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Impact of Oral Contraceptives on Periodontal health

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## **Summary of the article**

Sharma Prachi, Solanki Jitender, Choudhary Rahul et al. conducted a cohort study on a sample of women to investigate the possible adverse effects of current oral contraceptives on oral health. This study took place in Jaipur, India and it was published in the African Health Sciences journal on March 1, 2019 (<https://www.ajol.info/index.php/ahs/article/view/185858>).

The study involved 200 women that had been chosen based on certain qualifying criteria. These 200 women were split into 2 groups where 1 group had been taking oral contraceptives and the other group had no history of doing so. These groups were then compared over the course of 3 years using indexes such as the community periodontal index and loss of attachment index to identify if any periodontal involvement had occurred due to the contraceptives. Results from the study were analyzed using the chi-square test and one sample t-test.

Upon completion of the study, the authors were able to conclude that oral contraceptives do have adverse effects on periodontal health, and with increased use, there are increased risks. Therefore they recommend that females should consider other alternative methods to birth control and patients that are using oral contraceptives should have more oral hygiene education along with a home care plan in place.

## **Article information**

The title of the article is *Impact of Oral Contraceptives on Periodontal Health*. The authors are Sharma Prachi, Solanki Jitender, Choudhary Rahul et al. This article was published in the African Health Sciences journal on March 1st, 2019 (<https://www.ajol.info/index.php/ahs/article/view/185858>). It can also be accessed in the PubMed database (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3988649/>). For online access, the DOI is <https://doi.org/10.4314/ahs.v19i1.56>. There are no conflicts of interest present in this study.

## **Study analysis:**

### **1. Type of study**

This study type is a cohort study. It was conducted in Jaipur, India. The dates of the study were not disclosed.

### **2. Study purpose**

Prior to this study, it was observed that women were more likely to have oral health complications due to the frequent hormonal changes that they undergo. Not only do these

changes include puberty, menstruation, pregnancy, and menopause but also the use of oral contraceptives. When it was first introduced to society and as its use was becoming more widespread, there was concern regarding its impact on women's health. The systemic health effects have been identified to include issues such as nausea, breast tenderness, and weight loss but the oral effects have also been investigated. Previous studies supported the assertion that oral contraceptives did in fact contribute to gingival inflammation and periodontal attachment loss in women. It was discovered from research that this was likely a result of increased estrogen and progesterone levels in the body and factors such as the dose and duration can increase the risk of periodontal disease. However, more current research has indicated that modern oral contraceptives do not have any effects on periodontal health due to lower hormone levels used in these drugs. In the present society, the use of oral contraceptives is especially common. As a result, the author's aim of this study was to investigate the impact of current oral contraceptives on women's oral health.

### **3. Experimental design**

To conduct this study, a convenient sampling technique was utilized in which over the course of 2 months, 200 females at least the age of 18 were gathered from health centers, sub-centers, and hospitals based on certain criteria. Permission to visit these locations for this intended purpose was granted approval by the authorities involved and "ethical approval was obtained from the institutional ethical committee" (Sharma Prachi et al., 2019). The ideal participants had to be married, have no history of pregnancy, periodontal problems, or medical complications. They also could not be taking any medications aside from oral contraceptives, consume alcohol or tobacco, and not have had any periodontal treatment within the last 6 months. After the desired sample size was obtained, the 200 females were split into 2 groups, consisting of 100 each where 1 group had females that were taking oral contraceptives (Group A) and the other group had females that never took them (Group B). The study was conducted over time in which observations were made for 36 months. For data collection, the researchers utilized the community periodontal index (CPI) and loss of attachment index (LOA) from the modified world health organization proforma (1997) to observe significant changes throughout the study. To do this they used a mouth mirror and CPITN probe for assessment of the pocket depth, loss of attachment, gingival bleeding, and calculus. Data considering the participants' oral hygiene routines and duration of oral contraceptive use was also recorded with informed consent

given prior to disclosing this information. Findings from all of these assessments were analyzed statistically with use of the chi-square test and one sample t-test. Methods used to ensure interpersonal reliability amongst the researchers was not mentioned in this study.

#### **4. Results**

Upon evaluation of the data, the mean age of group A was 26.37 and the mean age of group B was 27.08. Subsequently, the mean CPI was 2.34+ 0.81 for group A and 1.16+ 0.89 Group B. In terms of LOA, the mean for group A was 0.28 + 0.45 and the mean for group B was 0.19+ 0.50. To determine the mean difference between the CPI and the LOA, the sample t-test was utilized and was recorded as 1.75 and 0.235. For this the probability level was equal to zero and therefore it was highly significant. Next, the results concerning the association between periodontal health as indicated by CPI and duration of oral contraceptive use was analyzed and a highly significant association was found. Data from month 8 displayed the highest bleeding on probing with 62.5%, and months 9 & 15 displayed the highest calculus with 100%, 18 months displayed the highest periodontal pocket with 100% at 4-5mm as well as 36 months with 18.75% at 6-8mm. Lastly, the association between loss of attachment and duration of oral contraceptive was analyzed in which there was a highly significant association noted here as well. A loss of attachment ranging from 0-3mm was highest in months 6, 8,9,15 and 18 with 100%. For the range of 4-5mm, it was recorded as highest in month 36 with 68.75%.

#### **5. Conclusions**

Based on the data that was collected and analyzed, the authors were able to conclude that the longer women use oral contraceptives, their risks for periodontal disease increased. This was due to the observed higher presence of calculus, attachment loss, bleeding upon, probing and periodontal pockets found in women who had been using oral contraceptives for 1.5-2 years. Their conclusion contributes to the knowledge of the subject as it supports the findings of other researchers that have come to a similar observation. The elevated hormones, estrogen and progesterone, promote the presence of edema, exudate and inflammation given the fact that these hormonal receptors have been observed in the human gingiva. Oral contraceptives also encourage reduced resistance to biofilm that therefore is the cause for inflammation as well. Advancement from inflammation to periodontal disease is also more likely with continued use of these contraceptives because of the increased production of inflammatory mediators. The authors did not mention any follow up questions or suggestions for future studies.

## **6. Impression**

I personally believe that this study is important because oral contraceptive usage is very common amongst women today and will continue to be more common as women wait later in their lives to have children. Therefore it is important to not only be aware of the adverse systemic effects but the adverse oral effects as well because our oral health contributes to our overall health. These findings can now be applied to the field of dental hygiene because as we take note of our patient's medical history, we can identify those patients that are using birth control and now realize that these patients do present a risk factor and provide better care for them. We can inform these patients of the risk and give them the knowledge necessary to decide if they would like to continue with using it or trying alternative methods. Also, if they continue to use oral contraceptives we can stress the importance of oral hygiene education to these patients and provide them with a homecare routine to reverse any inflammation due to the medication. However, my question would be given that there are other birth control methods that utilize hormones estrogen and progesterone such as the patch, an IUD and the shot, would these findings also reflect in these cases? My guess would be that it does because they work in a very similar way but granted that this study was only conducted on oral contraceptives I cannot be entirely sure. Similarly, given our current society, there are many instances in which men are given estrogen hormone therapy as part of their transitioning process and I would be interested in knowing whether this too would result in a higher risk for periodontal disease.

**Reference:**

Prachi, Sharma, Solanki Jitender, Choudhary Rahul, Khetan Jitendra, Mishra Priyanka, and Shah Disha. "Impact of Oral Contraceptives on Periodontal Health." African Health Sciences. 1 Mar. 2019. Web.(<https://doi.org/10.4314/ahs.v19i1.56>)