Personality Types in Relation to the Periodontal Health Status and Salivary Dehydroepiandrosterone among Teachers in Baghdad City

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ABSTRACT

Background: The individual differences in emotional and behavioral style can be examined through personality instruments. These differences may explain the health status of the individuals. The purpose of the present study was to assess the influence of Personality Types on gingival and periodontal health status among teachers in Baghdad city in relation to selected salivary hormone (Dehydroepiandrosterone).

Materials and methods: Females teachers 534 of randomly selected schools were subjected to personality questionnaire using The Riso-Hudson Enneagram Type Indicator. Teachers were examined to estimate the periodontal status according to the Community Periodontal Index (CPI). A group of teachers were selected for salivary analysis of Dehydroepiandrosterone (DHEA).

Results: Data analysis showed that the higher mean of scores was reported for the Helper personality Type among the sample. According to the maximum (CPI) code, significant difference was found in the mean values of Individualist Personality Type scores between the healthy periodontium (code 0) and calculus (code 2) of Community periodontal index. No significant correlation was found between salivary DHEA concentration (pg /ml) and the scores of the Nine Personality Types. No significant correlation was found between salivary DHEA concentration(pg/ml) and number of sextants for CPI codes.

Conclusions: Personality Types could influence gingival and periodontal health status of the subjectsso that psychological interventions may be carried out to improve the oral hygiene condition of the population.

Keywords: Personality Types, periodontalstatus, Dehydroepiandrosterone. **(J Bagh Coll Dentistry 2016; 28(4):144-148)**

INTRODUCTION

Riso and Hudson defined Personality Type as "a Metaphor for a wide range of behavior and attitude just as in astrology differences, shared by a group of people and reflecting the dynamic interaction among three personality centers (The Feeling, The Thinking and The Instinctive) and nine Personality Types" [(1)].

Personality influences on health appears over centuries of medical writing [(2)]. The work of Friedman and Rosenman on the association between personality type and coronary heart disease is perhaps the most well-known example of the personality and general health hypothesis [(3)]. Psychological science has new opportunities to find relations between oral health status and personality factors. Studies have been conducted by researchers to identify whether personality has an association with periodontal health [(4,5)].

Periodontal disease is one of the major dental diseases that affect human populations worldwide at high prevalence rates [(6)]. Periodontal disease is multifactorial with many risk factors, modifiable like microorganism; smoking, drugs, and non-modifiable like age; gender and hormonal fluctuations [(7)].

Stress also has been diagnosed as a risk factor in periodontal diseases. Clinical studies indicated strong relationships between stress and periodontal disease through a direct change in tissue physiology [(8,9)] or through changes in behavior [(10,11)].

Hormones and chemical mediators produced by the organism as the result of psychological influence may explain these effects [(12,13)]. From these hormones, Dehydroepiandrosterone (DHEA) is known as a hypothalamic-pituitary adrenal (HPA)-related steroid hormone [(14)].

The DHEA is considered as a metabolic intermediate in the biosynthesis of the androgen and estrogen steroids hormones. It also has a number of other important functions, it can decrease cholesterol levels, increase bone growth and support the immune system [(15)].

The DHEA can increase physical and psychological well-being by increasing energy,

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deeper sleep, improved mood, more relaxed feeling and better ability to handle stressful events [16]. Few reports regarding salivary DHEA have been presented in the dental field [17,18].This study was designed to investigate the influence of Personality Types on the periodontal health and salivary DHEA concentration.

MATERIALS AND METHODS

The target population of the study was females teachers aged between 29 and 39 years. Secondary schools of Females were randomly selected in Baghdad city, urban only. Riso-Hudson Enneagram Type Indicator (RHETI), Version 2.5, was used to determine the scores of the nine Personality Types of human nature [1].

After the agreement of the authors, the (RHETI) was translated to Arabic and prepared to be used in Iraq by Al-Yassiry [19]. The indicator sheet was introduced to each teacher. It requires from each teacher to choose one statement in each pair that best describes her throughout most of life (forced choice).

Each chosen statement has a score of one while the non-chosen statement has a score of zero. After collection of the scores, each teacher had nine scores of the nine Personality Types and each Personality Type should have a score range (0-32). The total scores for the nine types should be equal to 144 (number of paired questionnaires); otherwise the indicator sheet should be neglected.

The indicator sheets were checked for incomplete answers and the total scores were calculated for each Personality Type. Periodontal status was recorded according to the Community Periodontal Index (CPI) modified by WHO [20] as demonstrated in Table 1. Plain dental mirrors and WHO probes were used in the examination. Six segments were assessed for each individual which were 17, 16, 11, 26, 37, 36, 31, 46, and 47. If less than two functional teeth existed, the sextant was classified as edentulous. A group of teachers (87) was randomly selected from the total sample (534) for salivary analysis of Dehydroepiandrosterone (DHEA). Saliva collection, storage and analysis were according to the manufacturer instructions (Demeditec Diagnostics GmbH, Germany).

The collection time of saliva was between 11:00 AM and 1:00 PM to minimize any circadian rhythm effects. The teachers were instructed to stop eating for at least two hours. After saliva collection, the samples should be kept at a temperature of -20°C.At the day of saliva analysis, each sample has to be thawed, warmed up to room temperature and centrifuged for 5 to 10 minutes. Salivary ELISA Kit for the hormone is a solid phase enzyme-linked immunosorbent assay based on the principle of competitive binding.

Data were entered onto Microsoft Excel and statistically analyzed using SPSS version 18 software. A P- value less than 0.05 was considered to be statistically significant.

RESULTS

A sample of 534 teachers from 55 schools was examined, distributed throughout the six directorates of Baghdad city, urban only. The total scores for each Personality Type were calculated from the indicator sheets. Table 2 is showing the distribution of teachers according to maximum CPI score by the age groups.

The highest percentage was reported for the teachers with healthy periodontium (56.55%) while shallow pockets (4.31%) were the lowest. Table 3 is demonstrating the scores of Personality Types among the study sample. The higher mean of scores was reported for the Helper Type followed by the Peacemaker Type.

Table 4 reveals the differences in the scores of Personality Types according to maximum CPI codes. Statistical significant difference was found in the mean of scores of the Individualist Type. Further analysis using LSD test (to compare the means of scores for each personality type among the four groups of CPI codes) showed that the significant differences was found only between the (code 0) and (code2). This revealed that the scores of Individualist Type among teachers with healthy periodontium was significantly lower than the scores of Individualist Type among teachers with calculus (mean difference=0.95, P=0.003). No significant differences were found in the scores of the other Personality Types ($p>0.05$).

Table 5 is showing that the correlation coefficient between salivary DHEA concentrations (pg/ml) and the scores of the nine personality types was statisticallynot significant ($P>0.05$).Correlation coefficient between salivary DHEA concentrations (pg/ml) and number of sextants of CPI codes was also not significant (no case was reported in the sample of salivary analysis with shallow pockets) as seen in Table 6.

Table 1: Codes and criteria of community periodontal index (WHO, 1997)

Codes	Criteria
0	No bleeding, no calculus no pathological pocket
1	Bleeding on probing gingival margin, no calculus, no pathological pocket
2	Presence of calculus (sub or supra-gingival) with or without bleeding, no pathological pocket
3	Pocket 4 - 5 mm (gingival margin within the black band on the probe)
4	Pocket 6 mm or more (black band on the probe not visible)

Table 2: Distribution of teachers according to maximum CPI codes

Total sample	Maximum CPI Code							
	Healthy Code 0		Bleeding Code 1		Calculus Code 2		Shallow pockets Code 3	
	No.	%	No.	%	No.	%	No.	%
N=534	302	56.55	35	6.56	174	32.58	23	4.31

Table 3: The scores of personality types (means and standard deviations) among the study sample

Personality Types	Mean ± SD
The Reformer	16.51±4.186
The Helper	19.68±3.822
The Achiever	17.31±3.206
The Individualist	14.27±3.373
The Investigator	14.37±3.137
The Loyalist	16.65±3.445
The Enthusiast	12.65±4.079
The Challenger	15.15±4.142
The Peacemaker	17.42±3.977

Table 4: The scores of personality types according to maximum CPI codes

Maximum CPI code	Personality Types (Mean ± SD)								
	Reformer	Helper	Achiever	Individualist	Investigator	Loyalist	Enthusiast	Challenger	Peacemaker
Healthy Code 0 N=302	16.67 ±3.99	19.58 ±3.72	17.52 ±3.30	13.89 ±3.26	14.33 ±3.12	16.67 ±3.46	12.86 ±4.14	15.23 ±4.04	17.20 ±3.89
Bleeding Code 1 N=35	16.29 ±4.46	19.77 ±4.22	16.71 ±2.72	14.51 ±3.61	14.08 ±2.95	16.03 ±2.63	13.25 ±3.68	15.00 ±4.41	18.31 ±3.53
Calculus Code 2 N=174	16.33 ±4.407	19.71 ±3.79	17.11 ±3.09	14.84 ±3.46	14.50 ±3.26	16.63 ±3.51	12.22 ±4.10	15.08 ±4.27	17.56 ±3.99
Shallow pockets Code 3 N=23	16.04 ±4.63	20.39 ±4.79	16.86 ±3.32	14.47 ±3.24	14.21 ±2.83	17.47 ±3.77	12.00 ±3.34	14.73 ±4.20	17.78 ±5.28
F value df=3	0.382	0.333	1.221	3.083*	0.228	0.827	1.374	0.150	1.020

***Significant, P≤0.05**

Table 5: Correlation Coefficient between salivary DHEA concentrations (pg /ml) and the scores of the Nine Personality Types

Personality types	r	P
The Reformer	-0.06	0.54
The Helper	-0.12	0.25
The Achiever	-0.05	0.61
The Individualist	0.04	0.67
The investigator	-0.07	0.47
The loyalist	0.05	0.64
The Enthusiast	0.05	0.63
The Challenger	0.03	0.75
The Peacemaker	0.09	0.38

Table 6: Correlation Coefficient between salivary DHEA concentrations (pg /ml) and the number of CPI sextants

No. of sextants	r	P
Healthy Code 0	0.007	0.95
Bleeding Code 1	0.03	0.78
Calculus Code 2	-0.12	0.29

DISCUSSION

Data are still insufficient to determine the exact effects of different psychological factors especially the impact of personality on the oral health conditions. Since there are no previous studies in Iraq on the relationship between Personality Types and oral health status, this study was conducted to focus on the relation between personality types(on the basis of questionnaire) and periodontal health status. Teachers were the target group in this study, females only.

Females were the target group in many studies especially in some developing countries. In these studies, periodontal disease was worse in females than males and may be due to frequent child birth, poor nutrition and poor oral hygiene measures [21-23]. Other studies reported more periodontal diseases in males than the females [24,25].Teaching is one of the important and high stress professions in which Personality Type can influence the degree to which stressful situations are being perceived, and influence the teacher's emotional and cognitive well-being [26].

This study showed that the basic Personality Type among the study group was the Helper Type followed by the Peacemaker Type. Al Yassiry reported that the basic Personality Type among the college students in Baghdad was the Achiever Type followed by the Individualist Type [19]. In another study conducted in Syria, the basic Personality Type among the college students was the Achiever Type followed by the Loyalist [27]. This difference could be due to the differences in the target group regarding ageand occupation.

By comparing the Personality Type scores among groups divided according to the Maximum CPIcode, the study revealed that the scores of Individualist Type among teachers with healthy periodontium lower than the scores of Individualist Type among teachers with calculus. This difference was statistically significant and could be related to different possible explanations.

The Individualists are self-aware, sensitive, emotionally honest and creative, but can also be moody and self-conscious. They are withholding themselves from others due to feeling susceptible. At their unhealthy levels, they may feel hopeless, possibly abusing tobacco or drugs to escape and more related to the depressive personality disorders [28]. The above description of the Individualists could make them less concerned in the oral health measures. Other possible explanations are the differences in the salivary composition or flow rate due to psychological influence [29, 30]. This result is in agreement with another study that supported a possible relationship between certain personality factors and gingival conditions [4].

In the present study, no significant correlation was found between the scores of the Nine Personality Types and the concentration of salivary DHEA hormone.This finding disagrees with the finding of another study which concluded that Personality may be related to DHEA reactivity [31].The differences in study design and personality scale may explain this disagreement. Work stress among teachers was reported in previous studies [32,33]. Coping with this stress and teachers adaptation to their work roles may explain these results in the selected salivary hormone among the nine Personality Types.

Correlation coefficient between salivary DHEA concentrations and CPI codes was also not significant which disagrees with other studies [17,18]. These studies concluded that DHEA level were found to be increased with periodontal disease severity. The differences in current study design may be related to this finding. In addition to that, wide range of the hormone concentration may be responsible for this disagreement and larger

sample size may be needed to confirm this finding.Further studies are needed to correlate the personality characteristics with other biomarkers and to investigate the exact influence of Personality Types on oral health status.

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