

DENTAL PATIENTS PERCEPTION TOWARDS ASSOCIATION BETWEEN ORAL AND SYSTEMIC HEALTH -A CROSS SECTIONAL SURVEY

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Abstract

Background

Dental diseases are not considered as life threatening. Common non communicable diseases share risk factor as dental disease there exist a relationship between oral health and general health. World health organization (WHO) has emphasized the positive impact of common risk factor approach (CRFA) to improve health.

Objectives

- 1) To assess the dental patients perception towards the relationship between oral and systemic health.
- 2) To assess and compare the relationship between oral and systemic health among males and females

Methods

Self designed pretested closed ended questionnaire with 18 items pertaining to the objectives of the study was prepared. Completed questionnaire was carefully checked and considered for statistical analysis.

Results

The results showed 150 (50 %) males and 165 (47.1%) females agreed, good oral health is important for maintaining the general health. ($P = 0.05$) and 179 (59.6 %) males and 145 (41.4%) females, opined that maintaining the proper periodontal health helps to control blood sugar level. Removal of tooth was the preferred treatment option for deep painful dental caries by both genders. 140 (46.6%) males and 160 (45.7%) females were unaware about the risk of developing dental caries due to obesity. ($P > 0.05$) Males 250 (83.3%) and females 295 (84.2%) agreed to have positive effect of dental treatment on quality of life ($P > 0.05$)

Conclusion

People having moderate dental health knowledge appreciate the relationships that exist between dental and systemic health. The use of CRFA to develop health promotion programs will benefit individuals to enjoy disease free life.

Key Words: Common Risk Factor, Disease, Health

INTRODUCTION

Although the oral health of the population in developed countries has generally improved over past decades, dental caries and periodontal disease still remains a significant public health problem in developing countries.¹ In 2009, a survey of the dental health of people in India found about 50% of school children are suffering from dental caries and more than 90% of the adult population is affected by periodontal disease.²

Dental diseases are mainly due to unhealthy life style. Oral Hygiene (OH) is another key component of lifestyle. Most oral problems mainly cavities and gingivitis result from poor oral hygiene. In the other side, oral health significantly affects general health and quality of life.^{3,4,5} Oral health may also be influenced by poor nutrition, smoking and alcohol intake. In recognition of this, a number of authors have called for consistent health messages to be made available to the public and highlighted the need for creating awareness for oral health to be in line with for risking general health.⁶

Health behavior as defined by Steptoe and colleagues is 'the activities undertaken by people in order to protect, promote or maintain health and to prevent disease'.⁷

The broad categories of factors that may influence health behavior include: Knowledge, beliefs, values, attitudes, skills, finance, materials, time and the influence of family members, friends, co-workers, opinion leaders and even health workers themselves.⁸ The affected population needs to receive information on dental diseases, risk factors and measures that can be adopted to prevent them. Such campaigns will typically aim not only to impart knowledge, but also to improve attitudes regarding oral health, and to facilitate the transformation of these attitudes into practice.⁹

There is a growing scientific evidence to show the positive impact about common risk factor approach to curb the dental disease. The use of non-conventional settings for health promotion is currently a topic of great interest in public health. In dentistry specifically, WHO Policy advises the use of the Common Risk Factor Approach (CRFA), which aims to address different health problems by focusing on a shared risk factor.^{10,11} as dental diseases are not considered as life threatening, incorporating CRFA might prove effective in improving oral health. Existing knowledge helps to understand and add on the required information during advice to the people. There have long been initiatives delivered in the dentistry setting to improve health issues other than oral

health; for example, the promotion of alcohol and smoking cessation to prevent cancers.^{12, 13}

The complete absence of published literature about the perception of general population regarding the relationship between oral health and general health has prompted us to assess the knowledge and attitude in the present study.

MATERIALS & METHOD

Study design and target population

We designed a cross-sectional survey by means of a self administered questionnaire which was approved by the Ethics Committee of the D Y Patil University Pune.

The target population comprised all patients visiting dental OPD at a private dental institution. The survey was voluntary and the responses were anonymous. Of the 680 patients, 650 returned completed questionnaires (response rate: 99%).

Variables of the questionnaire

To assess the relationship between oral health and general health - information related to knowledge and attitude of study subjects an interviewer based, predesigned, structured, close ended 18 item questionnaire, which had been designed based on the primary objective of the study was used. The survey was conducted in regional language (Marathi). The questionnaire was initially prepared in English, translated into Marathi language and the re-translated back to English to check for consistency. Test retest reliability of questionnaire at the interval of 2 days yielded Intra class correlation coefficient of 0.90.

The details of the questionnaire are as follows:

- Relationship between oral and general health knowledge: The assessment of participant’s knowledge included 9 questions (items) on importance of dental caries and obesity, periodontal disease and cardiac disease and low birth weight, identification of tooth decay, cause of cancer.
- Relationship between Oral and general health attitude: 9 questions (items) on attitude toward condition of mouth, regular dental visit, preferred treatment for deeply decayed teeth and periodontal health condition and importance of dental treatment for quality of life.

The subjects were asked to respond to each item according to the response format provided in the questionnaire. Response format included multiple choice questions in which the subjects were asked to choose an appropriate response from provided list of options. The investigator recorded the responses of the subjects in the printed format. The completed response format was carefully checked by the investigator. Along with the questionnaire, information on demographic characteristics like age, sex, educational level, and residential area was also collected.

Statistical analysis

All the obtained data was entered into a personal computer on Microsoft excel sheet and analyzed using Statistical Package for Social Science (SPSS, IBM, USA) version 20. The statistically significant level was set at less than 0.05 with confidence interval of 95%. The Chi-square test was used to compare the proportions.

RESULTS

The population under study consisted mainly of individuals living in urban and rural areas. A total of 650 subjects were examined. Of these 300 (46 %) were males, 350 (54 %) were females. Table 1 shows the background variable of participants. When residence of the participants was considered majority 429 (66%) were from urban locality and the difference was statistically significant. P=0.001

Participants (N = 650)	N (%)	P value
Age (year)		
21 – 34 yrs	150 (23)	0.05
35 – 44 yrs	245 (38)	
>45 yrs	255 (39)	
Gender		
Male	300(46)	0.05
Female	350(54)	
Education		
Illiterate	129 (19.8)	0.05
Primary school	146 (22.4)	
Secondary school	166 (25.5)	
Diploma	134 (20.6)	
University	50 (7.6)	
Not specified	25 (3.8)	
Residential area		
Rural	221 (34)	0.001
Urban	429 (66)	

Table 1. Shows Socio-Demographic Characteristics of the Participants

Knowledge

Table 2 shows the knowledge of subjects related to the association between oral health and general health. According to 150 (50 %) males and 165 (47.1%) females, good oral health is important for maintaining the general health. The difference was not statistically significant (P = 0.05). A majority of the study participants, i.e., 179 (59.6 %) males and 145 (41.4%) females, opined that maintaining the proper periodontal health helps to control blood sugar level. However, 66 (22%) males and 130 (37.1%) females were unaware about the importance of good periodontal health. The difference was statistically significant (P < 0.001).

Response	Male N=300(%)	Female N=350 (%)	χ^2 value	df	P value
Good Oral Health can improve general health			9.55	4	0.05
Yes	150(50)	165(47.1)			
No	50(16.6)	65(18.5)			
Don't know	100(33.33)	120(34.2)			
Good Periodontal health helps to maintain and control blood sugar level			20.74	6	0.001
Yes	179(59.6)	145(41.4)			
No	55(18.3)	75(21.4)			
Don't know	66(22)	130(37.1)			
Cause of Mouth Cancer			7.77	3	0.05
Usage of betel nut and betel quid	90(30)	125(35.7)			
Usage of tobacco	150(50)	165(47.1)			
Alcohol	35(11.60)	30(8.5)			
Don't know	25(8.3)	30(8.5)			
Risk of Dental Caries increases with Obesity			9.45	4	0.05
Yes	105(35)	125(35.7)			
No	55(18.3)	70(20)			
Don't know	140(46.6)	160(45.7)			

Table 2. Shows Knowledge of subjects related to Relationship between Oral Health and General Health

In response to a question related to the cause of oral cancer, a majority of males, i.e., 150 (50%), followed by 165 (47.1%) females, said tobacco consumption has the cause for oral cancer. moreover, females 125 (35.7%) and males 90 (30%) answered chewing betel nut and betel quid has the cause for oral cancer. The difference was not statistically significant ($P > 0.05$).

In a reply to the question related to obesity and its relationship with dental caries, 140 (46.6%) males and 160 (45.7%) females, were unaware about the risk of developing dental caries due to obesity. The difference was not statistically significant ($P > 0.05$). But 105 (35%) males and 125 (35.7%) females agreed the existence of association between obesity and dental caries.

Attitude

Table 3 shows attitude of subjects toward obtaining oral health and its impact on general health. A majority of males, i.e., 150 (50 %) believed that condition of their

mouth was fair. While majority of females 100(28.5%) felt their mouth condition was poor. The difference was statistically significant ($P < 0.001$). Most of the males 105 (35%) and females 115 (32.8%) agreed consulting dentist helps to overcome their poor

Response	Male N = 300(%)	Female N=350 (%)	χ^2 value	df	P = Value
Condition of Mouth			31.29	6	0.001
Excellent	5(1.6)	15(4.2)			
Good	25(8.33)	55(15.7)			
Fair	150(50)	95(27.1)			
Poor	50(16.6)	100(28.5)			
Don't know	70(23.3)	85(24.2)			
Would you like to get treatment for bleeding gums and bad breath by			7.77	4	0.05
Home remedy					
Consulting Pharmacist	25(8.33)	35(10)			
Consulting dentist	75(25)	85(24.2)			
Post pone treatment	105(35)	115(32.8)			
Don't know	79(26.3)	88(25.1)			
Would you like to get treatment for painful tooth decay by			31.29	6	0.001
Root canal treatment	90(30)	125(35.7)			
Removal of tooth	150(50)	165(47.1)			
Taking tablets	35(11.60)	30(8.5)			
Don't know	25(8.3)	30(8.5)			
Ever visited dentist for any dental problem			9.45	4	0.05
Yes	125(35)	155(35.7)			
No	175(46.6)	195(45.7)			
Obtaining Dental Treatment helps to Improve Quality of Life			9.45	4	0.05
Yes	250(83.3)	295(84.2)			
No	50(16.6)	55(15.7)			

Table 3 : Shows Attitude of subjects towards taking dental treatment and its impact on general health

periodontal health, however 79 (26.3%) of males and 88 (25.1%) of females wanted to postpone the periodontal treatment. The difference was not statistically significant ($P = 0.05$).

Removal of tooth was the preferred treatment option for deep painful dental caries by both genders as males 150 (50%) and females 165 (47.1%) responded for the treatment of choice for dental caries. However 90(30%) males and 125 (35.7%) females opted for root canal treatment. The difference was statistically significant $p < 0.001$

In response to a question related to the effect of dental treatment on quality of life both males 250 (83.3%) and females 295 (84.2%) agreed to have positive effect on quality of life. The difference was not statistically significant $P > 0.05$.

Majority of males 175 (46.6%) and females 195 (45.7%) never visited the dentist for any dental problem and the difference was not significant $p > 0.05$.

DISCUSSION

In this paper, we made an attempt to investigate dental patient's perception towards association between dental disease and its impact on their general health. To our knowledge, this was the first effort to estimate knowledge and attitude towards relationship between oral and general health.

Oral health is an integral part of general health and a valuable asset for any individual. Oral health has always been remained a neglected entity. People have underestimated consequences of bad oral health, which have led to bigger problems which later on become difficult to treat. Unawareness regarding dental health highly depends on one's educational level.

Our study showed that the overall level of knowledge were moderate and agreed the importance of good oral health to maintain and improve general health. In the present study, 47 to 50 % study subjects believed that oral health problems have association with the systemic health. This finding is similar with results reported by Khami et al.¹⁴ in which males and females showed no differences and 34 % of participants were unaware about the relationship between oral and general health (table 2). We as dental health professionals understand that that a core group of risk factors are common to many chronic diseases and injuries. The four most prominent non-communicable diseases- cardiovascular diseases, diabetes, cancer and chronic obstructive pulmonary diseases-share common risk factors with oral diseases.¹⁵ India faces a combined burden of communicable diseases and chronic diseases, with the burden of chronic diseases just exceeding that of communicable diseases. The proportion of the burden of Non-Communicable Diseases (NCDs) is expected to increase to 57% by 2020 across the world. Estimated mortality due to NCDs in India is 8 million deaths per year. >75% of the deaths are projected to be due to NCDs by 2020.¹⁶ this calls for immediate

attention of CRFA in helping people to adapt healthy practices

Regarding the awareness for periodontal health and blood sugar maintenance, up to 59 % participants agreed to have an association. There was a significant difference between males and females, males were more aware than females. Probably, prevalence of diabetes high in males and better understanding of its ill effect might have contributed about the importance of maintaining proper periodontal health status.¹⁷ For comparing our results on awareness of peoples periodontal health and blood sugar level, very few studies are available that has surveyed the general population. Only two studies were found who have surveyed the general population by Kapoor D et al¹⁸ and Bhatia A et al¹⁹ surveying the local population of Punjab region and was contradictory to our findings as they also concluded that majority of the people were unaware about the relationship between oral hygiene and systemic health. Rest of the literature is available with studies done on specific group of professionals like medical interns, doctors, gynecologists²⁰⁻²³ and it will not be prudent to compare our results where we have surveyed the general population.

The oral cancer awareness and knowledge in the present population is moderate (47 -50%). It is curious to note the lack of knowledge about oral cancer causation. Our results are in line with the reports by Prayman et al.²⁴ and Warnakulasuriya et al.²⁵ with an awareness of 55% and 56%, respectively, however, lower than that reported by Ariyawardena and Vithanaarachchi²⁶ (awareness of 95%) and West et al.²⁷ (awareness of 96%). Betel nut chewing is considered as risk factor for oral cancer development by 30-35% of study participants, this is in line with the report by Anand R²⁸ and other related studies.^{29, 30}

Recent meta-analysis concluded there is a small but significant positive association between child obesity and caries, when systematic and universal measures of both obesity and permanent dentitions are applied to analyses³¹; however in the present study majority of the study participants (46%) were unaware. Perhaps obesity is perceived more as a risk factor for diabetes than oral diseases by study participants.

With respect to the condition of their oral cavity there was a significant difference between males and females. Males perceived to have better oral health than females; perhaps utilization of dental services is high among males as seen in the studies conducted by Kudaluru et.al.³² probably, the present study finding should be interrupted with caution as normative needs and felt needs might differ. Up to 35% participants consulted dentist for their dental problems, and there was no difference between males and females this finding is in agreement with the study conducted by Bommireddy et al.³³ Majority agreed for removal of tooth followed by

endodontic treatment and the difference was statistically significant. Dental treatment cost, time and dental phobia might be the reason for preferring tooth removal than tooth preservation³² around 46 % visited dentist at least once for seeking some dental treatment, this is a positive finding and should be utilized by dentist to motivate and reinforce the health related messages using common risk factor approach for people to adapt healthy life style.

It was pleasantly surprising to see even though the knowledge about the relationship between oral and general health is average, majority participants (84%) agreed that obtaining dental treatment helps to enjoy the quality of life. This clearly shows people valuing wellness rather than sufferings. This finding underlines the importance of common risk factor approach to prevent and control common communicable and oral diseases.

The present study shows the importance of CRFA as the four most common non communicable disease share the common risk factor as oral disease. The potential benefits of Common Risk Factor Approach are far greater than isolated interventions. The need of the hour demands the use of CRFA to develop health promotion programs that will benefit individuals to enjoy disease free life. This in turn will drive the public to have a positive dental health attitude and behavior.

CONCLUSION

These findings clearly suggest people being having moderate dental health knowledge appreciate the relationships that exist between dental and systemic health. However with respect to attitude and practice towards dental health alone it's poor. This revealed good dental health knowledge alone does not translate to seeking updated and modern dental treatment.

We recommend other researchers design the use of CRFA for public to promote their knowledge and improve their attitude and practice for caring about their dental health as well as common non communicable diseases. Our result showed that current method of targeting to improve dental health alone not working.

References

- 1) Shah K, Hunter ML, Fairchild RM and Morgan MZ. A comparison of the nutritional knowledge of dental, dietetic and nutrition students. *Br Dent J* 2011; 210: 33-38
- 2) Kaur J. Dental education and oral health problems in India. *Indian J Dent Educ.* 2009; 2:167-71.
- 3) Mbawalla HS, Masalu JR, Åström AN. Socio-demographic and behavioural correlates of oral hygiene status and oral health related quality of life, the Limpopo-Arusha school health project (LASH): A cross-sectional study. *BMC Pediatr* 2010; 10: 87.
- 4) Sheiham A. Oral health, general health and quality of life. *Bull World Health Organ* 2005; 83: 644.

- 5) Locker D, Quiñonez C. To what extent do oral disorders compromise the quality of life? *Community Dent Oral Epidemiol* 2011; 39: 3-11.
- 6) Moynihan P J. Dietary advice in dental practice. *Br Dent J* 2002; 193: 563-568.
- 7) Steptoe A, Wardle J, Vinck J. Personality and attitudinal correlates of healthy and unhealthy lifestyles in young adults. *Psychol Health* 2004; 9:331-43.
- 8) Sharda AJ, Shetty S. A comparative study of oral health knowledge, attitude and behaviour of first and final year dental students of Udaipur city, Rajasthan, India. *Int J Dent Hyg* 2008; 6:347-53.
- 9) Singh A, Bharathi MP, Swqueira P, Acharya S, Bhat M. Oral health status and practices of 5 and 12 year old Indian tribal children. *J Clin Pediatr Dent* 2011; 13:32530.
- 10) Sheiham A & Watt RG. The Common Risk Factor Approach: A Rational basis for promoting oral health. *Community Dent Oral Epidemiol* 2000;28: 399-406.
- 11) Petersen PE Challenges to improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. *Int Dent J* 2004; 54: 329-343.
- 12) Pettis S & Scully C. The role of the dental team in preventing and diagnosing cancer: 5. Alcohol and the role of the dentist in alcohol cessation. *Dent Update* 2005; 32: 454-462.
- 13) Scully C & Warnakulasuriya S. The role of the dental team in preventing and diagnosing cancer: 4. Risk factor reduction: tobacco cessation. *Dent Update* 2005; 32: 394-396.
- 14) Khami M R, Virtanen J I , Jafarian M , Murtomaa H Prevention oriented practice of Iranian senior dental students. *Eur J Dent Educ* 2007; 11:48-53.
- 15) J. S. Thakur, Renu Garg, J. P. Narain, Nata Menabde Tobacco Use: A Major Risk Factor for Non Communicable Diseases in South-East Asia Region. *Indian J Public Health* 2011(55) 3: 155-160
- 16) Sharma K. Burden of non-communicable diseases in India: Setting priority for action. *International Journal of Medical Science and Public Health.* 2013; 2:7-11.
- 17) Ramachandran A, Snehalatha C, Vijay V, King H. Impact of poverty on the prevalence of diabetes and its complications in urban southern India. *Diabet Med.* 2002; 19:130-5.
- 18) Kapoor D, Gill S, Singh A, Kaur I, Kapoor P. Oral hygiene awareness and practice amongst patients visiting the Department of Periodontology at a Dental College and Hospital in North India. *Indian J Dent.* 2014; 5(2):64-68.
- 19) Bhatia A, Bains SK, Singh MP. To assess knowledge and awareness of North Indian population towards periodontal therapy and oral-

- systemic disease link: A cross-sectional survey. *J Interdiscip Dentistry* 2013; 3:79-85.
- 20) Al-Habashneh R, Aljundi SH, Alwael HA. Survey of medical doctors' attitudes and knowledge of the association between oral health and pregnancy outcomes. *Int J Dent Hygiene*. 2008; 6:214-220.
 - 21) Shenoy RP, Nayak DG, Sequeira PS. Periodontal disease as a risk factor in pre-term low birth weight - An assessment of gynecologists' knowledge: A pilot study. *Indian J Dent Res* 2009; 20:13-16.
 - 22) Nasir N, Ali S, Ullah U. Extent of Awareness regarding Systemic Effects of Periodontal Disease among Medical Interns. *Pak Inst Med Sci* 2013; 9(4):188-190.
 - 23) Tarannum F, Prasad S; Muzammil, Vivekananda L, Jayanthi D, Faizuddin M. Awareness of the association between periodontal disease and pre-term births among general dentists, general medical practitioners and gynecologists. *Indian J Public Health*. 2013; 57(2):92-95.
 - 24) E. Prayman, Y. Yang, and S. Wamakulasuriya, "Oral cancer awareness of patients attending health centres in Trinidad" *International Journal of Clinical Dentistry* 2009; (2) 4: 1–12.
 - 25) S. Warnakulasuriya, C. K. Harris, D. M. Scarrott et al., "Analarming lack of public awareness towards oral cancer," *Br Dent J* 1999 (187) 6: 319–322
 - 26) A.Ariyawardana and N. Vithanaarachchi, "Awareness of oral cancer and precancer among patients attending a hospital in Sri Lanka," *Asian Pacific Journal of Cancer Prevention* 2005 (6) 1: 58–61.
 - 27) R. West, M. N. Alkhatib, A. McNeill, and R. Bedi, "Awareness of mouth cancer in Great Britain," *Br Dent J* 2006 (200) 3: 167–169
 - 28) Anand R, Dhingra C, Prasad S, Menon I. Betel nut chewing and its deleterious effects on oral cavity. *J Cancer Res Ther*. 2014; 10(3):499-505.
 - 29) Van Wyk CW, Stander I, Padayachee A, Grobler-Rabie AF. The areca nut chewing habit and oral squamous cell carcinoma in South African Indians. A retrospective study. *S Afr Med J*. 1993; 83:425–429.
 - 30) Merchant A, Husain SS, Hosain M, Fikree FF, Pitiphat W, Siddiqui AR, et al. Paan without tobacco: an independent risk factor for oral cancer. *Int J Cancer*. 2000; 86:128–131.
 - 31) Hayden C, Bowler JO, Chambers S et al. Obesity and dental caries in children: a systematic review and metaanalysis. *Community Dent Oral Epidemiol* 2013; 41: 289–308.
 - 32) Kadaluru et al. Utilization of oral health care services among adults attending community outreach programs. *Indian J Dental Res* 2012; 23(6):841-2.
 - 33) Bommireddy et al. Dental service utilization: patterns and barriers among rural elderly in guntur

district, andhra pradesh. *Journal of clinical and diagnostic research*. 2016 ;10(3): zc43-zc47

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How to cite this article: Karibasappa GN, Grover N, Kulkarni T, Lalani A. Dental Patients Perception towards Association between Oral and Systemic Health -A Cross Sectional Survey. *TMU J DENT* 2018;5(3):1-6