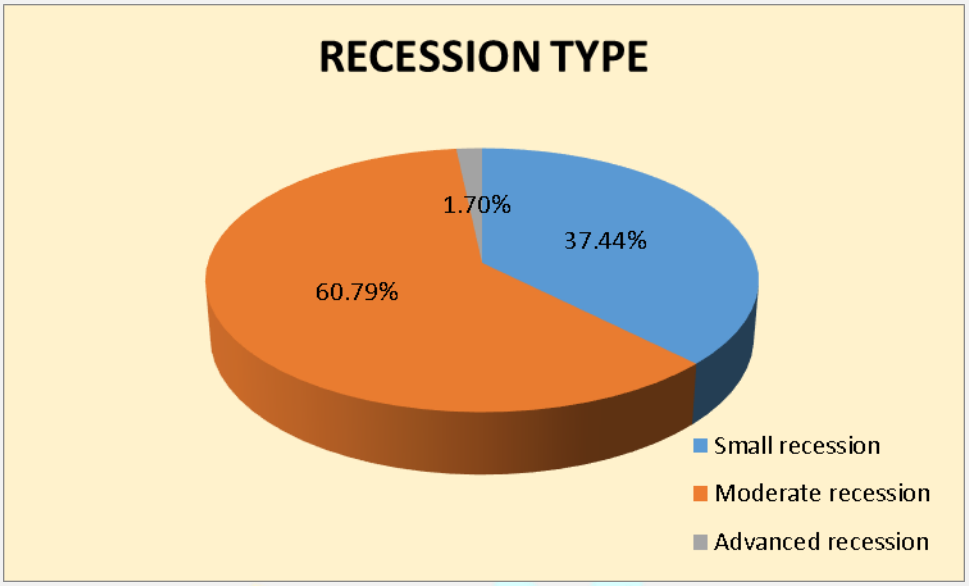
Statistical analysis:

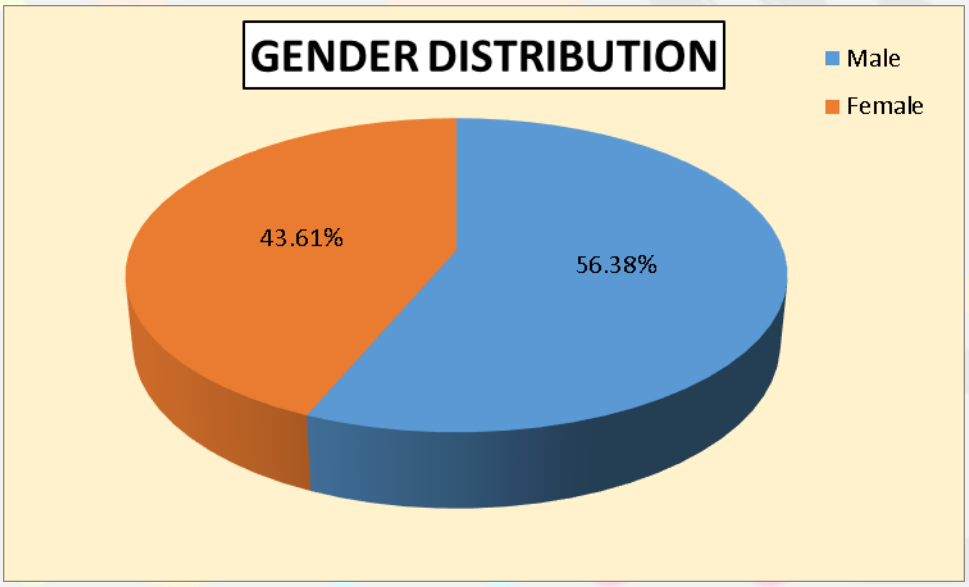
Statistical analyses of the data were done using chi-square test in SPSS 10 for categorical variables; multiple logistics regression analysis was done to determine the independent effect of each variable.

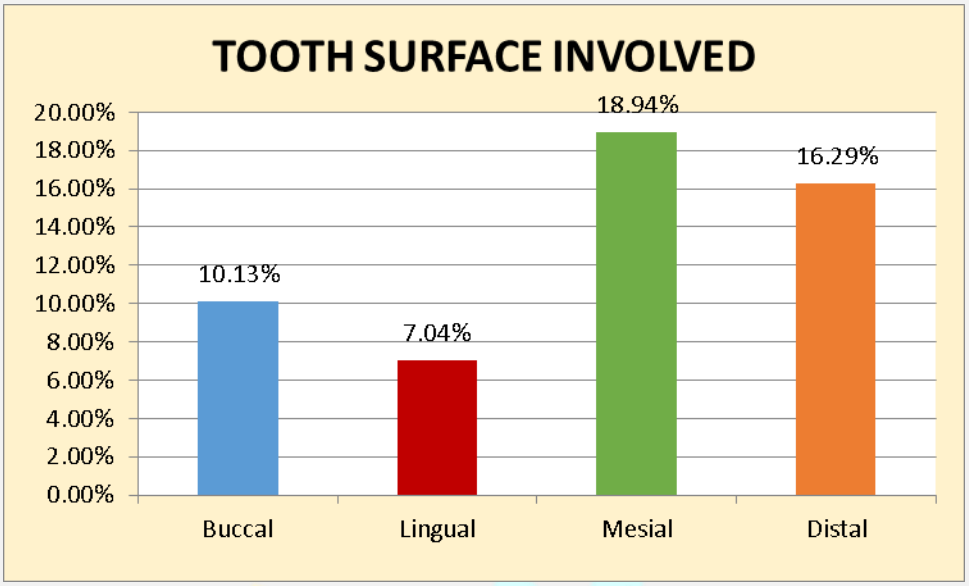
Results:

A total 227 dentate elderly patients (128 males and 99 females) with age from 50 years and above were examined to assess the prevalence of gingival recession and association with root caries. Among these 119 patients had root caries in one or more tooth exposing root surface. The prevalence of root caries among the examined elderly population was 53% (122 people), out of which 99 (43.61%) were female and 128 (56.38%) were males.

It was found that there was association between different variables and prevalence of root caries. The prevalence of gingival recession was significantly associated with the age, perceived dryness of mouth, smoking and tobacco chewing.


RECESSION TYPE
1.70%
37.44%
60.79%
Small recession
Moderate recession
Advanced recession


GENDER DISTRIBUTION
Male
Female
43.61%
56.38%



Discussion:

According to the literature, few studies have investigated the epidemiology and the associated factors of gingival recession (GR), whereas few similar studies have been carried out in Greece [11, 12].

The present study showed that the prevalence of GR was overall 53 %. Previous work have shown that GR prevalence ranged from 50 % to higher percentages [11, 13]. Only in one study the prevalence was 27.7% [14]. The variation in prevalence among these studies maybe explained by several factors.

First, the different criteria used in the various studies could at least partly be the reason for this discrepancy, such as the percentage of patients with at least one GR in the study sample[15], the number of affected sites divided by the number of sites examined multiplied by 100 [16], the total number of GR sites[17],etc. It is clear that there does not exist a specific and acceptable index to measure GR. In addition, it is often difficult to distinguish the main forms of root destruction such as erosion, attrition and abrasion from GR and it is likely that all these processes may have been included in some of the cases examined in current study.

Second, it is difficult to compare the results of prevalence of various studies when different teeth and different surfaces are included in its measurement methods. On other hand, the permanent dentition analysed in different investigations shows GR at ages ranging from young individuals to 65 + years, and these finding may also influence the results through differences in the time of exposure to risk factors.

The distribution of GR by gender, according to similar studies, implied higher rates in males than females [11-13, 18-19], a finding that was in accordance with current study. Only in one study [20], 31.74% of females and 24.48% of males showed GR, a finding that could be attributed to the fact that females are more motivated with regard to oral hygiene practice and, thus, brush their teeth more frequently than male [21].

The role of dental plaque and gingival inflammation in development of GR has been analysed in a number of epidemiological studies, which have shown that gingival inflammation was the most frequent precipitating etiological factor of GR [22, 23]. A similar study in Turkey [17] showed that GR was associated with a high level of dental plaque. However, other authors [24] observed a negative correlation between presence of dental plaque on the buccal tooth aspect and GR.

Though edentulousness is a major problem in older population, dentate older individuals have their share of problems too in the form of root caries, which decreases functional ability of their remaining teeth. In our study prevalence of root caries was found to be 53% which is similar to reports in older adults of Japan (39%) and China (43.9%) [25]. In contrast, studies done in Sri Lanka and Brazil report a much higher prevalence of root caries in older adults with 89.7% and 78% prevalence respectively [26, 27].

In present study, it was observed that prevalence of root caries was around 53% in elderly population in the age group of 50 years and above. This finding was found to be similar to studies done in England and Greece where the prevalence of root caries were around 52% and 40% respectively in this age group of elderly population [28,29]. A study conducted on coronal and root decay in older adults of Canada, concluded that GR was one factor consistently associated with root caries and confirmed that root caries cannot occur without apical migration of periodontal attachment [30]. In our study we found nearly all of the study population had recession in one or more teeth. However, Ritter et al. [31] considers GR to be sine qua non factor for root caries and hence investigators may not use it as an explanatory variable. Further, they fill GR is omnipresent in older adults, and it should not be considered significant predictor of root caries.

As we age, immune system weakens and fewer antimicrobial immunoglobulin are produced and found in saliva [32].Pharmacological agents with xerostomic side effects , Sjogren's syndrome and therapeutic radiation to the head and neck region

lowers salivary flow rate to pathological levels which elevates patient's risk of caries [33]. Physical inability to maintain good oral hygiene, GR may increases the susceptibility of elderly population for increased prevalence of root caries [34].

We found the prevalence of root caries was more among tobacco chewers and smokers. This finding is in agreement with results of study done in USA which showed that in addition to its established role as carcinogen, chewing tobacco may be a risk factor in development of root caries [35]. Many risk factors associated with the occurrence of root caries have been identified and these include oral, medical, mental, behavioural and psychological conditions [36].

Though there are ample number of studies done on GR, only few are done on Indian elderly population in rural areas, the present study which is done in a rural set up sheds light on the increased prevalence of gingival recession and association with root caries.

Conclusion

In conclusion, the present study showed that the prevalence of gingival recession in males was higher than females and presence of dental plaque, gingival inflammation, tobacco were the factors of gingival recession. And occurrence of root caries was equally prevalent.

Thus finding highlights the importance of tobacco cessation and maintaining good oral hygiene for achieving good periodontal health. Appropriate fluoride supplements can be used for remineralization of incipient lesions.

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