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# ASSESSMENT OF PERIODONTAL STATUS AMONG SUGAR FACTORY WORKERS

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**AUTHORS' CONTRIBUTIONS**

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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## ABSTRACT

**Introduction:** Wellbeing is of fundamental significance in this day and age. Show of sickness free dentition is a respectable test, however tragically not many stay in this unblemished condition of wellbeing. Oral wellbeing being an essential part of general wellbeing status, plays a part in the improvement of personal satisfaction. Hence, the current status of dental sicknesses in the agricultural nations is clearly unfit to change their epidemiological picture. This paper assess periodontal status among sugar factory workers of karad taluka of Maharashtra, using community periodontal index (CPI).

**Aim:** An epidemiological study to assess periodontal status among sugar factory workers of karad taluka using community periodontal index.

**Results:** The results obtained were analyzed statistically. It was seen that of the total population under study, 22.93% (score 1 i.e. 269 subjects) had bleeding on probing, 39.64% (score 2 i.e. 465 subjects) had calculus or other plaque retentive factors, 37.43% ( score 3 i.e. 439 subjects ) had a pocket of 4-5mm. 14.32% (score 0 i.e. 168 subjects) had a loss of attachment of 0-3mm according to CPI index calculations and 85.67% (score 1i.e. 1005 subjects) had a loss of attachment of more than 3 mm.

**Conclusion:** The following conclusions were drawn from the present study Subjects above the age of 35 years have more chances of occurrence of periodontal disease than the subjects below the age of 35 years. As age increases the prevalence of periodontal disease also increases. With increase in level of education and better socioeconomic status the level of periodontal disease decreased.

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## 1. INTRODUCTION

Gingival and periodontal illnesses in their different structures have impacted people starting from the beginning of history. Concentrates on in paleopathology have shown damaging periodontal illness as proven by bone misfortune in early humans1. Indeed, even among the antiquated Greeks, Hippocrates (460-377BC) father of present day medication, accepted that irritation of gums could be brought about by collections of 'pitutia' or analytics with gingival drain happening in instances of relentless splenic maladies [1**]**.

Various indices like Russel's and Ramjford's index were used to collect data on periodontal disease. But it was observed that data generated by earlier studies using these indices was not truly comparable because of differences in the method of collection of samples and indices used for evaluation.

Periodontal diseases are a group of chronic, progressive bacterial infections resulting in inflammation and destruction of tooth supporting tissues. Its impact on individuals and communities in terms of pain and suffering, impairment of function, and reduced quality of life is considerable [2-3].

Taking into account these disadvantages of records utilized before to assess the periodontal status of the populace, Federation Dentaire International (FDI) and World Wellbeing Association (WHO) perceived the need to foster a list which would assess the periodontal status as the need might arise of the population [5]. In this manner Ainamo et al. fostered a list called community periodontal file of treatment needs (CPITN) which would evaluate both the periodontal status and treatment needs [6].

There was a need for the general practitioners to have the principal responsibility of positively diagnosing and managing periodontal diseases so as to institute procedures for its prevention and control. Hence the CPITN system was used and recommended also to the general practitioners[3]. Over the years some modifications to the CPITN were also proposed when it is used for specific purposes. It was proposed to record total loss of attachment in addition to the basic CPITN which would be of value in situations where more accurate assessments of total attachment loss within populations is required. They advised to use CPITN-C probe which has additional markings at 8.5 and 11.5. [7].

CPITN was created as a technique for evaluation of periodontal circumstances in both epidemiological examinations and general practice. It was used extensively for epidemiological studies all over the world and the results were fed into the WHO databank. On further analysis it was found that the depth of periodontal pockets evaluated in CPITN, did not actually indicate the extent of attachment loss [6]. The study shows that the group considered that the clinical indicators which were of importance for population studies of periodontal disease were gingivitis and pocketing, but that in addition, calculus should also be assessed for the determination of treatment needs. A field trial was subsequently conducted testing the validity of clinical criteria, the results of which were reported in the WHO document. The final recommendations for scoring the CPITN were published by Ainamo et al [6,7].

Since its introduction, the CPITN has been widely used for epidemiological purposes and the WHO Global Oral Data Bank now contains extensive CPITN data from many countries around the world. In addition to its epidemiological role, the CPITN has been recommended with minor modifications for the screening and determination of treatment needs in individual patients in clinical practice and in this capacity has been promulgated under a number of different names including the 'Simplified Periodontal Examination' and the' Periodontal Screening and Recording system. Studies have shown that CPITN offered the most realistic screening and monitoring techniques [8].

## 2. METHODS

In the current review absolute of 1200 sugar assembly line laborers of Karad were incorporated. The review subjects were partitioned into three age bunches 25-34 years, 35-44 years and 45-54 years. Institutional moral freedom was acquired before comparability of the review (Ref. No: KIMSDU/IEC/01/2013 dated 6/12/2013). The above age groups were selected for the following reasons:

**25-34 years:**

The evaluation of periodontal status of this age is significant for the appraisal of periodontal sickness pointers in youths.

**35-44 years:**

This age group is used as the standard monitoring group for assessing the oral condition of adults. The level of severe periodontal involvement can be monitored using data for this age group.

**45-54 years:**

This age group was used to consider any comparisons possible with the previous age groups. As 55 years is the retirement age for the sugar factory workers, a higher age group was not taken into consideration. Information for this gathering is additionally required for arranging and observing the general impacts of oral consideration administration in the populace under study.

A meeting and oral assessment with the assistance of proforma arranged for the review was led for the assortment of the information. Individual information in regards to each subject was kept in the proforma. The recording of information depended on the WHO oral wellbeing study structure (1997). Since the data recorded was to be modernized, fitting codes were doled out to every one of the elements assessed. (Annexure I)

## 3. ARMAMENTARIUM

Mouth mirror, CPI–C WHO Periodontal probe (TRS 621 WHO Periodontal Probe), cotton swabs, tweezer and kidney trays for the instruments were used for the clinical examination. The technique of cold sterilization with 5% glutaraldehyde (Korsolex®) solution was used to sterilize the instruments between the examinations.

### 3.1 Examination Methods

Each subject was made to sit on a chair under adequate natural light; a single examiner conducted the oral examination. An assistant was trained during the study for recording the data.

### 3.2 Inclusion Criteria

- Sugar factory workers of age 25-54 years and Subjects who were willing to participate in the study.

### 3.3 Exclusion Criteria

- Edentulous subjects and Subjects with less than 20 functional teeth.

The assessment of periodontal status was carried out by using community periodontal index (CPI) and loss of attachment (LOA) (WHO 1997). The CPI records common conditions namely, gingival inflammation (identified by bleeding on probing), dental calculus, periodontal pockets and loss of attachment. The dentition was separated into six sextants characterized by tooth numbers 17-14, 13-23, 24-27, 37-34, 33-43, and 44-47. A sextant was inspected provided that there were at least two teeth present and were not demonstrated for extraction. At the point when just a single tooth stayed in a sextant, it was barred. Just ten teeth, known as record teeth were inspected. They were 17, 16… … … … 11… … … ..26, 27 ,47, 46… … … … 31… … … ..36, 37.

The molars were examined in pairs and only the highest score was recorded. Only one score was recorded for each sextant. If 11 or 31 were not present, they were substituted by 21 and 41 respectively. If no index tooth was present in a sextant qualifying for examination, all the remaining teeth in that sextant were examined and the highest score was recorded.

**CPI-C- Periodontal Probe: Technical report series (TRS) 621 WHO periodontal probe:**

As part of the proposed methodology for assessment of periodontal status, the light weight probe designed by Prof George Beagrie and Prof Jukka Ainamo was used.[3] The probe was of metal weighing 4.5 grams. The probe had at the tip, a ball end, with a diameter of 0.5 mm. The probe had a black colour coding starting at 3.5mm and ending at 5.5 mm and a black ring at 8.5mm and 11.5mm to measure pocket depth and loss of attachment. The lightness and spherical tip were important for the detection of subgingival calculus and to ensure minimum trauma when probing the gingival sulcus. The probing force used was 20- 25 grams to ensure that no pain was caused to the subject during probing. A practical test for establishing this force was to probe beneath the finger nail until blanching just occurred.

**Rules for scoring a sextant:**

First it was decided whether the sextant could be validly scored. The requirement was more than one functional tooth should be present. If only one functional tooth was present then the sextant was scored as X (Excluded). If the sextant could be validly scored, the index teeth were examined for recording the CPI score for the particular sextant and immediately score was recorded for presence for any visible attachment loss. If cement enamel junction (CEJ) was visible, loss of attachment in an index tooth was measured from CEJ to the maximum penetration of CPI probe. The highest score for each sextant was determined and recorded in the appropriate box.

**Method of probing:**

The tip of the probe was gently inserted keeping it parallel to the long axis of the tooth between the tooth and gingival margins starting at the distobuccal surface of the index tooth to the full depth of the sulcus or pocket, and probing depth read by observing the position of the black band. The distal, midsurface

and mesial on both facial and lingual/palatal surface of each index tooth was probed. The probing was carried out by moving it with short upward and downward movement from distal to mesial surface towards the contact area along the buccal sulcus. A similar procedure was carried out for the lingual surface.

**Community periodontal index (CPI) scores:**

- Code 0: Healthy.
- Code 1: Bleeding observed during or after probing.
  Note: If neither pathological pocketing nor calculus is observed, but bleeding occurs after gentle probing, a designated tooth or teeth should be inspected for the presence or the absence of bleeding before the subject is allowed to swallow or close his mouth. At times bleeding may become evident only after probing then gingival bleeding is scored code 1.
- Code 2: Calculus or other plaque retentive factors such as ill fitting crowns or poorly adapted edges of restoration were either seen or felt during probing.
  Note: If no pockets are observed which involves or exceeds the coloured area of the CPI-C probe, but supra and subgingival calculus or other plaque retentive factors are detected code 2 is assigned. It is unnecessary to examine for gingival bleeding.
- Code 3: Pockets of 4-5mm i.e. gingival margin was within the black band on the probe (the black band on the probe is partially visible).
  Note: If the deepest pocket found at the designated tooth or teeth in a sextant is 4 or 5mm, code 3 is recorded. There is no need to examine for calculus or bleeding.
- Code 4: Pockets 6 mm or more i.e. black band on probe was not visible. Note: If designated tooth or teeth were found to have 6 mm or deeper pockets in sextant being examined a code of 4 was given to the sextant. Recording of code 4 made further examination of that sextant unnecessary as there is no need to record the presence or absence of pathological pocket 4 or 5 mm, calculus or bleeding.
- Code X: Excluded sextant (less than 2 teeth present). When only one tooth or no teeth were present in a sextant, it is considered as an excluded sextant.

**Loss of attachment scores:**

Loss of connection was estimated provided that CEJ was apparent. It was measured from the base of the pocket to the CEJ and the following codes were given.

- Code 0: Loss of attachment 0-3mm that is CEJ not visible and CPI score 0-3.

If the CEJ is not visible and CPI score is 4 or if the CEJ is visible:-

- Code 1: Loss of attachment 4-5mm that is CEJ within the black band.
- Code 2: Loss of attachment 6-8mm that is CEJ between the upper limit of the black band and 8.5mm ring.
- Code 3: Loss of attachment 9-11 ring that is CEJ between 8.5mm and 11.5mm ring.
- Code 4: Loss of attachment 12mm or more that is CEJ beyond 11.5mm ring.
- Code X: Excluded sextant.
- Code 9: Not recorded that is CEJ neither visible nor detectable.

## 4. RESULTS

The study was conducted among the sugar factory workers of Karad Taluka. In 1200 collected sample, 27 subjects were rejected from the concentrate as they didn't meet the necessary measures. The rejected subjects were either finished dental replacement wearers or totally edentulous or who were not able to take an interest. Every one of the excess 1173 individuals agreed to partake in the review.

**COMMUNITY PERIODONTAL INDEX:**

Of the total population under study, 269 (22.93%) had bleeding on probing (code 1), 465 (39.64%) calculus (code2) and 439 (37.43%) had pocket of 4-5 mm (code 3).

**LOSS OF ATTACHMENT (LOA):**

168 (14.32%) had a loss of attachment of 0-3mm (code 0) according to CPI index calculations, 822 (70.08%) had a loss of attachment of 4-5mm (code 1), and 183 (15.60%) had loss of attachment of 6-8mm (code 3).

### 4.1 Statistical Analysis

For factual examination Chi-Square test has been utilized in the current review. The information gathered was broke down involving SPSS 21(Statistical Bundle for the Sociologies 21, IBM Partnership, US).

In the present study a significance was obtained when association of CPI and LOA were compared with age groups, sex, socioeconomic status, systemic conditions, diet, smoking and other habits with p value 0.00001. Significant association between CPI and frequency of brushing habit was present with p

value 0.0411, association between Loss of attachment and frequency of brushing habit was also significant with p value of 0.0033.

**AGE:**

The review test was isolated into three age gatherings. 611 (52.09 %) belonged to 25-34 years (code 1), 354 (30.18%) to 35-44 years (code 2) and 208 (17.73%) belonged to 45-54 years (code 3).

**CPI Vs Age Groups:**

A statistically significant value was obtained when CPI was compared with age groups (p=0.00001). 168 (80.77%) subjects in the age groups of 45-54 years had CPI score 3.100 (16.37%) whereas, 171(48.31%) subjects in the age group of 25-34 years and 35-44 years had CPI score of 3.

**LOA Vs Age Groups:**

A statistically significant value was obtained when LOA was compared with age groups (p=0.00001). 468 (76.60%) subjects in the age groups of 25-34 years had LOA score 1, in the age group of 35-44 years 262 (74.01%) had LOA score 1, and 69 (19.49%) had LOA score 2. In the age groups of 45-54 years 92 (44.23%) subjects showed LOA score 1, 114 (54.81%) showed LOA score 2.

**SEX:**

In the study population 887 (75.6%) respondents were males (code 1) and 286 (24.38%) were females (code 2).

**CPI Vs Sex:**

Statistically significant result obtained when CPI of males and females were compared (p=0.00001). 434 (48.93%) males had CPI score 3 where as 5 (1.75%) females had CPI score 3.

**LOA Vs Sex:**

Majority 655 (73.84%) of male subjects had LOA score 1, 181 (21.41%) had LOA score 2. Whereas 167 (58.39%) of female subjects had LOA score 1 and only 2 (0.75) females had LOA score 2. Statistically significant result was obtained on comparing LOA with sex. (p=0.00001)

**LITERACY LEVEL:**

Only 15 (1.28%) respondents were illiterate (code 1), 1019 (86.87%) and 139 (11.85%) were studied up to secondary (code 2) and above secondary level (code 3) of education respectively.

**SOCIOECONOMIC STATUS:**

40 (3.41%) of respondents belonged to upper middle class [code 2], 341 (29.07%) to lower middle [code 3], and 792 (67.52%) belonged to upper lower [code 4].

**CPI Vs Socioeconomic status**

Association between CPI and Socioeconomic status showed that 28 (70%) subjects belonging to upper middle class, 216 (63.34%) to lower middle class, 195 (24.62%) to upper lower class had CPI score 3. The p= 0.00001 was obtained showing the statistical significance.

**LOA Vs Socioeconomic status**

Association between LOA and Socioeconomic status showed that in the upper lower class 583 (73.61%) subjects had LOA score 1 and 57 (7.2%) had LOA score 2. 215 (63.05%) subjects belonging to lower middle class had LOA score 1 and 112 (32.84%) had LOA score 2, whereas 24 (60%) subjects with LOA score 1 and 14 (35%) with LOA score 2 belonged to upper middle class. There was statistical significant association present between LOA and Socioeconomic status (p=0.00001).

**PRESENCE OF SYSTEMIC CONDITIONS**:

Only 38 (3.24%) of respondents were aware of having systemic disease.

**CPI Vs Systemic conditions:**

A critical worth (p=0.00001) was gotten when the presence or nonappearance of fundamental circumstances was co-connected with CPI. 36 (94.74%) subjects with foundational infection had a higher level of locales with pockets of 4-5mm profundity.

**LOA Vs Systemic conditions:**

A significant value (p=0.00001) was obtained when the presence or absence of systemic conditions was co-related to LOA. 27 (71.05%) subjects with systemic disease had a higher percentage of sites with LOA score 2 and 11 (28.95%) subjects had LOA score 1.

**ORAL HYGIENE METHODS:**

All the subjects of the study that is 1173(100%) used tooth brush and tooth paste [code 1] for brushing their teeth.

**FREQUENCY OF BRUSHING HABIT:**

Only 6 (0.51%) total respondents brushed more than twice daily (code 1), 41 (3.50%) brushed twice daily (code 2), and 1126 (95.99%) brushed once daily (code 3).

**CPI Vs Frequency of brushing habit:**

There was significant result (p=0.0411) obtained when frequency of brushing habit was compared to CPI. 428 (38.01%) subjects who brushed once daily showed CPI score 3. Whereas 8 (19.51%) who brushed twice daily and 3 (50%) subjects had CPI score 3.

**LOA Vs Frequency of brushing habit:**

There was significant result (p=0.0033) obtained when frequency of brushing habit was compared to LOA. 177 (15.72%) subjects showed LOA score 2 and 795 (70.60%) showed LOA score 1 who brushed once daily. Whereas 4 (9.76%) had LOA score 2 and 23 (56.10%) had LOA score 1 who brushed twice daily.

**DIET:**

261 (22.25%) of the population consumes vegetarian food (code 1) and 912 (77.75%) had mixed diet (code 2).

**CPI Vs Diet:**

The diet pattern also showed a significant association (p=0.00001) with the CPI score. 409 (44.85%) subjects had mixed diet pattern showed CPI score 3, as compared to 30 (11.4%) vegetarian subjects with CPI score 3.

**LOA Vs Diet:**

The diet pattern also showed a significant association (p=0.00001) with the LOA score. 661 (72.48%) subjects had mixed diet pattern showed LOA score 1 and 170 (18.64%) showed LOA score 2, as compared to the 161 (61.69%) vegetarian subjects with LOA score 1 and 13 (4.98%) with LOA score 2.

**FORM OF SMOKING:**

478 (94.09%) of the population smoked cigarettes (code 1), 30 (5.91%) smoked beedi (code 2).

**DURATION OF SMOKING:**

224 (44.09%) of the study population have been smoking for less than 5 years (code 1),1 (0.20%) have been smoking since 5 years (code 2) and 283 (53.71%) smoking for more than 5 years (code 3).

**FREQUENCY OF SMOKING:**

435 (85.63%) of the population smoke 1-5 times per day (code 1), 73 (14.73%) smoke 6-10 per day (code 2).

**CPI Vs Smoking habit:**

There was significant result (p = 0.00001) obtained when smoking habit was compared to CPI. 329 (64.76%) Subjects with smoking habit showed CPI score 3. 168 (33.07%) showed CPI score 2 and 11 (2.17%) shoed CPI score 1. 297 (44.66%) Subjects who were nonsmokers had a CPI score 2 and 110 (16.54%) had CPI score 3, 258 (38.80%) showed CPI score 1.

**LOA Vs Smoking habit:**

There was significant result (p = 0.00001) obtained when smoking habit was compared to LOA. 154 (30.31%) Subjects with smoking habit showed LOA score 2 and 352 (69.29%) showed LOA score 1. Whereas 29 (4.36%) showed LOA score 2 and 470 (70.18%) showed LOA score 1 who were nonsmokers.

**OTHER HABITS:**

755 (64.36%) have the habit of chewing tobacco (code 1), 65 (5.54%) have the habit of areca nut chewing (code 2), and 48 (4.09%) consume alcohol (code 3).

**DURATION OF OTHER HABIT:**

212 (24.42%) have been having the above habits for less than 5 years (code 1), 7 (0.81%) having the habit since 5 years (code 2), and 647 (74.77%) had other habits for more than 5 years (code 3).

**CPI Vs Other habits:**

Association between CPI and other habits showed statistically significant results (p= 0.00001). 31 (64.5%) subjects who consumed alcohol had CPI score 3, 36 (55.38%) subjects with habit of areca nut chewing had CPI score 2, 389 (51.52%) subjects with habit of tobacco chewing had CPI score 3 and 198 (64.92%) subjects with none of the other habits had CPI score 1.

**LOA Vs Other habits:**

Association between LOA and other habits showed statistically significant results (p= 0.00001). 15

(31.25%) subjects who consumed alcohol had LOA score 2 and 32 (66.67%) subjects had LOA score 1. 49 (75.38%) subjects with habit of areca-nut chewing had LOA score 1. 569 (75.36%) subjects with habit of tobacco chewing had LOA score 1 and 172 (56.39%) subjects with none of the other habits had LOA score 1.

## 5. MULTIPLE LOGISTIC REGRESSION ANALYSIS OF CPI SCORES

In this analysis age, sex, education, systemic conditions, diet, smoking habits are significant predictors of CPI scores. The odds ratio of age is 8.97 with 95% confidence interval 6.33 and 12.73. It means that subjects above 35 years of age have approximately 8 times more chances of occurrence of periodontal disease by CPI scores as compared to their counterpart.

The odds ratio of sex is 0.05 with 95% confidence interval 0.01 and 0.23. It means that male subjects have 0.5 times more chances of occurrence of periodontal disease by CPI scores as compared to females. The odds ratio of education is 0.51 with 95% confidence interval 0.3 and 0.8. It means that illiterate subjects had 0.5 times more chances of occurrence of periodontal disease by CPI scores as compared to educated subjects.

Presence of systemic conditions also showed 4.6 times more chances of occurrence of periodontal disease by CPI scores as compared to the absence of systemic conditions. The 95% confidence interval for population was 1.08 and 19.8.

Subjects with Mixed diet habit had 2.23 times more chances of occurrence of periodontal disease by CPI scores as compared to subjects who are vegetarian, with 95% confidence interval of 1.27 and 3.9 for the population.

Smokers had 1.9 times more chances of occurrence of periodontal disease by CPI scores as compared to nonsmokers with 95% class interval of 1.34 and 2.77.

### MULTIPLE LOGISTIC REGRESSION ANALYSIS OF LOA SCORES:

This analysis showed age, education, frequency of brushing, diet, smoking habits; other habits are significant predictors of LOA scores. The odds ratio of age is 8.45 with 95% confidence interval 4.88 and 14.65 it means that subjects above 35 years of age have approximately 8 times more chances of occurrence of periodontal disease by LOA scores as compared to their counterpart.

The odds ratio of education is 0.49 with 95% confidence interval 0.24 and 0.99 it means that illiterate subjects had 0.4 times more chances of occurrence of periodontal disease by LOA as compared to educated subjects.

Subjects with brushing habit of once a day showed 1.6 times more chances of occurrence of periodontal disease by LOA scores as compared to brushing twice daily. The 95% confidence interval for population was 1.06 and 2.67.

Subjects with mixed diet habit had 13.08 times more chances of occurrence of periodontal disease by LOA as compared to subjects who are vegetarian, with 95% confidence interval of 3.09 and 55.4 for the population.

Smokers had 9.3 times more chances of occurrence of periodontal disease by LOA as compared to nonsmokers with 95% confidence interval of 3.8 and 22.9. Subjects with other habits had approximately 8.4 times more chances of LOA, with 95% confidence interval of 4.88 and 14.65 for the population.

## 6. DISCUSSION

As of late, modern wellbeing programs have perceived the need of keeping up with oral wellbeing and have accentuated the requirement for exceptional insurances to forestall the oral infections. This is primarily a result of the consequences of few examinations that showed high pervasiveness of dental infection among various industry workers [9].

However unavoidable trends are clearing the cutting edge world, there is no or negligible effect on dental field in agricultural nations. The level of pay spent on clinical consideration has been expanded over the most recent couple of many years yet comparable improvement isn't seen in dental consideration. Commonness of periodontal sicknesses depends on illness definition or indicative models. Greater part of cross sectional reviews to evaluate pervasiveness of periodontal illness have utilized CPITN [10,11].

The current survey point towards a typical periodontal wellbeing status among the sugar assembly line laborers, with weakening of the periodontal status with age and females having better periodontal status when contrasted with guys. The lower instructive and financial status, utilization of tobacco in various structures has prompted more periodontal annihilation [12]. Every one of the previously mentioned boundaries could go about as conceivable gamble pointers for periodontal sickness.

Kundu D et al. (2011) [13] conducted an epidemiological study, to find out the prevalence and severity of periodontal diseases in 22,452 individuals above 15 years in West Bengal using CPITN Index. The samples were chosen by arbitrary bunch inspecting and weighed by age, sex, local area, pay bunch, instructive level, diet example and home. They reasoned that periodontal sickness is far reaching in West Bengal with predominance of score 2 in every one of the gatherings. A positive connection seemed to exist between age, sex, financial status, training level and dietary propensities with periodontal status, which helped in future preparation of dental administrations in the state.

Bhardwaj et al. (2012) [14] in Shimla city (Himachal Pradesh, India), conducted an observational and cross sectional study on 1008 (705 males and 303 females) dentate subjects with mean age of 41.35 ± 8.31 years. CPI in accordance with WHO criteria was used and the influence of age on periodontal health status was assessed. It was found that score 2 was the highest among all the age groups where as score 0 was the lowest. The presence of 4-5 mm pocket was more prevalent in the age group of 18- 24 while periodontal pockets of 6 mm or more was more prevalent in the age group 55- 58 years. The presence was significantly higher among non-gazette than in gazette employees.

Singh et al., (2021) [15] carried out a cross sectional study to assess community periodontal index and treatment needs among 1000 Beedi factory workers aged 19-60 years in Patna, Bihar. Majority showed 67.2% had CPI Codes 2 followed by 12.3% falling in CPI code 3 and 9.7% of subjects in CPI code 4. The study presented high prevalence of periodontal disease among beedi factory workers, as age advances the prevalence of disease and treatment needs also increased.

Tirth et al. (2013) [16] carried out a study to assess as well as compare the oral hygiene practices and periodontal health among industrial and non-industrial populations of Moradabad city. A total sample of 1000 subjects participated in the study with 500 subjects being randomly selected from brass industries and general population each. All the subjects were in the age group of 30-50 years and the workers with 5 years working experience were only considered for inclusion. Periodontal wellbeing was surveyed with Local area Periodontal File (CPI) while oral hygiene practices and demographic data were recorded using a pre-designed questionnaire. Statistical analyses of the data revealed, bleeding and calculus were most prevalent periodontal indicators in both the groups; approximately there were double the number of subjects in industrial workers group (10.2%) with shallow periodontal pockets than the general population (5.6%). None of non-industrial subjects presented deep periodontal pockets whereas 0.6% industrial workers had deep periodontal pockets. None of the study subjects had excluded sextants. There were no massive contrasts between the review bunches for oral hygiene frequency. Periodontal status of brass industry workers was found to be poor than the general population. Tooth cleaning frequency did not differ significantly between the industrial workers and general population.

## 7. SUMMARY

The current local area based epidemiological review was attempted to survey the periodontal status among sugar assembly line laborers of Karad taluka. Periodontal disease is also affected by various risk factors some of which directly and some of which indirectly influence the progression of periodontal disease. An attempt was also made to identify the risk factors which may alter the progression of periodontal disease. The community periodontal index (CPI) developed by WHO in collaboration with the FDI was used. A total of 1173 subjects, belonging to 3 age groups 25-34 years, 35-44 years and 45-54 years were selected. The results obtained were analyzed statistically. It was seen that of the total population under study, 22.93% (score 1 i.e. 269 subjects) had bleeding on probing, 39.64% (score 2 i.e. 465 subjects) had calculus or other plaque retentive factors, 37.43% ( score 3 i.e. 439 subjects ) had a pocket of 4-5mm. 14.32% (score 0 i.e. 168 subjects) had a loss of attachment of 0-3mm according to CPI index calculations and 85.67% (score 1i.e. 1005 subjects) had a loss of attachment of more than 3 mm. Sugar factory workers were exposed to certain risk factors. Subjects with habits like smoking, alcohol consumption, tobacco and areca nut chewing had a poorer periodontal status than the other subjects. Exposure to these risk factors might have added to the crumbling of periodontal wellbeing. There is a need to make the people aware of the effects of these risk factors and motivate them to quit the habits they practice, for a better health and better living. Moreover, sugar factory workers have limited knowledge about overall health and very minimal knowledge especially about the oral health. This clearly indicates the need for educating and motivating this population in maintaining good periodontal health.

## 8. CONCLUSION

The following conclusions were drawn from the present study:

- Subjects above the age of 35 years have more chances of occurrence of periodontal disease than the subjects below the age of 35 years. As age increases the prevalence of periodontal disease also increases.
- With increase in level of education and better socioeconomic status the level of periodontal disease decreased.
- A majority of the sugar factory worker population practice deleterious habits like smoking, alcohol consumption, areca nut and tobacco chewing.
- Subjects with deleterious habits have more periodontal destruction than the other subjects.

## CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

### FUTURE PERSPECTIVE

In the radiance of these perceptions from the current review, the accompanying suggestions can be made:

- The dental health care attitude which attaches more importance to treatment of a disease should be changed towards periodontal health care attitude which emphasizes prevention.
- The sugar factory workers should be educated and motivated regarding the need of oral health care.
- Good oral health care facilities should be made available to the sugar factory worker population.
- Oral health care facilities should be provided in accessible areas where people can reach out for the treatment or in the form of mobile dental units and satellite centers.
- Oral health care facilities should be made affordable to this community.
- Since these factory workers form a well confined group of this region, easily accessible group efforts should be extended to carry out programmes for health education and to meet the treatment needs of this population, thus enhancing their periodontal health which in turn improves their oral and general health.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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## PROFORMA: (ANNEXURE I)

**BOXES 1-4:** These boxes are reserved for the WHO code for the country in which the study was carried out and is left blank.

**BOXES 5-10**: Year month and day of examination was recorded.

**BOXES 11-14(A):** Each subject examined is assigned a identification number which is recorded in these boxes beginning from 0001.

**BOX 15:** This is for examiner code. In the present survey, only one examiner participated. So the code assigned is 1.

**BOX 16:** If the subject is being re-examined to assess reproducibility, then the first (original) examination is recorded "1" and any subsequent duplication examinations are coded 2,3,4, etc. in the space provided. For all subjects for which duplicate examination have been made, data from the first examination only are included in the survey analysis.

Name of the subject: The information is recorded in the space provided.

**BOXES 17-20:** The year and month of birth was entered for cross checking purpose.

**BOX 21-22(B):** The age of the subject at the last birthday recorded in these boxes.

**BOX 23(C):** This box is for recording the sex of the subject. Code 1 is assigned for male and Code 2 for female.

**BOX 24(D):** This box is used to record the educational status of the subjects.

**Code 1:** Illiterate

**Code 2:** Up to secondary level

**Code 3:** Above secondary level

**Code 4:** Illiterate/No formal education

**BOX 25:** The occupation of the individual is recorded in these boxes as follows

Code 1: Sugar factory worker.

**BOX 26:** This box is to record the income of the subject per month in Rupees.

**BOX 27(E):** The socioeconomic status of each subject is recorded in the boxes as Follows

Code 1: Upper class (Rs 32050 and above)
Code 2: Upper middle (Rs 16020-32049)
Code 3: Lower middle (Rs 8010-16019)
Code 4: Upper lower (1601-8009)
Code 5: Lower class (less than Rs 1600)

**BOX 28(F):** This box is used to record the presence or absence of any systemic disease. Subjects were told to specify the disease. Example: Diabetes mellitus

Code 1: Present
Code 2: Absent

**BOX 29(G):** This is used to record the oral hygiene method practiced by the subject.

Code 1: Tooth brush and paste.
Code 2: Chew stick.
Code 3: Finger
Code 4: Others

**BOX 30 (H):** This is to record the frequency of brushing

Code 1: More than twice a day
Code 2: Twice a day
Code 3: Once a day

**BOX 31 (I)**: Diet

Code 1: Vegetarian
Code 2: Mixed diet

**BOX 32 (J):** This is to record the smoking habits

Code 1: Smoker
Code 2: Nonsmoker

**BOX 33 (K):** This is to record the form of smoking

Code 1: Cigarette
Code 2: Beedi

**BOX 34 (L):** This is to record the duration of smoking

Code 1: < 5 years
Code 2: Since 5 years
Code 3: > 5 years

**BOX 35 (M):** This is to record the frequency of smoking per day

Code 1: 1-5
Code 2: 6-10
Code 3: 11-20
Code 4: > 20

**BOX 36 (N):** This is to record other habits.

Code 1: Tobacco chewing
Code 2: Areca nut chewing
Code3: Alcohol consumption

**BOX 37 (O):** This is to record the duration of the habit practiced.

Code 1: < 5 years
Code 2: Since 5 years
Code 3: > 5 years