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LAYOUT AND DESIGN OF DENTAL CLINICS DURING THE COVID19 PANDEMIC

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ABSTRACT

The Coronavirus Disease (COVID-19) pandemic has occurred since March 2020. Dentists and therapists have a very high risk of transmitting the SARS-CoV-2 virus. Dentists and dental and oral therapists are not spared from this virus because transmission can be through the release of aerosols or droplets containing the virus or direct contact with mucous membranes, oral fluids, and instruments and surfaces contaminated with the virus. For this reason, an appropriate layout and design approach is needed to avoid these aerosols or droplets. Objective: to get an overview of the Layout and Design of a Dental Clinic that is responsive to the spread of the virus during the Covid-19 Pandemic at a Private Dental Clinic in the Jakarta Region in 2022.Methods: This research is a descriptive study with a sample of 30 private dental clinics in South Jakarta, using a random sampling technique. Results: The results showed that private dental clinics in the South Jakarta area which had complete availability of complementary equipment, ten clinics (33.3%), 17 clinics (56.7%) were incomplete, three clinics (10%) were incomplete, compliance with the location and design as well as the percentage of complementary tools that are very suitable, appropriate, and not suitable are the same, namely (26.7%) and (20%) are not very suitable, the airflow is under the PDGI guidelines, namely (36.7%), (3,3%) is not suitable, and (60%) is not suitable. Conclusion: Most private dental clinics in the South Jakarta area have the layout of complementary equipment according to the PDGI guidelines. The criteria are very suitable. Still, less than 1/3 of the respondents and 1/5 are not very suitable, complementary tools must be completed, and some large have inappropriate airflow.

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INTRODUCTION

Indonesia has had a Coronavirus Disease (COVID-19) pandemic since February/March 2020. Dentists and dental and oral therapists are not spared from the target of this virus because the transmission can be through aerosol release. If you are doing aerosol release treatment, it is obtained by using burs when burping the cavity, ultrasonic tools such as scalers when cleaning tartar, water/water syringe when cleaning

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and drying the cavity, and droplets of saliva or blood from the patient's oral cavity. The virus that causes COVID-19 is also possible for transmission in dental practices because of the possibility of inhalation of aerosols or droplets containing the virus or direct contact with mucous membranes, oral fluids, and instruments and surfaces contaminated with the virus (Chen et al., 2020). One infected patient can infect not only the dentist but also other patients. In dental settings, this deadly virus can be transmitted through the air, spread by contact, and contaminated surfaces (Muktawat, 2020).

In addition, the risk of cross-infection can also occur in the dentist's office. The government also appealed to dentists to temporarily not practice first. This was followed up by the Indonesian Dental Association (PDGI), which issued guidelines for dental services during the Pandemic. Dentists are asked to screen all patients and postpone no-complaint and non-emergency, aesthetic, and aerosol-producing measures, such as burbursing and tartar cleaning (Louisa et al., 2021). Dental and oral health providers should pay attention to infection prevention practices to protect the health of patients and themselves (Aslam et al., 2020). Dentistry work procedures are classified as a high risk of transmission and contamination of the SARS-Cov-2 virus. Therefore, work procedures need proper infection prevention and control (Lubis et al., 2019).

This study aims to get an overview of the Layout and Design of Dental Clinics that are responsive to the spread of the virus during the Covid-19 Pandemic at Private Dental Clinics in Jakarta in 2022.

METHODS

The method in this study is that this study is a descriptive study with a sample of 30 private dental clinics in the South Jakarta area with random sampling techniques, an overview of the suitability of the layout of complementary equipment in the dental clinic room in the South Jakarta area during the Pandemic, an overview of the existence of complementary equipment in a private dental clinic room in the South Jakarta area during the Pandemic, description of airflow in dental clinic practice rooms in the South Jakarta area during the Pandemic.

RESULTS AND DISCUSSION

Results

The COVID-19 outbreak severely impacted dentists & Dental Therapists, so they had to limit procedures in their practice and reduce the number of meetings with patients. During the COVID-19 Pandemic, several protocols, such as physical distancing, limiting interpersonal contact and reducing patient queues in waiting rooms, had to be applied to dental care. Dentists should use level 3 personal protective equipment when performing emergency treatment. (Hudyono, 2020). Clinic room layout & design plays an essential role in infection prevention and cross-infection transmission (Fichman et al., 2011). Cross-contamination has two approaches: prevention from patient to doctor or vice versa and disinfection of surfaces and objects (Palenik et al., 2000). Various international dental health guidelines published by *the*

American Dental Association, Polish Dental Association, the Società Italiana di Parodontologia e Implantologia, dan the Swiss *Association of Dentist* Recommend avoiding non-emergency care during a pandemic. Triage is vital to prevent nosocomial transmission and transmission of infection (Gurzawska-comis et al., n.d.).

The SARS-CoV-2 virus survives depending on materials. The virus remains active on inanimate objects from 2 hours to 9 days (Ren et al., 2020). Aerosols/droplets produced during dental procedures can remain in the air for 3 hours (Anfinrud et al., 2020) (Isha et al., 2020)

Sample This study uses samples with the following criteria: a). Independent dental practice, joint doctor practice, and dental poly in private hospitals in South Jakarta. The sample of this study is 30 private dental clinics located in the South Jakarta area. The sampling method used is random sampling by lottery. b). Observations by looking at the suitability of the layout of complementary equipment in the dental clinic room in the South Jakarta area during the Pandemic, the existence of complementary equipment in the private dental clinic room in the South Jakarta area during the Pandemic and the suitability of airflow in the dental clinic room in the South Jakarta area during the Pandemic.

Discussion

Overview of Complementary Tool Layout Conformity

An overview of the suitability of the layout of complementary equipment in private dental clinic rooms in the South Jakarta area during the COVID-19 Pandemic can be seen in Table 1 below:

Table 1 Suitability of PDGI Guide Supplementary Tools Layout

Compatibility of Complementary Tools Layout	Number of Respondents	%
Highly Incompatible (0 tools)	6	20,0
Non-Compliant (1 tool)	8	26,7
Compliant (2 tools)	8	26,7
Highly Compliant (3 tools)	8	26,7
Sum	30	100

Based on table 1 above, it is known that the suitability of the layout of the complementary equipment in the private dental clinic room in the South Jakarta area, namely 6 clinics (20%) has a very inappropriate layout of the complementary equipment, namely the location of the equipment is very inconsistent with the PDGI guidelines, such as the location of the air conditioner next to right or left of the operator, where the exhaust fan is on the ceiling, and where the HVE aerosol is located other than to the left of the dental unit, 8 clinics (26.7%) had an inappropriate accessory layout, namely only having 1 out of 3 tools the location is suitable, 8 clinics (26.7%) have a

suitable layout of complementary equipment, namely only 2 out of 3 tools are located according to the PDGI guidelines, and 8 clinics (26.7%) have a very suitable layout of complementary equipment, namely water The conditioner is located above the back of the head of the dental unit (behind the operator), the exhaust fan is located under the patient's feet approximately 20cm from the lower surface, and the HVE aerosol is located to the left of the dental unit with the suction tip facing the patient's mouth.

Overview of Availability and Completeness of Complementary Tools

An overview of the availability and completeness of complementary equipment in private dental clinic rooms in the South Jakarta area during the COVID-19 Pandemic can be seen in Table 2 as follows:

Table 2 Availability and Completeness of PDGI Guide Supplementary Tools

Availability and Completeness of Complementary Tools	Number of Respondents	%
Incomplete (1 tool)	3	10,0
Incomplete (2 tools)	17	56,7
Complete (3 tools)	10	33,3
Sum	30	100

Based on Table 2 above, it is known that all clinics have the availability and completeness of complementary tools, although some still need to be completed. Namely, three clinics (10%) have incomplete availability and completeness, only one tool available out of 3 complementary tools, most of which are dental clinics only had one tool, namely air conditioner, 17 clinics (56.7%) had incomplete availability and completeness. Namely, only 2 of 3 tools were available: air conditioners and exhaust fans, air conditioners and HVE aerosols, or exhaust fans and HVE aerosols. Then ten clinics (33.3%) have complete availability and equipment, including air conditioners, exhaust fans, and HVE aerosols. There is not a single private dental clinic that does not have complementary tools.

Airflow Suitability Overview

An overview of air suitability in private dental clinic rooms in the South Jakarta area can be seen in Table 3 below:

Table 3 PDGI Guide Airflow Suitability

Airflow Compliance	Number of Respondents	%
Non-Compliant (0 tools)	18	60,0
Less Suitable (2 tools)	1	3,3

Compliant (3 tools)	11	36,7
Sum	30	100

Based on Table 3 above, it is known that the suitability of airflow in private clinic rooms in the South Jakarta area, namely 18 clinics (60%), has wrong airflow paths, namely, airflow that does not comply with PDGI guidelines such as clean air from the operator's right or left, dirty air. Not sucked in by an exhaust fan from under the patient's feet, one clinic (3.3%) had airflow that was not under the guidelines, namely the criteria for airflow not flowing from the top behind the head of the dental unit and dirty air flowing downwards towards the patient's feet to then removed from the room using an exhaust fan, the airflow does not flow from the top behind the head of the dental unit, and dirty air does not flow downwards to the patient's feet. The air is removed from the room using an exhaust fan, and the airflow flows from above the back of the head of the dental unit. The dirty air does not flow down towards the patient's feet to then be removed from the room using an exhaust fan, 11 clinics (36.7%) have airflow that is under the guidelines, namely airflow from above behind the operator and air flowing towards the patient's feet to be then removed using an exhaust fan.

CONCLUSION

There are 30 private dental clinics in the South Jakarta area, most of which still need to complete the availability of complementary equipment and the layout of complementary equipment under PDGI guidelines. The criteria are very suitable. Still, less than 1/3 of the respondents and 1/5 are very inappropriate. Some of its airflows do not comply with PDGI guidelines.

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