INTRODUCTION

People’s health and consequently the health of society have great influence on development and abilities of the community. Individual health ultimately reflects not only the singular influence of biology but also the complex constellation of many other dimensions. Health arises not only from a doctor’s office but also from our homes, jobs, schools, communities, and places of worship—in short, where we live, labor, learn, play, and pray.[1] The oral cavity is one of the main biological structures of the body, which has a great effect on people’s health and as a consequence, the health of the society.[1] Oral healthcare in India has been neglected from a long time and oral diseases are considered the least importance even though India is considered a fast developing nation.[2] It is well known that a close relation lies between dental caries experience and socioeconomic status leading to the concentration of the disease in communities living in deprived conditions.[3] Periodontal disease is one of the important public health problems. Its impact on an individual’s quality of life reflects complex social norms and cultural values and traditions. Personal risk factors such as poor lifestyle and negative psychosocial conditions have been said to play an important role in the etiology of adult periodontitis.[3] The working population in India usually belong to the lower socioeconomic group.[4] Workers are involved with the local productivity and economically active population.[5] The workers are also involved in smoking, chewing tobacco, and drinking habits, which predispose to oral diseases, which are of predominantly gingival and periodontal diseases. Socioeconomic conditions

Background: Oral health is a vital part of general health and is a valuable asset of every individual. The working population in India usually belong to the lower socioeconomic group. Aim: This study was conducted to assess the oral health status and treatment needs of Gunj marketing yard laborers. Materials and Methods: A descriptive study was conducted among 550 laborers of Gunj marketing yard of Raichur city. A specially designed questionnaire was used to assess the demographic variables and oral hygiene practices. Oral health status was assessed using the WHO assessment form 1997. Simplified oral hygiene index (1964) was used to assess the oral hygiene status. Results: The mean age of the study participants was 35.1 (± 8.02) years and the mean decayed teeth, missing teeth, filled teeth, and decayed, missing, filled teeth was 2.06 (± 1.49), 0.76 (± 2.53), 0.13 (± 0.39), and 2.95 (± 3.02), respectively. The prevalence of dental caries and periodontal disease was 85.7% and 93.5%, respectively. The oral hygiene status was poor in 45.9% of the study participants. Conclusion: This study demonstrates poor oral hygiene and high prevalence of periodontal diseases and dental caries as well as a large proportion of unmet dental needs among these laborers.

Keywords: Dental caries, laborers and treatment needs, oral health, periodontal diseases

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adversely influence oral health status of individual’s by indirectly lowering, preventing, or postponing their use of appropriate self-care or professional services. One such condition is the financial loss of hourly wages for workers who take off to visit the dentist, a general inability to pay for dental care, poor access to dental care, lack of insurance, and lack of regular source of dental care. Dental disease is a major but too often overlooked and misunderstood cause of morbidity. It is closely linked to lifestyle as well as the availability of preventive and dental treatment services. There are more proportions of unfulfilled treatment needs in this working class as they are not provided with dental treatment or dental insurance from management. Hence, the present study was aimed to assess the oral health practices, to evaluate the complete oral health status and suggest the treatment needs to be required for Gunj marketing yard laborers of Raichur city, Karnataka.[4]

**Materials and Methods**

**Study design**

A descriptive cross-sectional study was conducted to assess the oral health status and treatment needs of laborers in Gunj marketing yard, Raichur city.

**Source of data**

A total of 510 of 550-registered laborers working at Gunj market yard of Raichur city, Karnataka, have given their consent to participate in the study. Of 510 laborers, 327 were male and 183 were female.

**Inclusion criteria**

- Registered laborers who were present on the day of examination were included in the study
- Those who have given the voluntary consent were included in the study.

**Exclusion criteria**

Laborers who have systemic diseases were not included in the study.

**Method of collection of data ethical committee clearance**

The study protocol was approved by the Institutional Ethical Committee and Review Board, Raichur and clearance was given. The prior permission was obtained from the secretary of the Gunj market yard, Raichur, to conduct the study.

**Study group consent**

Informed written permission was obtained from the study participants after explaining the nature of the study. Consent form was presented both in English and Kannada languages for easy understanding and acceptance of the study participants. Laborers unable to read consent form were explained thoroughly by the examiner and then consent was obtained.

All the data collected were recorded in a pro forma by a trained assistant. The data were collected over 4 months from February to June 2014. Recording of data was done in the office of Gunj marketing yard.

**Questionnaire**

A specially prepared, structured questionnaire was interviewer-administered to the laborers to know the demographic variables and oral hygiene practices. All the questions were explained individually in their local language, and the answers were recorded by the examiner himself. Socioeconomic status was recorded using the Kuppuswamy scale (2011).

**Pilot study**

A pilot study was carried out on 20 laborers to determine the feasibility and applicability of the questionnaire and clinical examination. The necessary modifications and changes were made. The patients who were examined in the pilot study were not included in the final study. Examiner calibration and reliability was assessed before the start of the study.

**Clinical examination**

Laborers were examined for oral health status, treatment needs, and oral hygiene. Oral health status and treatment needs were assessed using the WHO Oral Health Assessment Form (1997).[6,7] Oral hygiene status was assessed using oral hygiene index-simplified (OHI-S) and was according to the criteria given by Greene and Vermillion in 1964.[8] The average time taken to each patient for getting answers and clinical examination was 15–20 min.

**Statistical analysis**

Data were analyzed using SPSS V16.0 IBM software package. Cohen’s Kappa statistics was used to assess the examiner reliability. Descriptive statistics was used to assess mean age, socioeconomic class distribution of the study participants, their educational qualification, and questionnaire response, and Chi-square test was used to evaluate the association between the independent variables such as age, educational qualification, and socioeconomic class with the dependent variables such as questionnaire response. Statistical significance is considered $P < 0.05$.

**Results**

**Demographic characteristics**

Table 1 shows the demographic characteristics of the study participants, a total of 510 study participants were examined with a minimum age of 20 years...
and a maximum of 69 years. Mean age of the study participants was 35.1 (± 8.02) years. Nearly 64.1% (327) were male and 35.9% (183) were female. Socioeconomic status was measured using Kuppuswamy scale (2011) revealed that majority of the study participants belonged to lower/upper lower class 92.7% (473). Educational qualification revealed that 86.3% (440) of the study participants are illiterate.

**Oral hygiene practices**
Out of 510 laborers, 169 (33.1%) laborers used toothbrush to clean their teeth, 223 (43.7%) laborers used a finger to clean their teeth, and 118 (23.2%) laborers used neem stick to clean their teeth. In this study, 172 (43.9%) laborers used toothpaste to clean their teeth, 61 (15.6%) laborers used tooth powder to clean their teeth, 148 (37.7%) laborers used charcoal to clean their teeth, and 11 (2.8%) laborers used brick powder to clean their teeth.

**Extra oral examination and temporomandibular joint assessment**
The laborers examined had the normal extraoral appearance, and none of the laborers examined had any symptoms of temporomandibular joint (TMJ) disorder, with no laborers in the study showing signs of clicking and tenderness on palpation of TMJ.

**Oral mucosal conditions**
Among 510 laborers, 74 (14.5%) laborers had leukoplakia, 14 (2.8%) laborers had Candidiasis, 23 (4.5) laborers had an abscess, and 21 (4.1%) laborers had other conditions such as pigmentation and 378 (74.1%) were free from the oral mucosal condition.

**Periodontal condition**
The periodontal condition was assessed using community periodontal index; the prevalence of periodontal disease was 93.5%, only 6.5% of the laborers had healthy periodontium. The mean number of sextants per person with healthy periodontium was 0.5 (± 1.56), whereas with calculus, it was 3.6 (± 1.99)

**Periodontal loss of attachment**
This study showed no periodontal loss of attachment in 371 (72.8%) of the laborers [Table 2].

**Dentition status and treatment needs**
The prevalence of dental caries among laborers was 85.7%.

Tables 3 and 4 show mean a number of teeth/person according to dentition status and treatment needs code.

The mean decayed, missing, filled teeth/person in this study was 2.95 (± 3.02), mean decayed teeth/person was 2.06 (± 1.49), mean missing teeth/person was 0.76 (± 2.53), and mean filled teeth/person was 0.13 (± 0.39).

In this study, 72.3% required one surface filling, 27.6% need two surfaces filling, 34.5% need pulpal care and restoration, and 18.2% required extraction while 22.1% required the need for other care Removable partial denture (RPD).

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**Table 1: Demographic characteristics of the participants**

| Variable          | n (%) |
|-------------------|-------|
| Gender            |       |
| Males             | 327 (64.1) |
| Females           | 183 (35.9) |
| Age group         |       |
| 20-29             | 120 (23.5) |
| 30-39             | 265 (52.0) |
| 40-49             | 100 (19.6) |
| 50-59             | 22 (4.3) |
| ≥60               | 3 (0.6) |
| Socioeconomic status |      |
| Upper             | 0     |
| Upper middle      | 0     |
| Middle/lower middle | 3 (0.6) |
| Lower/upper lower | 473 (92.7) |
| Lower             | 34 (6.7) |
| Educational status |      |
| Illiterate        | 440 (86.3) |
| Primary school    | 8 (1.6) |
| Secondary school  | 40 (7.8) |
| Higher school     | 19 (3.7) |
| Profession        | 3 (0.6) |
| Total             | 510 (100) |

**Table 2: Distribution of study participants according to loss of attachment**

| Loss of attachment | n (%) |
|--------------------|-------|
| 0 mm               | 371 (72.8) |
| 4-5 mm             | 116 (22.7) |
| 6-8 mm             | 20 (3.9) |
| 9-11 mm            | 0     |
| 12 mm or more      | 0     |
| Excluded sextant   | 3 (0.6) |
| Not recorded       | 0     |
| Total              | 510 (100.0) |

**Table 3: Mean number of permanent teeth per person according to the dentition status code**

| Dentition status                                | Mean number of teeth per person |
|-------------------------------------------------|---------------------------------|
| Sound                                           | 28.36                           |
| Decayed                                         | 2.06                            |
| Filled no decay                                 | 0.13                            |
| Missing as a result of caries                    | 0.76                            |
| Missing any other reason                        | 0.05                            |
| Unerupted tooth (crown)/unexposed root          | 0.68                            |

Rao, et al.: Oral health status and treatment needs
Prosthetic status and prosthetic needs

In the present study, none of the laborers had a prosthesis in the upper and lower jaw.

In the present study, 396 (77.6%) laborers required no prosthetic needed in the upper jaw, 63 (12.4%) required one-unit prosthesis, 48 (9.4%) required multi-unit prosthesis, and 3 (0.6%) required full prosthesis.

In the present study, 403 (79.0%) laborers required no prosthetic needed in the lower jaw, 62 (12.2%) required one-unit prosthesis, 42 (8.2%) required multi-unit prosthesis, and 3 (0.6%) required full prosthesis.

Dentofacial anomalies (dental esthetic index)

In the present study of the 510 laborers, 260 (51%) of laborers had no abnormality or minor malocclusion, 177 (34.7%) of laborers had definite malocclusion, 39 (7.6%) of laborers had severe malocclusion, and 34 (6.7%) of laborers had very severe or handicapping malocclusion.

Oral hygiene status (simplified oral hygiene index)

The oral hygiene status in the present study was assessed using OHI-S, based on OHI-S criteria. 507 laborers were examined for OHI-S. Among 507 laborers, 46 (9.1%) had good oral hygiene. Two hundred and twenty-eight (45.0%) had fair oral hygiene, and 234 (45.9%) had poor oral hygiene.

Age group, community periodontal index, and loss of attachment

Table 5 shows a statistically significant association between age group, periodontal condition, and periodontal loss of attachment of the laborers was seen ($P < 0.05$).

The prevalence of deep pocket was found to be high among 50–59 years age group (95.5%) as compared to 40–49 years age group (89%). In the age group of 30–39 years, the shallow pocket was found to be 43%. In the age group of 20–29 years, the calculus was found to be (65%). The association between periodontal disease and age group of among 50–59 years was found to be highly statistically significant ($P < 0.001$).

In the age group of 50–59 years, 19 (86.4%) participants were found to be 4–5 mm of loss of attachment, whereas in 40–49 years age group 73% of participants were found to be 4–5 mm of loss of attachment, and participants in the age group of 30–39 years 23 (8.7%) found to be 4–5 mm of loss of attachment. The association between loss of attachment and age group 50–59 years was found to be statistically significant ($P < 0.001$) and it is more when compared to remaining age groups among the study population.

**Discussion**

In the present study, laborers age ranging between 20 and 69 years, with a mean age of 35.1 years, constituted the study participants. The distribution of participants by gender showed that the study population
slightly comprised more number of males (64.1%) than females (35.9%), which was almost similar to the study carried out the Baddi-Barotiwala-Nalagarh industrial hub, Himachal Pradesh.[15] This could be because the females seldom to join the laborious nature of work done in the market yard. Nearly 92.7% of the laborers belong to the upper lower socioeconomic class as per Kuppuswamy scale (2011). Illiterate laborers were 86.3%. This shows lack of minimum primary education. The most prevalent oral hygiene practices among the study population were the use of fingers (43.7%) to clean their teeth; these findings are in contrast to the study carried out among building construction workers in Chennai who used toothbrush to clean their teeth (76.9%).[3] The poor oral hygiene measures of these laborers in the present study could be due to lack of awareness among these laborers of simple oral health preventive measures (oral hygiene) as these majority of the laborers belonged to an upper lower socioeconomic class, who paid less attention to oral health. The prevalence of oral mucosal lesions in the present study was 25.9%, which was much higher than the study conducted among transport workers in Chandigarh (1.6%),[10] factory employees in the Baddi-Barotiwala-Nalagarh industrial hub, Himachal Pradesh (11.4%).[15]

The prevalence of periodontal disease was high in the present study with only 6.5% of the laborers having healthy periodontium. The high prevalence (93.5%) of periodontal disease in the present study is comparable to studies carried out in Jaipur (96.4%),[9] Jodhpur city (95.01%),[19] and Chandigarh (90.7%),[10] but the findings are higher than the prevalence of periodontal disease among study carried out in Mangalore city (83.2%)[13] and South Australian (88.7%).[17] This could be due to the poor oral hygiene status, illiterate and belonging to the lower socioeconomic status group. Furthermore, it could be due to the lack of knowledge about the competent practices of good oral hygiene measures as in the present study. In the current study, majority of them had calculus (39.0%), followed by deep and shallow pocket, respectively (26.9%, 24.3%), whereas study conducted in Moradabad,[11] showed that 36.2% of calculus, followed by shallow and deep pockets, respectively (10.2%, 0.6%) and in other study conducted in Davangere,[14] showed that 69.9% of calculus which was much higher than the present study followed by shallow and deep pockets, respectively (22%, 6.7%). The prevalence of dental caries was high in the present study with only 14.3% of the laborers are free from dental caries. The high prevalence (85.7%) of dental caries in the present study is comparable to studies carried out in Antara steel factory workers in Pasir Gudang, Johor, Malaysia (87.4%)[12] and female beedi factory workers in Mangalore city (82.6%).[13] but the findings are higher than the prevalence of dental caries among study carried out in factory employees in Baddi-Barotiwala-Nalagarh industrial hub, Himachal Pradesh (18.5%),[15] bakery workers in Lucknow city (60%),[13] confectioner workers in Bangalore city (60.3%),[20] green marble mine laborers in Keshriyaji (71.1%),[16] and stone mine workers of Jodhpur city (74%).[19] This might be due to poor oral health knowledge and practices among the study population, as the laborers belonging to the lower socioeconomic status group.

In the present study, 72.3% required one surface filling, 27.6% need two surfaces filling, 34.5% need pulpal care and restoration, and 18.2% required extraction while 22.1% required the need for other care (RPD). Another study at Sambhar lake, Jaipur,[9] India, shows that 78.2% required one surface filling, 41.3% required two surface filling, 76.1% required pulpal care and restoration, and 27.4% required extraction which was comparatively higher than our study. The need for other care (5.4%) which is lesser than our study. The study shows the very low utilization of dental services by laborers with an attitude of negligence toward their oral health.

Limitations

- The major limitation of the study was its cross-sectional nature, which limited our ability to relate the time pattern with the risk factors and their complications
- More refined and informational results could be obtained if the present study inference would be compared with nonlaborers population, questioned and examined by the same codes and criteria.

Conclusion

The results of this study shown that Gunj marketing yard laborers in the community do suffer from various oral health problems such as dental caries and periodontal problems.

Recommendations

A thorough understanding of the oral health problems of this population and a planned, coordinated, interdisciplinary approach involving a team of specialists between medical and dental, and social care sectors is necessary to create oral health awareness, to develop oral health policies, to provide basic oral health services, and to reduce the disease burden on this underprivileged population. Hence, appropriate public health actions at various levels need to be taken like health education and health promotion is of utmost important to curtail the disease in this population.
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Conflicts of interest
There are no conflicts of interest.

REFERENCES
1. Akrad ZT, Beitollahi JM, Khajetorab AA. DMFT (decayed, missing, filled, teeth) oral health index in sweets and cable industry workers. Iran J Public Health 2006;35:64-8.
2. Duraiswamy P, Kumar TS, Dagli RJ, Chandraekant, 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.
3. Sri SS, John J, Saravanan S, Pradeep KR. Periodontal health status and treatment needs among building construction workers in Chennai, India. J Int Oral Health 2011;3:7-13.
4. Nagarajappa R, Sanadhya S, Sharda AJ, Asawa K, Tak M, Batra M, et al. Assessment of the Periodontal Status among Kota Stone Workers in Jhalawar, India. J Clin Diagn Res 2013;7:1498-503.
5. Batista MJ, Rihs LB, Sousa ML. Workers oral health: A cross-sectional study. Braz J Oral Sci 2013;12:178-83.
6. Patil VV, Shigli K, Hebbal M, Agrawal N. Tooth loss, prosthetic status and treatment needs among industrial workers in Belgaum, Karnataka, India. J Oral Sci 2012;54:285-92.
7. World Health Organization. Oral Health Surveys-Basic Methods. 4th ed. Geneva, Switzerland: World Health Organization; 1997.
8. Greene JC, Vermillion JR. The simplified oral hygiene index. J Am Dent Assoc 1964;68:7-13.
9. Sanadhya S, Nagarajappa R, Sharda AJ, Asawa K, Tak M, Batra M, et al. The oral health status and the treatment needs of salt workers at Sambhar Lake, Jaipur, India. J Clin Diagn Res 2013;7:1782-6.
10. Gambhir RS, Sogi GM, Veeresh OA, Sohi RK, Randhawa A, Kakar H. Dental health status and treatment needs of transport workers of a Northern Indian city: A cross-sectional study. J Nat Sci Biol Med 2013;4:451-6.
11. Tirth A, Shankar RT, Mathur A, Tandon V. Oral hygiene practices and periodontal health among brass industry workers and general population of Moradabad city, India. J Oral Health Res 2013;4:8-12.
12. Abdal Majid Z, Zain RB. The dental health of factory workers in Pasir Gudang, Johor (Malaysia). Dent J Malays 1988;10:38-41.
13. Vanishree N, Sequeira PS, Rao A, Gupta N, Chandrashekar BS, Mohan AN. Oral health status and treatment needs of female beedi factory workers in Mangalore city, India. Al Ameen J Med Sci 2014;7:26-33.
14. Shaikh H, Shankar S, Vinay S. Assessment of periodontal status and treatment needs among beedi factory workers Harapanahalli Town, Davangere District, Karnataka. JIADS 2011;2:13-7.
15. Bansal M, Veeresh OA. Oral health status and treatment needs among factory employees in Baddi-Barotiwala-Nalagarh Industrial hub, Himachal Pradesh, India. Indian J Oral Sci 2013;4:105-9.
16. Dagli RJ, Kumar S, Dhanni C, Duraiswamy P, Kulkarni S. Dental health among mine green marble labourers, India. J Oral Health Community Dent 2008;2:1-7.
17. Srikandi TW, Clarke NG. Periodontal status in a South Australian industrial population. Community Dent Oral Epidemiol 1982;10:272-5.
18. Grover S, Grover A. Assessment of dentition status and treatment needs of bakery workers working in Lucknow city. Int J Oral Health Res Rev 2013;1:40-5.
19. Solanki J, Gupta S, Chand S. Oral health of stone mine workers of Jodhpur city, Rajasthan, India. Saf Health Work 2014;5:136-9.
20. Rekha R, Hiremath SS. Oral health status and treatment requirements of confectionery workers in Bangalore city. A comparative study. Indian J Dent Res 2002;13:161-5.