British Journal of Medicine & Medical Research
4(14): 2725-2735, 2014

SCIENCEDOMAIN *international*
www.sciencedomain.org

Determination of Self Satisfaction with Dental Appearance and Oral Health Status among a Population of Dentate Adults in a Referral Institution

Sunali Khanna[1*] and A. S. Gharpure[1]

[1]Nair Hospital Dental College, Mumbai, India.

Authors' contributions

This work was carried out in collaboration between the authors. Author SK designed the study, performed the survey, carried out the statistical analysis, wrote the protocol, and made the first draft of the manuscript. Author ASG assisted in statistical analyses of the study and managed a part of literature searches. The authors read and approved the final manuscript.

Original Research Article

Received 11th June 2013
Accepted 19th August 2013
Published 25th February 2014

ABSTRACT

Aim: The aim of the study was to analyze how self- perceived satisfaction with dental appearance is affected by oral health status of an individual keeping in mind various socio-demographic factors.
Methodology: A sample size of 850 was obtained from the Out Patient Department of Nair Hospital Dental College in a cross sectional survey. The clinical oral health status was recorded after thorough clinical examination followed by measurement of Decayed, Missing Filled teeth (DMFT) and Oral Hygiene Index – Simplified (OHI-S). The questionnaire included socio-demographics and a single-item measuring self-reported satisfaction with appearance of teeth.
Results: Out of the total participants, 42.43% of the women and 37.7% of the men in this study were satisfied with their dental appearance. Odds ratio revealed that age, level of education, DMFT and OHI-S scores were inversely proportional to satisfaction with appearance of teeth. Multiple logistic regression analysis showed that OHI-S, DMFT and Education were the most significant factors ($P < .05$) to affect self-perceived dental appearance followed by gender and age.

**Corresponding author: Email: sunalikhanna@gmail.com;*

Conclusion: Dissatisfaction with dental appearance was common in this hospital-based sample of young, middle-aged and older adults, and was significantly associated with key socio-demographic and oral health factors such as education, caries and oral hygiene status. Information from self-reports could help in planning effective strategies towards treatment to promote oral health.

Keywords: Dental appearance; satisfaction; oral health.

ABBREVIATIONS

***DMFT Index**: Decayed Missing Filled Teeth Index; **OHI-S**: Oral Hygiene Index Simplified*

1. INTRODUCTION

Quality of life has been aptly defined by the Centre for Health Promotion at the University of Toronto. It states: 'quality of life is concerned with the degree to which a person enjoys the important possibilities of life. Dolan defined oral health as "a comfortable and functional dentition which allows individuals to continue in their desired social role [1]".

Oral health is fundamental to general health and wellbeing [2]. In the field of dental sciences, the quality of life is generally dependent on patient satisfaction and presence of oral discomfort and/or disease i.e. condition of oral health and presence of disability.

It has been widely accepted that in addition to clinical indicators, functional, social and psychological implications of oral health status play an important role in treatment and should be considered when assessing dental needs [3,4,5]. Numerous subjective oral health indicators have been employed to assess functional, social and psychological oral health outcomes ranging from single item indicators, such as satisfaction with oral health and satisfaction with appearance of teeth, to multiple-item scales and scoring systems [6]. In dental sciences, the single item indicators have shown to be as beneficial [7,8].

1.1 Determinants of Satisfaction with Appearance

Out of the various subjective oral health indicators used to evaluate oral health, social class and clinical status may be important variables in understanding how an individual perceives his/her oral health status [9,10,11,12].

Dental disabilities are those conditions which if left untreated can limit an individual's participation in life activities or which diminish the quality of life. This involves a host of conditions like dental caries, periodontal disease and other such debilitating factors [13].

The most important debilitating disease affecting oral health is dental caries. Dental caries which are untreated, treated and those which cause tooth loss have been used as key international indicators to monitor oral health [14,15].

Dental disabilities like stained teeth, irregular shaped teeth have significant effect on patient satisfaction. Review of literature reveals that missing, diseased, or unattractive teeth determine the dental appearance [16]. Presence of such conditions lowers the patient satisfaction as they affect function as well as aesthetics Root pieces, fractured teeth, missing

teeth and prosthesis were significantly associated with higher levels of patient dissatisfaction often resulting in oral disadvantages like avoidance of smiling or laughing in public [12]. Time and again it has been observed that dental aesthetics constitute an important dimension of oral-health-related quality of life [12].

The amount of satisfaction with dental appearance is also dependant on the age of the patient. Age constitutes a vital part in the perception of dentofacial beauty. Younger patients are more aware and have higher aesthetic concerns as compared to older patients. However, the geriatric age group is more focused on fulfilment of function. Other studies conducted have shown that the interest in appearance and desire for physical attractiveness do not appear to decline with age [12].

In a study looking specifically at satisfaction of the geriatric patient with dental care, certain investigators found that patients over the age of 60 years tended to be more satisfied with their dental care than younger patients [17]. Various other investigators, on the other hand, found elderly patients to be less satisfied due to higher prevalence of oral disabilities [18].

It is a well-known fact that gender plays an integral part in the determination of satisfaction with dental appearance. It is commonly found that women expressed greater levels of satisfaction with dental care than men [19]. This is because women generally have greater exposure to dental services which probably moderates their expectations, making it easier to satisfy them [20]. However certain studies have shown that females perceive their oral health more positively than males but tend to be less satisfied with the appearance of teeth [21].

The level of education also plays an important part in patient satisfaction. People with higher education were more concerned about their oral health. Whereas people who were lesser educated were more dissatisfied with treatment [22]. Previous studies have shown that people who had higher education levels tend to rate their dental appearance more positively [23]. It is also observed that subjects of higher socio-economic status tend to be more satisfied with oral health than their lower counterparts [24,25].

1.2 Self-Perceived Dental Appearance

Self-evaluation of dental appearance by the patient is an important criterion for treatment planning as many studies have shown how patients and dentists differ in their evaluation of dentofacial aesthetics [26]. Hence it is essential to find out which factors affect patient preference in self-evaluation rather than concentrate on the imposed perception of aesthetics provided by the dentist.

The main objective of this study was to study the prevalence of self-satisfaction with dental appearance and the association between oral health and patient satisfaction. An attempt was made to determine the factors affecting patient satisfaction and their socio-demographic indicators.

2. METHODOLOGY

Study sample consisted of patients from the Out Patient Department of Nair Hospital Dental College at Mumbai Central, Mumbai. A random sample of 850 individuals was selected to participate as baseline, over a period of 3 months with a precision of 0.05. Inclusion criteria

were (a) Above the age limit of 20 years (b) had at least two teeth present such that they satisfy the requirements of OHI-S Index. Exclusion criteria were (a) below the age limit of 20 years and (b) Absence of two or more teeth such that they do not satisfy the requirements of OHI-S Index. Informed consent was obtained and the study was approved by the institutional Ethical Committee. Detailed case history was recorded which was followed by clinical examination for the presence of caries food debris and calculus.

The information was collected using a structured questionnaire. Clinical examination, questionnaire and a simple face to face interview method was employed as part of the study. The questionnaire was constructed and administered in language best understood by the patient. Self - perceived Appearance of teeth was considered as the dependant variable. All other factors like Gender, Age, Education, and Oral Health Status were considered as independent variables. Self-perceived appearance of teeth was assessed using a single question and the participants were made to answer the question as a dichotomous variable, as yes or no.

Education was assessed on the basis of how far the participant had studied. Those who had no formal schooling were considered in the illiterate group. Those who had completed four years of primary school were considered in the Primary group. Those who had completed ten years of education and had passed the Secondary School Certificate (SSC) exam or equivalent were considered in the SSC group. Those participants who had completed their graduation were considered in the Graduate group.

The oral health of the participants was analysed, using two indices namely Oral Hygiene Index – Simplified (OHI-S) and Decayed Missing and Filled Teeth (DMFT) Index [27,28]. The record of these indices were made by thorough clinical examination using adequate illumination and after drying the teeth and gums using cotton rolls. Caries analysis was done using DMFT following the guidelines given by W.H.O [29]. DMFT helped gauge caries experience of the oral cavity whereas the OHI-S gave an insight about the state of oral hygiene [30]. After examination, the DMFT scores of the participants were grouped into Very low (< 5), Low (5 - 8.9), Moderate (9 - 13.9) and High (>13.9). OHI-S scores were calculated and grouped into Good (0.0 to 1.2), Fair (1.3 to 3) and Poor (3.1 to 6).

2.1 Statistical Analysis

Data was analysed was SPSS version 13.0 (SPSS Inc., Chicago IL). Multiple logistic regression analysis was performed with self-perceived appearance of teeth as the dependent variable and the other factors like age, gender, education level, DMFT and OHI-S as independent variables. Various interactions were evaluated using multiple logistic regression analysis.

3. RESULTS

The total sample size comprised of 850 participants; 348 (40.95%) were satisfied with the self-perceived appearance of teeth whereas 502 (59.05%) of participants were dissatisfied. Out of the total participants, 440 (51.8%) participants were males and 410 (48.2%) were females respectively, 37.7% males and 44.39% of the females were satisfied with the appearance of their teeth (Table 1).

Study sample was grouped according to age in 20-29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years, 70-79 years wherein 41.67%, 46.86%, 42%, 36.74%, 25.46% and 18.75% participants respectively, were satisfied with their dental appearance (Fig. 1).

Self-perceived dental satisfaction among participants with different levels of education revealed that 47.37% Illiterates, 44.74% of primary group, 41.90% of the SSC group followed by 38.28% of Graduates were satisfied with their appearance of teeth (Fig. 1).

Out of the participants who had good OHI status, 47.64% were satisfied with their dental appearance whereas 30.56% of participants having fair oral hygiene were satisfied with their dental appearance. This study did not have any participant with a score higher than 3.00 indicative of poor oral hygiene (Fig. 2).

Table 1. Frequency of participants satisfied with dental appearance according to independent variable

Variable		*N*	Participants satisfied with dental appearance	
			n	%
Age in years				
i.	20-29	324	135	41.7%
ii.	30-39	207	97	46.9%
iii.	40-49	150	63	42.0%
iv.	50-59	98	36	36.7%
v.	60-69	55	14	25.5%
vi.	79-79	16	3	18.8%
Gender				
i.	Males	440	166	37.7%
ii.	Females	410	182	44.4%
Education				
i.	Illiterate	38	18	47.4%
ii.	Primary	114	51	44.7%
iii.	SSC	327	137	41.9%
iv.	Graduate	371	142	38.3%
DMFT				
i.	Very low(<5)	349	153	43.8%
ii.	Low (5-8.9)	295	127	43.1%
iii.	Moderate (9-13.9)	130	53	40.8%
iv.	High (>13.9)	76	15	19.7%
OHI-S				
i.	Good (0-1.2)	445	212	47.6%
ii.	Fair (1.2-3)	405	136	30.6%
iii.	Poor (3-6)	0	0	

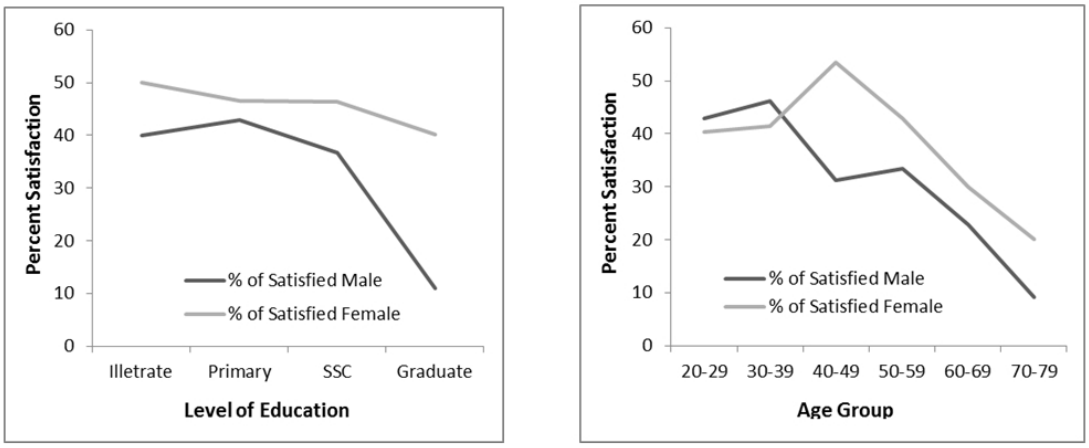

Fig. 1. Percent satisfaction with dental appearance of males and females seen in various age groups and levels of education

The findings of DMFT analysis have revealed that 43.84%, 43.05%, 40.77% and 19.74% of the participants were satisfied in the groups, very low, low, moderate and high respectively (Fig. 2).

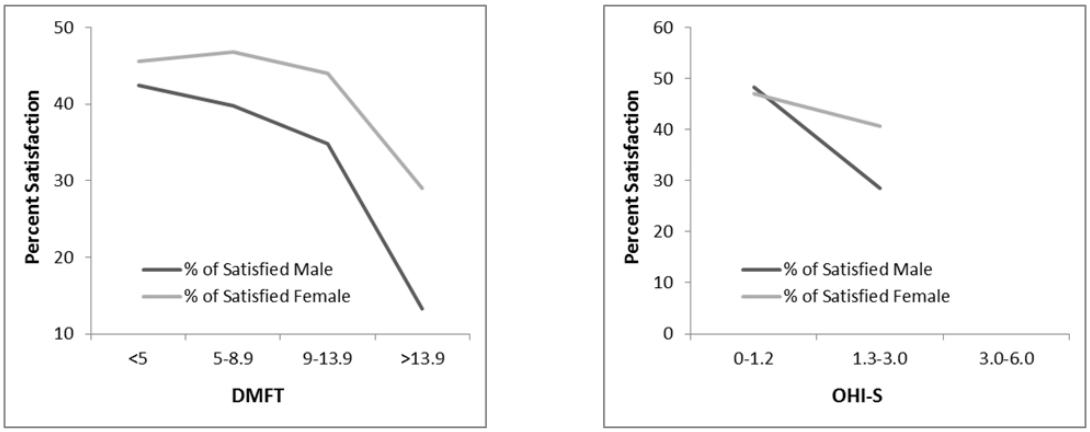

Fig. 2. Percent satisfaction with dental appearance of males and females seen in various groups of mean DMFT and OHI-S

Multiple Logistic regression revealed that Education, DMFT and OHI-S have significant (<.05) *P* values. The odds ratios of satisfaction decreased from 1.12 to 1.02 as the Age group increased. The odds ratios of satisfaction decreased from 1.5 to 1.15 as the level of education increased. The odds ratio of satisfaction for gender was 0.96, and that for OHI-S was 1.56. The Model Fitting Information had a *p* value less than .001 (Table 2).

Table 2. Independent factors showing multiple logistic regressions

Variable		Adjusted *OR*	95% CL *OR*		X^2 *	*P* value
			Lower bound	Upper bound		
Age in years						
vii.	20-29	.996	.495	2.005	<.001	.992
viii.	30-39	1.127	.559	2.273	.112	.738
ix.	40-49	1.041	.517	2.098	.013	.910
x.	50-59	1.050	.517	2.129	.018	.893
xi.	60-69	1.026	.494	2.132	.005	.944
Gender						
iii.	Males	0.963	.815	1.139	.194	.660
Education						
v.	Illiterate	1.507	1.004	2.263	3.916	.048
vi.	Primary	1.307	1.016	1.681	4.348	.037
vii.	SSC	1.156	.965	1.384	2.460	.117
DMFT						
v.	Very low(<5)	1.918	1.319	2.788	11.640	.001
vi.	Low (5-8.9)	2.084	1.440	3.015	15.174	<.001
vii.	Moderate (9-13.9)	1.608	1.079	2.394	5.453	.02
OHI-S						
iv.	Good (0-1.2)	1.562	1.32	1.848	26.917	<.001

Participants not satisfied with appearance of teeth are taken as reference category
Females are taken as reference category in Gender
Graduates are taken as reference category in Education
High DMFT is taken as reference category
Fair OHI-S is taken as reference category
OR – Odds Ratio
**Wald test*

The present study has evaluated simultaneously, multiple socio-demographic and oral health measures that may influence the satisfaction levels of adults in their self-perception of dental appearance. Our findings suggest that 40.95% of the patients are satisfied with the appearance of teeth as against studies done on 838 12 year olds in Kerala, India which showed 63% satisfaction and studies done on 873 participants from the Florida Dental Care which showed 76%satisfaction [12,31]. It is important to note that the questionnaires applied in studies might have certain limitations [32]. Problems like a chance of reporting bias by participant to provide socially desirable answers and lack of recall are frequently encountered [33]. Thus, the percentage of participants reporting dissatisfaction with appearance may have been underestimated [33]. There was a possibility that some of participants were reluctant to provide negative opinions due to some amount of social pressure to obtain desirable answers. Also, a single item measure of oral health status may not be sensitive enough to determine differences in appearance of teeth scores. However, there have been positive outcomes in self-assessed appearances of teeth using item measures of oral health studies [34,35].

4. DISCUSSION

Age wise distribution of self-reported satisfaction showed that the level of satisfaction decreased marginally from 20 years up to 49 years. It decreased rapidly from 36.73% for the 50 – 59 yrs group to 25.45 % for the 60 – 69 yrs age group and finally 12.5% for the 70 – 79 yrs age group. The odds ratio decreased from 1.127 to 1.026 from 30 to 69 years of age. which indicated decrease in satisfaction levels with increase in age. This can be attributed to increase prevalence of dental caries and periodontal disease in the older age groups which could have reduced satisfaction levels. These findings were similar to findings from other studies [18].The visual analogue scale was not deemed appropriate for this study because of operational difficulties and the need for self administration. This study had a large sample size and involved subjects with a varied level of education.

The odds ratio for gender was 0.96 showing higher levels of satisfaction in females. It was seen that the amount of satisfaction was higher in females (42.43%) as compared to males (37.7%) which is in line with results of other studies [19,20]. This is probably attributed to greater exposure of women to dental care [19].

The odds ratios for education decreased from 1.5 for illiterate to 1.15 for SSC group. Illiterates (45.94%) were the most satisfied with dental appearance followed by of SSC pass participants (41.57%) and of the graduates38.44%) were satisfied, which was the lowest among the three groups. Thus, it was seen that level of education was inversely proportional with the self-perceived level of satisfaction with dental appearance as opposed to previous studies [22,23]. However some other studies have shown similar findings [12].

In DMFT analysis, the odds ratios decreased as we moved from the very low group to the severe group. Data analysis indicates that satisfaction decreases with increase in DMFT values. These were consistent with findings in previous studies [11,36]. The present results revealed positive associations between self-reported state of teeth and dental caries. Research should be targeted to assess if perceived oral health status could be improved through strengthening of preventive and therapeutic dental services for the general population. Thus, the present finding also supports previous research to indicate that caries experience is a consistent clinical correlate of adolescent's oral quality of life [38]. The positive association between DMFT scores and self-reported state of teeth can be attributed partly to a high level of untreated dental caries and a high level of unmet need for dental care and partly to a high level of awareness and self-perception of dental disease on the part of the children investigated.

OHI-S status of the participant also played a crucial role in the amount of satisfaction with a highly significant P value. The odds ratio was 1.5. 47.64% of the participants in the “good” category were satisfied with their dental appearance as against only 33.58% of the participants in the “fair” category who were satisfied. Data analysis indicates that satisfaction decreases with increase in OHI-S values.

The Model Fitting Information, Pseudo R- square and Goodness of Fit test all indicated that the model used was appropriate.

5. CONCLUSION

This study reveals that self-perceived dissatisfaction with dental appearance was common among young, middle aged and older adults. It also demonstrates significant association of satisfaction with socio-demographic and oral health factors. Developing countries like India have less than 7% of the gross national product allotted for health care, therefore in such countries a combination of self-reports and clinical indicators would prove to be advantageous to analyse the need for dental care. In order to provide quality health care it is vital that dental surgeons have adequate knowledge of factors that affect patients' satisfaction with dental appearance. Apart from professionally assessed dental status, self-reports measuring oral health and appearance may also play a pivotal role in preventive and therapeutic treatment planning. In future studies, it will be important to examine how other components, such as arrangement of teeth, general self-image, cultural background, personal expectations, and social environment relate to aesthetic importance. These areas merit future systematic and multidisciplinary investigations.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

ETHICAL APPROVAL

All authors hereby declare that ethical clearance was obtained from the Nair Hospital Dental College Ethical Committee, Mumbai, India.

ACKNOWLEDGEMENTS

Prof. S.J. Nagda, Director (ME&MH) &Dean, Nair Hospital Dental College, Mumbai; Dr. F.R. Karjodkar, Prof. & Head, Dept. Oral Medicine & Radiology, Nair Hospital Dental College, Mumbai.

COMPETING INTERESTS

Authors have declared that no competing interest.

REFERENCES

1. Dolan T. Identification of appropriate outcomes for an aging population. Spec Care Dentist. 1993;13:35-39.
2. Cohen LK, Jago JD. Toward the formulation of sociodental indicators. Int J Health Serv. 1976;6:681-698.
3. Locker D. Subjective Oral Health Indicators. In: Slade GD, ed. Measuring Oral Health and Quality of Life. Chapel Hill. University of North Carolina: Dental Ecology; 1997.
4. Sheiham A, Maizels JE, Cushing AM. The concept of need in dental care. Int Dent J. 1982;32:265-270.
5. Locker D. Measuring oral health: A conceptual framework. Community Dent Health. 1988;5:3-18.

6. Skaret E, Åstrøm AN, Haugejorden O. Oral Health-Related Quality of Life (OHRQoL). Review of existing instruments and suggestions for use in oral health outcome measure research in Europe. In: Bourgeois D, Llodra JC, editors. European Global Oral Health Indicators Development Project. Paris: Quintessence International. 2004;99-110.
7. Locker D, Gibson B. Discrepancies between self-ratings of and satisfaction with oral health in two older adult populations. Community Dent Oral Epidemiol. 2005;33:280-288.
8. Cunny KA, Perri M. Single-item vs multiple-item measures of health-related quality of life. Psychological reports. 1991;69:127-130.
9. Jokovic A, Locker D. Dissatisfaction with oral health status in an older adult population. J Public Health Dent. 1997;57:40-47.
10. Masalu JR, Astrøm AN. Applicability of an abbreviated version of the oral impacts on daily performances (OIDP) scale for use among Tanzanian students. Community Dent Oral Epidemiol. 2003;31:7-14.
11. Reisine ST, Bailit HL. Clinical oral health status and adult perceptions of oral health. Soc Sci Med Med Psychol Med Sociol. 1980;14A:597-605.
12. Meng GX, Heft, et al. Satisfaction with Dental Appearance among Diverse Groups of Dentate Adults. J Aging Health. 2007;19(5):778-791.
13. Definition of Dental Disability. American Association of Paediatric Dentistry; 2012 Available at: http://www.aapd.org/media/Policies_Guidelines/D_DentalDisability.pdf.
14. U.S. Department Of Health and Human Services. Healthy People 2010. 2nd ed. Washington, DC: U.S. Government Printing Office; 2000.
15. Petersen PE. The world oral health report 2003: Continuous improvement of oral health in the 21st century. In: The approach of the WHO Global Oral Health Programme. Geneva, Switzerland: World Health Organization; 2003.
16. Slade G. Oral Health Impact Profile. In: Slade GD, ed. Measuring Oral Health and Quality of Life. Chapel Hill. University of North Carolina: Dental Ecology; 1997.
17. Stege P, Handelman S, Baric J, Espeland M. Satisfaction of the older patient with dental care. Gerodontics. 1986;2:171–174.
18. Lahti S, Hausen H, Kääriäinen R. Patients'expectations of an ideal dentist and their views concerning the dentist they visited: Do the views conform to the expectations and what determines how well they conform? Community Dent Oral Epidemiol. 1996;24(4):240-244.
19. Gopalakrishna, Mummalaneni V. Influencing Satisfaction for Dental Services. J Health Care Market. 1993;13:16-22.
20. Mira J, Aranaz J. Patient satisfaction as an outcome measure of health care. Medicina Clínica. 2000;114(3):26-33. Spanish.
21. Ostberg AL, Halling A, Lindblad U. A gender perspective of self-perceived oral health in adolescents: associations with attitudes and behaviors. Community Dent Health. 2001;18:110-116.
22. Artnik B, Premik M, Zaletel-Kragelj L. Population groups at high risk for poor oral self-care: the basis for oral health promotion. Int J Public Health. 2008;53(4):195-203.
23. Cushing A, Sheiham A, Maizels J. Developing sociodental indicators- The social impact of dental disease. Community Dent Health. 1986;3:3-17.
24. Chen MS, Hunter P. Oral health and quality of life in New Zealand: a social perspective. Soc Sci Med. 1996;43:1213-1222.
25. Chen MS. Social, psychological, and economic impacts of oral conditions and treatments. In: Cohen LK and Gift HC, editors. Disease Prevention and Oral Health Promotion, Socio-Dental Sciences in Action. Copenhagen: Munksgaard International Publications. 1995;33-72.

26. Flores-Mir C, Silva E, Barriga MI, Lagravère MO, Major PW. Lay person's perception of smile aesthetics in dental and facial views. J Orthod. 2004;31(3):204-209.
27. Greene JC. Oral Hygiene & Disease. Am J Public Health Nations Health. 1963;53(6):913-922.
28. Klein H, Palmer CE, Knutson JW. Studies on dental caries. Dental status and dental needs of elementary school children. Public Health Rep. 1938;53:751 -765.
29. WHO. Oral health survey - Basic Methods**.** 4th edition. Geneva: World Health Organization; 1997.
30. Greene JC, Vermillion JR. The simplified oral hygiene index. J Am Dent Assoc. 1964;68:7-13.
31. David J, Åstrøm AN, Wang NJ. Prevalence and correlates of self-reported state of teeth among schoolchildren in Kerala, India. BMC Oral Health. 2006;6:10.
32. Cozby PC. Descriptive Methods. In: Methods in Behavioral Research. 6th ed. California: Mayfield Publishing Company. 1997;77-104.
33. Kroeger A. Health interview surveys in developing countries: a review of the methods and results. Int J Epidemiol. 1983;12:465-481.
34. Brunswick AF, Nikias M. Dentist's ratings and adolescents' perceptions of oral health. J Dent Res. 1975;54:836-843.
35. Jamieson LM, Thomson WM, McGee R. An assessment of the validity and reliability of dental self-report items used in a National Child Nutrition Survey. Community Dent Oral Epidemiol. 2004;32:49-54.
36. Slade GD, Spencer AJ, Locker D, Hunt RJ, Strauss RP, Beck JD. Variations in the social impact of oral conditions among older adults in South Australia, Ontario, and North Carolina. J Dent Res. 1996;75:1439-1450.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history.php?iid=446&id=12&aid=3827