Original Article

Dental Prosthetic Status and Treatment Needs of Green Marble Mine Laborers, Udaipur,India

Santhosh Kumar[1], Jyothi Tadakamadla[2], Harish Tibdewal[3], Prabu D[4], Suhas Kulkarni[5]

ABSTRACT

Background: Assessment of prosthetic needs in a special population would aid in planning the oral health service programs. The aim of this study was to assess the dental prosthetic status and prosthetic needs in a sample of green marble mine laborers of Udaipur, India.

Methods: The study population comprised of 513 green marble mine laborers who were divided into four age groups (15-24, 25-34, 35-44 and 45-54). Prosthetic status and treatment needs along with dentition status were recorded using WHO oral health assessment form. The examination was done by two examiners who were calibrated for inter examiner variability with kappa statistic of 86%. Chi-square test was used to compare the proportions. The significance level was set at $\alpha = 0.05$.

Results: Mean number of missing teeth due to any reason for the whole sample was 0.82. Approximately, 96.5% of the subjects were free from any kind of prosthesis and only the rest of sample (3.5%) had single fixed prosthesis. The overall prosthetic treatment needs was 15.5%. Prosthetic needs increased as the age increased with the age group 45-54 showing the greatest. Prosthetic needs in the lower arch were found to be greater than that of the upper arch. Single unit prosthesis comprised a greater percentage of the whole prosthetic needs (41%).

Conclusion: Most of the prosthetic needs of the study population were unmet. The prosthetic needs being four and half-fold greater than the status.

***Keywords*:** Dental prosthesis, Fixed bridges, Full denture, Partial denture.

Received: *May 2010*
Accepted: *September 2010*

Dent Res J 2011; 8(3): 123-127

Introduction

It has been suggested by several authors that the loss of teeth could be a disturbing emotional experience for many people[1-3]. Some people associate the loss of teeth with growing old, which may be emotionally depressing.

Much like the fact that decline in activities of daily living[4] is a final common pathway for a broad range of decrements in general health, tooth loss constitutes a final common pathway for most dental diseases and conditions. This tooth loss can lead to substantial impacts on quality of life.[5] Naturally, in an effort to prevent or ameliorate some of these decrements in oral health-related quality of life, dentists frequently recommend removable or fixed prosthetic treatment for tooth loss. However, it has been suggested by previous studies that the number of dentures should be decreased with higher priority for the preservation of natural dentition.[6]

There is abundant data on dental prosthetic needs of elderly institutionalized and non institutionalized population but most of these studies are from developed countries. It was observed among the elderly population living in long term care facilities in Singapore that 56.2% were edentulous and 94% of the population was in need of partial dentures.[7] A study from India which was con-

[1] Senior lecturer, Department of Preventive Dental Science, College of Dentistry, Jazan University, Jazan, KSA.
[2] Senior lecturer, Department of Maxillofacial Surgery & Diagnostic Sciences, College of Dentistry, Jazan University, Jazan, KSA.
[3] Postgraduate Student, Department of Preventive and Community Dentistry, Darshan Dental College and Hospital, Udaipur, Rajasthan, India.
[4] Associate Professor, Department of Preventive and Community Dentistry, Darshan Dental College and Hospital, Udaipur, Rajasthan, India.
[5] Professor, Department of Preventive and Community Dentistry, Darshan Dental College and Hospital, Udaipur, Rajasthan, India.
Correspondence to: Santhosh KumarTadakamadla, Email: santosh_dentist@yahoo.com

www.mui.ac.ir

ducted on institutionalized elderly population observed that 88% of the population had no prosthesis and 79.7% required some kind of prosthesis.[8] However, no study has been done till date on prosthetic status and treatment needs of marble mine laborers and no information is available about the role of mining on prosthetic need, although a significant amount of research has investigated the role that race plays in risk for both partial and total tooth loss,[9] and consequently the risk for being ''eligible'' for prosthetic treatment. There are very few studies[10-12] that have assessed prosthetic status and treatment needs from India. Assessment of prosthetic needs in a special population like marble mine laborers would aid in planning the oral health service programs .Thus, the present study aimed to assess the dental prosthetic status and prosthetic needs in a sample of green marble mine laborers of Udaipur, India.

Materials and Methods

In the present cross-sectional study, the target population was chosen by stratified cluster sampling technique from four green marble mining regions of Udaipur namely Masoronkiovri, Rushabhdev, Khandiovri and Kagdarbhatiya which accounted for 513 individuals who were in the age range of 15 to 54 years. The subjects were divided into four age groups (15-24, 25-34, 35-44 and 45-54 years). Inclusion criterion comprised of subjects who were present on the days of survey. Those who were absent on the corresponding days of survey and subjects who reported systemic diseases like hypertension and diabetes mellitus were excluded from the study. The methodology and the methods used in the present study have been presented explicitly in a previous paper.[13] The examiners were two dentists who had been trained and calibrated for inter examiner variability and weighed kappa statistic was 86%.

The oral examination was conducted in natural day light and findings were recorded using WHO oral health assessment form.[14] The prosthetic status and needs along with dentition status were recorded.

Within the 'prosthetic status' variable the categories of 'no prosthetic restorations', 'fixed restorations' and `removable dentures' were differentiated. Subjects with both fixed restorations and removable dentures were considered separately. Dentition status comprised of recording decayed teeth, missing teeth due to caries or other reasons, traumatized teeth (fracture of tooth) and teeth with fixed restorations. Ethical clearance for the study was obtained from the Ethical Review committee of Darshan Dental College and Hospital (Udaipur, India). Data processing was done using SPSS software (version 15.0). Chi square was used to compare the proportions. The significance level was set at $\alpha = 0.05$.

Results

Table 1 shows the dentition status and the number of subjects in each age group. The mean number of decayed teeth was greater in the younger age groups in comparison to the older groups. The mean number of missing teeth due to caries or any other reasons was highest in the 45-54 years age group. None of the subjects had filled teeth, fissure sealants, and not erupted teeth.

It was observed that, 96.5% of the study population was free from any kind of prosthesis. Of the whole sample, only 3.5% had single fixed prosthesis and none of the subjects had more than one fixed prosthesis, partial denture or full removable denture. None of the subjects in the age range 25-54 had prosthesis. Among the youngest age group, 5.2% of the population had fixed prosthesis in both the upper and lower arches.

Table 1. Dentition status (mean and standard deviation per person) of the studied population

Age groups	N	Decayed teeth	Missing teeth due to caries	Missing teeth due to other reasons	Traumatized teeth	Bridge abutment, crown or veneer/implant
15-24	171	2.63 ± 0.89	0.15 ± 0.09	0.05 ± 0.01	0.15 ± 0.06	0.21 ± 0.11
25-34	162	3.11 ± 1.26	0.33 ± 0.12	0	0.22 ± 0.08	0
35-44	135	1.73 ± 0.92	0.33 ± 0.25	0.33 ± 0.18	0	0
45-54	45	1.2 ± 0.64	2.0 ± 1.6	3.40 ± 2.22	0.40 ± 0.28	0

www.mui.ac.ir

Figures 1 and 2 depict the whole prosthetic needs of study population in the upper and lower archs respectively. The overall prosthetic treatment needs in the study population was 15.5%. Prosthetic needs increased as the age increased with the oldest age group presenting greatest prosthetic needs both in the upper and lower arches. Almost one fifth (20%) of the persons belonging to 45-54 years old age group needed full prosthesis for lower arch. Prosthetic need in the lower arch was found to be greater than that of the upper arch. Single unit prosthesis comprised a greater percentage of the whole prosthetic needs (41%). Chi square analysis revealed significant difference between the age groups for various prosthetic needs in both the upper and lower arches ($p < 0.001$).

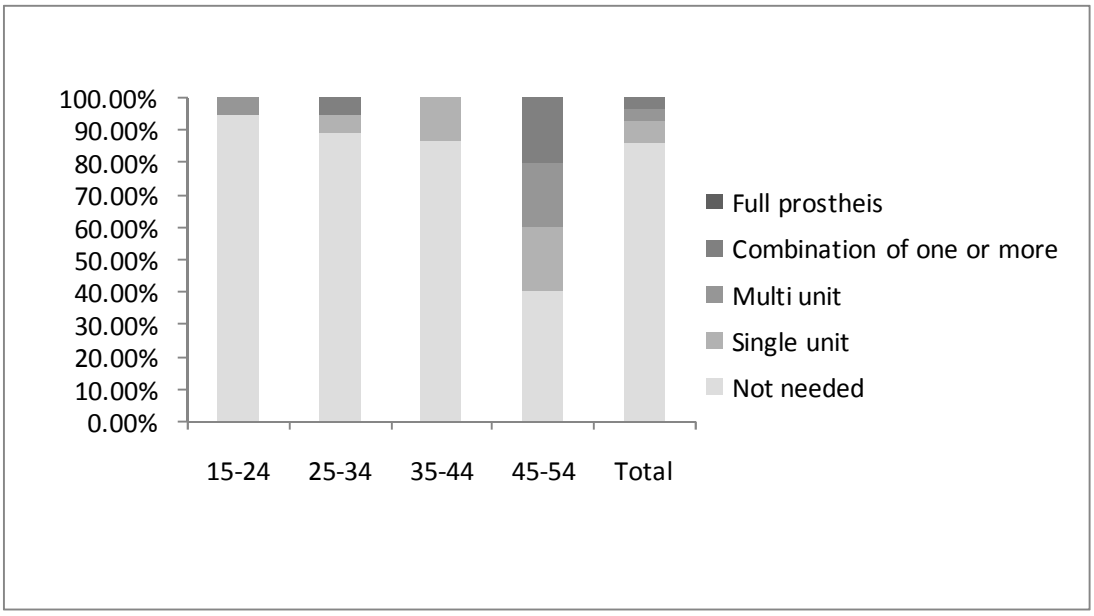

Figure 1. Prosthetic needs in the upper arch of the study population in relation to age groups. (Chi square = 133.91, d.f. = 9, P <0.001).

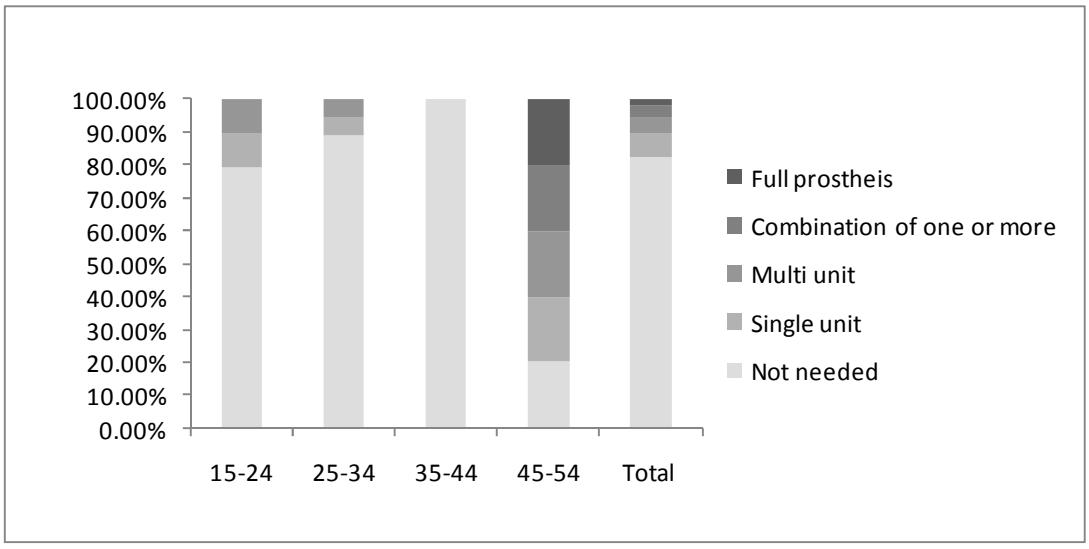

Figure 2. Prosthetic needs in the lower arch of the study population in relation to age groups. (Chi square = 235.52, d.f. = 12, P <0.001).

www.mui.ac.ir

Discussion

Many studies regarding dental prosthetic status and treatment needs were done on elderly individuals residing at elderly homes,[15] hospitals,[7, 16, 17] institutions[18-20] and elderly general population.[21-23] Prosthetic needs of our study was 15.5% which was very low when compared to that of previous studies.[15-23] In a study done on elderly home residents 82% of the subjects were in need of either fixed, removable or combined prosthodontic treatment.[22] The reason for this great difference in prosthetic needs between the present and past studies may be due to the reason that our study population comprised of adults (15 – 54 years). It has been established from a past study[24] that an increase in the educational level of a population affects the needs and demands of that population. The educational level and social standard of the study population was poor which led to unmet prosthetic needs. Past studies[25-27] have collected information regarding prosthetic needs as subjective and normative prosthetic treatment and found out that a discrepancy always exists between the subjective and normative needs, but in our present study we have recorded only normative prosthetic needs as only clinical examination of the subjects was done without any questionnaires or interviews.

No subject was in need of complete denture; the reason was that no subject was older than 60 years, while 20% of the subjects belonging to the oldest age group exhibited need of lower full prosthesis. This need is very low when compared to the past studies;[21-23] the reason might be the age factor. In the present study it was observed that the total prosthetic needs were 15.5% whereas in a study done on a representative German sample, 81% had normative prosthetic treatment needs.[25] This vast difference in prosthetic needs might be due to the difference in criteria used in the assessment of prosthetic needs between the studies. While assessing the prosthetic needs, Walter et al.[25] have included all those individuals with grade III mobile teeth, extreme malocclusion, intraosseous and non restorable hard tissue decay.

Treatment need of single unit prosthesis was the highest need reason being anterior teeth lost due to trauma in many subjects, trauma to anterior teeth was a common finding as marble mining requires working on slippery surfaces. However, it was also observed that many subjects (most of them belonging to the youngest age group) required single unit prosthesis in the lower arch which could be attributable to missing tooth due to caries. Greatest need was observed in oldest age group followed by youngest age group, need in 45-54 years old age group was due to teeth missing from periodontal disease whereas for the 15-24 years old age group it was due to teeth missing from dental caries.

Conclusion

Most of the prosthetic needs of the study population were unmet with prosthetic needs (15.5%) being approximately four and half folds greater than the prosthetic status (3.5%). Thus, the results obtained from the present study could be used in planning oral health programs for the study population.

References

1. Dodge CA. Prevention of complete denture problems by use of "overdentures". J Prosthet Dent 1973; 30(4): 403-11.
2. DeFranco RL. Overdentures. Dent Clin North Am 1977; 21(2): 379-94.
3. Renner RP, Foerth D, Levey M. Preventive prosthodontics-overdenture service. A case report. N Y State Dent J 1977; 43(1): 17-21.
4. Katz S, Ford AB, Moskowitz RW, Jackson BA, Jaffe MW. Studies of illness in the aged. The Index of Adl: A standardized measure of biological and psychosocial function. JAMA 1963; 185: 914-9.
5. Locker D, Miller Y. Evaluation of subjective oral health status indicators. J Public Health Dent 1994; 54(3): 167-76.
6. Heinrich R, Kunzel W, Vago P, Orschel H, Guckler A. [Prosthetic status, conditions of the oral mucosa and temporomandibular joint, as well as treatment needs in the elderly population of a Hungarian city (Gyor) II]. Fogorv Sz 1995; 88(6): 187-93.
7. Soh G, Chong YH, Ong G. Dental prosthetic status and needs of an elderly population living in long-term care facilities in Singapore. J Community Health 1992; 17(3): 175-81.
8. Shenoy RP, Hegde V. Dental prosthetic status and prosthetic need of the institutionalized elderly living in geriatric homes in Mangalore: A Pilot Study. ISRN Dentistry 2011, Article ID 987126; 2011: 3 pages.
9. Marcus SE, Drury TF, Brown LJ, Zion GR. Tooth retention and tooth loss in the permanent dentition of adults: United States, 1988-1991. J Dent Res 1996; 75(Spec No): 684-95.
10. Shigli K, Hebbal M, Angadi GS. Prosthetic status and treatment needs among patients attending the prosthodontic department in a dental institute in India. Eur J Prosthodont Restor Dent 2009; 17(2): 85-9.

www.mui.ac.ir

11. Bhat M. Oral health status and treatment needs of a rural Indian fishing community. West Indian Med J 2008; 57(4): 414-7.
12. Nadgere JB, Doshi AG, Kishore S. An evaluation of prosthetic status and prosthetic need amongst people living in and around Panvel, Navi-Mumbai-A Survey. Int J Prosthes Dent 2010; 1(1): 6-9.
13. Duraiswamy P, Kumar TS, Dagli RJ, Kulkarni S. Dental caries experience and treatment needs of green marble mine laborers in Udaipur district, Rajasthan, India. Indian J Dent Res 2008; 19(4): 331-4.
14. World Health Organization. Oral Health Surveys: Basic Methods. 4th ed. Geneva: World Health Organization; 1997.
15. Saub R, Evans RW. Dental needs of elderly hostel residents in inner Melbourne. Aust Dent J 2001; 46(3): 198-202.
16. Lewis S, Jagger RG, Treasure E. The dental prosthetic status of psychiatric in-patients in South Wales. Journal of Disability and Oral Health 2003; 4(1): 9-14.
17. Brauer L, Bessermann M, Frijs-Madsen B, Brauer E. Oral health status and needs for dental treatment in geriatric patients in a Danish district hospital. Community Dent Oral Epidemiol 1986; 14(3): 132-5.
18. Karkazis HC, Kossioni AE. Oral health status, treatment needs and demands of an elderly institutionalised population in Athens. Eur J Prosthodont Restor Dent 1993; 1(4): 157-63.
19. Thomson WM, Brown RH, Williams SM. Dentures, prosthetic treatment needs, and mucosal health in an institutionalised elderly population. N Z Dent J 1992; 88(392): 51-5.
20. Mersel A. Oral health status and dental needs in a geriatric institutionalized population in Paris. Gerodontology 1989; 8(2): 47-51.
21. Moskona D, Kaplan I. Oral health and treatment needs in a non-institutionalized elderly population: experience of a dental school associated geriatric clinic. Gerodontology 1995; 12(12): 95-8.
22. Catovic A, Jerolimov V, Catic A. Tooth loss and the condition of the prosthodontic appliances in a group of elderly home residents. J Oral Rehabil 2000; 27(3): 199-204.
23. Widstrom E. Loss of teeth and the frequency and condition of removable and fixed dentures in Finnish immigrants in Sweden. Swed Dent J 1982; 6(2): 61-9.
24. Ettinger RL, Beck JD. The new elderly: what can the dental profession expect? Spec Care Dentist 1982; 2(2): 62-9.
25. Walter MH, Wolf BH, Rieger C, Boening KW. Prosthetic treatment need in a representative German sample. J Oral Rehabil 2001; 28(8): 708-16.
26. Elias AC, Sheiham A. The relationship between satisfaction with mouth and number, position and condition of teeth: studies in Brazilian adults. J Oral Rehabil 1999; 26(1): 53-71.
27. Kiyak HA. Reducing barriers to older persons' use of dental services. Int Dent J 1989; 39(2):95-102.

www.mui.ac.ir