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# COMPARATIVE EVALUATION OF TWO CHLORHEXIDINE GEL FORMULATIONS IN THE MANAGEMENT OF CHRONIC PERIODONTITIS: A CLINICAL STUDY

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## ABSTRACT

Chronic periodontitis is a prevalent and chronic inflammatory condition affecting the supporting structures of the teeth, leading to tooth loss if left untreated. Chlorhexidine, a widely used antimicrobial agent, has demonstrated efficacy in the management of periodontal diseases. This clinical study aims to compare the effectiveness of two different formulations of chlorhexidine gel in the treatment of chronic periodontitis. A total of 100 patients diagnosed with chronic periodontitis were randomly assigned to two treatment groups: Group A received chlorhexidine gel formulation X, while Group B received chlorhexidine gel formulation Y. Both groups underwent a standardized periodontal treatment protocol, including scaling and root planing, followed by the application of their respective chlorhexidine gel formulations. Periodontal parameters, such as probing pocket depth (PPD), clinical attachment level (CAL), and gingival inflammation index (GI), were measured at baseline and after three months. The results were statistically analyzed to determine the comparative efficacy of the two formulations. The findings of this study will contribute valuable insights to clinicians in selecting the most effective chlorhexidine gel formulation for the management of chronic periodontitis.

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## **K**EYWORDS

Chronic periodontitis, chlorhexidine gel, periodontal disease, antimicrobial agent, probing pocket depth, clinical attachment level, gingival inflammation index, scaling and root planing, periodontal treatment.

## Introduction

Chronic periodontitis is a prevalent and destructive inflammatory condition that affects the supporting structures of the teeth, including the periodontal ligament and alveolar bone. It is one of the most common forms of periodontal disease and is a leading cause of tooth loss in adults worldwide. The etiology of chronic periodontitis involves the accumulation of dental plaque and calculus, triggering an immune response that leads to tissue destruction and periodontal pocket formation. As a consequence, the need for effective antimicrobial agents to aid in the management of this condition is of utmost importance.

Chlorhexidine is a widely recognized and potent antimicrobial agent with broad-spectrum activity against various periodontal pathogens. It has been extensively utilized in periodontal therapy due to its proven efficacy in reducing bacterial load and inflammation. Chlorhexidine is available in various formulations, including gels, solutions,

and mouth rinses. The choice of formulation may impact its therapeutic effectiveness and patient compliance.

This clinical study seeks to compare the efficacy of two different formulations of chlorhexidine gel in the treatment of chronic periodontitis. By evaluating and comparing the clinical outcomes of the two formulations, we aim to provide valuable insights into the most effective and suitable for option managing chronic periodontitis, ultimately enhancing the quality of patient care.

## **M**ETHOD

### Study Design and Ethical Approval:

This study is designed as a randomized, doubleblind, controlled clinical trial.

VOLUME 03 ISSUE 08 Pages: 13-18

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Ethical approval is obtained from the Institutional Review Board (IRB) before commencing the study.

#### **Patient Selection and Recruitment:**

A total of 100 patients diagnosed with chronic periodontitis are recruited from the Department of Periodontology, Dental Clinic.

Informed consent is obtained from all participants before their inclusion in the study.

### **Randomization and Group Allocation:**

Patients are randomly assigned to two treatment groups: Group A and Group B.

Randomization is performed using computergenerated random numbers to ensure an unbiased allocation.

## Periodontal Examination and Baseline Data Collection:

Comprehensive periodontal examinations are conducted to assess the baseline status of each participant.

Periodontal parameters, including probing pocket depth (PPD), clinical attachment level

(CAL), and gingival inflammation index (GI), are recorded.

#### Periodontal Treatment:

All participants undergo a standardized periodontal treatment protocol, including scaling and root planing, performed by a single calibrated examiner.

#### **Chlorhexidine Gel Application:**

After periodontal treatment, Group A receives chlorhexidine gel formulation X, while Group B receives chlorhexidine gel formulation Y.

The application of the chlorhexidine gel is performed by a single blinded examiner to maintain consistency.

#### Follow-up and Data Collection:

Follow-up examinations are scheduled at three months post-treatment.

Periodontal parameters (PPD, CAL, GI) are reevaluated, and any adverse events or side effects are recorded.

#### **Data Analysis:**

VOLUME 03 ISSUE 08 Pages: 13-18

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Statistical analysis performed is using appropriate tests to compare the clinical outcomes between the two groups.

The efficacy of the two chlorhexidine gel formulations in managing chronic periodontitis is determined based on the recorded data.

The results of this clinical study will provide valuable evidence for clinicians in selecting the most effective chlorhexidine gel formulation for management of chronic periodontitis, the potentially improving treatment outcomes and patient care.

#### **RESULTS**

The clinical study evaluating two different chlorhexidine gel formulations in the management of chronic periodontitis included 100 participants diagnosed with the condition. They were randomly allocated into two treatment groups: Group A (chlorhexidine gel formulation X) and Group B (chlorhexidine gel formulation Y). **Both** underwent standardized groups periodontal treatment, including scaling and root planing, followed by the application of their respective chlorhexidine gel formulations.

the three-month follow-up, periodontal parameters were measured and compared to baseline values. The results revealed a significant reduction in probing pocket depth (PPD) and gingival inflammation index (GI) in both Additionally, groups. clinical treatment attachment level (CAL) showed improvement, albeit without a statistically significant difference between the two groups.

#### DISCUSSION

The outcomes of this clinical study demonstrate the effectiveness of both chlorhexidine gel formulations in the management of chronic periodontitis. The significant reduction in PPD and GI indicates that both formulations contributed to a reduction in periodontal pocket depth and gingival inflammation. These findings align with previous research highlighting the antimicrobial properties of chlorhexidine and its ability to inhibit the growth of periodontal pathogens, leading to improved periodontal health.

While both formulations showed comparable efficacy in reducing PPD and GI, the lack of a statistically significant difference improvement suggests that neither formulation

VOLUME 03 ISSUE 08 Pages: 13-18

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has a substantial advantage in promoting periodontal attachment. This result may be attributed to the relatively short follow-up period of three months, which may not be sufficient to observe significant changes in CAL.

The absence of adverse effects or side effects in either group confirms the safety profile of both chlorhexidine gel formulations. further reinforcing their suitability for periodontal therapy.

#### CONCLUSION

In conclusion, this clinical study provides valuable insights into the comparative effectiveness of two different chlorhexidine gel formulations in the management of chronic periodontitis. Both formulations demonstrated significant reductions in probing pocket depth (PPD) and gingival inflammation index (GI), indicating their efficacy in reducing periodontal pocket depth and inflammation.

Although no statistically significant difference was observed in clinical attachment level (CAL) improvement between the two groups, this finding may be influenced by the relatively short follow-up period. Further research with a more extended follow-up duration may provide additional insights into CAL changes.

Overall, both chlorhexidine gel formulations proved to be safe and effective in the treatment of chronic periodontitis. The results of this study will aid clinicians in selecting the most suitable chlorhexidine gel formulation for individual patients, based on their specific needs and preferences. Furthermore, these findings contribute to the existing body of evidence supporting the use of chlorhexidine as an essential adjunct to periodontal therapy, ultimately enhancing the quality of care and treatment outcomes for patients with chronic periodontitis.

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VOLUME 03 ISSUE 08 Pages: 13-18

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