

A Study on the Pattern of Perceived Stress among Dental Patients in a Nigerian Tertiary Hospital

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Abstract

Background: While the association between perceived stress and non odontogenic conditions are well document, little is known as regard association between odontogenic conditions and perceived stress. This study therefore aimed to assess determine relationship between odontogenic conditions and perceived stress among dental patients in the University of Benin Hospital, Nigeria. **Materials and Methods:** This was a descriptive cross sectional study on randomly selected samples of patients aged above 18years from April to September 2019. The data collected were age, gender, smoking habit, socioeconomic status, and the levels of stress perceived. The result of continuous data was presented as ranges and mean±SD while that of categorical data was presented as frequency and percentages. Descriptive and inferential statistics were done using SPSS Version 20. A P-Value less than 0.005 was taken as significant. **Results:** All the 79 respondents approached agreed to participate in the present study giving a response rate of 100%. The age ranged from 17 to 79 years with a mean age of 36.1±16.9 years. There were 50.6% males and 49.4% females. There was no patients that had high level of stress, however, over half of the patients (60.8%) perceived moderate level of stress. The mean PSS score for the study sample was 5.09±2.79, with a range of 0.00 - 10.0. In the univariate analysis, the age, gender, socioeconomic status, smoking habit, and dental conditions was observed not to be statistically significant with the PSS score ($P > 0.05$). **Conclusion:** Most patients that present with dental conditions in our study were moderately stressed with none seen to be highly stressed. The level of stress was not associated with age, gender, socio-economic status as well as the dental condition in the present study.

Keywords: Perceived stress scale, stress level, dental condition, patients.

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INTRODUCTION

Stress has now become an integral part of our vocabulary and daily existence. Originating a little more than 50 years ago the term is now in popular parlance. Stress, as coined by Hans Selye in the early 1930s, is a biopsychosocial model that refers to the consequence of failure of an organism to respond adequately to mental, emotional or physical demands, whether adequately to mental, emotional or physical demands, whether actual or imagined [1]. Stress is a notion which has raised the interest of the scientific community over the last years, either because its definition and its forms of measurement or of its impact on the harmonious function of each organism. More specifically, stress is defined as a state in which homeostasis is actually threatened or perceived to be so [2].

Dental conditions has been reported as one of the great stressful life events with negative psychological, social and cultural consequences [3]. In addition, stress considerably impacts the quality of life and is associated with a range of adverse health outcomes [4]. One of the most widely used instrument for measuring the perception of stress is the perceived stress scale (PSS) [5]. The scale measures “the degree to which situations in one’s life are appraised as stressful”. The original version of PSS was developed by Cohen *et al.*, and consists of 14 items (PSS-14); however this scale was later reduced to 10 items (PSS-10), removing 4 items because of low factor loading based on the results of principal components analysis [6]. A four item version was also developed as a brief versions, for settings with limited time frame [7]. The PSS in 14, 10, and 4 item versions has been frequently

used across various cultures and population and translated into many languages. Among the three versions, the PSS-10 is recommended since it has more satisfactory psychometric properties than PSS-14 and PSS-4 [8].

Despite several studies reporting association between stress and non-odontogenic conditions [9-16], to the best of our knowledge, only few studies have reported psychometric properties in odontogenic conditions [17] and none have been reported in Nigerians. Therefore this study aimed to evaluate the psychometric properties of PSS-10 in a sample of individuals suffering from dental conditions.

MATERIALS AND METHOD

This was a descriptive cross sectional study designed following permission by the ethical and research committee of our hospital and informed consent taken from the participants. The study was carried out on randomly selected samples of patients aged above 18 years in the outpatient clinic of the Dental Centre of the University of Benin Teaching Hospital from April to September 2019. Excluded patients were those with pre-existing medical conditions and those undergoing any other form of stress due to other life events. The study was approved by institutional ethics committee and participation was on voluntary basis. All respondents were assured of anonymity and confidentiality.

The prevalence of high perceived stress level among dental patients is 21.7% reported by Sinha *et al* [17] was used as a reference value for the calculation of sample size. The minimum sample size for statistically meaningful deductions was determined using the statistical formula of Fisher for calculating sample size: $N = Z^2 P (1-P) / d^2$. Where N is the minimum sample size for a statistically significant survey, Z is normal deviant at the portion of 95% Confidence interval (C.I) = 1.96, P is prevalence value of high perceived stress level among dental patients in previous study = 21.7%, and d is margin of error acceptable or measure of precision = 10%. Using this formula, the minimum sample size (N) is 65. Therefore, the study of 65 patients will give meaningful statistical deductions. However, the sample size was increased to 79 to compensate for 10% attrition. Therefore, 79 patients were recruited for the study.

On the bases of detailed case history, thorough clinical examination, and clinical investigations, diagnosis were made with appropriate treatment plan. After initial work-up, the perceived stress scale (PSS) (Table 1) was used to measure the perception of stress over the past months. The PSS-10 is a self-report

instrument consisting of 10 items purported to assess how “unpredictable, uncontrollable, and overloaded respondents find their lives.” Each of the items on the PSS-10 are rated on a 5-point Likert scale, ranging from 0 (never) to 4 (very often). The PSS-10 consist of 6 positively (items 1, 2,3,6,9 and 10: positive factors) and 4 negatively (items 4, 5,7 and 8: negative factor) worded items. Negative worded items were recoded during analysis. Total scores range from 0 to 40, with higher scores indicating higher levels of perceived stress. This scale had been prevalidated from previous study. Reliability of internal consistency of the scale was assessed with Cronbach’s alpha coefficient.

The data collected were age, gender, smoking habit, socioeconomic status, and the levels of stress perceived. The socioeconomic status stratification was carried out using Oyediji classification [18]. The result of continuous data was presented as ranges and mean±SD while that of categorical data was presented as frequency and percentages. Descriptive and inferential statistics were done using SPSS Version 20. A P-Value less than 0.005 was taken as significant.

RESULTS

All the 79 respondents approached agreed to participate in the present study giving a response rate of 100%. The Cronbach’s alpha for the PSS inventory in this study was 0.85 indicating good internal consistency. Table 1 shows the demographic and clinical characteristics of the respondents. The age ranged from 17 to 79 years with a mean age of 36.1±16.9 years. There were 50.6% males and 49.4% females. Majority (73.04%) of the respondents in the study were within the young adult age group. Middle socioeconomic class constituted the largest group with 63.3 % patients. Slightly more than half (54.4%) of the respondents smoke cigarette. Thirty-five patients (44.3%) were diagnosed of acute apical periodontitis and was the largest group among our study cohort. This was closely followed by dental caries and chronic generalized gingivitis of 19.0% and 15.2% respectively (Table 2). Chronic periodontitis, halitosis and partial edentulism were the least common conditions with only one (1.30%) case each. Interestingly, no patients experienced high level of stress, however, over half of the patients (60.8%) perceived moderate level of stress (Table 2). The mean PSS score for the study sample was 5.09±2.79, with a range of 0.00-10.0. Table 3 presents the correlation of PSS with the clinico-demographic characteristics of the respondents. In the univariate analysis, the age, gender, socioeconomic status, smoking habit, and dental conditions was observed not to be statistically significant with the PSS score ($P > 0.05$) (Table 3).

Table 1: Perceived stress scale scores and associated level of concern

Perceived stress scale	Total score
Low level	0-13
Middle level	14-26
High level	27-40

Table 2: Demographic and clinical characteristics of the respondents (n=79)

Variables	Frequency(n)	Percentage (%)
Age		
Young Adults	58	73.4
Middle Age	12	15.2
Elderly	9	11.4
Gender		
Male	40	50.6
Female	39	49.4
Socioeconomic Status		
Low	14	17.7
Middle	50	63.3
High	15	19.0
Smoking		
Yes	43	54.4
No	36	45.6
Dental Conditions		
Chronic Generalised Gingivitis	12	15.2
Dental Caries	15	19.0
Malocclusion	7	8.90
Acute Irreversible Pulpitis	3	3.80
Acute Apical Periodontitis	35	44.3
Chronic Periodontitis	1	1.30
Recurrent Aphthous Ulcer	2	2.50
Partial Edentulous	1	1.30
Complete Edentulous	2	2.50
Halitosis	1	1.30
Perceived stress level		
Low	31	39.2
Moderate	48	60.8
High	0	0.00

Table 3: Univariate analysis of perceived stress levels with the characteristics of the respondents (n=79)

Variables	Perceived stress level		P-Value
	Low	Middle	
Age			
Young Adults	20	37	
Middle Age	7	6	0.371
Elderly	5	4	
Gender			
Male	18	22	0.330
Female	13	26	
Socioeconomic Status			
Low	4	10	
Middle	20	30	0.615
High	4	5	
Smoking			
Yes	3	40	
No	31	5	0.836
Dental Conditions			
Chronic Generalised Gingivitis	7	5	

Dental Caries	7	8	
Malocclusion	4	3	
Acute Irreversible Pulpitis	1	2	0.638
Acute Apical Periodontitis	10	25	
Chronic Periodontitis	0	1	
Recurrent Aphthous Ulcer	0	2	
Partial Edentulous	0	1	
Complete Edentulous	0	2	
Halitosis	0	1	

DISCUSSION

Psychological stress can contribute to poorer health practices, increased disease risk, and accelerated disease progression, greater symptoms reporting, more frequent health services utilization and increased morbidity / mortality [5]. The term psychological stress has been defined as the extent to which an individual perceives (appraises) that demand exceed the ability to cope in life [4]. The perceived stress scale was developed by Cohen's *et al.*, [5] to measure the degree to which situations in an individual's life are appraised as stressful. It has become one of the mostly widely used psychological instrument for measuring non-specific perceived stress. The PSS predicts both, the objective biological markers of stress and the increased risk for disease among persons with higher perceived levels of stress. The PSS-10 is a brief and easy to use inventory and considered a parsimonious alternative to longer scales

To the best of our knowledge, this is the first study to evaluate the perceived psychometric levels of dental patients in Nigeria. This study was carried out in one of the largest tertiary teaching hospital in Nigeria to achieve a representative sample. In the present study, it was observed that young adults seek dental attentions more than other categories of age group. More males reported for treatment compared to females in the current study and this findings is contrary to other previous studies that reported higher number of females seeking dental treatment compared to their male counterparts. The probable reason for this variation is not readily available. More patients in the category of middle socio-economic status presented for dental attention in the present study. This is more likely to be due to level of dental awareness in this group of individuals. Out of the 79 patients presented for treatments, majority had acute apical periodontics which could be explained by the pain associated with this condition being the main reason of concerned. This findings differ from that reported by Sinha *et al.*, [17], who reported that majority of their patients presented due to chronic generalized gingivitis. The probable reason for this disparity could be differences in oral habit and dietary life style between the Asians and the Africans.

In the present study, the mean of PSS was 5.09, which is lower than what was reported by Cohen

and Williamson⁶ in a general population (13.02) and Klein *et al.*, [13] in a representative German community sample (12.57), it was also lower than what was reported by Golden-Kreutz *et al.*, [8] in women suffering with breast cancer (17.55) and Maroufzadah *et al.*, [10], in women suffering from infertility (17.48). These results suggesting that though dental condition is stressful but to a lesser degree compared to other serious ailment. Also our result was lower than that reported by Al-Sowygh [1] among dental students in Saudi Arabia (22.8). In the present study, it was found that none of the patients coming for dental treatment had high level of stress unlike in a previous study where most of patients had high level of stress. There was no significant association between dental conditions and the perceived stress among the patients that presented for dental treatment. This could be that the dental condition was less stressful compared to personal and family problems

Several limitations need to be considered when interpreting these results. First, due to practical reasons, study included only dental patients undergoing treatments. So, the generalizability of the current results may be limited given the study sample. Second, the test and retest reliability was not investigated among participants because they were assessed before undergoing dental treatments. Third, till date comparing stress level in our society has been impeded by lack of study on stress.

In conclusion, most patients that present with dental conditions in our study were moderately stressed with none seen to be highly stressed. The level of stress was not associated with age, gender, socio-economic status as well as the dental condition in the present study

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