Original article:

Periodontal status in different socioeconomic groups of patients attending Government Dental College and Hospital, Ahmedabad

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Abstract:

Introduction: Socioeconomic status is defined as a measure of one's combined economic and social status. Some studies lend support to the perception that differences of socio-economic aspects play a major part in the development of periodontal diseases.The aim of this study was to determine the periodontal status by CPITN index in different socioeconomic groups of patients attending Government Dental College and Hospital, Ahmedabad.

Method: A short study was conducted on 1034 patients aged 25-50 years attending Government Dental College and Hospital, Ahmedabad in January-February 2016. Community periodontal index of treatment needs (CPITN) index was recorded in these patients as a part of periodontal examination. The patients were categorized into five different groups according to Kuppuswamy scale.

Results:A total of 280 patients belonged to LOWER class (V) and had a mean CPI score of 3.08.A total of 495 patients belonged to UPPER-LOWER class (IV) and had a mean CPI score of 2.5. A total of 172 patients belonged to MIDDLE class (III) and had a mean CPI score of 2.15 and 122 patients belonged to UPPER-MIDDLE class (II) and had a mean CPI score of 1.5. A total of 6 patients belonged to UPPER class (I) and had a mean CPI score of 1.25

Conclusion: There is a discernible evidence or association between the periodontal status and the socioeconomic status of an individual. A person of a lower socioeconomic status has a higher risk of periodontal destruction than the person of a higher status.

Key words : Socioeconomic status; Community periodontal index of treatment needs (CPITN) index; Kuppuswamy scale; periodontal inflammation; smokeless tobacco

Introduction:

Socioeconomic status (SES) is defined as a measure of one's combined economic and social status (Galobardes et al. 2006)[1].Generally, in sociology Socioeconomic status is viewed as a latent construct and it is evaluated by considering the education, monthly income and occupation or the employment of the individual or some form of variation amongst these factors. Several factors such as genetic (age), co-morbidity (diabetes mellitus, DM) and lifestyle (smoking) have been identified to possess a risk for periodontal diseases in published studies (Page & Beck 1997, Albandar 2002)[2,3,4].

Oral health has always been an inseparable part of general health and several studies in the past have

revealed an association between socioeconomic factors and oral health[5, 6, 7, 8, 9]. The literature concerning the association between the socioeconomic variables and the periodontal status of individuals in India is scanty. Hence, the present study was taken up as an attempt to assess the relationship between oral health status and socioeconomic factors among the patients attending the outpatient department of Government Dental College and Hospital, Ahmedabad.

Materials and methods:

A short study was conducted on 1069 patients aged 25-50 years attending Government Dental College and Hospital, Ahmedabad in January-February 2016. Community periodontal index of treatment needs (CPITN) index was recorded in these patients as a part of periodontal examination. The patients were categorized into five different socioeconomic groups according to Kuppuswamy scale.

The periodontal status and treatment needs were assessed by means of the CPITN system. In order to secure a fully objective evaluation of the periodontium, the recordings were based on the highest treatment need observed after examination of all the remaining teeth in a sextant.

CPITN recordings were made for sextants containing at least two functional teeth, using the following code numbers:

Code 0 = healthy periodontal tissue (H)

Code 1 = bleeding after probing (B)

Code 2 = supra- or subgingival calculus and/or overhang(s) of filling(s) or crown(s) (C)

Code 3 = pathologic pocket(s) 4 or 5 mm (Pi)

Code 4 = pathologic pocket(s) > 6 mm (P2)

X = excluded sextant (X)

According to the highest code number recorded, the subjects and sextants were classified into the following treatment need categories:

0 = no treatment needed (code 0)

TN 1 = oral hygiene instruction (codes 1, 2, 3, and 4)

TN 2 = oral hygiene instruction and prophylaxis (codes 2, 3, and 4)

TN 3 = oral hygiene instruction, prophylaxis, and complex treatment (code 4)

The community based stratification is the basis of all the community based studies and the key to evaluate the utilization of health services, amenities and purchasibility. When it is taken as a summation of education, occupation, and income, it reflects the value system expected for that level of education and occupation. Income is parallel to standard of living.

Socio Economic Status (SES) is established determinantof health. Kuppuswamy'ssocioeconomic status is an important tool in hospital and community-based research in India, which was originally proposed in 1976.Kuppuswamy's original income groups of family for1976 were based on 1960 as 100 (base). Current income groups = Original family incomegroups of Kuppuswamy (1976) Current Consumer Price Index =0.0735 (multiplication factor)[10].

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TABLE 1: KUPPUSWAMY'S SOCIOECONOMIC STATUS SCALE

(A) Education Score

1 Professional or Honors	4
2 Graduate or Post Graduate	3
3 High school or Intermediate or Diploma	2
4 Illiterate or Primary school	1

(B) Occupation Score

1 Legislators, Senior Officials, and Managers	13
2 Professionals	11
3 Technicians and Associate Professionals	9
4 Clerks	7
5 Service Workers and Shop and Market Sales Workers	6
6 Skilled Agricultural and Fishery Workers	5
7 Craft and Related Trades Workers	4
8 Plant and Machine Operators and Assemblers	3
9 Unskilled worker	2
10 Unemployed	1

(C)Monthly family income

Monthly family income in Rupees(1976)	Score	Modified income in rupees
>=2000	12	>=32050
1000-1999	10	16020-32049
750-999	6	12010-16019
500-749	4	8010-12019
300-499	3	4810-8009
101-299	2	1601-4809
<=100	1	<=1600

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Total Score	**CLASS**	
26-29	**I**	**Upper**
16-25	**II**	**Upper Middle**
11-15	**III**	**Middle / Lower Middle**
5-10	**IV**	**Upper Lower**
0-4	**V**	**Lower**

RESULT:

A total of 280 patients belonged to LOWER class (V) and had a mean CPI score of 3.08. There was a need of complex treatment like deep scaling, root planning and complex surgical procedures in about 87.35% of patients.

A total of 495 patients belonged to UPPER-LOWER class (IV) and had a mean CPI score of 2.5. There was a need of scaling and root planning and need for improving oral hygiene in about 79% of patients.

A total of 172 patients belonged to MIDDLE class (III) and had a mean CPI score of 2.15. There was a need of scaling and improving oral hygiene in about 71.34% of patients.

A total of 116 patients belonged to UPPER-MIDDLE class (II) and had a mean CPI score of 1.5. There was a need of scaling and improving oral hygiene in about 64.65% of patients.

A total of 6 patients belonged to UPPER class (I) and had a mean CPI score of 1.25. There was a need of improving oral hygiene in about 50% of patients.

CPI SCORES

Class	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	ANOVA P VALUE
					Lower Bound	Upper Bound			
1	6	1.23	0.48	0.198	0.72	1.74	1	2	
2	116	1.54	0.72	0.067	1.41	1.67	0	4	
3	172	2.15	0.75	0.057	2.04	2.27	1	4	
4	495	2.63	0.70	0.032	2.57	2.69	0	4	<0.001
5	280	3.05	0.56	0.033	2.98	3.11	1	4	
Total	1,069	2.54	0.82	0.025	2.49	2.59	0	4	

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MULTIPLE COMPARISONS

DEPENDENT VARIABLE: CPI SCORE

TUKEY HSD

(I) socioeconomic class	(J) socioeconomic class	Mean Difference (I-J)	Std. Error	P VALUE	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-0.31	0.283	0.815	-1.08	0.47
1	3	-0.92	0.281	0.010	-1.69	-0.15
1	4	-1.40	0.278	<0.001	-2.16	-0.64
1	5	-1.81	0.279	<0.001	-2.58	-1.05
2	3	-0.61	0.081	<0.001	-0.83	-0.39
2	4	-1.09	0.070	<0.001	-1.28	-0.9
2	5	-1.51	0.075	<0.001	-1.71	-1.3
3	4	-0.48	0.060	<0.001	-0.64	-0.32
3	5	-0.89	0.066	<0.001	-1.07	-0.72
4	5	-0.42	0.051	<0.001	-0.55	-0.28

The mean difference between the CPI scores of Upper class and Lower class is highly significant, while there was no statistical significance between the scores of Upper Class and Upper Middle Class.

The increasing mean CPI scores from Upper to Lower classes proves the association between periodontal status and socioeconomic status of patients.

DISCUSSION:

It was suggested that there have been disparities in health status because it is seen that the lower strata groups have succumbed to more dangerous and health damaging behavior and may also have lesser interest in health maintenance for the future.Excessive consumption of harmful commodities, certain foods, tobacco and alcohol and underutilization of preventive health care is implied to be harmful[11]. These may be the possible explanations for this difference in the periodontal status among the subjects in different socioeconomic groups.

It has been proposed that the distinct pattern of behavior, knowledge and health attitudes within certain social groups is mainly related to educational level (Peterson 1990)[12]. Smoking is an evident risk factor for periodontal diseases. However, it is a fact that there is a higher smoking frequency in people

with lower education compared to those with higher education(Tillgren et al 1996)[13].

The most important indicators of socioeconomic status are occupational status, income and level of education. There are different aspects of social stratification of each indicator and this it is advisable to use all the three instead of any one[6]. Often, information on education, occupation and income may be unavailable and being necessary to use proxy measures of socioeconomic status such as indicators of living standards (car ownership) which reflect the financial support of the individual[14].

Occupational status is relevant and the place of an individual in the society is determined by it. The most usual approach consists of classifying people based on their position in the labor market into a number of discrete groups or social classes. Children are classified according to the occupation of their parents[15]. Income is also a frequently used parameter to measure the socio-economic status. The current income of the individual depicts the direct appreciation of the living condition, healthy and unhealthy habits and behavior, also it is a reflection of the position the individual holds in the society.

Inequalities generated by income are associated with differences in mortality and morbidity rates, including oral health diseases[16]. High incomes permit the access to good oral health services, a good environment for health and offer the opportunity to adopt appropriate oral health behavior[14]. All adults can be evaluatedaccording to the level of education,which is significantly different fromthe occupation. More, the level ofeducation remain fixed for themajority of persons older than 25years and unlike the income, it is notinfluenced by the health status[15].Information in education is used todistinguish people with a high positionin the social hierarchy from those witha low position.Characteristically, the level ofeducation is appreciated according tothe number of years spent by anindividual in an educational institution(primary, school, secondary school,high school, faculty, post-university studies).

Demetriou et al (1995) in a retrospective study assessed the compliance to supportive periodontal treatment for different socio-economic classes at one private dental office in Athens. Patients in the highest social class had the highest compliance rate after 8 years, 61.5%, compared with 41.4% for the lowest social class ($p<0.017$)[17].

The influence of socioeconomic factors on the oral health status of people in South Africa was studied by Gugushe in 1998-99, and a positive relation was found between the socioeconomic variables and the periodontal status[18].Brodeur et al in 2000, proved the association between inequalities in income and education and missing teeth, decayed and filled coronal surfaces[19]. However, none of these studies used national representative data, which limits their generalizability. Even changes have been reported in the prevalence of periodontitis has been shown to differ by race/ethnicity, income, and education (Borrell and Crawford, 2008)[20]. Low education and low income groups have been reported to possess worse oral health (Sabbah et al., 2007)[21].

In a cross sectional study including socio-demographic risk indicators of attachment loss Dolan et al. (1997), low income and rural living were proven to be risk factors associated with increased prevalence of attachment loss[22]. In the NHANES III survey by Drury et al (1999), there was a seven fold more likeliness of untreated root decay in lower socio-economic groups than higher socio-economic groups, but the differences were less apparent as attachment loss was found to be more than 4 mm[23].

It has been proven in many studies that there is presence of a social gradient with an incremental reduction in oral health when we move from richer sections of the society to the poorer ones, but there is a considerable variation with the nature and shape of the gradient and is highly dependent on the parameters used (Morita et al. 2007; Sabbah et al. 2007; Holst 2008; Tsakos et al. 2011; Elani et al. 2012)[21, 24, 25, 26, 27].

CONCLUSION:

There is a discernible evidence or association between the periodontal status and the socioeconomic status of an individual. A person of a lower socioeconomic status has a higher risk of periodontal destruction than the person of a higher status.

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