Biosafety Practices of Private Dental Clinicians during COVID-19 Pandemic: A Descriptive Phenomenological Study

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ABSTRACT

This study investigates the implementation of biosafety protocols in dental settings during the COVID-19 pandemic. It draws attention to the increased risk of Covid-19 transmission to dental practitioners because of close contact and aerosol-generating procedures. There have been several transmissions among dentists, according to reports, which highlights the significance of taking appropriate precautions. Through a phenomenological study approach utilizing Colaizzi's method, six private dental practitioners were interviewed to understand their lived experiences during this period. The study unveils key themes and adaptations made by dental clinicians, including the swift implementation of safety measures such as online scheduling and specialized equipment adoption. Financial challenges, including increased PPE costs and clinic closures, prompted innovative solutions like implementing PPE fees for patients. Emphasis was placed on adherence to guidelines, patient triage systems, and clinic layout modifications, with a focus on safety measures such as high-vacuum suction systems and comprehensive PPE coverage. Despite financial constraints, dental clinicians demonstrated resilience and dedication to prioritizing safety amid challenging circumstances, highlighting the importance of ongoing adaptation and commitment to biosafety protocols in dental practice during the pandemic. For future research, recommend extending interviews, conducting further studies on Biosafety Practices among Private Dental Clinicians in Silang, Cavite, and assessing current biosafety practices while exploring decision-making processes behind specific measures.

Keywords: Biosafety Practices, Private Dental Clinician, Covid-19, Aerosol Generating Procedures

INTRODUCTION

On the early part of the year 2019 a massive pandemic due to the Coronavirus of 2019, also known as COVID-19 struck and affected the entire world. It has affected all and everyone, endangering lives of mankind. The greatly affected sector of the population are those we call front-liners or people of medical profession. The more of great risk of all of them are the

medical professionals who work in close proximity to other people. The dental profession is greatly affected as dentists work in the mouth, the most transmissive part of a human body.

The dental profession as essential as it is needs to continue serving humanity even in the adverse threat of the situation. For the safety of dentists and other clinic personnel, biosafety measures have to be in place. Biosafety is "the practice of safely handling and controlling harmful microorganisms and dangerous biological substances to prevent any risks." (Centers for Disease Control and Prevention, 2020)

The global awareness of the potential transmission of coronavirus in dental practices has become a significant and widely acknowledged concern. Banakar et. al, (2020) mentioned that when compared to other occupations, dentistry posed a high risk for COVID-19. Addition to that, the authors expressed that the propagation of the virus from patient to dental team and other patients is faster when the intrinsic features of dental procedures are taken into account, as well as the patient's close proximity to the dentist practitioners without appropriate infection control measures. It is possible for members of the dental team to become infected by patients who cough or sneeze on them, or they can acquire the illness from high-speed handpieces or ultrasonic devices that release aerosols into the air that may include bacteria or viruses from saliva or blood. Because patients and dentists are in proximity, there is a higher chance of viral transmission through dental fluids and saliva. This makes wearing of proper protective clothing essential.

Hence, before dental practice and patient treatment cannot be put into a halt, various propositions from dental associations worldwide circulated. Some solutions are to improve personal protective equipment (PPE), develop specific biosafety barriers for dental settings to minimize aerosol transmission in enclosed areas. Due to the attributes of dental care, such as the close contact of a dentist to the patient, constant exposure to blood, saliva, and other fluids, use of manual cutting instruments, and performing aerosol-generating procedures (AGP), it is necessary to have biosafety measures to inhibit transmission of microorganisms.

STATEMENT OF THE PROBLEM

The study aimed to explore the experiences of private dental clinicians who implemented/followed biosafety practices during the COVID-19 pandemic. It aims to explore and understand the lived experiences of dentists who followed biosafety guidelines in their dental practice during the COVID-19 pandemic. This study aims to answer questions like:

1. How did the Dentists adapt to the presence of the COVID-19 pandemic?
2. What has been the effect of biosafety protocols and the wearing of Personal Protective Equipment (PPEL) to performance of dental procedures?
3. What has been the dentist source of biosafety protocols?
4. What engineering protocols had been applied on their clinics?
5. How are these changes in dental practice affected the Dentists financial situation in the clinic?

SIGNIFICANCE OF THE STUDY

This study will not only yield data that will be helpful to the researcher, more so to the following groups of people:

Practicing Dental Clinicians. -This study will give them insights on how they can be better prepared in the presence of another pandemic, improve their infection control practices and broaden the knowledge on how to execute the biosafety protocol.

Dental Students. -This study will give them awareness on the knowledge and implementation of biosafety protocols and make them prepared for their practice in the future.

Patients. -This study will eventually help patients be more protected of infection transmission during their treatment on a dental clinic. Application of this study to a private clinic will serve as the proper guideline thus reducing any possible risk for disease related to COVID-19.

Dental Schools. This study will help the faculty and staff deliberate and implement the best guidelines in biosafety practices to prevent cross-contamination in the clinics. This study will help them in planning to provide necessary equipment and to train students how to use this new dental equipment mentioned in the modified biosafety guideline.

SCOPE AND LIMITATION

This study analyzes biosafety practices and infection control among private dentists. It will involve private dental practitioners actively treating patients in a local community in Cavite, Philippines.

The data gathering would be collected by personal interview. Personal background, educational background, current emotional state, and as such conditions cannot be controlled in the study.

DEFINITION OF TERMS

1. Biosafety Practices -these are the safety protocols that must be done regularly to prevent exposure, transmission, and contracting a disease.
2. Private Dental Clinic -it is a facility wherein dental procedures are being done and owned by a private dentist.
3. Aerosol Generating Procedures -are any dental procedures that mix off the air and water and the patient's saliva by the dental device used in dental procedures.

LITERATURE REVIEW

A study by Celik and Cansever, (2021) found that dental practitioners face uncertainty and must rely on common knowledge about COVID-19 transmission routes and guidelines from frontline healthcare workers to protect themselves and their patients. The emergence of COVID-19 has raised the bar for implementing additional measures alongside standard infection control practices. The primary outcome of the study focused on "dental practice management," specifically the administration of infection control procedures through supplementary measures during the COVID-19 pandemic. The secondary outcome focused on the psychological distress experienced by dental professionals during the COVID-19

pandemic. The pandemic-induced preventive measures have had a detrimental economic impact on various industries, including dental practices (Farooq & Ali, 2020). This is corroborated by an economic analysis conducted by Schwendicke et al. (2020), which revealed the severity of the financial repercussions of pandemic-related policies on dental practices

In the 2021 study, Souza and colleagues discussed concern arising from the necessity to postpone routine dental procedures, leading to the prioritization of urgent cases and emergency appointments. The study reported that a majority of dentists (80.60% of participants) faced challenges in delivering quality services to their patients. Specifically, 11.25% of dentists refrained from providing any treatment, and 46.5% focused only on urgent dental matters, indicating a substantial impact. Additionally, 36% of dentists expressed uncertainty about the duration of urgent cases and whether patients would be able to afford dental treatments post-pandemic. Hence, their study emphasizes the importance of embracing biosafety standards as the optimal routine for utilizing protective equipment and implementing disinfection procedures.

The modifications to biosafety measures have been associated with several drawbacks, most notably higher expenses and lower profits for clinics. This is especially noticeable in the growing costs of materials, PPE, and disinfection supplies, which makes it difficult for clinics to completely adhere to the most recent biosafety regulations. Çelik et. al (2022). In addition to Çelik (2022),the author stressed that dentists will have to spend extra money on office infrastructure upgrades in order to adjust to the "new normal" brought on by the pandemic. Installing negative pressure chambers, implementing strict cleaning and disinfecting procedures, and implementing sophisticated filtration systems are all part of this. These changes come with a significant price tag instead of being quick and easy.

In March of 2020, the World Health Organization (WHO) published biosafety measures for health professionals to follow during patient care to lower the risk of their exposure. The American Dental Association (ADA) also provided standards for preventive safety measures in dental offices to lower the risk of COVID-19 transmission before, during, and after dental procedures in early April (Cabrera-Tasayco et al., 2020). Patient care within the dental office is meticulously overseen in adherence to rigorous biosafety protocols. It is imperative for patients to be fully informed about the necessary precautions to ensure that they will receive effective and safe dental treatment. Dentists were convinced to reduce elective treatments and use modified infection protection and control measures due to the concern of contacting the COVID-19 and the need for a great deal of time to reinforce biosafety precautions in a dental environment (Siles-Garcia et al., 2020).

Faccini et al., (2020) discovered that approximately 95.5 percent of dental professionals enhanced biosafety measures in their clinics. Face shields, disposable protective personal equipment that should be disposed of after each appointment and upgraded suctions to prevent aerosol/droplet dispersion. And every procedure takes more time due to chlorhexidine as a mouth rinse and rubber dam isolation. Also, dentists and dental assistants are required to use hand-washing techniques, disinfect using sodium hypochlorite, and always wear a mask.

Furthermore, Montalli et al., (2020) did another investigation, the risk of contamination can rise dramatically in a single day, and the necessary 1.5-meter space between dentist chairs

is insufficient to prevent COVID-19. Because air contamination levels were above the ADA's recommended limit (200 CFU/ml), the investigation includes equipment measures such as UV light and air conditioning with HEPA filters.

As per the definition provided by the Centers for Disease Control and Prevention (CDC), an Aerosol Generating Procedure encompasses any dental activity that generates fine particles (measuring <10um) known as aerosols. These aerosols have potential to remain suspended in the air for extended durations and can be inhaled, posing a risk of infection. Common dental instruments responsible for generating these aerosols include air/water syringes, high-speed dental handpieces, air/water syringes, high-seed dental handpieces, Air polishing devices and ultrasonic scalers. To add on that, COVID-19 can persist in aerosol particles, for a maximum of 3 hours in the air and for as long as 72hours on plastic or stainless-steel surfaces. The aerosols produced during dental procedures create a significant hazard of cross-linked infection if appropriate biosafety precautions are not observed and practiced (Van Doremalen et al., 2020).

According to World Health Organization (2020) COVID-19 disease is primarily transmitted through contact or droplet spread. Respiratory droplets may be spread whereas breathing, talking, hacking or wheezing. Utilizing personal protective equipment, like a fluid-resistant (Type-llR) surgical facemask, is essential within the comprehensive approach to protect healthcare workers and patients from the transmission of COVID-19.When choosing protective clothing according to Park (2020), it is really vital for any health workers to carefully consider about the possible risks they might encounter from the things like blood and body fluids, and how these risks might arise. Additionally, in the study of Hegde (2020), he mentioned that using more protective gear which covers more body parts provides better safety.

In a previous study, Zhao et al., (2020) proved that air purifiers significantly reduce aerosols in dental clinics, with results ranging from 80 to 95 percent, lowering the risk of dental health care workers. Research conducted by Ren et al., (2021) shows that dental treatment rooms with limited ventilation, aerosol collection can occur. The use of portable air purifiers with a HEPA filter significantly reduces aerosol accumulation, and aerosol removal significantly improved. On the other hand, according to Malateaux et al., (2020), UV-C proved to decrease bacterial and viral tainting in a few well-being administrations, tending to the sterilization of air, water, and surfaces. According to Miglani et al., (2020) high-volume suction should be employed with routine suction for aerosol-generating procedures. It revealed a significant reduction in oral bacterial aerosols during dental treatment. Noro et al. also said that patients with oral infectious diseases should be treated with an extraoral vacuum aspirator after they had discovered that it significantly decreased the spread of streptococci in the surroundings (Bahador et al., 2021).

Aldahlawi and Afifi (2022) state that dental professionals must remain informed on new studies to continue providing dental care in a secure setting. Given the potential growth of dental services in the years following COVID -19, a better understanding of the current situation will enable the planning of future dental needs. To implement thorough preventative and control strategies in future dental treatment, health agencies should coordinate. As our knowledge of COVID-19 infection develops, new safety procedures, air purification technologies, or extra infection control measures may be created.

Farshidfar et al., (2021) specified that the current architecture of dental clinics has been acknowledged as needing urgent change. According to a recent study, clinic designs are modified to delineate treatment areas (where patients interact with dentists directly) from non-treatment areas (waiting areas, reception, lavatory, restrooms, and office space). Khader (2020) research reveals that despite the existence of disease prevention measures and guidelines, a considerable number of dental offices fall short of meeting the minimum standards for infection control. Dentists responded more favorably to personal protective equipment and cleaning and disinfection processes than to measures taken to protect dental workers or patients, such as ventilation or protective clothing. Given that infections primarily arise from direct contact between contaminated hands and mucosal membranes, dentists may see the most recent preventative measures as extra protective measures that are unnecessary.

According to Hanif (2020), one of the main variables influencing whether infection control measures are strictly followed in dentistry clinics in countries like Pakistan is finance or resources. The majority of dentists were informed with the CDC recommendations for PPEs against COVID-19 in their dental practices. Surprisingly, there are only 28% of dentists used rubber dam isolation when conducting operations that produced aerosols. Only 46.2% of dentists in Balochistan asked their patients about their travels; 38.5% used N95 masks; and 53.8% used eye protection. None of the dentists (0%) were using rubber dams 15%. The reason for this low percentage is because many dentists find it challenging and time-consuming to utilize rubber dams on every patient of whom used high volume suction during dental procedures, instructed their patients to rinse their mouths with antibacterial mouthwash prior to the procedure. (Kamran, Saba & Azam, 2021).

According to a study by Chaudhary et al., (2022), dentists' preparedness may be described by their knowledge of COVID-19. Undergrads had less understanding of COVID-19 when compared to experts and PhD holders, and oral health care providers who saw more patients performed better. Moreover, Plaza-Ruiz et al., (2022) stated that dentists in Columbia who are older in practice adhered to biosafety practices and used personal protective equipment. However, COVID-19 impacted their career goals, including cutting back on working hours, retiring early, and choosing a job outside of dentistry. In addition, older dentists are therefore afraid of contracting an infection because age has been linked to a higher risk of serious illness and consequences (Hleyhel et al., 2021).

Dentistry is severely affected by the COVID-19 epidemic, particularly during its peak. The majority of dental offices remained closed, which put a financial strain on the field of dentistry. The limited availability and high price of PPEs added to this burden. Standardized protocols are required to stop the spread of illness, and government organizations should consider private clinics into account for funding and the provision of affordable PPE (Hafeez et al., 2022).

Although the cost of care and maintenance has increased, it reveals that most dentists follow PPE guidelines and prepare for patient care while providing very high or high levels of attention to the COVID-19 virus Moimaz et al., (2022). It shows that dentists, armed with the valuable experience gained during the recent outbreak, will be well-equipped to effectively reshape their professional scope and adapt to the changing circumstances. (Tysiąc-Miśta & Dziedzic, 2020)

Dentists are found to likely to experience extreme anxiety because of the present pandemic crisis, given that they work in a high-risk industry. The American Dental Association (ADA) emphasized precautions that dentists should take in addition to the standard universal precautions, such as asking patients about recent travel, assessing RTI symptoms, taking their body temperature, rinsing their mouths with 1% hydrogen peroxide before any procedure, utilization of rubber dam and high volume suction during procedures, and frequently cleaning a patient's mouth. The majority of dentists are still reluctant and scared to treat patients in such a condition, even though the ADA has established preventive guidelines. Ahmed et al., (2020)

Furthermore, Cruz-Fierro et al., (2022) showed that dentists' stress and anxiety levels are increasing due to less income resulting in financial problems, the constant need to disinfect utilities and equipment, and the health hazard that comes with the profession. In addition, the cost to maintain a dental clinic has gone up as a result of; having to remodel the entire facility as protection from the COVID-19 including, but not limited to, barriers, PPEs, thermometers, and sanitizing stations.

METHODOLOGY

To understand the peoples' belief, experiences, attitudes, behavior and interactions, the researcher utilized a qualitative research design that is a systematic subjective technique to describe and give meaning to life events. The objective of this design is to understand, and investigate the depth, richness, and complexity of the situation. Hoover, (2021). Qualitative analysis is utilized. In the framework of descriptive phenomenology, the researcher's aim is to attain a state of transcendental subjectivity where the effects of biases and preconceptions are regularly evaluated and neutralized in the research subject so that they do not affect the study's findings of the research (Esperanza, 2022).

Purposive sampling was utilized. Researchers choose their sample based solely on the given criteria. The respondents were private dental clinicians in a municipality in the province of Cavite in the Philippines. The participants would include dentists practicing for three or more years before the pandemic. Excluded were dentists who did not continue to practice throughout the pandemic, new dentists, and those who only practiced during the pandemic.

Data collection for the qualitative study consisted of 15-20-minute interviews with each respondent. All interviews were audio-recorded with the participants' consent. Analysis and data collection were carried-out simultaneously. The researcher listened to the recorded data, read the transcript, and then coded the data after each interview. Interviews continued until data saturation was achieved. Themes were created by collecting related content from noteworthy statements into codes and then sorting these codes into categories. Using selected data, similar expressions were categorized and sorted.

The audio recordings were transcribed verbatim following the interview and the transcripts were thoroughly checked for accuracy, carefully listening to the audio recordings, any inconsistencies were checked for accuracy. The phenomenological approach of Colaizzi's is utilized for the data analysis. During the initial step, the researcher listened to the recordings to improve data accuracy. The transcribed data was read several times, with an emphasis on context, participant responses, and identifying key statements, thematic analysis made

systematic management, investigation, and visualization of qualitative data and documents easier, especially for researchers who were already familiar with coding and qualitative data analysis strategies. themes were created by grouping similar content from notable data, followed by simultaneous collection and analysis. similar expressions were then grouped based on the selected data.

An Ethical Review Board had reviewed the research design, participant consent procedures, data handling protocols and overall ethical implication of the study. The confidentiality and privacy of participants were safeguarded throughout the research process.

The interview guide questions utilized in this study underwent a rigorous validation process to ensure their appropriateness, clarity, and relevance. Prior to their inclusion in the research, the questions were subjected to validation by expert validators in the filed. These validators experts, possessing extensive knowledge and experience in the subject matter, critically evaluated the questions for their alignment with the research objectives. Subsequently, the validated questions underwent a peer review process, where they were assessed by colleagues with expertise in the area under investigation. This comprehensive validation process not only ensures the questions' reliability but also bolstered their ability to elicit meaningful and insightful responses from the study participants.

RESULTS AND DISCUSSION

The themes that have emerged from the data gathered on the interview are displayed in Table 1. Some of the verbatim from the interviews are included after the table which supports the themes emerged in the research.

TABLE 1

LIVED EXPERIENCES OF PRIVATE DENTAL CLINICIANS DURING COVID-19 PANDEMIC

Research Question	Themes	Categories	Codes
What are the lived experiences of dental clinicians as it pertains to the biosafety guidelines in their dental practice	**Theme 1 – Adapting Dental Practices for Excellence**	**Practice Enhancement Strategies**	- Change in practice - Investing on new equipment - Compliance - Adjustment in dental clinic protocols

during COVID-19?			
	Theme 2 – Navigating Financial Constraints in Dental Practice	**Financial Challenges**	- **Less patients** - Financial Adversity - Funds Allocation
	Theme 3 – Addressing Dentist Discomfort and Well-being	**Dentist Well-being**	- **Physical Discomfort**
	Theme 4 – Ensuring Safety Amidst COVID-19 Pandemic	**Infection Prevention and Awareness**	- **Every patient is infectious** - Cautious procedures
	Theme 5 – Redesigning Dental Practices for Optimal Efficiency	**Practice Environment Enhancement**	- **Clinic Redesigning** - Need for bigger spaces - Dentist's Preferences

THEME 1 -ADAPTING DENTAL PRACTICES FOR EXCELLENCE

The first theme that emerged on the lived experiences of private dental clinicians during COVID -19 Pandemic is Adapting Dental Practices for Excellence. This theme underscores the proactive stance adopted by dental clinicians in response to evolving patient needs due to the Pandemic. The theme emerges from change in practice, investing in new equipment, compliance, adjustment in dental clinic protocols. Research conducted during the pandemic underscores the significance of measures such as transitioning to online appointments and enhancing clinic safety using specialized equipment. A change in practice was highlighted in the clinical experiences of the participants.

The challenges faced by dentists during the COVID-19 pandemic and their subsequent adaptations to ensure safety align with findings in dental literature. Research highlights the

necessity of implementing enhanced infection control measures, including the use of PPE, barriers, and specialized equipment, to minimize the risk of viral transmission in dental settings.

Studies have highlighted the effectiveness of UV sterilizers, intraoral suction systems, and air purifiers in reducing the risk of viral transmission during dental procedures. Additionally, the importance of personal protective equipment (PPE) for both dental practitioners and patients has been well-documented in scientific literature. Dental professionals' proactive approach to safety, as demonstrated by Dentist 6, aligns with research emphasizing the role of proactive infection control measures in reducing the spread of infectious diseases. "I have been operating by appointment even before the pandemic... UV sterilizers, intraoral suction, extra aerosol suction, and air purifiers in my clinic" (Participant 6). Another participant describes how wearing personal protective equipment has changed. "Instead of lab gowns, we now use bunny suits to ensure our own protection... PPE for our patients" (Participant 7). "We were using respirators during the pandemic; we also put-up barriers, like the PPE... The UV light we used is the one used in hospitals... It was hard, really hard." (Participant 1).

THEME 2 -NAVIGATING FINANCIAL CONSTRAINTS IN DENTAL PRACTICE

The second theme that emerged is Navigating Financial Constraints in Dental Practice. The participants in this study mentioned that they have faced financial difficulties during the pandemic. "The prices of face masks have increased... cost of gloves has also gone up... impact financially... suffered financial loss." (Participant 5). Since there was a declaration of lockdown, everyone was affected including the dental practitioners. Moreover, new equipment must be used to provide a higher standard in dental clinics. According to one participant, the cost of PPE and other biosafety measures increased significantly during the pandemic, impacting the financial aspect of dental practice. "It costs too much... price increase in gloves... price of alcohol has increased... expenses doubled... suffered financial loss." (Participant 1). Plus, a significant decrease in the number of patients, leading to financial losses during the pandemic. "The first thing we did was to make appointments via online means... during the pandemic, we only had maybe 3 or 5 patients per day... It was hard for us." (Participant 2).

THEME 3 -ADDRESSING DENTIST DISCOMFORT AND WELL-BEING

The third theme that emerged is Addressing Dentist Discomfort and Well-being. During the pandemic, the use of coverall or bunny suit type of PPE were highlighted, it provides more protection to the dentist and the patient, but discomfort comes with it according to the participants. According to the research they faced discomfort due to the use of PPE and the presence of barriers while treating patients, affecting the quality of treatment.

One of the Wearing PPE's.. It is so hot, sometimes there is an air conditioning unit but there was a time they required negative pressure. So everything must be flowing. So even if

there's an AC, at the height of the pandemic, we were not able to use it. It was prohibited. The operating area was enclosed. It was really hard then. (Participant 1).

I'm not sure if I can be honest, it was irritating to wear those things. I mean after a while it becomes second nature when you're used to it. Your mobility was a little hard. Impaired mobility. And you know, some patients are, I mean, the reality of our work is this, you expect your patient to open their mouth a certain way, and it doesn't really happen like that. you know, they can open it this way, but they're facing a certain way. (Participant 2).

There have been various types of face shields that came out, some of them looking effective. I've tried different face shields myself. Some were blurry and not suitable for work, but the one with a strap is still the best. I also bought goggles for the patients, but they were not comfortable to wear and hindered my breathing. (Participant 6).

THEME 4 -ENSURING SAFETY AMIDST COVID-19 PANDEMIC

The fourth theme that emerged is Ensuring Safety Amidst COVID-19 Pandemic. Dentists became more cautious since everyone is new with the virus, requiring a new set-up.

"When it comes to PPE, that's something I never remove. I prefer to be fully covered in PPE, even for myself. And Just like for my assistant, after clinics she's gonna go home, so i don't know what she's doing after, the patient, it's just like, everything is based on patient you'll believe what the patient says, "ah doc I don't have any exposure" So it's difficult to tell how effective our protocols if after the dental visit they are safe or not, so that is hard to monitor so we have to stick with strict implementation. (Participant 6).

"I can say that our PPE during the pandemic is really helpful because we are like more covered during the dental procedures and I also have a donning and doffing space in my entrance and exit area. And we should be like get used to it." (Participant 4).

The dentists treated every patient as potentially infectious during the pandemic, showing increased awareness of safety thus giving them a positive outlook of following the adjusted biosafety protocols in their private dental clinics. "Sometimes, there is this gut feeling that this patient is sick, or might be sick... I thought I needed to wear double masks... to be extra-protective towards this patient." (Participant 1).

THEME 5 -REDESIGNING DENTAL PRACTICES FOR OPTIMAL EFFICIENCY

The fifth theme that emerged is Redesigning Dental Practices for Optimal Efficiency. Most of the participants expressed the need to redesign their dental clinics specifically in the engineering design and air control. These two make biosafety more efficient however an increase in expenses and the type of building where they are established is an issue. "Yes, I really thought of that. To make a hole in the ceiling. It's like negative-positive pressure. I really thought of doing it. But then I didn't have money to spend then." (Participant 2).

"It is better that the patient is negative and then we keep the room open (pertaining to the treatment room). It is easy to say it if you have money, really. For me, I can relocate anytime. But how about those who have established themselves here, how can they relocate? Not advisable. It costs much. You cannot do it right away. It is not easy to do, especially if you have established yourself already. (Participant 1)

The desire for negative-pressure environments and enhanced ventilations, as mentioned by Participant 1 and Participant 2, is in line with recommendations to improve air quality and reduce the concentration of airborne contaminants. Additionally, the challenges associated with clinic reconstruction, relocation, and financial constraints resonate with the broader healthcare context, where balancing safety measures with practical and financial considerations has been a common theme during the COVID-19 pandemic. "I want to reconstruct or redesign... new clinic... air control... consider relocating clinics can be expensive." (Participant 7).

SUMMARY OF FINDINGS

The findings revealed several key themes and codes that shed light on the challenges and adaptations made by dental practitioners to ensure safety and infection control in their practices. In response to the challenges of the pandemic, dental practitioners swiftly implemented diverse biosafety measures, including online scheduling and the adoption of specialized equipment. Experimentation with face shields and group communication were key elements, demonstrating their adaptability in enhancing safety. Financial challenges were prominent, with rising PPE costs and clinic closures straining budgets. Implementing innovative solutions, such as PPE fees for patients, underscored their resilience amidst financial uncertainty.

While adapting to safety protocols, dental professionals emphasized adherence to guidelines, integrating patient triage systems and making clinic layout modifications for optimal safety. Seeking guidance from health organizations was vital in this dynamic process. Focus on safety measures such as high-vacuum suction systems and comprehensive PPE coverage highlighted their commitment to patient and staff well-being. Despite financial constraints, they recognized the significance of clinic airflow and ventilation, contemplating clinic redesigns to enhance safety.

CONCLUSION AND RECOMMENDATION

This study provides valuable insights into the experience of dental clinicians navigating the challenges posed by the COVID-19 pandemic. The findings underscore the remarkable adaptability of dental practitioners who swiftly implemented a diverse array of biosafety measures, ranging from online scheduling to the adoption of specialized equipment. Despite facing pronounced financial challenges, including escalating PPE costs and clinics

closures, dental professionals exhibited resilience by introducing innovative solutions such as PPE fees for patients.

Throughout this dynamic process, a steadfast commitment to safety was evident. Dental practitioners emphasized strict adherence to guidelines, introducing patient triage systems, and modifying clinic layouts to optimize safety. Their proactive approach included seeking guidance from health organization, highlighting the importance of staying informed in the rapidly evolving landscape of pandemic response.

Moreover, the study illuminated the unwavering dedication of dental professionals to the well-being of both patients and the assistants. The emphasis on safety measures, including the implementation of high-vacuum suction systems and comprehensive PPE coverage, reflects a conscientious effort to mitigate risks. Even amid financial constraints, the recognition of the significance of clinic, airflow and ventilation underscores a commitment to continuous improvement, with practitioners contemplating clinic redesigns to enhance overall safety.

In this essence, this study demonstrates the resilience and adaptability of dental clinicians in the face of evolving biosafety guidelines and financial constraints. Their commitment to excellence and patient safety stands as a testament of their unwavering dedication in these challenging times.

The researchers recommend the following:

1. To conduct a similar study on different areas which might have different circumstances than the area where this interview was done.
2. To conduct quantitative studies on Biosafety Practices on post-pandemic time.
3. To assess dentists' current biosafety practices, identify any changes evolving pre, during and post-pandemic time.

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