Self-perceived oral health and its determinants among adult dental patients in a University Dental Clinic in Tehran, Iran

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Original Article

Abstract

BACKGROUND AND AIM: Self-perceived oral health is a simple, non-invasive, and inexpensive method of data collection, which considers the psychosocial aspects of oral health and is related to the likelihood of seeking oral health care. Our study aimed to assess the association between self-perceived and clinically determined findings of oral health in a context of socio-economic status (SES) and perceived general health among adult dental patients in a university dental clinic.

METHODS: Through a cross-sectional study, we collected the data from 499, 20-50 years olds attending dental clinic of Tehran University of Medical Sciences, Iran, using valid questionnaire-led interviews about patients' demographic characteristics; their perceived general health, and oral health. In addition, clinical oral examination was performed to assess decayed missing filled teeth (DMFT) index and prosthesis status of the participants. Spearman correlation, ANOVA and a linear regression model served for statistical analysis.

RESULTS: The mean age of the participants was 34.8 years [SD (Standard deviation) = 9.91] and more than half of them were women (51.9%). While as high as 73.0% of the patients perceived their general health as excellent or good, only 31.0% reported the same with their oral health. Self-perceived oral health was positively associated with self-perceived general health. The younger participants, patients with a higher number of missing and decayed teeth, and those participants wearing more complicated prosthesis in the upper jaw reported worse oral health status ($P < 0.050$).

CONCLUSION: Oral conditions have significant effects on function and well-being. The present association between clinically determined and self-perceived oral health admitted that it might be beneficial to monitor oral health using such inexpensive and non-invasive method.

KEYWORDS: Self-Perceived, Oral Health, Adults

Most studies on oral heath, either clinical or epidemiologic surveys, have used clinical indicators of oral health.[1] This strategy however, has been under criticism since it does not take into account the psychosocial aspects and patient's perceptions of oral health.[2] Furthermore, clinical examination may be not only expensive but also invasive, painful and uncomfortable for some patients. Thus, in order to conduct oral health surveys, self-assessment seems a good alternative,[3] which is also related to predisposing factors for oral complications and the likelihood of seeking health care.[4]

In addition to its simplicity, self-assessment

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is a cost-effective method of data collection[5] which is easier in population-based studies rather than data collection by clinical examination.[6] Self-rated health has been a strong predictor of mortality and functional ability.[7] Self-assessment might be useful to evaluate and monitor the oral health of populations;[6] however its ability to predict the clinical findings is controversial.[8] Results of a population-based survey in Iran revealed that as high as 84.5% of adults perceived their oral health as good. Factors including age, educational level, economic status, and oral health literacy were associated with perceived oral health among Iranian adults.[9]

Nowadays, a global self-rating method has been used to assess the health status of individuals. In this method, they rate their general or oral health on a scale ranging from "excellent" to "poor."[10] These ratings reveal how people perceive their health. Since an association exists between this score and the scores from multi-item health status scales, this score might be used as an alternative to those multi-item indexes to assess the health status of patients and populations.[11] These single-item sores are short, quick, and also their clarity result to higher response rate. Administration, recording and interpretation of the data are also simple with no need to trained personnel.[11]

Oral health is an integral part of general health. Moreover, the oral cavity has a multitude of functions in relation to daily life such as food intake, speech, social contact and appearance.[12] Oral health can affect the individuals' quality of life, and their physical, psychological and social well-being.[13,14] The association between self-reported oral health and general health, however, have rarely been investigated. Confounding factors such as cultural differences may make the application of self-reported methods different between countries.[15] In this study, we aimed to evaluate the association between self-assessed and clinically determined findings of oral health in a context of socio-economic

status (SES) and perceived general health among 20-50 years old patients attending dental clinic of Tehran University of Medical Sciences, Iran.

Methods

A cross-sectional study[16] was carried out at dental clinic of the Tehran University of Medical Sciences from March to June 2011. Data collection was performed using questionnaire-led interviews and oral examinations. The study population comprised 20-50 years old new attenders to oral disease diagnosis department of dental school. Two trained and calibrated senior dental students conducted face to face interviews and clinical examination. Each interview and examination lasted for approximately 15 min. Altogether, 499 patients participated in the study with the response rate of 99.4%.

The questionnaire was developed based on previously validated questionnaire by Chen et al. in 1997[17] and was pretested on 10 adults. We asked the patients about their gender and age. In addition, their level of education and wealth index served as indicators for SES. The highest level of education was classified into four categories: primary school or less, secondary or high school, university education, and postgraduate studies. Wealth index was calculated based on monthly family income, house ownership, household size, and the number of persons in the household. Monthly family income-reported in Iranian currency (250000 Rials = 1 Dollar) was classified as: less than 4000000, 4000000-7000000, 7000000-14000000, 14000000-21000000, more than 21000000. House ownership was recorded as: tenant, free of charge for the service, owner. Household size was categorized as: < 50 m², 50-100 m², 100-150 m², and more than 150 m². The response alternatives of each item were then scored so that higher scores showed better wealth. The number of persons in the

household was categorized into four groups: 1 person, 2 persons, 3 persons, and 4 persons or more. A sum variable of the wealth index was then calculated by dividing the sum score by the number of people in the household.

We asked the participants about their perceived oral health and general health using the questions "How would you describe your oral health?" and "How would you describe your general health?"[9,18] with the response alternatives including ''excellent," "good," "fair," "poor" and "very poor." The response alternatives of the variable "Self-perceived Oral Health" were then scored so that higher scores showed better perceived oral health.

To avoid inter-examiner inconsistencies, two trained and calibrated senior dental students carried out the clinical examination. The minimum kappa for inter-examiner reliability was 0.85. Decayed missing filled teeth (DMFT) index was recorded visually based on WHO (World Health Organization) criteria[19] under unit lamp illumination using mouth mirrors, WHO probes if necessary, and cotton rolls to control saliva. Prosthetic status for maxilla and mandible was categorized as follows: no prosthesis, one fixed partial denture, more than one fixed partial denture, removable partial denture, a combination of fixed and removable partial denture, and removable complete denture.[19]

Ethical clearance was granted by Tehran University of Medical Sciences Ethics Committee. Participants provided their written and verbal informed consents prior to the study. The data were analyzed with SPSS for Windows (version 18, SPSS Inc., Chicago, IL, USA). Chi-square test and spearman correlation coefficient were used to analyze the association between self-perceived oral health and general health of the participants. To analyze the relationship between mean of the wealth index and DMFT of the patients by their perceived oral health, ANOVA test was used. A linear regression model was fitted to the data to analyze the association

between independent variables and participants' perceived oral health (level of significance < 0.050).

Results

Among the participants, 259 (51.9%) were women. The mean age of the participants was 34.8 years [SD (Standard deviation) = 9.91, range = 20-50], most had completed secondary or high school education (78.0%), and had a monthly income of between 4000000 and 7000000 Rials (64.7%). More than half of the participants lived in a home that they owned (57.9%), and lived in 50-100 m2 homes (55.3%). The number of persons in the household was predominantly four or more (61.1%) (Table 1). The mean of the wealth index was 2.1 (SD = 1.2) and it ranged between 0.75 and 10.

Patients perceived their general health as follows: 16.9% excellent, 56.7% good, 22.9 fair, 1.5% poor and 2.0% very poor. Among the participants, 4.0% had perceived their oral health as excellent, 27.0% good, 26.5% fair, 28.5% poor and 14.0% very poor. There was no gender difference in participants' perception of general health (P = 0.217) and oral health (P = 0.688). Self-perceived oral health was positively associated with self-perceived general health (r = 0.4, P < 0.001).

The mean number of existing teeth was 26.7 (SD = 6.8; range = 0-32). The mean DMFT of the patients was 11.6 (SD = 7.0) with the distribution of 3.1 (SD = 3.2) for filled, 4.3 (SD = 6.4) for missing caused by caries and 4.4 (SD = 3.7) for decayed teeth. Those with higher DMFT scores had perceived their oral health to be poorer (P < 0.001) (Table 2). As high as 77.3% of the patients had no prosthesis in upper jaw, 11.2% one fixed partial denture, 6.0% more than one fixed partial denture, 1.8% removable partial denture, 1.8% a combination of fixed and removable partial denture, and 1.8% removable complete denture. In lower jaw, majority (83.8%) had no prosthesis, 6.6% one fixed partial denture, 4.2% more than one fixed partial denture, 1.2% removable partial

denture, 2.4% a combination of fixed and removable partial denture and, 1.8% removable complete denture.

In multivariable analysis, controlling for demographic characteristics; perceived general health, and clinical findings, self-perceived oral health was positively associated with general health (P < 0.001). In addition, the younger participants (P < 0.046), those with higher number of missing teeth (P = 0.005) and decayed teeth (P < 0.001), and those wearing more complicated prosthesis in upper jaw (P < 0.042) perceived their oral health to be poorer (Table 3).

Table 1. Characteristics of participants

Variable	Number	Percentage
Gender		
Men	240	48.1
Women	259	51.9
Education		
Illiterate or primary school	37	7.4
Secondary or high school	389	78.0
University	57	11.4
Post graduate	16	3.2
Number of members in household		
1	22	4.4
2	71	14.2
3	101	20.2
4 or more	305	61.1
House ownership		
Owner	289	57.9
Free of charge for service	39	7.8
Tenant	171	34.3
Monthly family income (Rials)		
Less than 4000000	89	17.8
4000000-7000000	323	64.7
7000000-1400000	69	13.8
1400000-2100000	8	1.6
More than 2100000	10	2.0
Household size (m^2)		
< 50	99	19.8
50-100	276	55.3
100-150	84	16.8
More than 150	40	8.0

Table 2. Mean (± SD) of wealth index and DMFT by self-perceived oral health of adult patients

Self-perceived oral health	Percentage	Wealth index	DMFT
		Mean ± SD	Mean ± SD
Excellent	4.0	2.2 ± 1.1	5.4 ± 4.4
Good	27.0	2.0 ± 1.4	9.0 ± 5.7
Fair	26.5	2.1 ± 0.8	10.6 ± 4.9
Poor	28.5	2.4 ± 1.5	13.0 ± 6.3
Very poor	14.0	2.0 ± 0.9	14.4 ± 7.5
Total	100	2.1 ± 1.2	11.1 ± 6.3
*P	-	0.561	< 0.001

*Statistical analysis by ANOVA test; SD: Standard deviation; DMFT: Decayed missing filled teeth

Table 3. Factors related to poor perceived oral health of adult patients

Factors	B	Standard error	P	95% Confidence interval for B	
				Lower bound	Upper bound
[*]Gender	0.04	0.15	0.796	-0.26	0.34
Age	-0.02	0.01	0.046	-0.04	0.000
[**]Education	0.08	0.21	0.719	-0.34	0.50
[***]Wealth index	0.03	0.06	0.682	-0.09	0.14
[†]Self-perceived general health	0.51	0.10	< 0.001	0.32	0.70
Number of filled teeth	0.02	0.03	0.376	-0.03	0.08
Number of missing teeth	0.05	0.02	0.005	0.02	0.08
Number of decayed teeth	0.08	0.02	< 0.001	0.04	0.12
[††]Upper jaw prosthesis status	0.29	0.14	0.042	0.01	0.57
[††]Lower jaw prosthesis status	-0.14	0.15	0.379	-0.44	0.17

The response alternatives of the dependent variable "Self-perceived Oral Health" were scored so that lower scores showed poor perceived oral health
[*]Men = 1 and women = 2; [**]Primary school or less = 1, secondary or high school = 2, university education = 3, postgraduate studies = 4; [***]Wealth index was calculated based on monthly family income, house ownership, household size, and the number of persons in the household
The response alternatives of the first three items were then scored so that higher scores showed better wealth. The number of persons in the household was categorized into four groups: 1 person, 2 persons, 3 persons, and 4 persons or more
A sum variable of wealth index was then calculated by dividing the sum score by the number of people in the household, [†]Excellent = 1, Poor = 5; [††]1 = No prosthesis, 2 = One fixed partial denture, 3 = More than one fixed partial denture, 4 = Removable partial denture, 5 = A combination of fixed and removable partial denture, 6 = Removable complete denture

Discussion

In the present study as high as three-fourth of the patients were pleased with their general health, however, only one-third felt the same with their oral health. Measures for health-related quality of life provide comprehensive information about perceived health; however a single question about self-reported general or oral health that uses a global rating is easier to interpret for the dental community. In this method, among all aspects of general health, patients can consider those aspects relevant to them and can weight them based on their own perceptions.[20] Furthermore, where questionnaire resources are limited, these single-item measures might be used as an alternative for longer scales.

The effect of socioeconomic factors on oral health is indirectly associated with environmental elements, psychosocial factors, lifestyle and availability of health services.[21] In a study of Canadian adults aged 20 years and older, Locker reported income as a significant predictor of self-rated oral health after controlling for other background factors. Income has a direct effect on the ability to access goods, services, and other resources that promote health.[22] Moreover, the impact of sociodemographic factors on oral health may mediated directly or indirectly by oral health behaviours.[21,23]

In another study of Australian adults aged 43-57 years, Turrell et al. reported an association between low income and fair/poor self-rated oral health after controlling for factors including gender, age, education and neighborhood disadvantage.[24] In a study from Iran, factors including high age, low education, low economic status, and low oral health literacy were associated with poor perceived oral health among adults aged 18-65 years.[9] In the present study, we calculated a sum variable of the wealth index to better reveal the dimensions related to financial status of the participants. Non-significant association between wealth index and perceived oral health and also between educational level and perceived oral health might be due to the fairly homogenous group commonly referring to a public center such as dental school clinic.

In our study, those who were satisfied with their oral health had a lower number of decayed and missing teeth. The WHO caries

diagnostic criterion for decayed, missing, and filled teeth is the simplest and most commonly used in epidemiologic surveys of dental caries.[19] In addition, having no or less complicated maxillary dentures was associated with better perceived oral health. It has been previously reported that people with more than 20 teeth and no removable dentures revealed more positive perceptions of oral health.[25] Having no or less eating difficulties was associated with few spaces between anterior teeth.[26] Based on the concept of shortened dental arch, acceptable oral functions are guaranteed with having only three to five occlusal units together with the anterior teeth.[27] Meeuwissen et al. reported that even with reduced dentition, elderly people are usually satisfied with their dental status. Thus, self-perception of the patient should be considered while planning prosthetic replacement.[28]

Studies have shown that oral complications have negative effects on well-being and general health.[29,30] Oral condition may affect people in different ways and that impact can be sufficiently serious to their lives. The most frequently reported problems influencing general health are physical pain and psychological impact of oral conditions.[31] Furthermore, an early investigation of the associations between oral symptoms, perceived oral health, and perceived general health found that perceived oral health was significantly associated with quality of life; and both oral symptoms and oral functional status were correlated with perceived general health.[32]

The significant association between perceived general and oral health in our study was in agreement with previous studies and also with the U.S. Surgeon General's report on oral health in America: "oral health means much more than healthy teeth-oral health is integral to general health." Thus, an improvement in oral health should lead to an improvement in general health.[33] Therefore, although oral conditions have significant effects on function and well-being, the extent and aspects to which perceived oral health is related to perceived general health is not fully understood. Only a few studies have specifically addressed this question.[20]

Cross-sectional studies (such as our study) usually have a lower level of evidence than randomized controlled trials. In addition, the time sequence between some covariates and oral health status would not be well defined in such studies. Ethnic differences in self-perceived oral health may be related to other factors such as cultural attitudes to oral health and dental care, perceived discrimination, and institutional obstacles.[6] Moreover, assessing patient's view on oral health via a single item questionnaire should be considered as another limitation of the study.

Conclusion

The present association between self-perceived and clinically determined findings of oral health admitted that it might be beneficial to monitor oral health situation of adults using such inexpensive and non-invasive way. The degree of usefulness and validity of this subjective evaluation, however, would be a subject in need of further investigations.

Conflict of Interests

Authors have no conflict of interest.

Acknowledgments

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