RESULTS

The demographic characteristics, i.e. age, age at initiation/quitting, frequency, duration of smoking/chewing, of the study population (n=253) are shown in Tables 1-4. The variables were based on self report, intra-oral examination, and wherever necessary biochemical validation of self reported tobacco usage was carried out. Age matched 23 subjects formed the control group who had never smoked/chewed tobacco. The variables are expressed as Mean±S.D. Smoking exposure, as measured in cigarette years, varied between 75.4±40.2 to 467.07±40.3 cigarette years for smoker subgroups (Table-3) and chewing exposure as measured in hours/day varied between 2.28±0.62 to 9.13±1.17 hrs/day for chewer subgroups (Table-4).

Different grades of recession at site of placement of tobacco preparation in chewer subgroups are presented in Table-5. The grades of recession were significantly associated with extent of chewing habit, i.e. light, moderate and heavy chewing (Chi-square X² = 51.03, correlation r = .701, significance p<0.01). As the extent of chewing habit increases (i.e. light to moderate to heavy) the grades of recession also increases linearly (Chi-square for linearity X² = 42.84, significance p<0.01).

Comparison of mean debris, calculus and stain indices of different subgroups of smokers, chewers and control group is presented in Table-6. All indices in all subgroups are significantly higher than the control group, excepting calculus
index in light smoker and light chewer groups which is lower than the control group.

Comparison of mean gingival, periodontal and attrition indices of different subgroups of smokers and chewers with control group is presented in Table-7. There is no significant difference in all indices of light and moderate smokers compared to control group. Gingival index of light chewer is non-significant compared to control. Gingival and Attrition Indices of pooled smokers are also non-significant compared to control. All other indices of various subgroups of smokers and chewers are statistically significantly different from control group.

Intra-group comparison of various indices in smoker subgroups is presented in Table-8. The difference in debris index as frequency and duration of smoking increase is not significant. There exists a significant difference in calculus index of light smoker and heavy smoker, but from light to moderate and moderate to heavy subgroups of smokers the change in calculus index is non-significant. Gingival, Periodontal, Stains and Attrition Index change from light to moderate smoking is non-significant, but from moderate to heavy and light to heavy smoking, the change in Gingival, Periodontal, Stains and Attrition Index is significant.

Intra-group comparison of various indices in chewer subgroups is presented in Table-9. There is non-significant difference in debris index as the frequency and duration of chewing increase. Calculus, gingival, periodontal and attrition index change from light to moderate, light to heavy, and moderate to heavy chewing is significant. Calculus, gingival inflammation, periodontal disease and attrition progressively increase as the frequency and duration of tobacco chewing habit
index in light smoker and light chewer groups which is lower than the control group.

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increase. There is no significant change in stains index from moderate to heavy chewing, but from light to moderate and light to heavy chewing the change in stains index is significant.

Inter-group comparison of various indices in smoker and chewer subgroups is presented in Table-10. All indices except the debris index are significantly higher in light chewers compared to light smokers. All other indices except calculus index are significantly higher in moderate chewers compared to moderate smokers. All other indices except debris index are significantly higher in heavy chewers compared to heavy smokers.

As the frequency and duration of habitual tobacco usage increase, the chewers experience more gingival inflammation, periodontal diseases, stains and attrition compared to matched smokers. When pooled smokers are compared to pooled chewers there is significant change in all indices except calculus index. A comparison of salivary immunoglobulin A values of different subgroups of smokers and chewers with that of the control group is presented in Table-11. All SigA values in all subgroups of smokers and chewers, except passive smokers, are significantly lower than control group values. Intra-group and intergroup comparison of salivary immunoglobulin A values amongst smoker and chewer subgroups is presented in Table-12. All SigA values are significantly different in all intra and intergroup comparisons, and also the chewers have significantly lower SigA values compared to matched smokers. Combined smoker and chewer has the lowest SigA values. As the duration and frequency of habitual tobacco usage
in form of smoking and chewing increase, there is a proportionate decrease in the S IgA values.

Predictivity percentage of regression equations derived to predict the S-IgA using cigarette years varies between 71% and 97% for smoker subgroups, which is highly significant \( p < 0.01 \) (Table 13). Predictivity percentage of regression equations derived to predict S-IgA using hours/day varies between 72% and 96% for chewer subgroups, which is highly significant \( p < 0.01 \) (Table-14).

Different variables, viz. age, age at initiation, frequency, duration, cigarette years/hrs per day, were used to predict S-IgA independently among pooled smokers and chewers. The regression equations thus developed are presented in Tables 15 and 16, where only the frequency, duration and cigarette year have predictivity more than 60% in smokers, and duration, hrs/day have predictivity more than 70% in chewers. Further stepwise multivariate regression equations/analysis was carried out to find out the small set of variables which has maximum predictivity. The regression equations thus developed are presented in Table 17.

These regression equations, which have predictive percentage of 97 for smokers and 88 for chewers, were used to predict S-IgA at the time of quitting habit of ex-smokers and ex-chewers, as frequency, duration, cigarette years/hr/day of tobacco habitual usage was known at time of quitting habit. Table-18 depicts the actual S-IgA, abstinence period, predicted S-IgA and gain in S-IgA of individual subjects who formed the ex-smokers group, where the mean gain in S-IgAabs was
in form of smoking and chewing increase, there is a proportionate decrease in the SIgA values.

Predictivity percentage of regression equations derived to predict the S-IgA using cigarette years varies between 71% and 97% for smoker subgroups, which is highly significant (p< 0.01) (Table 13). Predictivity percentage of regression equations derived to predict S-IgA using hours/day varies between 72% and 96% for chewer subgroups, which is highly significant (p< 0.01) (Table-14).

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24.23 mg%. Table-19 depicts the actual S-IgA, abstinence period, predicted S-IgA and gain in S-IgA of individual subjects who formed the ex-chewers group. Mean gain in S-IgA was only 11.24 mg% compared to 24.23 mg% in ex-smokers. Percentage gain of S-IgA in ex-smokers is 36.7% and for ex-chewers it is 25% only. Correlation between abstinence period and S-IgA as well as percentage gain of S-IgA in ex-smokers and ex-chewers groups is significant (p<0.5) (Table-20).

Table-21 shows the comparison of mean changes in S-IgA concentration at 6 months and 1 year from baseline among the immune-recovery groups of smokers and chewers. The mean change of S-IgA after 1 year of quitting tobacco habit among smokers and chewers is significant (p<0.01). On comparing the levels of change between smokers and chewers groups no significant difference was observed.

Table-22 shows the comparison of mean changes in S-IgA concentration at 6 months and 1 year from baseline amongst immune-recovery/leukoplakia reversal groups of smokers and chewers. The mean change of S-IgA after 1 year of quitting tobacco habit among smokers and chewers is significant (p<0.01). On comparing the levels of change among smoker and chewer groups no significant difference was observed. Local immune recovery seems to be independent of reversal of leukoplakia severity on tobacco cessation.

Table-23 shows the change in leukoplakia grades at various intervals of 6 months and 1 year amongst immune-recovery/leukoplakia reversal groups of smokers and chewers. Due to the small number of subjects, the change in grade
3 to 2 and grade 2 to 1 or 1 to 0 was treated as same. Only 73.3% of leukoplakia grades reversed at 1 year in smokers compared to 100% in chewers. The Chi-square statistics was calculated to see the association between use of tobacco, i.e. smoking, chewing and duration of abstinence. It is found to be significant ($X^2 = 5.79; p<0.05$).