



Original Article

Prevalence of dental caries based on personality types of 35–44 years old residents in Davangere city



Puja C. Yavagal, Hitashi Singla *

Department of Public Health Dentistry, Room No. 8, MCC-B Block, Bapuji Dental College and Hospital, Davangere, Karnataka 577004, India

ARTICLE INFO

Article history:
Received 16 June 2016
Accepted 25 September 2016
Available online 4 October 2016

Keywords:
Personality
Dental caries
DMFT
Jenkins Activity Survey

ABSTRACT

Aim: To assess dental caries experience of different personality types of 35–44 years old residents in Davangere city.

Materials and methods: A cross-sectional survey was conducted in field setting. Based on Jenkins Activity Survey Questionnaire¹¹ used to assess the personality types, a personality questionnaire was designed consisting of 20 items. Questionnaire was used to assess and categorize personality types as Type A, Type B and Type AB. Data were analyzed using SPSS software version 17. Standard descriptive statistics were generated. Evaluation of data was done using chi square test.

Results: Prevalence of dental caries was 96.6% in Type A personality and 95.9% in Type B personality and this difference was not statistically significant (person chi square p value = 0.53).

Discussion: In a cross-sectional survey it is difficult to inspect personality types which is a qualitative variable with some people giving different responses at different occasions. There are chances of social desirability bias. Hence, longitudinal studies should be conducted to ascertain the association between personality types and dental carries.

© 2016

1. Introduction

According to WHO, health is the state of complete physical, mental and social well-being and not merely the absence of disease and its infirmity. Psychosocial factors such as personality, stress and coping, sense of coherence, self-efficacy and social support are thought to alter patterns of health related behaviours that are directly related to health risks such as smoking, alcohol consumption and physical activity.¹ Hence, health of an individual is affected by his thoughts, emotions and behaviour, which reflect his personality.

Stress seems to be related to specific personality traits that constitute the personality of a person. Personality is the combination of characteristics or qualities that form an individual's distinctive character. Personality of a person is quite often considered as better predictor of stress. Specific personality of a person shows high predilection towards stress and hence personality is related to diseases. Many studies have established the relationship of personality of an individual as risk factor of heart diseases, cancer, injuries and mental disorders.^{2,3} People

with Type A personality traits are aggressive, ambitious, highly competitive, preoccupied with status, workaholics, hostile, and lack patience and traits of Type B personality are relaxed, less stressed, flexible, emotional and expressive, and have a laid-back attitude. The personality of the Type C or “anger in” personality is described as a repressive and vigilant personality pattern. The main characteristics are: strong defense mechanisms leading to incapacity of verbalization and recognition of the subject's own negative emotions; secondary negative reactions such as feelings of hopelessness and uselessness; lack of self-control in stress situations; individual is characterized by emotional control and desire to please others, even at the expense of the individual's own needs. This suppressive style is thought to be linked with impaired endocrine and immune responses to chronic stress (i.e., cancer diagnosis), leading to the host's inability to resist disease onset/progression.

Personality of an individual is discussed under psychosocial determinants of oral health. Psychosocial determinants of oral health constitute a complex domain of several psychological and social factors that have profound influence on oral health. Several salivary parameters like salivary pH, salivary secretion rate, salivary flow rate and salivary level of minerals are found to vary depending on personality.⁴ In recent years; intensive research has been directed towards identifying risk factors that predispose individuals to behaviours that could be dangerous to their health.

* Corresponding author.

E-mail addresses: pujacyavagal@gmail.com (P.C. Yavagal), singlahitashi@gmail.com (H. Singla).

Personality factors may play a key role in explaining individual differences in health behaviours, with impulsivity, psychoticism, neuroticism, anxiety and hostility having been associated with risky behaviours, while conscientiousness, agreeableness, optimism, hardiness and self-efficacy have been shown to predict health-promoting behaviours. Knowledge of these risk factors is also important for dental health and the success of dental practice. Understanding of aspects that influence participants' dental behaviours help health professionals in improving patients' compliance and ultimately dental health outcomes.

Dental caries and periodontal diseases are the two major oral diseases, which are universal in distribution and constitute the primary reason for tooth mortality. Research has suggested that stress, depression and ineffective coping may contribute to development of periodontal diseases and dental caries.⁵ Particular personality types of people are more prone to ineffective coping with stress, depression and hence may affect their carious experience.⁶

Exploration of available literature revealed that studies relating personality types of people and dental caries experience are relatively less. None of the studies have addressed this relationship comprehensively. Thus the present study is undertaken to generate the baseline data and to understand the prevalence of dental caries based on personality types of 35–44 years old residents in Davangere city of Karnataka, India.

2. Materials and methodology

A cross-sectional survey was conducted in field setting. A sample size of 300 was calculated scientifically based on data provided by National Oral Health Survey, 2004. For collecting the data multistage randomized quota sampling was followed. After taking the ethical approval to conduct the survey from Institutional Review Board of Bapuji Dental College and Hospital, Davangere. Voluntary informed consent was obtained on a consent form from all the subjects after explaining the purpose of the study.

The survey was scheduled over a period of 5 months, which included scheduling for planning the survey, permission of authorities, data collection, compilation, data analysis and report writing. On an average 30 subjects were examined per day. All the clinical examinations were carried out by a single examiner who was calibrated. For the purpose of examination and application of examination criteria the examiner was trained and calibrated in the Department of Public Health Dentistry, Bapuji Dental College and Hospital, Davangere. The kappa value obtained was 0.8, which indicated less intra examiner variability.

2.1. Training of recording assistant

A recording assistant was trained to assist in recording the investigation results examined by the examiner.

Subjects who can read and understand the personality questionnaire and who gave the consent participated in the survey. The participants who were diagnosed to have psychiatric

problems, systemic diseases or on any medications which have an influence on oral health like diabetes mellitus, HIV, asthma, epilepsy, blood dyscrasias and so on did not participate in the study.

A pretested study proforma was designed to collect data regarding socio-demographic details, Oral hygiene and dietary practices, oral hygiene status and Dental caries experience.

2.2. Assessment of personality type

Based on Jenkins Activity Survey Questionnaire¹¹ used to assess the personality types, a personality questionnaire was designed consisting of 20 items. Questionnaire was used to assess and categorize personality types as Type A, Type B and Type AB. The questions were close ended and responses were on 4 point Likert scale. The questionnaire was translated to local language. (The copy of it is enclosed as annexure – 3.) The questionnaire was checked for face validity.

2.3. Assessment of dental caries experience and oral hygiene status

Individuals requiring immediate care were referred to Bapuji Dental College and Hospital, Davangere.

2.4. Statistical analysis

The raw data so obtained after the study was classified, tabulated and subjected to statistical analysis. Data was analyzed using SPSS software version 17. Standard descriptive statistics were generated. Evaluation of data was done using chi square test.

3. Results

The present cross-sectional survey was conducted to assess the caries experience among different personality types of 35–44 years old residents in Davangere city. The questionnaire was distributed to 300 subjects selected on the basis of selection criteria. The response rate was 100%.

The data was subjected to Kolmogorov–Smirnov and Shapiro–Wilk's test to check for normality and it was observed that the data was not normally distributed. Hence, non-parametric tests were used for statistical analysis (Table 1).

The mean age group of study subjects was 41 ± 2.3 years (Table 2).

Among male subjects 49% were of Type B personality followed by Type A (48%). Among females, majority (51%) were Type A followed by Type B (48.4%). Very few male and female subjects belonged to Type AB category (3% and 0.6%), respectively (Table 3).

Prevalence of dental caries was 96.6% in Type A personality and 95.9% in Type B personality and this difference was not statistically significant (person chi square p value = 0.53). Very few subjects belonged to Type AB group; hence, it was not considered for statistical analysis (Table 4).

Table 1
Distribution of study data.

Personality type		Kolmogorov–Smirnov ^a			Shapiro–Wilk		
		Statistic	Degrees of freedom	Significance	Statistic	Degrees of freedom	Significance
A	DMFT	0.121	148	0.000	0.954	148	0.000
B	DMFT	0.112	147	0.000	0.958	147	0.000
AB	DMFT	0.258	5	0.200 [*]	0.782	5	0.057

^a Lilliefors significance correction.

^{*} This is a lower bound of the true significance.

Table 2
Distribution of study population based on age.

Personality type	Number of subjects	Mean age (years)	Standard deviation
Type A	148	39.70	3.376
Type B	147	39.56	3.147
Type AB	5	43.80	0.447
Total	300	41.00	2.300

Table 3
Distribution of study population based on sex.

Sex	Personality type	Frequency (n)	Percentage (%)	Total
Male	A	66	48	139 (46.3%)
	B	69	49	
	AB	4	3	
Female	A	82	51	161 (53.7%)
	B	78	48.4	
	AB	1	0.6	

Table 4
Prevalence of dental caries among study population.

Personality type	Prevalence of dental caries	Frequency	Pearson chi square p value (2-sided)
Type A	96.6	143	0.53
Type B	95.9	141	
Type AB	100	5	
Total	292.5	289	

The median DMFT values of Type A and Type B personality groups were 4 and 5, respectively, and this difference was statistically significant when tested using Mann–Whitney ‘U’ test ($p = 0.005$) (Table 5).

4. Discussion

Health of an individual is affected by his thoughts, emotions, behaviour which reflects his personality. Specific personality of a person shows high predilection towards stress and hence personality is related to many diseases. Several salivary parameters like pH, secretion rate, flow rate and minerals are found to vary depending on personality; hence, the personality of an individual may have an influence on oral health and dental caries experience.⁴

Literature search revealed scarcity of studies assessing the relationship between personality traits and oral health. Hence, the present cross-sectional survey attempted to assess the caries

experience among different personality types of 35–44 year old residents in Davangere city.

The age group of 35–45 years old was chosen as it is standard monitoring group for health conditions of adults. The full effect of dental caries and the effects of care provided can be monitored using data of this age group.¹⁴

To assess dental caries experience DMFT index was chosen as this is the standard and sensitive index used to assess the dental caries experience in epidemiological studies as recommended by WHO. It becomes easier to compare our results with other studies, because many studies have used DMFT index.¹³

The questionnaire used for the study was a modification of Jenkins Personality Questionnaire.¹¹ It is a standard questionnaire to assess personality types. Since the Jenkins questionnaire is a very lengthy questionnaire involving around 100 items it was cumbersome to use as tested in the pilot study. Hence, the questionnaire was modified to 20 items questionnaire which included all the constructs of original Jenkins questionnaire. It was tested for validity and reliability in the pilot study. It was translated to local language (Kannada) and back translation was done to check for its validity.

Many other personality questionnaires include Meyer Brigg’s Questionnaire, Multi-Dimensional Personality Questionnaire (MDP), Carl Jung Typology Test, Eysenck Personality Questionnaire and Tri-Dimensional Personality Questionnaire.^{15–18}

In the present study, the prevalence of dental caries was high among Type A personality subjects compared to Type B, but the difference was not statistically significant. Perhaps the reason for this could be the fact that Type A personality people are more prone to stress. Stress diminishes saliva flow and increases dental plaque formation. Stress modifies salivary pH and its chemical composition, like IgA secretion which in turn lead to high susceptibility to dental caries.⁴

A prospective study done by Thomson et al.⁷ to study the relationship between personality and oral health indicated that people of negative emotionality had a greater risk of having decayed teeth compared to complacent emotionality; personality was considered risk factor for dental caries.⁷

In the present study, severity of dental caries was significantly high among Type B personality people compared to Type A. The probable reason for this could be the laid back attitude of Type B people towards seeking dental care for dental caries. A study done by Manhold and Rosenberg showed correlation between personality traits like objectivity, agreeableness and cooperativeness with dental caries.⁸

Personality of individuals may influence health in multiple pathways. Personality types like extroversion, introversion, and

Table 5
Caries experience of different personality types.

Statistics				Mann–Whitney ‘U’ test p value (2-sided)
DMFT (decayed, missing and filled teeth)				
Personality A	Median		4.00	0.005
	Range		12	
	Percentiles	25	2.00	
		50	4.00	
Personality B	Median		5.00	
	Range		16	
	Percentiles	25	3.00	
		50	5.00	
Personality AB	Median		4.00	
	Range		4	
	Percentiles	25	1.00	
		50	4.00	
		75	5.00	

neuroticism may influence people's emotional and social life including sensitivity to negative experience and poorer atrocities in adapting to difficult and changing life circumstances resulting in stress. Stress diminishes saliva flow, increases dental plaque formation and hence, increases risk for dental caries.⁴

In a cross-sectional survey it is difficult to inspect personality types which is a qualitative variable with some people giving different responses at different occasions. There are chances of social desirability bias. Hence, longitudinal studies should be conducted to ascertain the association between personality types and dental caries.

5. Conclusion

The prevalence of dental caries was high among Type A personality compared to Type B personality people but this was not statistically significant. The severity of dental caries experience was high among Type B compared to Type A personality people.

Conflicts of interest

The authors have none to declare.

Acknowledgement

We would like to thank the final year B.D.S. undergraduate student of Bapuji Dental College for helping in collecting the data.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.jobcr.2016.09.004](https://doi.org/10.1016/j.jobcr.2016.09.004).

References

- Dumitrescu A, Kawamura M. Involvement of psychosocial factors in the association of obesity with periodontitis. *J Oral Sci.* 2010;52(1):115–124.
- Fickley C, Lloyd C, Costacou T, Miller R, Orchard T. Type A behavior and risk of all-cause mortality, CAD, and CAD-related mortality in a Type 1 diabetic population: 22 years of follow-up in the Pittsburgh epidemiology of diabetes complications study. *Diabetes Care.* 2013;36(10):2974–2980.
- Petticrew M, Lee K, McKee M. Type A behavior pattern and coronary heart disease: Philip Morris's "Crown Jewel". *Am J Public Health.* 2012;102(11):2018–2025.
- Costa P, Chauncey H, Rose C, Kapur K. Relationship of parotid saliva flow rate and composition with personality traits in healthy men. *Oral Surg Oral Med Oral Pathol.* 1980;50(5):416–422.
- Rosania A, Low K, Mc C, ornick C, Rosania D. Stress, depression, cortisol, and periodontal disease. *J Periodontol.* 2009;80(2):260–266.
- Kruger E, Thomson W, Poulton R, Davies S, Brown R, Silva P. Dental caries and changes in dental anxiety in late adolescence. *Commun Dent Oral Epidemiol.* 1998;26(5):355–359.
- Thomson W, Caspi A, Poulton R, Moffitt T, Broadbent J. Personality and oral health. *Eur J Oral Sci.* 2011;5(119):366–372.
- Manhold J, Rosenberg N. Study of the possible relationship of personality variables to dental cavities. *J Dent Res.* 1954;33(3):357–363.
- Anon. 2015. Available at: <http://www.psych.uncc.edu/pagoolka/TypeAB> [accessed 10.05.14].
- Klein H, Palmer C, Knutson J. Studies on dental caries. *Public Health Rep.* 1938;(53):751–765.
- WHO. *Oral Health Survey: Basic Methods.* 3rd ed. Geneva, Switzerland: WHO; 1997.
- Hansley J, Lee CM, Wood JM. Controversial & questionable assessment technicians. In: Lilienfeld SO, Lohr JM, Lynn SJ, eds. In: *Science and Pseudoscience in Clinical Psychology.* Guilford; 2004:59385-070-0.
- Tellegen A, Walker NG. Exploring personality through test construction. Development of the multidimensional personality questionnaire. *The SAGE Handbook of Personality Theory & Assessment.* vol. 2. 2008;261–292.
- Eyserick SBC, Eyserick H, Barret P. A revised version of the psychoticism scale. *Pers Individ Differ.* 1985;6(1):21–29.
- clonings CR, przybeck TR, vrekic DMS. The tridimensional personality questionnaire. U.S. Nordin data. *Psychol Rep.* 1991;69(3):1047–1105.