

Distribution of Periodontal Patient Visits at Dental Hospital During COVID-19 Pandemic

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Abstract

Since the outbreak of Corona Virus Disease of 2019 (COVID-19) pandemic in 2020, many activities have been restricted, including the provision of dental treatments. Most periodontal treatments are categorized as high-risk activities for COVID-19 transmission.

This study aims to evaluate the distribution of periodontal patients who visited dental hospital during the COVID-19 pandemic.

A cross-sectional approach was taken for this descriptive and observational research. Data were collected from 167 medical records of patients who visited the periodontal clinic in dental hospital of Faculty of Dentistry, Universitas Indonesia (RSKGM FKG UI) between June 2020 and May 2021. We divided those periods into three terms according to government policies. A statistical analysis was conducted using data frequencies and Kruskal-Wallis test.

The primary patient complaint was the need for teeth cleaning (29.3%). Most of the patients (71.8%) had periodontitis, most often categorized as stage III grade C. The number of visits to the RSKGM FKG UI periodontal clinic increased in each term studied: June–September 2020, October 2020–January 2021, and February–May 2021. Conclusion. The increase in periodontal patients in this study suggests that people feel more secure about undergoing periodontal treatment than they did when the pandemic began.

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Introduction

Many aspects of life have changed dramatically since the World Health Organization (WHO) declared the coronavirus disease of 2019 (COVID-19) a global pandemic in 2020. The novel coronavirus, officially named severe acute respiratory syndrome (SARS-CoV-2), originated in Wuhan, China, and quickly became a public health emergency of international concern¹. COVID-19 is transmitted mainly through the inhalation or ingestion of, or direct contact with, the salivary droplets or nasal fluid of an infected person; it can also spread through contact with any other body fluids. The most common symptoms of COVID-19 are fever, dry cough, and fatigue, but the effects may be more severe,

especially for patients with other systematic diseases². The speed of transmission and the rapid progression of this disease caused the collapse of health systems in many countries³.

Indonesia confirmed its first case of COVID-19 in March 2020. Since then, the government has enacted policies restricting social activities³. These restrictions have affected many aspects of life, including dental practices^{4,5}. Most dental treatments are considered high risk for COVID-19 transmission because they involve the production of aerosol and droplets, and the viral load contained in human saliva is extremely high. Airborne infections can also occur through inefficient ventilation systems in dental facilities^{6,7}. Therefore, the Indonesian dentists' association published guidelines for dental practices during the initial stages of the pandemic, which the organization revised periodically following changes to the government's restriction policies. At first, dental treatments were limited to emergency cases only. In addition, the Indonesian Dental Association has published a guideline recommending that dentists take a number of personal protection measures, avoid

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treatments that produce more droplets and aerosol, limit waiting and treatment times, and adjust ventilation within dental clinics⁸.

Periodontal disease often associated with an increased risk of several diseases including cardiovascular, cancer, diabetes, Alzheimer and respiratory tract infection⁹. Microbial products and cytokines from oral inflammation can cause exacerbations of inflammatory reactions in distant organs, therefore it can be a potential risk to severity of Covid-19. In a retrospective explorative study, Donder et al reported that alveolar loss and tooth loss are associated with the severity of Covid-19, but not independent risk factors¹⁰. Furthermore, the progression and severity of COVID-19 is related to the same comorbidities, such as obesity, diabetes mellitus, hypertension, and other systemic diseases, associated with periodontitis stage and grade. Moreover, the oral cavity is a reservoir for respiratory pathogens, and patients with periodontitis are more likely to develop hospital-acquired pneumonia. Thus, periodontal health maintenance at all ages can reduce the risk and morbidity of COVID-19^{11,12}.

A study conducted in England that examined the impact of the COVID-19 outbreak on the dental profession, particularly in the periodontic field, uncovered a link between the COVID-19 pandemic and the number of patients who visited a periodontal clinic⁴. In Indonesia, no epidemiological data are available pertaining to periodontal health service provision during the COVID-19 period. The Universitas Indonesia Faculty of Dentistry Dental Hospital (RSKGM FKG UI) is located in the heart of Indonesia's capital city, Jakarta. Jakarta has been hit hard by the COVID-19 pandemic. The large scale restriction of activities in Jakarta has been adjusted several times following movement in the COVID-19 case curve. Epidemiological data are needed for further research and, more importantly, to establish a policy that better serves the future of the dental practice in Indonesia. Therefore, this study aims to evaluate the distribution of RSKGM FKG UI patient visits for periodontal treatments from June 2020 to May 2021.

Materials and methods

This is a retrospective study using secondary data from medical records of patients who visited

the RSKGM FKG UI periodontal clinic from June 2020 to May 2021. This study was approved by the Committee on Ethics of Dental Research Faculty of Dentistry, Universitas Indonesia (No. 010270721). Data taken from medical records were age, gender, oral hygiene index-simplified (OHI-S), chief complaint, and diagnosis based on the 2017 classification of periodontal and peri-implant diseases and conditions. Patient visits were examined within three periods: June–September 2020, October 2020–January, and February–May 2021. Univariate (data frequencies) and bivariate (Kruskal-Wallis) statistical analyses were performed using the SPSS software version 26.

Results

A total of 167 patient medical records, documenting 552 visits to the periodontal clinic from June 2020 to May 2021, were examined. This study divided the distribution of patients by gender, age, and oral hygiene index-simplified (OHI-S) (Table 1).

Periodontal Clinic Patients (N = 167)	n (%)
Gender	
Male	77 (46.1)
Female	90 (53.9)
Age	
18–25 years	32 (19.2)
26–44 years	71 (42.4)
45–59 years	39 (23.4)
≥60 years	25 (15.0)
OHI-S	
Good	44 (26.3)
Fair	75 (45.0)
Poor	48 (28.7)

Table 1. Distribution of patients at periodontal clinic RSKGM FKG UI (June 2020–May 2021).

Univariate analysis of patient's distribution at periodontal clinic RSKGM FKG UI divided by gender, age, and OHI-S score.

Most patients were female (53.9%), aged 26–44 years (42.4%), with poor oral hygiene (28.7%). The chief complaints from patients who visited the periodontal clinic (Table 2) varied: the most common was the need for teeth cleaning (29.3%), followed by tooth mobility issues (23%) and bleeding gums (11.4%). Most patients in the sample were diagnosed with periodontitis

(71.8%), most commonly at stage III grade C (Tables 3 and 4).

Chief Complaint	n (%)
Tooth cleaning	49 (29.3)
Tooth mobility	38 (23.0)
Bleeding gums	19 (11.4)
Swollen gums	18 (10.8)
Implant placement	10 (6.0)
Referral for pre-prosthetic surgical therapy	7 (4.2)
Splint control	5 (3.0)
Post-surgery control	4 (2.4)
Gum discoloration	3 (1.8)
Short/broken teeth	3 (1.8)
Food impaction	3 (1.8)
Gum enlargement	2 (1.1)
Gums down	2 (1.1)
Periodic control/evaluation	2 (1.1)
Gummy smile	1 (0.6)
Teeth feel down	1 (0.6)
Total	167 (100)

Table 2. Distribution of chief complaints of periodontal clinic patients RSKGM FKG UI (June 2020–May 2021).

Univariate analysis of patient's chief complaints distribution at periodontal clinic RSKGM FKG UI.

Classification	n (%)
Healthy Periodontal, Gingival Diseases and Conditions	Gingivitis caused by dental biofilm 32 (19.2)
Periodontitis	Periodontitis 120 (71.8)
Other Conditions	Periodontal abscess and endodontic-periodontal lesions 9 (5.4) Mucogingival deformities and conditions 2 (1.2) Occlusion traumatic style 2 (1.2) Factors related to teeth and dentures 2 (1.2)
Total	167 (100)

Table 3. Distribution of periodontal diseases and conditions in RSKGM FKG UI periodontal clinic patients (June 2020–May 2021).

Univariate analysis of periodontal disease and condition distribution at periodontal clinic RSKGM FKG UI.

From June–September 2020, 123 visits were made to the RSKGM FKG UI periodontal clinic, increasing in the second period (October 2020–January 2021) to 194 visits, and further increasing to 235 visits from February–May 2021 (Figure 1). A Kruskal-Wallis bivariate analysis showed a significant difference in the number of visits in each period ($p < 0.05$).

Classification of Periodontitis	n (%)
Stage I grade A	6 (5.0)
Stage I grade B	2 (1.7)
Stage II grade A	11 (9.2)
Stage II grade B	12 (10.0)
Stage II grade C	3 (2.5)
Stage III grade A	8 (6.7)
Stage III grade B	29 (24.2)
Stage III grade C	32 (26.7)
Stage IV grade A	1 (0.8)
Stage IV grade B	4 (3.2)
Stage IV grade C	12 (10.0)
Total	120 (100)

Table 4. Distribution of patients diagnosed with periodontitis in periodontal clinic RSKGM FKG UI June 2020–May 2021.

Univariate analysis of periodontitis diagnosis distribution at periodontal clinic RSKGM FKG UI.

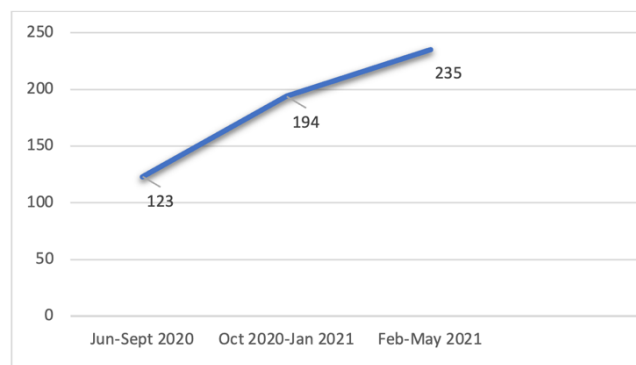


Figure 1. Distribution of patient visits at RSKGM FKG UI periodontal clinic June 2020–May 2021.

Discussion

Since the initial period of the pandemic, instead of implementing a total lockdown policy to limit the spread of SARS-CoV-2, the Indonesian government applied various levels of restrictions on public activities based on the case rate at the time^{3,12,13}. Changes in the restriction levels have affected many aspects of life, including healthcare and dental treatments. These restrictions have also impacted people's behaviors related to their well-being, including maintenance of their dental health. The significant impact that COVID-19 has had on the economic and psychological aspects of people's lives have likely led them to avoid non-emergency dental treatments. In addition, the strong relationship between dental treatments and the risk of being exposed to the virus likely changed people's motivation to seek dental

treatment^{4,5}. Emergency dental services were utilized at a higher rate during the pandemic period in comparison to the pre pandemic era¹³. The present study investigated the impact of the pandemic on people's dental health maintenance by examining visits to the RSKGM FKG UI periodontal clinic.

The patients who visited the RSKGM FKG UI periodontal clinic during the study period were mostly females (53.9%). Women are more susceptible to periodontal disease due to hormonal factors that can be observed during certain life phases, such as puberty, the menstrual cycle, pregnancy, and menopause^{14,15}. According to the age distribution of the clinic visitors during the time examined, the patients who visited most frequently were 26–44 years (42.4%), followed by 45–59 years (23.4%), 18–25 years (19.2%), and ≥ 60 years (15%). This finding is in line with the restriction policy that allows adults who are of working age and healthy to conduct their activities. The same exception was not made for senior citizens, who are known to be more vulnerable to the COVID-19 infection¹⁵. In line with Moharrami, et al, the group of patient who visited most is 0-18 years followed by 19-40 years (March-September 2020, Alberta Canada)¹⁶.

Following the WHO's recommendation, the RSKGM FKG UI implemented several adjustments to prevent the spread of the virus and protect both clinicians and patients. New triage and treatment systems were devised, personal protective equipment was used, and biosecurity measures were intensified to minimize local transmission of the virus in the clinic environment. The research results revealed a continuous increase of patient visits over the three periods in this study. The division of the study period into three terms was based on the restriction levels defined by government policies and changes to those policies.

The distribution of patients' chief complaints varied, not only because of periodontal disease but also due to periodontal conditions that affect aesthetics and functioning, such as gum discoloration, missing teeth, and teeth covered by gum. The most common chief complaint that prompted patients to visit the clinic was the need for teeth cleaning (29.3%), but a fair level is the highest number on the OHI-S. In a study conducted in Chennai, the main chief complaint of periodontal patients from June 2019 through

March 2020 was bleeding gums¹⁷

The rate of periodontitis for clinic visitors during the study period was extremely high (71.8%); the second most common diagnosis was gingivitis caused by dental biofilm (19.2%). Based on health research in Indonesia in 2018, periodontitis is the second most common dental disease, impacting a high percentage of the population. The periodontitis classification data showed that most patients who sought periodontal treatments came at the later stages, specifically, stage III grade C (26.7%) and grade B (24.2%). Previous study in 2017 at periodontology clinic RSKGM FKG UI, also showed that majority of patients visits during 2017-2019 was diagnosed with stage III grade C¹⁸. These results showed that the level of periodontitis staging and grading among patients that came to RSKGM FKG UI are high. Meanwhile according to a study by Marouf, et al., periodontitis increase the risk of ICU admission, need for ventilation and death of Covid-19 patients. They also found higher white blood cells, D-Dimer and C Reactive Protein in Covid-19 patients with periodontitis¹⁹.

In general, dental health is not a priority in Indonesian society, unless it has already caused problems, such as pain and mobile teeth. Therefore, this study is important to support the need for Indonesian citizens to improve their dental health behaviors, especially during a pandemic, because periodontal problems can present an additional burden to patients with other infectious diseases, such as COVID-19. The findings of this study is still limited by the population and sample size, but the results hopefully can be a supplementary data to build a systematic policy by the government, encourage the communities to participate in oral health maintenance and become a start for further research.

To the best of our knowledge, epidemiological research conducted in the periodontal field during the COVID-19 pandemic in Indonesia is lacking. Meanwhile, such studies are essential to establishing effective health and dental systems that can be adapted to new situations, such as during and after a pandemic. These data can be used as evidence to plan more thorough dental health education practices and policies; however, the scope of this study needs to be broadened in the future research.

Conclusions

The COVID-19 pandemic has had an impact on the dental practice. The increase in periodontal patients across the three periods in this study suggests that Indonesian people feel more secure about undergoing periodontal treatment now than they did in the initial phases of the pandemic.

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Declaration of Interest

The authors report no conflict of interest.

Institutional Review Board Statement

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Committee on Ethics of Dental Research Faculty of Dentistry, Universitas Indonesia (No. 010270721).

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