

Oral Health Status of Middle-Aged (45–55 Years) Rural Women: A Cross-Sectional Study from North India

Abstract

Aim: This study aimed to assess the oral hygiene practices and oral health status of middle aged (45–55 years) women residing in rural areas of Ambala district (Haryana). **Materials and Methods:** In this cross-sectional study, 79 villages were selected using simple random sampling technique through an online randomizer. The study participants (780) were selected through convenience sampling and oral health status was (dental caries, periodontal status, prosthetic needs, and dental fluorosis) recorded on a self-structured format based on World Health Organization Criteria (WHO, 1997). Group comparisons were done by using Chi-square test for categorical data. **Results:** In the present study, 69.2% of the study participants used toothbrush and toothpaste for cleaning teeth. Women in the age group of 45–50 years had lower mean Decayed, Missing and Filled Teeth (7.80 ± 5.21) when compared with the age group of 51–55 years (9.77 ± 6.16). Ninety-eight percentage of the women were in need of dental prosthesis. Among the study participants, 56.5% had 4–5 mm loss of attachment (LOA) and 23.2% had 6–8 mm of LOA. Difference between the need for multiunit dental prosthesis among the age groups (45–50 years) and (51–55 years) was statistically significant ($P < 0.05$). **Conclusion:** Thus middle-aged women residing in rural area have high oral care need; however, there is quite a gap between the need for dental care and the amount of dental care utilized.

Keywords: Dental caries, middle-aged women, periodontal status

Introduction

In a country like India, there is a significant disparity among men and women in terms of seeking health care.^[1] In general, it is seen that more men seek medical help when compared to women. This disparity can be attributed to our social fabric, in which men are given more importance in all the spheres and accordingly their health gets more medical attention.^[2,3]

Women's biology combined with other social and behavioral determinants have cumulative effect on their health. Girls and women face differential exposures and vulnerabilities throughout their life.^[4] One of the vulnerable periods of women's life is the middle age, when the hormonal changes during this life phase impact the women's physical, psychological health, and overall quality of life. Studies suggest that middle-aged women show increased susceptibility for developing plaques, gingivitis, periodontitis, and reduced tooth anchorage during menopausal transition

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of their life cycle.^[5] Additionally, these women in pre- and post-menopausal stages often complain of dry mouth, painful mouth sensation, burning mouth syndrome, loss of bone tissue which leads to periodontitis, higher oral hygiene index, and more number of Decayed, Missing, and Filled teeth (DMFT index).^[5-8] It has also been noted that these symptoms lead to further complications; for example, dry mouth can lead to mandibular dysfunction, diffuse gingival atrophy, oral ulceration, oral candidiasis, etc.^[5,6]

Therefore, dentists managing the women in this stage of life should evaluate for paucity of saliva, dental caries, dysesthesia, change in taste, atrophic gingivitis, periodontitis, and osteoporosis of the jaws, which may render them unsuitable for the prosthetic device or implants.^[6,7] Although many studies from India have evaluated middle-aged women for general health morbidity,^[9,10] limited data are available for the oral health status. Women in rural areas often show lack of utilization of health services owing to their health attitude, poor accessibility, and affordability of services.^[11]

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Most of the available literatures from India in this field are based on studies with small sample sizes and women attending the clinics. Moreover, none of the studies have studied the community-based middle-aged women for their oral health status. Therefore, a study is necessitated for the oral health status of middle-aged women (45–55 years) residing in rural communities of Ambala district.

Materials and Methods

This cross-sectional study was conducted in different villages of Ambala district of Haryana by holding dental care camps from December 2013 to October 2014 (11 months). For administrative purpose, Ambala district is divided into three blocks: Naraingarh, Ambala, and Barara. Nearly 55.6% of population lives in rural areas of Ambala district, of which 167,667 are women.^[12] Hence, the sample size was estimated using the following parameters on (Open Epi Info, CDC, Atlanta, Georgia, United States)^[13] with a population size of 200,000, with 95% confidence interval and hypothesized frequency of outcome factor in the population taken as 50%. Hence, the estimated sample size was 672 and anticipating the incompleteness of data while recording, a 15% of the sample was added to the estimated sample size to round off to 780. A total of 796 individuals were approached in the study, out of which 16 refused which generated 98% response rate. For this study, initially the phone numbers of Sarpanchs (elected village headmen) of various villages in Ambala District were obtained from the district authorities.^[14] We obtained a total list of 470 villages from three blocks of Ambala district [Figure 1].^[15] Out of these total villages, equal number of villages from each block were selected using online randomizer.^[16] The individuals were selected through convenience sampling. On the basis of their age, the study participants were divided into the following two groups: 45–50 years and 51–55 years. Each study camp was followed by free dental treatment for all the villagers attending the camp.

The study received approval from Research Board of the Institution and ethical approval from Institute Ethical Committee (Project No: 359 dated 27.11.2013). The principal investigator was trained and calibrated in the department by the consultants. The intraexaminer reliability was assessed using Kappa statistics^[17] $\kappa = 0.82, 0.76, 0.85,$ and 0.90 for dental caries, periodontal status, prosthetic needs, and dental fluorosis, respectively. The eligible participants who gave their informed consent were included in the study. Keeping in mind the sociocultural aspects and confidentiality, the demographic data that included level of education and socioeconomic status^[18,19] and personal information were obtained from one-to-one interaction by a trained female recorder. The participants were examined using Type III dental examination^[20] and oral health status was recorded using self-structured format designed on the basis of World Health Organization Basic Oral Health Surveys 1997.^[21] The variables measured were dental

caries, periodontal status, oral mucosal lesions, prosthetic status, prosthetic needs, and dental fluorosis.

Statistical analysis

The data were analyzed by using Statistical Package for the Social Sciences for Windows, Version 13.0 (SPSS Inc., Chicago, IL, USA). Mean and standard deviation were calculated for the continuous variables and frequencies and percentages were calculated for the ordinal and nominal variables. Group comparisons were done by using Chi-square test.

Results

The study included 780 women in the age range of 45–55 years with a mean age of 49.02 years. More than two-third of the participants were in the age group of 45–50 years (70.1%) and remaining (29.9%) were aged 51–55 years. Around 60% of the participants were illiterate.

Nearly 69.2% of participants were with the habit of using toothbrush and toothpaste as an oral hygiene aid, 91.6% were brushing their teeth at least once a day, and 75.6% of participants were in practice of cleaning tongue as well [Table 1].

The mean number of decayed teeth was 2.35 (± 1.88) and mean number of missing teeth was 5.93 (± 5.39), with higher number of decayed teeth in the age between 45 and 50 years and higher number of missing teeth in the age group of 51–55 years. Participants in the age group of 45–50 years had mean filled teeth of 0.12 (± 0.87) and participants in the age group of 51–55 years had mean filled teeth of 0.05 (± 0.48) [Table 2]. Nearly 59.1% of the participants were found to have root stumps. Almost 56.5% of the study participants had 4–5 mm loss of attachment (LOA) and 23.2% of the study participants had 6–8 mm LOA [Table 3]. Around 0.5% had oral mucosal lesions [Table 4] and only 0.2% had dental fluorosis. The distribution of partially edentulous among maxilla and mandibular arches was statistically significant ($P < 0.05$) [Table 5]. Nearly 65.3% of the study participants expressed need for dental treatment

Table 1: Oral Hygiene Practices of the Study Subjects

Variables	Frequency (%)
Preferred type of aid	
Toothbrush and Toothpaste	540 (69.2%)
Finger and Toothpowder	136 (17.4%)
Tree stick only	45 (5.7%)
Others	59 (7.5%)
Preferred frequency of Brushing Teeth	
At least once a day	495 (91.6%)
Twice a daily	38 (7.1%)
Thrice a day	7 (1.3%)
Tongue Cleaning	
Yes	590 (75.6%)
No	190 (24.4%)

and rest 34.7% had no felt needs, but the no felt need group did require one or more form of dental treatment.

Discussion

This study aimed to assess the oral health status of women in the age group of 45–55 years residing in the rural community of Ambala district, Haryana. This is possibly the largest study in terms of total number of samples included in the study. Sample size in our study was scientifically established when compared with earlier studies on menopausal women evaluating oral health status of middle-aged women.^[8,22-27] In the present study, 60.3% of

the study participants were illiterate. The high illiteracy rate of the study sample can be understood in the background of lower educational opportunity to the women during their childhood and adolescence probably, which has an effect on oral health practices.^[28]

Findings of the present study suggest that middle-aged women have more number of decayed teeth and missing teeth. The mean DMFT score obtained in the present study was comparatively less in comparison to previous studies.^[8,22-27,29-32] There is an increase in total mean DMFT with advancing age but is still less when compared to the findings in rural women from other countries.^[33,34] Similarly, studies on women residing in Thailand^[35] and a rural area in Norway^[33] reported higher rates of mean missing teeth when compared to the present study. Further, the present study also suggests much lower mean filled teeth, compared to previous studies from other parts of the world^[31,33,34,36] and women older than 50 years of age have lower mean filled teeth in comparison with studies done elsewhere on rural women dwellers.^[33,34] It is evident from the present study that women beyond 50 years of age retained less teeth which is in concordance with the results of a study from rural China where participants had <10 functional teeth.^[37] However, these findings are contrary to a study done in rural China where women had retained more teeth.^[34]

The LOA among the participants was similar to studies by Baleum *et al.*^[35] and Brennan *et al.*^[36] and indicates that there is a dire need to impart education toward oral health. Although 69.2% of women were using toothbrush for cleaning teeth; however, it was less when compared to 96.5% using toothbrush in a study from India evaluating the general oral health practices for other age groups.^[38] However, the findings differ from a study done by Zubiene *et al.*^[39] where only 25.6% of women complied with brushing their teeth at least once a day. Predominantly 69.2% were using oral hygiene aids which could have been influenced by the percolation of media awareness programs and advertisement of various tooth pastes and tooth brush on television, print media, and radio in our country.

Although 74.1% had visited a dental surgeon in the past, still 65.3% felt need for dental treatment in the present study. However, this study did not evaluate the specific reasons for the same (barriers). There could be many reasons for the same, such as poor access to dental health, cost of the dental health care, and low priority in seeking oral care.

Haryana is the first state to have dentists deployed in all the primary health centers (390)^[40] still there is underutilization of services among middle-aged women. This could be attributed to household responsibility, financial dependency on male spouse, inability in decision-making, and logistics.^[28]

The strength of this study is that it is a field study, rather than a hospital/health care based. The limitations of the

Table 2: Caries experience of study subjects

	Mean (±SD)
DMFT	2.35 (1.88)
	5.93 (5.39)
	0.10 (0.77)
Decayed teeth	
45-50 years	2.42 (1.86)
51-55 years	2.20 (1.91)
Missing teeth	
45-50 years	5.24 (4.83)
51-55 years	7.52 (6.23)
Filled teeth	
45-50 years	0.12 (0.87)
51-55 years	0.05 (0.48)
DMFT	
45-50 years	7.80 (5.21)
51-55 years	9.77 (6.16)

Table 3: Periodontal status of study subjects

Codes=Loss of Attachment in millimeter	Frequency (%)
Code 0=0-3 mm	148 (19.0%)
Code 1=4-5 mm	441 (56.5%)
Code 2=6-8 mm	181 (23.2%)
Code 3=9-11 mm	5 (0.6%)
Code 4=12mm or more	1 (0.1%)
Code X=Excluded	4 (0.5%)

Table 4: Type of oral mucosal condition and location of oral mucosal lesion in the study subjects

	Frequency (%)
Type of oral mucosal condition	
Presence of Ulceration	3 (0.4%)
Presence of Periapical abscess	1 (0.1%)
Absent	776 (99.5%)
Location of Oral Mucosal Lesion	
Present on Buccal Mucosa	3 (0.4%)
Present on Hard or soft Palate	1 (0.1%)
Absent	776 (99.5%)

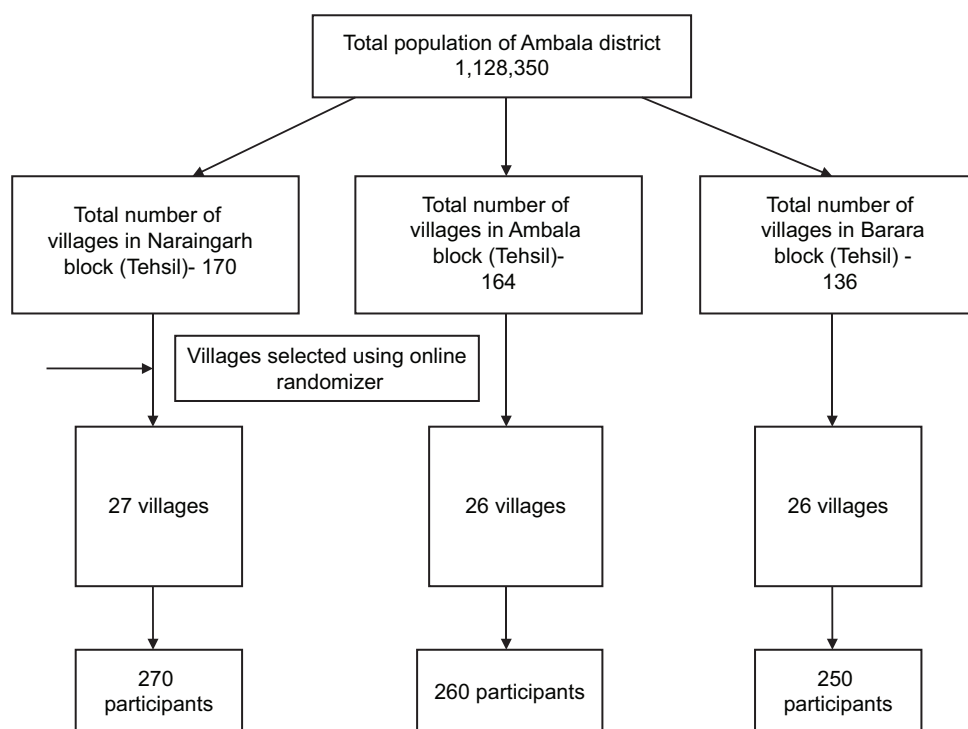


Figure 1: Sample selection

Table 5: Prosthetic need of study subjects

Prosthetic need	45-50 year (n=547)	51-55 year (n=233)	Chi-square value (P)
Maxilla			
No prosthesis needed	159 (29.0%)	39 (16.7%)	12.47 (0.0004)***
Need for one unit prosthesis	121 (22.1%)	42 (18%)	1.65 (0.19)
Need for multi-unit prosthesis	94 (17.2%)	54 (23.2%)	3.81 (0.05)
Need for combination of one/or multiunit prosthesis	173 (31.7%)	92 (39.5%)	4.49 (0.03)
Need for full prosthesis [#]	0	6 (2.6%)	11.02 (0.0009)***
Mandible			
No prosthesis needed	124 (22.7%)	40 (17.2%)	2.97 (0.08)
Need for one unit prosthesis	96 (17.5%)	46 (19.7%)	0.527 (0.46)
Need for multi-unit prosthesis	126 (23%)	44 (18.9%)	1.65 (0.19)
Need for combination of one and/multiunit prosthesis	199 (36.4%)	96 (41.2%)	1.61 (0.20)
Need for full prosthesis [#]	2 (0.4%)	7 (3%)	7.79 (0.005)**

[#]Chi-Square with Yates correction. *P<0.05; **P<0.01; ***P<0.001

present study are that we did not evaluate the factors which could have influenced the oral health status as well as the barriers among the study participants.

There is an urgent need to improve the dental health care facilities for this group of women through different approaches such as holding screening camps at the village level and referring those requiring further care to community health centers could be a useful and cost-effective method.

Female health workers could also serve as valuable resource to provide health education on oral health, and insist in utilization of dental services by popularizing government schemes available for middle-aged women in Ambala district such as Mukhyamantri Muft Ilaj Yojana

promoted by the Government of Haryana is a scheme which is providing 21 types of dental treatment free to the general population.^[41]

Conclusion

In general, middle-aged women residing in a rural Indian community setting were in need of high oral care; however, there is quite a gap between the need for dental care and the amount of dental care received.

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Conflicts of interest

There are no conflicts of interest.

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