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Original Research

Evaluation of Effect of Periodontal Therapy on Patient's Psychology and Oral Health Related Quality of Life- An Experimental Study

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ABSTRACT

Aim: This experimental study aimed to investigate patient's psychology and oral health related quality of life in chronic periodontitis patient's after periodontal therapy.

Methods: The study sample consisted of 150 chronic periodontitis patients aged 25-55 years. Patient divided in three groups: Group A-Control Group (n=50) Patient with Chronic Periodontitis receiving no periodontal treatment. Group B- Test Group I (n=50) Patient with Chronic Periodontitis undergoing non-surgical periodontal treatment. Group C- Test Group II (n=50) Patient with Chronic Periodontitis undergoing surgical periodontal treatment. Psychological stress assessment was done by using questionnaires form General Health questionnaire-12 (GHQ-12) along with evaluation of Pocket Probing Depth (PPD) & Bleeding On Probing (BOP) on three different groups undertaken. Patient assessment and data collection on day 0, 1 month and 3 months in each group.

Results: The oral health and psychological well-being of periodontitis patients who have not undergone recommended treatment appear to deteriorate, affecting both their psychological state and oral health-related quality of life and patients experienced treatment showed a reduction in the percentage of sites with bleeding on probing (BOP) and pocket probing depth (PPD) following both non-surgical and surgical periodontal treatment, leading to enhancement in both their Oral health related quality of life (OHRQoL) and psychological well-being.

Conclusion: Periodontitis significantly affects psychological stress and Oral Health Related quality of life, particularly exerting its greatest influence on domains such as pain, psychological discomfort, physical disability, and oral health-related quality of life.

Introduction

Periodontal disease is the most common multifactorial oral diseases. [1] Chronic periodontitis is an infection caused by microorganisms on the tooth surface, which form supra- and sub-gingival biofilm resulting in irreversible loss of tooth-bearing structures and eventually tooth loss. [2] Chronic periodontitis may compromise functional aspects of the stomatognathic system, such as mastication, swallowing, and speech,

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consequently affecting the self-esteem of an individual.[1]

Psychological factors are recognized as important determinants of health.[3] One such modulating factor, psychosocial stress, arises from the combined effects of psychological (mental behavior) and social environmental factors, leading to strain and distress that affect an individual's physical and mental well-being. [4]It is essential to understand more people perceive their oral health condition and how much importance they give towards their to oral health related problems which directly would reflect on the treatment undertaken by them there by effecting their oral health related quality of life.[1]

Oral Health Related Quality of life (OHRQoL) is essentially to measure the wellbeing of an individual that includes the physical, emotional, and social aspects. The dynamics of understanding the Oral Health Related Quality of Life (OHRQoL) is based on patients' subjective evaluation of the treatment rather than evaluating the conventional clinical parameters post operatively. [5]

Around 5%–15% of the general population globally is affected by severe periodontitis with the potential of a negative impact on patient's oral health. It has also been understood that the Oral Health status of an individual could play a significant role in his overall general health which might be related to his emotional, psychological, or systemic status. [6]

A number of studies have observed that periodontal diseases has a negative effect on the Oral Health Related Quality of Life (OHRQoL) of affected individuals. A better understanding of the consequences of periodontal disease and its treatment on patient's perception should be linked to Oral Health Related Quality of Life (OHRQoL). It also helps in understanding the treatment effect and further evaluation of periodontal care and maintenance. [7]

Participants and Methods

Study Description*:* This is an experimental

prospective study was carried among the dental patients (aged 25-55) with Chronic Periodontitis, who visited to the OPD (Out Patient department) in the Department of Periodontology and Oral Implantology, People's Dental Academy, Bhopal, Madhya Pradesh.

Sample Size Estimation*:* The study sample consisted of 150 chronic periodontitis. Patient's divided in three groups of categories: **Group A-Control Group (n=50)** Patient with Chronic Periodontitis receiving no periodontal treatment. **Group B- Test Group I (n=50)** Patient with Chronic Periodontitis undergoing non-surgical periodontal treatment. **Group C-Test Group II (n=50)** Patient with Chronic Periodontitis undergoing surgical periodontal treatment.

Data collection method. All these patients further assessed for Oral Health Related Quality of Life (OHRQoL) by General Health Questionnaire (GHQ-12) questionnaire form. General Health Questionnaire-12 (GHQ-12) was taken before and after treatment to assess importance in Oral Health Related Quality of Life (OHRQoL) in the patients at the end of study.

Oral Health Related Quality of Life (OHRQoL) was evaluated by using General Health Questionnaire-12 (GHQ-12) reflected the mental health condition of the patient by 12 items self-assessment result.

Data collection tool. Data was collected from chronic periodontitis patients who visited the OPD of Department Periodontology and Oral Implantology, Peoples Dental Academy, Bhopal, by using questionnaires form for General Health questionnaire-12 (GHQ-12) along with evaluation of Pocket Probing Depth (PPD) & Bleeding On Probing (BOP) on three different groups undertaken. Patient assessment and data collection on day 0, 1 month and 3 months in each group. Group A control group, group B test group I & Group C test group II was observed with these parameters.

Data Analysis. The data obtained were

subjected to statistical analysis using Statistical Package for the Social Sciences (SPSS Version 23; Chicago Inc., IL, USA). Data comparison was done by applying specific statistical tests to find out the statistical significance of the comparisons. Kolmogorov –Smirnov and Shapiro Wilk tests were performed to determine the normality of the data for cheek pressure based on facial forms. Both the tests showed no significant differences and hence confirmed that the data obtained were normally distributed.

Variables were compared using mean values and standard deviation. The mean for different readings for GHQ -12 and PPD were compared using ANOVA test. Spearman's correlation was run to find significant correlation between GHQ -12. P value lesser than 0.05 was considered to be statistically significant.

Results: A total of 150 participants were recruited and randomly assigned to three groups: the control group (n=50), the nonsurgical treatment group (n=50), and the surgical treatment group (n=50). The groups were similar in terms of age, gender distribution, and baseline oral health status as shown in **Table 1**

Table 1: Age distribution of the study participants

Groups	Mean	S.D.
Control	41.1200	6.43219
Non - Surgical	41.0600	6.26102
Surgical	40.9600	6.29207

Comparison of GHQ 12 scores at different time periods across control and test groups:

Baseline scores between the groups exhibited no significant difference. Follow up periods at 1 month and 3 months showed significant reduction in GHQ -12 scores as seen in **Table 2 & graph 1.**

On comparing GHQ-12 results between the control group and the two test groups (Non-surgical & Surgical) it was observed that the mean value of GHQ-12 at baseline was more or

less the same in all three groups ranging between 20.8800- 22.400. Whereas, there was a marked change in readings in both the test groups after 1 month & 3 months.

To further elaborate it was seen that the mean GHQ-12 value in the control group at baseline was 22.400 which remained almost static at 1 month & 3 months' recall. Whereas, in the ***non-surgical group*** the mean GHQ-12 decreased dramatically from 22.3400 at baseline to 15.5200 after 1 month and further the GHQ-12 value reduced to 14.1400 after 3 months. Which was statically significant.

Similarly, in the ***surgical group*** the mean GHQ-12 value which was 23.9400 at baseline reduced sharply to 13.4600 after 1 month and further the GHQ-12 value dropped to 10.3000 after 3 months which was once again statistically significant as shown in **table 2 & graph 1.**

Comparing the GHQ-12 value between the two test groups (Non- Surgical & Surgical) it was seen that the surgical group of patients showed significantly more drop in GHQ-12 value as compared to their baseline readings both after 1 month & 3 months in comparison with non-surgical group signifying betterment in psychological status within surgical group of patients.

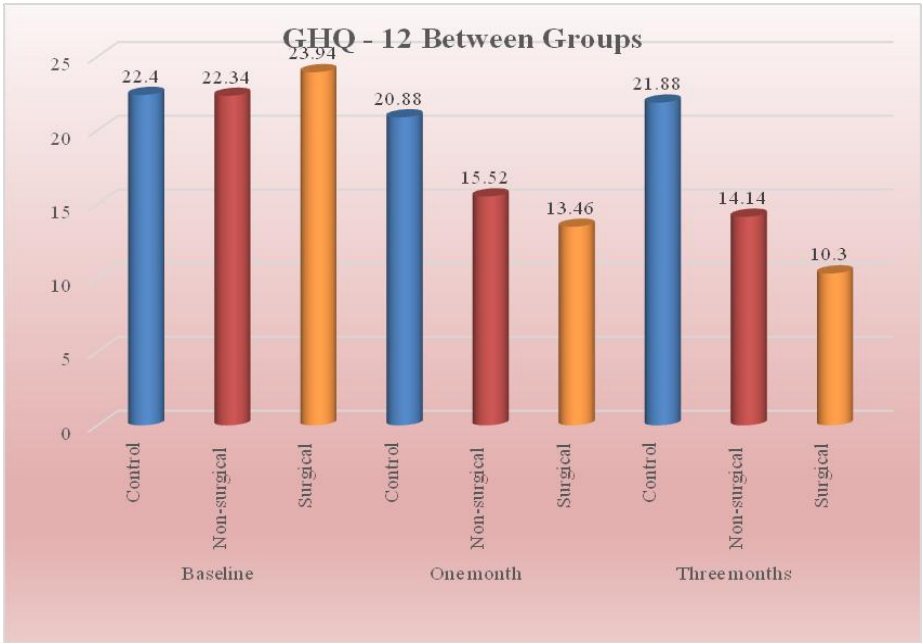
To further elaborate it was seen that the surgical group showed the mean GHQ-12 score which was 66.5% at baseline drop to 37.3% after 1 month 28.6% after 3 months as compared to non-surgical group, which was 62% at baseline and reduced to 43.1% after 1 month & 39.2% after 3 months showing that the surgical group benefited the most when assessing the psychological well-being of the patient using GHQ-12 questioner.

Table 2: Comparative evaluation of GHQ-12 between groups

Time period	Mean	Std. Deviation	F statistic	P value
Baseline				
Control	22.4000	2.49080	4.187	.067(NS)
Non-surgical	22.3400	2.49579		
Surgical	23.9400	4.12761		
One – month				
Control	20.8800	3.63453	51.595	.000*
Non-surgical	15.5200	2.70480		
Surgical	13.4600	2.42613		
Three – months				
Control	21.880	3.73969	18.142	.000*
Non-surgical	14.1400	6.19746		
Surgical	10.3000	4.03176		

* = Significant; NS = Not Significant

Graph 1: Comparative evaluation of GHQ-12 between groups



Discussion-

Periodontal disease is a chronic, infectious disease affecting individuals' quality of life and general. It is an inflammatory disease closely associated with specific periodontal pathogens and concomitant host responses. The host inflammatory reactions are largely responsible for most parts of periodontal breakdown, and if left untreated, may progress further with eventual tooth loss and significant impairments on daily function. [8,9]

Recent classification of periodontal diseases includes depression as a systemic disorder that influences the pathogenesis of periodontal diseases. Lack of mental well-being and depression may lead to health-related behavioural changes, such as negligence in maintaining regular oral hygiene, attending dental check-ups; smoking, alcohol, and dietary changes may also have adverse effects on periodontal health. The two most common periodontal intervention procedures are Non-surgical periodontal therapy, (mainly comprising of scaling with root planning, optimal plaque control) and Surgical

periodontal therapy (scaling with root planning, plaque control, and periodontal flap surgery). Hence, this study evaluated the effect of periodontal disease and its treatment approaches on OHRQoL and psychological perspective. [10] Moreover, psychosocial factors such as anxiety and personality have been identified as significant elements that impact OHRQoL ratings. [11s] As such, poorer OHRQoL may not be entirely dependent on a patient's oral health status alone but may reflect an individual's disposition to complain or view things negatively. [12] But literature evidence that explores the relation of OHRQoL and psychological status with different intervention therapy for periodontitis is scarce. Hence the present experimental study aimed to investigate the impact of periodontal therapy on patients' psychology and oral health-related quality of life, using the OHIP-14 and GHQ-12 assessment tools, within the context of three distinct groups: a control group, a group intervened with nonsurgical treatment, and a group intervened with surgical treatment. The findings revealed significant insights into the relationship between periodontal therapy, psychological well-being, and oral health-related quality of life.

Psychological Impact and Periodontal Therapy:

The General Health Questionnaire-12 (GHQ-12) was employed to assess participants' psychological well-being. Our results indicated noteworthy improvements in psychological well-being among both the nonsurgical and surgical treatment groups. Specifically, participants who underwent periodontal therapy, irrespective of the modality, exhibited a significant reduction in their GHQ-12 scores. This suggests that addressing periodontal health through interventions has the potential to positively influence psychological health. [13]

Victor Goh et al observed that periodontitis patients with combinations of depression, stress or anxiety had worse periodontal conditions

compared to those without all psychological states. However, when stress-only and anxiety-only groups were compared, they did not differ in terms of periodontitis severity compared to those without all psychological states. The adverse impact of psychological factors on periodontal health [14,15]

The findings from this study have several important implications. Firstly, they highlight the significance of periodontal therapy not only in restoring oral health but also in positively influencing patients' psychological well-being and overall quality of life.

Conclusion

This research explores the complex connection between periodontal disease and its effects on patients' psychological well-being. It aims to understand how interventions in periodontal care not only influence oral health outcomes but also impact the overall quality of life experienced by patients. The oral health and psychological well-being of periodontitis patients who have not undergone recommended treatment appear to deteriorate, affecting both their psychological state and oral health-related quality of life. This elevates the risk of worsening periodontal conditions and eventual tooth loss.

Patients diagnosed with generalized chronic periodontitis and received treatment their psychological status and oral health-related quality of life (OHRQoL) experienced a reduction in the percentage of sites with bleeding on probing (BOP) and pocket probing depth (PPD) following both **non-surgical** and **surgical** periodontal treatment, leading to enhancement in both their Oral health related quality of life (OHRQoL) and psychological well-being during evaluations at 1 month, and 3 months.

The research findings indicated that periodontitis significantly affects psychological stress and Oral Health Related quality of life (OHRQoL), particularly exerting its greatest influence on domains such as pain,

psychological discomfort, physical disability, and oral health-related quality of life.

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