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PERIODONTAL HEALTH IN THE MARBLE MINING WORKERS OF UDAIPUR CITY, INDIA.

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ABSTRACT

Objectives: The study was aimed to evaluate the periodontal status of the mining workers of the Udaipur city and compare the same with the general population. **Materials and Methods:** cross sectional survey was conducted on 500 mining employees and 480 general population. The demographic data and the periodontal status was recorded according to the World health organization Performa. The periodontium was checked using the community periodontal index probe. The data was subjected to statistical analysis using SPSS version 21 and chi square test and Cramer's "v" test was used to check the intra group and the inter group difference. **Results:** healthy periodontium was seen in 7.60% of mining employees and in the general population it was 10.42%. Bleeding was seen in 17.80% in mining workers and 24.17% in general population. Maximum number of the sample had the problem of calculus with 39% mining population and 35.63% general population reporting the same. There existed a significant difference in between the mining workers (<0.01) and in between the general population and the mining workers (<0.05). **Conclusion:** the periodontal Health Status of the current mining population group is poor. Proper education in the form of oral hygiene instructions and the periodic oral checkups is necessary. It is Advised to conduct frequent awareness programmes to educate the mining workers regarding the deleterious effects of the habits.

KEYWORDS: employees, mining workers, periodontal health, CPI, oral health.

INTRODUCTION

Work and the work related environment is the one which determines the individual's health in the present scenario. As an average normal person spends maximum of time in his working environment, it is the major contributor in determining the persons overall health. Location of oral cavity and its functional capabilities are such that the work environment has direct influence on it. And it's a proven fact the environmental hazards can add to the poor oral cavity conditions in many of the occupations.[1, 2]

Adding to it most of the mining workers according to the government survey are malnourished, have poor health and have physical impairment due to the accidental injuries in the work environment.[3] One more factor which is major contributor to the poor oral cavity condition in the mining workers is the habits like the alcohol consumption and the tobacco usage. These habits are developed owing to the strenuous working condition.[4,5, 6] The work environment of chemical, industrial, mining industries affects the oral cavity[7-10] and it's been reported that the major oral cavity diseases like dental caries, periodontitis, cancerous and precancerous lesion, malocclusions and the traumatic injuries have bearing on the overall well-being of the individual.[11]

Prevalence of periodontal disease in many of the occupation is evident, but the studies related to the prevalence of periodontal diseases in the marble mining workers are very few. Mining is one of the oldest occupation and since from ages the hazardous conditions of mining make the mining employees vulnerable to the oral diseases. The present study is aimed to evaluate the periodontal status of the marble mining workers and to compare the same with the general population.

MATERIALS AND METHODS

Udaipur city is known for its export quality marble and the marble mining industry is one of the staple employments of this region. A cross sectional study was conducted on the 500 mining employees and on 480 general population for recording the periodontal health status. The ethical clearance for the study was obtained from the Post Graduate Research Board (PGRB)

committee of the institution. The sample size was decided after consulting the previous studies of similar nature for determining the lowest prevalence of the significant target lesion. The demographic data collected for the sample included age, sex, type of employment and years of experience. Depending upon this the mining employees were segregated into five different units like; the Administrative unit (A), the Maintenance unit (M), the Transportation unit (T), the Cutting unit (C) and the Polishing unit (P). The data for the general population was collected from the outpatient department of the dental college were the subjects came for the routine dental checkup.

Prior permission of the mining owners was obtained before doing the oral cavity examination. The purpose of the study was explained to the employees and the consent for their willing participation was procured. The examination was conducted randomly by one calibrated examiner. The calibration of the examiner was standardized by reexamining the oral cavity of the ten employees after a week. And the kappa statistics for the same was accounted for 80%. The oral cavity was examined in the day light and an additional artificial light was used whenever it was deemed necessary. The examination was carried out using a mouth mirror and the Community Periodontal Index (CPI) probes as per the recommendation of the world health organization (WHO) and was recorded in the standard Performa of WHO.[12] The instruments were sterilized using the cold sterilization procedure using a 2% glutaraldehyde solution after the examination of each subject.

The collected data was tabulated and was subjected descriptive statistical analysis using the Statistical package for Social Sciences (SPSS) version 21. The Chi-Square test and Cramer's 'V' test were applied to obtained the statistical difference between intra group and the inter group data.

RESULTS

Table 1 shows the demographic data of the sample. There were no female employees in the mining group and taking this into account only the male general population was included in the comparative group.

Table 1: Distribution of study population based on groups

Study Population	No
Granite factory employees (Study group)	500
General Population (Comparative group)	480
Total	980

Table 2 shows the segregation of the mining employees according to type of work assigned to them.

Table 2: Distribution of marble mining labourers based on work units

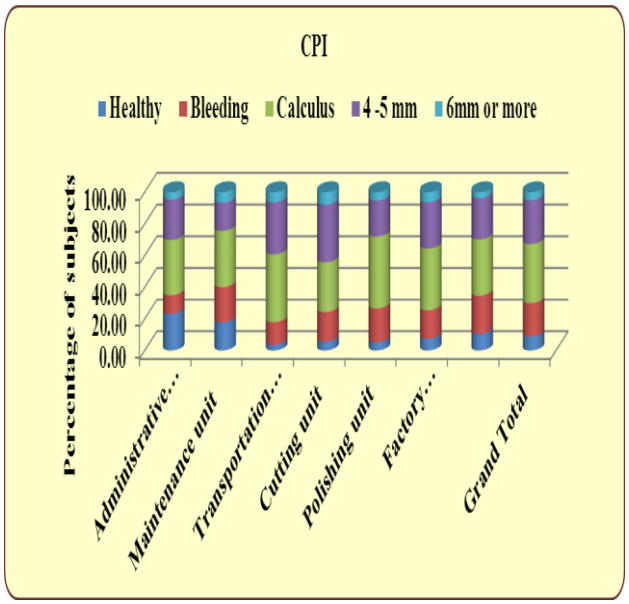
Factory employees (F.E)	No
Administrative unit (A)	43
Maintenance unit (M)	45
Transportation unit (T)	140
Cutting unit (C)	140
Polishing unit (P)	132
Total	500

The overall periodontal status of the population is depicted in the table 3 and Graph 1. Healthy periodontium was seen in administration employees than in any other mining employees. Presences of calculus was noted in higher percentage in all the mining employees and same was true in case of general population. However, there existed statistically significant difference in between the mining employee groups (<0.01) and between the mining employees and the general population (<0.05). However, the degree of association of the findings between the groups and in between the mining employees was not significant, as depicted by the Cramer's 'v' test value.

Table 3: Distribution of study population according to community periodontal index (CPI) scores.

CPI		Factory employees					F.E -Total	G.P	Total
		A	M	T	C	P			
Healthy	**No**	10	8	5	8	7	38	50	88
	%	23.26	17.78	3.57	5.71	5.30	7.60	10.42	8.98
Bleeding	**No**	5	10	20	26	28	89	116	205
	%	11.63	22.22	14.29	18.57	21.21	17.80	24.17	20.92
Calculus	**No**	15	16	60	44	60	195	171	366
	%	34.88	35.56	42.86	31.43	45.45	39.00	35.63	37.35
4 -5 mm	**No**	11	8	46	51	30	146	125	271
	%	25.58	17.78	32.86	36.43	22.73	29.20	26.04	27.65

6mm or more	**No**	2	3	9	11	7	32	18	50
	%	4.65	6.67	6.43	7.86	5.30	6.40	3.75	5.10
Total	**No**	43	45	140	140	132	500	480	980
	%	100	100	100	100	100	100	100	100
Intra group - F.E: χ^2 = 40.351, df = 16, P = 0.001 (<0.01) (HS) Cramer's V = 0.142									
Inter group (F.E. Vs G.P.): χ^2 = 11.910, df = 4, P = 0.018 (<0.05) (S) Cramer's V= 0.110									
***A - Administrative unit; M-Maintenance unit; T-Transportation unit; C-Cutting unit; P-Polishing unit; F.E –Factory employees; G.P-General Population**									



Graph 1: Distribution of study population according to community periodontal index (CPI) scores.

DISCUSSION

Periodontal diseases are caused due to multiple factors and one of the most important factor among them is the environment in which the person is living and that constitute the occupational environment as well. The occupations like mining industries are highly strenuous in nature and most of the employees owing to this strain revert to the habits like ghutka chewing, alcohol consumption, bidi and cigarette smoking. These habits are not kind to the oral cavity proper, gingival and periodontal problems ensure with this. The current paper aimed to evaluate the periodontal status of the mining employees of the Udaipur city.

Total of 92.4% population had gingival and the periodontal problems, which is low in comparison to the results obtained for the salt lake workers in Jaipur and the stone mining workers of Jodhpur.[13, 14] However, the results coincided with the National Oral Health Survey and Fluoride Mapping, 2002-03, of India and Rajasthan, the survey conducted by Dagli et al on the stone mining workers and the survey conducted by Abbas et al on the underground coal mining workers.[15, ,16, 6, 17] Similar prevalence as also been noted by the earlier studies in the different industrial workers.[18, 19, 20] It is noted in the earlier studies that an individual if manages to have lip seal during the working hours will tend to have lesser chances of periodontal health risks than in the non-lip sealed individuals.[1] In the other study on the Finnish industrial population, 97±58 of mean estimated periodontal treatment need was reported. This is backed by the study on the Chinese factory workers, were the periodontal status was poor and the amount of calculus, the shallow and the deep pockets noted was very high.[21] The trend discussed here shows that the periodontal health status of the mining or the factory workers is poor in all over the world. Thus, the role of the working or the occupational environment seems to be the major factor which triggers the unhealthy changes related to periodontium. In German factory workers the prevalence of periodontal disease was 100%, which is way higher than the statistics of the present study.[22] In comparison to the present study results with lesser prevalence of periodontal diseases was noted in sea farers of Gujarat with only 75% of them reporting to be having poor periodontal status.[23]

The reports also appreciate the difference in the periodontal health status between the factory workers and the control group and the difference was statistically significant. Even the results of our study show the significant difference between the mining workers and the general population for the periodontal health.[24] The deep pockets of more than 6mm were found in 6% of the current mining population and similar prevalence rate was noted for the marble stone mining workers of the Jodhpur city.[14]

When we considered the different categories of the mining workers, poor periodontal status was noted for the transportation, cleaning and the polishing unit workers. The periodontal health was far better in the administrative group than the other mining workers. The intra group difference noted was statistically significant. Similar reports were published by Lie et al, where the periodontal health status was evaluated in the aluminum factory workers and there also the administration unit employees had less problematic periodontal health.[25]

Further, the study carries the scope to establish the correlation between the years of experience of the employees and the oral habits they indulged with the periodontal health status.

CONCLUSION

The results of the study emphasize the need of developing the healthy working environment for the mining employees by providing them the protective wares, by giving them the proper oral hygiene training, by scheduling the periodic oral health checkups regularly and by educating them about the ill effects of the oral habits and there by aiding them in quitting the habit.

REFERENCES

1. Vianna MIP, Santana VS, McKelvey W. Periodontal health and oral mucosal lesions as related to occupational exposure to acid mists. Community Dent Oral Epidemiol, 2005; 33: 341–8.
2. Shizukuishi S, Hayashi N, Tamagawa H, Hanioka T, Maruyama S, Takeshita T, et al, Lifestyle and periodontal health status of Japanese factory workers. Ann Periodontol, 1998; 3: 303–11.
3. Verma DK, Purdham JT, Roels HA. Translating evidence about occupational conditions into strategies for prevention. Occup Environ Med, 2002; 59: 205-14.
4. Siegrist J, Rödel A. Work stress and health risk behaviour. Scand J Work Environ Health, 2006; 32(6): 473–81.
5. Duraiswamy P, Kumar S, Dagli RJ, Chandrakant, Kulkarni S. Dental caries experience and treatment needs of green marble mine laborers in Udaipur district, Rajasthan, India. Indian J Dent Res, 2008; 19: 331-4.
6. Dagli RJ, Kumar S, Dhanni C, Duraiswamy P, Kulkarni S. Dental health among green marble mine laborers, India. J Oral Health Comm Dent, 2008; 2: 1-7.
7. Grover Harpreet S, Bharadwaj A, Singh Y. Smoking and periodontal disease. J Pharm Sci Innov, 2013; 2(2): 7-13.
8. Mullally BH. Influence of Tobacco smoking on the onset of periodontitis in young persons. Tobacco Induced Diseases, 2004; 2(2): 53-65.
9. Warnakulasuriya S, Dietrich T, Bornstein M, Peidro EC, Philip Preshaw M, Walter C, et al. Oral health risks of tobacco use and effects of cessation. Int Dent J, 2010; 60(1): 7-30.
10. Tezal M, Grossi SG, Ho AW, Genco RJ. Alcohol consumption and periodontal disease the third National Health and Nutrition Examination Survey. J Clin Periodontol, 2004; 31: 484–88.
11. Petersen PE, Henmar P. Oral conditions among workers in the Danish granite industry. Scand J Work Environ Health, 1988; 14(5): 328-31.
12. WHO. 4th ed. WHO; Geneva: 1997. Oral health surveys, basic methods.
13. Sanadhya S, Nagarajappa R, Sharda AJ, Asawa K, Tak M, Batra H, et al. The Oral Health Status and the Treatment Needs of Salt Workers at Sambhar Lake, Jaipur, India. J Clin Diagn Res, 2013; 7(8): 1782-6.
14. Solanki J, Gupta S, Chand S. Oral Health of Stone Mine Workers of Jodhpur City, Rajasthan, India. Safety and Health at Work, 2014; 5: 136-9.
15. Bali RK, Mathur VB, Talwar PP, Chanana HB. National Oral Health Survey and Fluoride Mapping 2002-2003 India. Dental Council of India and Ministry of Health and Family Welfare (Government of India), 2004.
16. Bali RK, Mathur VB, Talwar PP, Chanana HB, Ramesh GVN, Jain J. National Oral Health Survey and Fluoride Mapping 2002-2003 Rajasthan. Dental Council of India and Ministry of Health and Family Welfare (Government of India), 2004.
17. Abbas I, Mohammad SA, Peddireddy PR, Mocherla M, Koppula YR, Avidapu R. Oral Health Status of Underground Coal Mine Workers of Ramakrishnapur, Adilabad District, Telangana, India – A Cross-Sectional Study. J Clin Diagn Res, 2016 Jan; 10(1): ZC28–ZC31.
18. Tirth A, Yadav V, Tangade PS, Ravishankar TL, Chaudhary S, Mathur A. Assessment of Dental caries status, Periodontal health and oral hygiene practices among two Populations of Moradabad city, India. Int J Occu Safety and Health, 2013; 3(2): 8–11.
19. Dini EL, Guimarães LO. Periodontal condition and treatment needs in a worker population in Araraquara, SP, Brazil. Int Dent J, 1994; 44 (4): 309-11.
20. Dharmashree S, Chandu GN, Pushpanjali. Periodontal status of industrial workers in Davangere city, Karnataka-A Descriptive Cross sectional study. J Ind Ass Pub Health Dent, 2006; 7: 20-4.
21. Pilot T, Lu ZY, Lin ZQ, Yen WP, Cao GR. Periodontal condifions in 35-40 year-old factory workers in Shanghai. Community Dent Oral Epidemiol, 1989; 17: 216.
22. Hohlfeld M, Bernimoiilin JP. Application of the community periodontal index of treatment needs (CPITN) in a group of 45-54-year-old German factory workers. J Clin Periodontol, 1993; 20: 551-5.
23. Aapaliya P, Shinde K, Deswal AK, Mohapatra S, Saleem S, Mangal S, et al. Assessment of oral health among seafarers in Mundra Port, Kutch, Gujarat: a cross-sectional study. Int Marit Health, 2015; 66, 1: 11–7.
24. Amin WA, Al-Omoush SA, Hattab FA. Oral health status of the workers exposed to acid fumes of phosphate and battery industries In Jordan. Int dental journal, 2001; 51: 170-3.
25. Lie T, Due NA, Abrahamsen B, Boe OE: Periodontal health in a group of industrial employees. Community Dent Oral Epidemiol, 1988; 16: 42-6.