

Ministry of Higher education  
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# **Evaluation of Serum Homocysteine and Nitric Oxide Levels in Women with Polycystic Ovary Syndrome and Periodontal Diseases**

A thesis

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## Abstract

**Background:** Polycystic ovary syndrome and periodontal disease are common chronic inflammatory disorders. Polycystic ovary syndrome is the most common endocrine disorder and it is likely to be responsible for metabolic abnormalities. Available evidence suggests that oxidative stress may be a common link for the association between periodontal diseases and components of the metabolic syndrome. Both homocysteine and nitric oxide are considered to reflect the strength of oxidative stress.

**Aims of study:** The aims of the study were to compare the periodontal health status among the study groups (gingivitis, gingivitis + polycystic ovary syndrome, chronic periodontitis and chronic periodontitis + polycystic ovary syndrome); by measuring the clinical periodontal parameters (plaque index, gingival index, bleeding on probing, probing pocket depth and clinical attachment level) and measure serum homocysteine and nitric oxide and compare their levels between study groups, then correlate between these biochemical parameters with each other and with clinical periodontal parameters.

**Materials and Methods:** eighty females with an age range between (25-35) years old were included in this study. They were divided into four groups, each group consists of (20) patients: (gingivitis group, gingivitis + polycystic ovary syndrome group, chronic periodontitis group and chronic periodontitis + polycystic ovary syndrome group). Clinical periodontal parameters were recorded for each subject for all sites of teeth except for the third molar. Blood samples were collected and allowed to clot at room temperature for 30 minutes before centrifugation for 15 minutes at 1000 rpm to separate serum from blood and collected into two separated eppendorf tubes and kept in the deep freeze at - 80 °C till used for subsequent biochemical analysis for serum homocysteine and nitric oxide levels using enzyme linked immunosorbent assay test.

**Results:** The results showed that the highest mean value of plaque index was at the gingivitis group, while the mean values of gingival index and bleeding on probing were highest among the gingivitis + polycystic ovary syndrome group. The highest mean values of the probing pocket depth and clinical attachment level were recorded at chronic periodontitis + polycystic ovary syndrome group. The mean values of serum levels of homocystiene (57.23) and nitric oxide (43.1) were found to be highest at chronic periodontitis + polycystic ovary syndrome group. All of the clinical periodontal parameters as well as serum biochemical parameters demonstrated highly significant differences in the comparisons among the study groups. The correlations between serum homocysteine and plaque index was found to be a statistically significant moderate positive at gingivitis group and a highly significant moderate positive with gingival index at chronic periodontitis group. On the other hand, the correlations between nitric oxide with clinical periodontal parameters as well as, the correlations between homocysteine and nitric oxide were statistically non significant among all study groups.

**Conclusion:** It can be concluded that the susceptibility for and severity of periodontal diseases may significantly increase in patients with polycystic ovary syndrome and those women have more periodontal tissue destruction compared with healthy women, and the concentration of serum homocystiene and nitric oxide increased with the increase in severity of periodontal diseases as well as the presence of polycystic ovary syndrome; accordingly, these results can suggest the developing of new therapeutic procedures such as antioxidant agents for monitoring and efficient management of periodontal diseases and polycystic ovary syndrome.