

# Mobile application-based support for treatment of patients with gum disease

<b>Submission date</b> 21/02/2024	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 28/02/2024	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 08/03/2024	<b>Condition category</b> Oral Health	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

Encouraging patients to effectively remove plaque from above the gumline and control factors that contribute to oral disease requires them to understand how to maintain good oral hygiene. This study aims to assess the effects of using a mobile application to help manage gingivitis (gum inflammation) and periodontitis (serious gum infection).

### Who can participate?

Women aged between 35 and 55 years with either gingivitis or periodontitis.

### What does the study involve?

Participants are randomly allocated to either the control group (plaque removal and dental health education) or the test group (plaque removal and dental health education + mobile application). The test group participants are instructed to download and install mobile apps. For every visit, clinical periodontal parameters are recorded and displayed inside the app to ensure that the participants are aware of whether their periodontal condition has improved or deteriorated. Additionally, the app serves as a daily dental hygiene reminder for users as well as a constant source of education and motivation for periodontal health maintenance. Instructions on how to perform the proper way of brushing and the use of complimentary dental hygiene tools, notably interdental brushes and dental floss, are given simultaneously with the daily reminder sent for users through the app, twice a day (every morning and night). Moreover, dental health education is given to users three times a week in the form of interactive posters. Clinical parameters (e.g. gum bleeding), cognitive scores and a checklist of oral hygiene procedures are assessed at 1 and 3 months after the intervention.

### What are the possible benefits and risks of participating?

The researchers expected improvement in clinical parameters, cognitive, and psychomotor aspects. There were no side effects or adverse events.

### Where is the study run from?

Universitas Indonesia (Indonesia)

When is the study starting and how long is it expected to run for?  
April 2021 to December 2022

Who is funding the study?  
Ministry of Education, Culture, Research and Technology (Indonesia)

Who is the main contact?  
Dr Benso Sulijaya, benso.sulijaya87@ui.ac.id, bensosulijaya@gmail.com

## Contact information

### Type(s)

Public, Scientific, Principal investigator

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## Additional identifiers

### Clinical Trials Information System (CTIS)

Nil known

### Protocol serial number

091241221

## Study information

Scientific Title

Mobile application-based support for periodontal treatment improves clinical, cognitive, and psychomotor outcomes: a randomized controlled trial study

### **Study objectives**

Mobile application-based support for periodontal treatment improves clinical, cognitive, and psychomotor aspects more than conventional dental health education

### **Ethics approval required**

Ethics approval required

### **Ethics approval(s)**

approved 21/01/2022, The Dental Research Ethics Committee, Faculty of Dentistry, Universitas Indonesia (Jl. Salemba Raya IV, Jakarta Pusat, 10430, Indonesia; +62 (0)2131906289; etikrisetfkg@ui.ac.id), ref: 01/Ethical Approval /FKGUI/I/2022

### **Study design**

Interventional double-blinded randomized controlled clinical trial

### **Primary study design**

Interventional

### **Study type(s)**

Quality of life, Treatment

### **Health condition(s) or problem(s) studied**

Improving clinical, cognitive, and psychomotor aspects of patients with gingivitis or periodontitis

### **Interventions**

Participants were listed and evenly distributed between the test (professional mechanical plaque removal including scaling and root planing and dental health education [PMPR-DHE] + mobile application) and control (PMPR-DHE alone) groups by a masked researcher who was not involved in the clinical examination. A periodontal mobile application intervention was only implemented for participants who belong to the test group. First, the participants were instructed to download and install mobile apps. For every visit, clinical periodontal parameters, which were recorded, were displayed inside the app to ensure that the participants were aware of whether their periodontal condition had improved or deteriorated. Additionally, the app served as a daily dental hygiene reminder for users as well as a constant source of education and motivation for periodontal health maintenance. Instructions on how to perform proper way of brushing and the use of complimentary dental hygiene tools, notably interdental brush and dental floss, were given simultaneously with the daily reminder sent for users through the app, twice a day (every morning and night). Moreover, dental health education were given to users three times a week in the form of interactive posters.

### **Intervention Type**

Mixed

### **Primary outcome(s)**

1. Clinical periodontal parameters: probing pocket depth (PPD) measured using periodontal probe UNC-15 and visual inspection on six tooth surfaces, namely the distobuccal, mid-buccal, mesiobuccal, distolingual, mid-lingual, and mesiolingual surfaces of all teeth, except for the third molars, and the average probing depth value was measured at baseline, 1 and 3 months

2. Clinical periodontal parameters: bleeding on probing (BoP) measured using periodontal probe UNC-15 and visual inspection by assessing the presence of bleeding lasting up to 30 seconds, the BoP was recorded during the PPD measurement at baseline, 1 and 3 months
3. Clinical periodontal parameters: oral hygiene index (OHIS) measured using a disclosing agent and visual inspection which stained plaque and calculus on all tooth surfaces to be evaluated at baseline, 1 and 3 months
4. Cognitive scores recorded by using pretest questions at baseline and post-test questions during the evaluation visits at baseline, 1 and 3 months
5. Psychomotor scores assessed using a checklist form of oral hygiene procedures at baseline, 1 and 3 months

### **Key secondary outcome(s)**

Microbiology periodontal complexes measured using next-generation sequencing (NGS) at baseline, 1 and 3 months

### **Completion date**

01/12/2022

## **Eligibility**

### **Key inclusion criteria**

1. Gingivitis or periodontitis subjects
2. Aged between 35 and 55 years
3. Had never received periodontal therapy only during the previous 6 months
4. Android system-based smartphone users

### **Participant type(s)**

Patient

### **Healthy volunteers allowed**

No

### **Age group**

Adult

### **Lower age limit**

35 years

### **Upper age limit**

55 years

### **Sex**

Female

### **Total final enrolment**

40

### **Key exclusion criteria**

1. Systemic conditions related to periodontal disease such as cardiovascular disease, oral cancer, respiratory tract infection, and diabetes

2. Pregnancy or breastfeeding
3. On medication from a health provider
4. Current smokers

**Date of first enrolment**

21/01/2022

**Date of final enrolment**

01/06/2022

## Locations

**Countries of recruitment**

Indonesia

**Study participating centre****Universitas Indonesia**

The Periodontics Clinic  
Dental Teaching Hospital  
Faculty of Dentistry  
Jl. Salemba Raya IV No 2  
Jakarta Pusat  
Indonesia  
10430

## Sponsor information

**Organisation**

Universitas Indonesia

## Funder(s)

**Funder type**

Government

**Funder Name**

Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi

**Alternative Name(s)**

Ministry of Education, Culture, Research, and Technology, Ministry of Education, Culture, Research, and Technology, Republic of Indonesia, Kemdikbudristek, Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, Republik Indonesia, Indonesia Ministry of Education, Culture,

Research, and Technology, Indonesian Ministry of Education, Culture, Research, and Technology, Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, MECRT, Kemdikbudristek

### Funding Body Type

Government organisation

### Funding Body Subtype

National government

### Location

Indonesia

## Results and Publications

### Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are not expected to be made available due to patient confidentiality. However, if only needed, the researchers can provide the patients' informed consent to participate in this study.

### IPD sharing plan summary

Not expected to be made available

### Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>		04/04/2024	08/03/2024	Yes	No