

Oral health assessment during Covid-19 pandemic: community self-report questionnaire

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ABSTRACT The Covid-19 pandemic has affected community activities, work, income which decreased, psychological disorders such as stress, and limited accessibility to dental practice service, which is now for emergency cases only. This condition can affect oral health in the community. This study aimed to assess the oral health condition in the community during the Covid-19 pandemic. This study implemented a cross-sectional research design. Data were obtained from online questionnaires with the respondent's consent. The sample selection with inclusion criteria comprised 19-60 years old who lived in Bandung West Java. The self-report questionnaire for oral health assessment was followed, the previous research, by Levin et al., 2013. It has been trans-adapted to Bahasa Indonesia and validated. Respondents of the study were 380 participants. Poor oral hygiene maintenance was the wrong frequency of brushing teeth (12.1%), only visiting the dentist when having a toothache (72.9%), and smoking (7.9%). Oral health problems include gingival bleeding on brushing (15.3%), tooth mobility (13.2%), tooth cavities (62.9%), toothache (27.1%), and bad breath (22.6%). Most of the oral health problems were tooth cavities followed by toothache. The contributing factors include poor oral hygiene maintenance, improper brushing, smoking habits, and infrequent dental care. Furthermore, the accessibility and availability of services in dental practice in the pandemic situation are limited. Therefore, it is reasonable to say that oral self-examination probably could minimize the distancing-related problem in this Covid-19 pandemic situation and be helpful in the early detection of oral health problems.

KEYWORDS: assessment, Covid-19 pandemic, oral health

INTRODUCTION

Coronavirus disease 2019 (Covid-19) is the severe acute respiratory syndrome caused by coronavirus 2 (SARS-CoV-2). It was first informed in Wuhan City of Hubei Province of China in December 2019, and it has spread throughout the world.¹ The Covid-19 pandemic has affected every aspect of human life and limited community activities, work, and income, including general and oral health. This pandemic has raised concerns about the future economic crisis and recession. Social distancing, self-isolation, and travel restrictions have led to a diminished workforce involving all economical sectors and cost many jobs

or decreased income. Conversely, the need for medical supplies has increased.²

Psychological disorders increased because the mass media has emphasized Covid-19 as an exclusive threat. It has created panic and stress, leading to several mental health issues like anxiety, obsessive-compulsive disorder, and post-traumatic stress disorder, which should be treated immediately in its initial phases.³ Isolation, social distancing, loneliness in quarantined people, working from home, and extreme changes in daily life affect mental health. Stress due to this pandemic situation can also affect oral health.⁴ These include difficulties in obtaining dental health services, tooth

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decay that cannot be handled, and declining quality of life due to other periodontal and dental diseases.^{5,6}

The American Dental Association (ADA) has established that telephone consultations should be used only for emergency dental care. Emergency dental procedures, it has been suggested, should be performed with the least amount of invasive care possible.⁷ The pandemic of Covid-19 has resulted in a significant reduction in dental care, primary care,

specialized endodontic care, and periodontal and oral surgery technical care procedures.⁸ Due to the limited availability of dental practice services, it is difficult for individuals to obtain dental examinations and treatments. Changes in the community's daily life during the pandemic have declined oral health maintenance levels. It has the potential to wreak havoc on oral health conditions. This study aimed to determine the oral health status of the community during the Covid-19 pandemic.

MATERIALS AND METHODS

Research Design

Ethical recommendation approval has been received from The Research Ethics Committee of Universitas Padjadjaran with study No. 570/UN6.KEP/EC/2020. All participants gave their informed consent. This study implemented a descriptive-observation research design. Data were obtained from online questionnaires. The samples were selected from a community that lives in Bandung in June-July 2020, and the sample selection method was consecutive sampling. The aim and procedure of this study were explained to all participants. The sample selection with inclusion criteria comprised participants in the range of 19-60 years old who live in Bandung West Java, do not have systemic diseases, are not pregnant, and can fill out a questionnaire in the Google form. The number of participants who filled out the questionnaire was 530 people. However, only 380 people were appropriate to the study inclusion criteria.

The minimum sample size was calculated using with single population proportion formula⁷: $n = \frac{Z^2 P (1-P)}{d^2}$, level of confidence 95%, and degree of accuracy (0,05). The proportion of the target population on oral health status was 0,25. The

researcher required 288 subjects to ensure an adequate sample size in anticipation of response errors based on this formula. We increased the sample size estimate to be 380 subjects.

According to the previous research by Levin et al. (2013), the self-report questionnaire for oral health assessment was developed.⁸ It has been trans-adapted to Bahasa Indonesia, validated with correlation Rank Spearman, and reliable with Cronbach's Alpha. It included oral health maintenance, smoking habit, gingival, periodontal, teeth condition, and bad breath. The oral health degree was determined by summation the score for each question: frequency of brushing teeth (score: 0 or 2), visit a dentist for a check-up (0 or 2), calculus removal (0 or 2), smoking (0 or 1 or 2), gingival bleeding (0 or 2), tooth mobility (0 or 2), tooth cavity (0 or 2), toothache (0 or 2), bad breath (0 or 2). The category of oral health: good (score 0-6), moderate (score 7-12), week (score 12-18). The design of this study is the same as the research design that we have reported previously,⁴ but this study report focuses on a more detailed description of oral health status.

RESULTS

As previously reported, participants with a low level of education (elementary-high school) made up 20%, those with an associate degree made up 9.5%, and those with a high level of education (bachelor-master/doctorate) made up approximately 70%. A number of 55,5 percent of participants were employed, while 45,5 percent were unemployed. As many as 67% of participants reported having a monthly income more significant than the average per capita income. A high level of education can affect the level of expertise at work,

and the majority of them are permanent employees in the public or private sectors.⁹

Maintenance of oral hygiene can affect oral health conditions. The assessment of oral hygiene care included: the frequency of brushing teeth was 87.9% done right, while the wrong one was 12.1%; only visited the dentist when having a toothache 72.9%, never had calculus extractions 40.5%, and smoked (7.9%). This is described in **Table 1** below. Visiting the dentist only if there is pain and never having calculus removal can result in the teeth and periodontal tissues being out of control.

Table.1 Oral hygiene maintenance of the community in Bandung

Oral hygiene maintenance	Percentage (%)
Frequency of brushing teeth	
Twice a day	87.9
Once a day	12.1
Visit a dentist for a check-up regularly	
Once a year or more often	27.1
Once every few years or when there is a pain	72.9
Visit a dentist for calculus removal	
Once a year or more often	59.5
Never	40.5
Smoking	
Never	92.1
Yes, 1-10 cigarettes a day	6.6
Yes, more than 10 cigarettes a day	1.3

The results of this study showed that oral health problems include gingival bleeding on brushing (15,3%), tooth mobility (13,2%), tooth cavities (62,9%), toothache (27,1%), and bad breath (22,6%). It is described in **Figure 1**. The highest oral health problem was tooth cavities, followed by toothache. Besides oral bacteria, several factors that lead to tooth decay were harmful in maintaining oral hygiene, including low frequency of brushing teeth, smoking habits, and not doing enough dentist

visits for check-ups or treatment. Most participants visit a dentist only when they feel pain in this study. It could be due to research conducted during the Covid-19 pandemic, affecting dentists' limited access. The level of oral health is based on the results of calculations from the questionnaire, including as much 67,1% (good), 32, 1% (moderate), 0,8% (poor). Most people in Bandung have a good level of oral health.

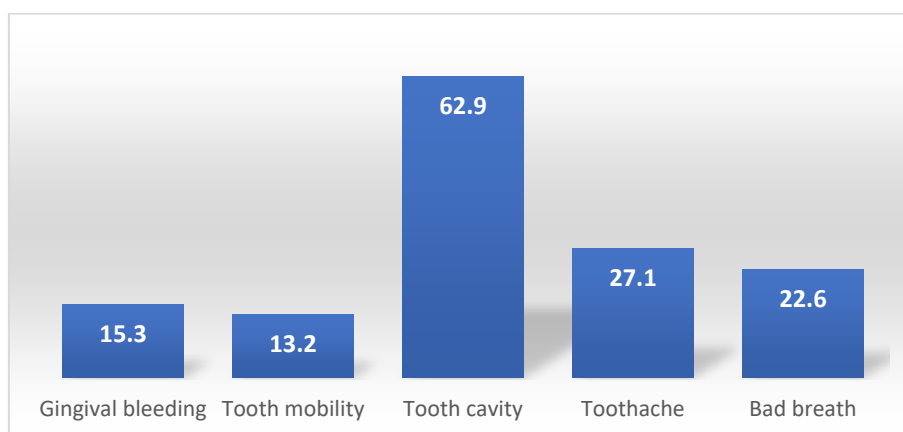


Figure 1. Percentage of oral health problems of the community in Bandung

DISCUSSION

In this study, there are errors in maintaining oral health, such as the wrong frequency of brushing teeth. Oral hygiene maintenance is essential during the Covid-19 pandemic because it can alleviate the possibility of spreading SARS-CoV-2 in the community and quarantine and isolation centers.⁹ Viral infectious disease transmission through droplets and aerosol can attack the oral cavity as the

entrance portal. Viral infection colonizes the oral and periodontal, gingival crevicular fluid, salivary glands, and lower and upper respiratory.^{10,11} In the oral mucosa, the salivary glands, and the epithelial lining of salivary ducts, there is a higher level of angiotensin-converting enzyme-2 expression, that is, early target cells for coronavirus.¹² Moreover, microorganisms discharge from the oral cavity to

the respiratory system and the other way around.¹² Therefore, it is essential to improve public knowledge in maintaining oral hygiene during this pandemic.

We found tooth cavity to be the highest factor in oral health problems followed by toothache. In this study, the respondents have frequently brushed teeth twice a day, but it was not known whether the method and time for brushing their teeth were done correctly or not. They also rarely visit the dentist or only when there is pain. Pandemic situations have given difficult access to dentists' services. According to policy American Dental Association (ADA) and the Indonesian Dentist Association (PDGI) have released guidance to advise dentists to selective dental service and treat only patients requiring emergency dental procedures.¹³ The following research states that hygienic and physical activity habits have a significant correlation with dental caries status.

In the present study, we obtained results regarding the condition of the oral problems of the community through the online questionnaire. The results indicated that the community's oral health at Bandung city is generally excellent (67,1%). Several factors can influence oral health. The pathological factors cause oral disease, for example, sugar exposures, topical fluoride, adequate plaque control, salivary factors, and socio-economic status.¹⁴ Most of the respondents had a high level of education and a monthly income above the average per capita income. It can be said to have a good socio-economic status. In addition, most of the respondents did the frequency of brushing teeth correctly and did not smoke.

Most of the participants had a high level of education, so they had good oral hygiene maintenance. There was an association between the educational level and levels of oral health knowledge. The academic level of subjects increased so did their oral health knowledge.¹⁵ More than half (72,9%) participants visited the dentist when there was pain. They delayed dental care since the Covid-

19 pandemic. We did not know the reasons. Dental care was delayed due to patient perceptions of risk, office closures, or other reasons.¹⁶

Previous research had suggested that oral self-examination during the Covid-19 pandemic could help people determine their oral condition.¹⁷ A study confirmed the use of WhatsApp as support in oral diagnosis, in which 82% of teleconsult cases agreed with the clinicopathological diagnosis. Thus, it is a good option for teledentistry. Telemedicine is not a substitute for face-to-face consultation; physical consultation is required after teleorientation, followed by the health measures of the regulatory agencies.¹⁸

Oral health assessment during the Covid-19 pandemic could be done using a self-report questionnaire as a good predictor of community dental status. Questions about the symptoms and conditions of the oral cavity can provide an initial description of oral health in the community. Self-assessment questionnaires can be applied through online media to help detect oral health problems in the community due to limitations to conducting oral health examinations in this pandemic situation. Furthermore, oral hygiene education about dental caries and periodontitis preventions should be informed through online media regularly to improve awareness of oral health maintenance in the community.

In the next stage, if someone will treat oral disease during the Covid-19 pandemic, the treatment process follows the urgency. The urgent and non-urgent conditions are carried out through teledentistry, appropriate pharmaceuticals, and home instructions. If the symptoms persist, schedule an appointment to dental practice, clinics, or hospital. Patients can schedule an appointment to dental practice, clinics, or hospitals immediately. A patient can be treated after previously being screened as a patient for Covid-19.¹⁹ Based on this review, the community's proposed management of oral health during the Covid-19 pandemic is in **Figure 2**.

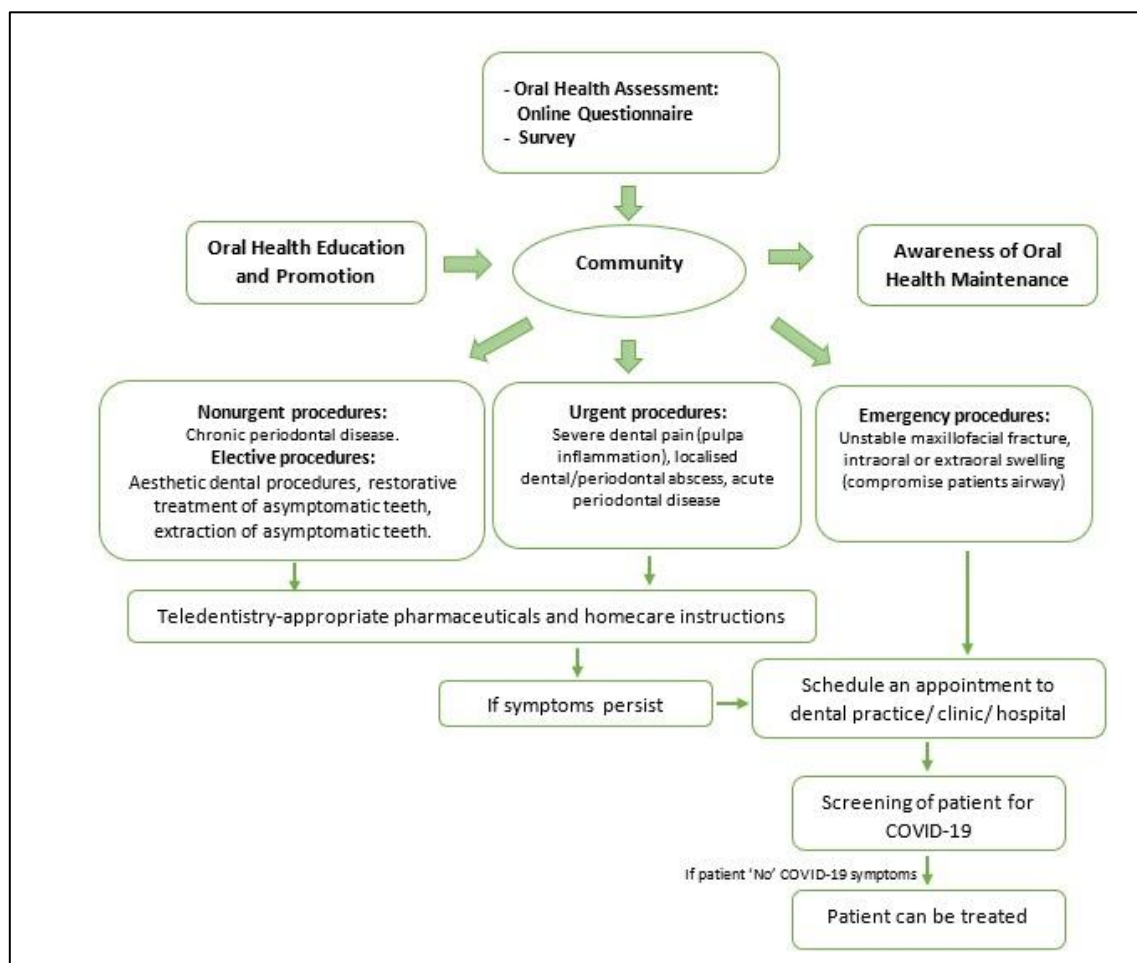


Figure 2. The proposed management of oral health in the community during the Covid-19 pandemic.

CONCLUSIONS

Most of the oral health problems were tooth cavities followed by toothache. The contributing factors include poor oral hygiene maintenance, improper brushing, smoking habits, and infrequent dental care. Furthermore, the accessibility and availability of services in dental practice in the pandemic situation are limited. Therefore, it is

reasonable to say that oral self-examination probably could minimize the distancing-related problem in this Covid-19 pandemic situation and be helpful in the early detection of oral health problems. People who regularly do self-examination can take precautions for tooth decay or decide when to go to the dentist.

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