Dentisry Section

Periodontal Health Status of Different Socio-economic Groups in Out-Patient Department of TMDC & RC, Moradabad, India

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ABSTRACT

Aims & Objective: To assess the oral health awareness and periodontal health status of different socio-economic groups in out-patient department of the Teerthanker Mahaveer Dental College and Research Centre (TMDC&RC), Moradabad, India.

Materials and Methods: This cross-sectional study was conducted on 416 subjects of 30-60 years age group with different socio-economic status classified according to modified Kuppuswamy scale (2012). Subjects were interviewed by the questionnaire and Community Periodontal Index was recorded.

Statistical Analysis: Chi-square test (SPSS version 17).

Result: This study showed that the code 2 and code 3 is more in lower socio-economic status (p =0.115 and p=0.079 respectively). Significant association was seen in Code 0, code 1 & code 4 (p<0.01) which is indicative that upper class have more healthy periodontal status than lower.

Conclusion: Significant association exists between oral health awareness and periodontal health with the socio-economic status of the individual.

Keywords: Oral health, Periodontal status, Socio-economic status

INTRODUCTION

The prevalence and distribution of the periodontal disease is worldwide. India is a country with more than one billion people living a diverse life in terms of geography, culture tradition and even races. There are also huge disparities present between the socio-economic status of the people living in the country [1].

In India, periodontal disease is still the leading cause for the tooth loss in adults. It is a chronic inflammatory disease which leads to loss of attachment and deepening of the gingival sulcus that further causes loss of alveolar bone. Periodontal health status is associated with age, smoking, systemic diseases, gender, genetics and utilization of the dental care [2,3].

It has been seen that the poor health is related to the lower economic status. In developing countries where illiteracy rates are quite high, education status plays determining role in the health of a particular individual. Health is multifactorial, influenced by factors like genetics, environment, lifestyle, socio-economic status (SES) and many others. Economic status of the individual also determines the utilization of the health services in a particular population [4,5]. Evidences have proven that existence of inadequate oral health in lower SES group as compared with higher SES groups [6].

Several literatures are proven that association exists between oral health and socio-economic status. The present study is carried out in order to find out the correlation between different socio-economic groups and periodontal health status in the outpatient department of the Teerthanker Mahaveer Dental College & Research Centre (TMDC&RC).

MATERIALS AND METHODS

The present cross-sectional study was carried out in the Outpatient Department of Public Health Dentistry, TMDC&RC. Ethical clearance was obtained from the institutional review board of Teerthanker Mahaveer University. The study was conducted in between the month of September to November 2012. A pilot study was carried out to check the feasibility of the study. Sample size estimation for the pilot study done on the basis of previous literature.

Total 416 subjects participated between the age group of 30-60 yr (Male: 256 Female: 160). The age group is chosen as the periodontal health starts deteriorating in between these age groups. Informed consent was obtained from each individual.

Inclusion Criteria
- Individuals in between the age groups of 30-60 yr.
- Those who give consent were included in the study.

Exclusion Criteria
- Patient with history of systemic disease, pregnancy/lactation.
- Individuals using tobacco in any form,
- Individuals having <15 teeth & those who denied giving the consent was excluded from the study.

A pretested questionnaire [7] was interviewed by each participant asking information about their personal information, socio-economic status & oral hygiene habits. Modified Kuppuswamy SES Scale (2012) [8] [Table/Fig-1] was used for the categorizing the individuals under different socio-economic groups.

Community Periodontal Index (CPI) [9] was recorded by a single, trained, calibrated examiner with the use of CPITN probe, mouth mirrors and under good illumination light. Calibration was performed by reexamining 5% of the sample size and the kappa value of 0.8 was obtained which indicates a good intra-examiner consistency.

Statistical analysis was done by using statistical package for social sciences (SPSS version 17), continuous variables are presented as mean ± SD, and categorical variables are presented as frequencies and percentage. Nominal categorical data between the groups were compared using the Chi-square test. P<0.05 was considered statistically significant.

QUESTIONNAIRE

Name: _____   Age: _____

Sex: M/F   Occupation: _____   Education: _____

Total Income of the Family per Month: _____

Address: _____

1. How do you clean your teeth?
   a. Tooth brush and paste
   b. Toothbrush and powder
   c. Other (Please specify)
2. How often you brush your teeth each day?
   a. Once
   b. Twice
   c. more than twice
   d. Sometimes
3. Approximately how many minutes do you brush your teeth?
   a. 1-2 min
   b. 2-3 min
   c. 3-4 min
   d. > 4 min
4. How frequently do you change your brush?
   a. < 3 months
   b. 3 months
   c. 3-6 months
   d. More than 6 months
5. What type of tooth brushing movements do you employ?
   a. Vertical
   b. Horizontal
   c. Circular
6. Do you use a mouthwash?
   a. Yes
   b. No
   c. If yes, then how often
7. Which secondary methods for plaque control do you use?
   a. Dental Floss
   b. Interdental Brushes
   c. Toothpicks
   d. None
8. When was your last dental checkup?
   a. Less than 6 months
   b. Within past 6-12 months
   c. Between last 1 and 2 years
   d. Never visited
9. Reason for dental check up?
   a. Pain in tooth
   b. Bleeding from the gums
   c. Halitosis
   d. Regular check up
   e. Scrubbing

Socio-economic Status
1. Upper
2. Upper Middle
3. Middle/Lower Middle
4. Lower/Upper Lower
5. Lower

Clinical Examination
CPITN Index:

Code 0: No periodontal disease

Code 1: Bleeding observed during or after probing

Code 2: Calculus or other retentive factors either seen or felt during probing

Code 3: Pathological pocket 4 to 5 mm in depth

Code 4: Pathological pocket 6 mm or more in depth

(A) Education		Score
1	Profession or honors	7
2	Graduate or post graduate	6
3	Intermediate or post high school diploma	5
4	High school certificate	4
5	Middle school certificate	3
6	Primary school certificate	2
7	Illiterate	1

(B) Occupation		Score
1	Profession	10
2	Semi-Profession	6
3	Clerical, Shop-owner, Farmer	5
4	Skilled worker	4
5	Semi-skilled worker	3
6	Unskilled worker	2
7	Unemployed	1

(C) Monthly family income in Rs		Score	Modified for 1998 in Rs	Modified for 2012 in Rs
1	≥ 2000	12	≥ 13500	≥32050
2	1000-1999	10	6750 – 13499	16020 – 32049
3	750-999	06	5050 – 6749	12020 – 16019
4	500-749	04	3375 – 5049	8010 – 12019
5	300-499	03	2025 – 3374	4810 – 8009
6	101-299	02	676 – 2024	1601 – 4809
7	≤ 100	01	≤ 675	≤ 1600

Total Score	Socio-economic class	
26-29	Upper (I)	
16-25	Upper Middle (II)	
11-15	Middle/Lower middle (III)	
5-10	Lower/Upper lower (IV)	
<5	Lower (V)	

[Table/Fig-1]: Kuppuswamy's socio-economic status scale

RESULT

The results showed that use of toothbrush & toothpaste for cleaning of teeth is more in upper & upper middle class that is 81.8% & 88.1% respectively as compared to middle, lower/upper lower & lower class with values 66.2%, 51.3% & 79.8% respectively [Table/Fig-2]. Individuals with habit of brushing twice in a day belongs to mainly upper & middle class that is 18.2% & 19.5% respectively compared to 8.8% of lower/upper lower & 15.4% of lower class [Table/Fig-3]. Individuals from upper & upper middle class that is 63.6% & 50% brush their teeth for the duration of 2-3 minutes compared to 49.4% of lower/lower middle & 34.6% of lower class [Table/Fig-4]. Most of the participants from all the socioeconomic groups uses horizontal brushing technique for cleaning of their teeth. [Table/Fig-5].

On the evaluation of periodontal status it is revealed that code 2 and code 3 is more in lower socio-economic status (p =0.115 and p=0.079 respectively). Significant association was seen in Code 0, code 1 & code 4 (p<0.01) which is indicative that upper class have a more healthy periodontal status than lower class [Table/Fig-6].

DISCUSSION

India is a country with diverse variations in its social, cultural and economic aspects. As periodontal disease is multifactorial, it's a result of age, socio-economic status, diet & nutrition and is local factors like plaque and calculus plays an important role. Most of the lower socio-economic groups have lack of oral health awareness, fear and anxiety towards dentist and also fewer visits to the dentist so most of the treatment is curative rather than preventive in this group.

Socio-economic Status	Total	How do you clean your teeth			Chi-Sq value	p-value
		Tooth Brush & Paste	Tooth Brush & Powder	Other		
Upper	33	27 (81.8%)	5 (15.2%)	1 (3.0%)	42.452	<0.001
Upper Middle	42	37 (88.1%)	5 (11.9%)	0 (0%)		
Middle/Lower Middle	77	51 (66.2%)	14 (18.2%)	12 (15.6%)		
Lower/Upper Lower	160	82 (51.3%)	41 (25.6%)	37 (23.1%)		
Lower	104	83 (79.8%)	7 (6.7%)	14 (13.5%)		

[Table/Fig-2]: Distribution of the participants according to socio-economic status & oral hygiene aids used

Socio-economic Status	Total	How often you brush your teeth each day				Chi-Sq value	p-value
		Once	Twice	> than twice	Sometimes		
Upper	33	27 (81.8%)	6 (18.2%)	0 (0%)	0 (0%)	36.335	<0.001
Upper Middle	42	37 (88.1%)	5 (11.9%)	0 (0%)	0 (0%)		
Middle/Lower Middle	77	62 (80.5%)	15 (19.5%)	0 (0%)	0 (0%)		
Lower/Upper Lower	160	127 (79.4%)	14 (8.8%)	0 (0%)	19 (11.9%)		
Lower	104	67 (64.4%)	16 (15.4%)	0 (0%)	21 (20.2%)		

[Table/Fig-3]: Distribution of the participants according to socio-economic status & frequency of cleaning

Socio-economic Status	Total	Approximately how many minutes do you brush your teeth				Chi-Sq value	p-value
		1-2 min	2-3 min	3-4 min	>4 min		
Upper	33	9 (27.3%)	21 (63.6%)	3 (9.1%)	0 (0%)	72.404	<0.001
Upper Middle	42	0 (0%)	21 (50%)	14 (33.3%)	7 (16.7%)		
Middle/Lower Middle	77	19 (24.7%)	27 (35.1%)	29 (37.7%)	2 (2.6%)		
Lower/Upper Lower	160	40 (25%)	79 (49.4%)	34 (21.3%)	7 (4.4%)		
Lower	104	44 (42.3%)	36 (34.6%)	8 (7.7%)	16 (15.4%)		

[Table/Fig-4]: Distribution of the participants according to socio-economic status & duration of cleaning

Socio-economic Status	Total	What type of tooth brushing movements do you employ				Chi-Sq value	p-value
		Vertical	Horizontal	Circular	Scrubbing		
Upper	33	7 (21.2%)	15 (45.5%)	1 (3%)	10 (30.3%)	73.274	<0.001
Upper Middle	42	16 (38.1%)	17 (40.5%)	9 (21.4%)	0 (0%)		
Middle/Lower Middle	77	9 (11.7%)	32 (41.6%)	27 (35.1%)	9 (11.7%)		
Lower/Upper Lower	160	25 (15.6%)	68 (42.5%)	20 (12.5%)	47 (29.4%)		
Lower	104	7 (6.7%)	60 (57.7%)	7 (6.7%)	30 (28.8%)		

[Table/Fig-5]: Distribution of the participants according to socio-economic status & type of tooth brushing movement employed

Socio-economic Status	Total	Code 0	Code 1	Code 2	Code 3	Code 4
Upper	33	7 (21.2%)	0 (0%)	12 (36.4%)	13 (39.4%)	1 (3%)
Upper Middle	42	12 (28.6%)	4 (9.5%)	7 (16.7%)	19 (45.2%)	0 (0%)
Middle/Lower Middle	77	11 (14.3%)	9 (11.7%)	23 (29.9%)	19 (24.7%)	15 (19.5%)
Lower/Upper Lower	160	6 (3.8%)	17 (10.6%)	32 (20%)	56 (35%)	49 (30.6%)
Lower	104	0 (0%)	23 (22.1%)	29 (27.9%)	45 (43.3%)	7 (6.7%)
Chi-Sq value		45.471	14.152	7.432	8.335	41.071
p-value		<0.001	0.007	0.115	0.079	<0.001

[Table/Fig-6]: Relationship between socio-economic status & CPI codes

Various studies have shown an impact of socio-economic status on the oral health of an individual. It has been also proven that there is a significant association exists between the individual's oral health & awareness about the same. Individuals with lower socio-economic group have less awareness and access to the oral health care. Individuals from lower socio-economic groups unable to use the oral hygiene aids like mouthwash, interproximal brushes, and various medicated toothpaste because of their high cost. Comparatively Individuals from higher economic status have access to all the above mentioned oral health aids and also the awareness of its role in improving periodontal health.

In the present study, total 416 individuals participated among which 256 were male and 160 females. Out of which 7.93% belongs to upper class, 10.09% from upper middle, 18.50% from middle,

38.46% from upper lower & 25% from lower class. A possible reason for the maximum no. of people from the lower class is affordability in dental colleges.

In the present, 81.8% & 88.8% of the individual from upper and upper middle class uses a toothbrush and toothpaste for cleaning followed by 66.2% middle class, 51.3% upper lower and 79.8% lower class. These results are similar with the study done by Chandra Shekar BR et al., [10] where all the subjects in the upper SES were using brush and paste for cleaning.

The results of the present study are similar to the study done by Gautam DK et al., [7] which have shown a positive correlation between the periodontal status of an individual and socio-economic status. The study has shown more prevalence of code 3 and code 4 in lower socio-economic group individuals similarly present study

has shown more prevalence of code 2 and code 3 in the lower socio-economic group.

The study done by Bertoldi C et al., [2] & Gundala R [11] also shown similar results and significant association between the periodontal health status and socio-economic status of the individual. The results of the study showed that lower socio-economic status have less access to the utilization of the dental services and also have a poor periodontal health status compared to upper class of socio-economic status.

The result of the present study is in contrary with a study done by the Opeodu OI [3] which shows that there is no significant relationship exists between the periodontal health status and socio-economic group of the individual.

CONCLUSION

The study revealed that oral hygiene awareness and periodontal conditions are significantly associated with socio-economic status of an individual. Present study proven that the prevalence of code 2 and code 3 is more in lower socio-economic groups suggestive of the presence of more calculus and periodontal pockets in the lower socio-economic groups as compared to upper socio-economic groups.

It has been also seen that the education, economic status of the individual and unawareness about the oral health needs to be given attention as they are acting as a barrier in accessing oral health care. Periodontal health status is important to maintain the integrity of the tooth, and to maintain the same, oral health care should reach to the grass root level of the community so that the equitable distribution of periodontal health in each socio-economic strata can be achieved.

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