Review Article

Dental and Oral Health Practice in COVID-19 Pandemic: Bangladesh Perspective

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Abstract

COVID-19 pandemic has brought about many challenges in dental practice for dental professionals and their team. The route of transmission of the virus and the nature of dental service has put dental professionals at risk of being exposed and infected by the virus and at the same time making dentistry itself a part of the infectious chain of COVID-19. The World Health Organization (WHO) has advised dental professionals across the world to limit dental practice to emergency cases only and postpone all non-essential dental services. According to Bangladesh Dental Society, about 10,000 practicing dentists and near about 20,000 supporting staff are involved in dental health practice in the country. There are about 4,000 dental clinics only in Dhaka city. A dental practice guideline has been developed by Bangladesh Dental Society to employ by dental professionals during COVID-19 pandemic. However, we feel that efforts to explore the real scenario of proper safety precaution and maintenance of public health measures in COVID-19 is less evident in the manuals in the context of public health and patient safety in Bangladesh. Hence, we proposed this review paper through an extensive literature and guidelines search to explore the risks of COVID-19 transmission inside dental settings, explore recommended safety protocols to minimize those risks and address the challenges associated with resuming regular dental and oral health practice.

Keywords: *COVID-19; Dental and oral health practice; Occupational safety; Patient safety; Public health; Bangladesh.*

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Introduction

The COVID-19 disease is caused by SARS-CoV-2 virus.[1] The disease spreads primarily in close contact among human through respiratory droplets. These droplets are produced when an infected person coughs, sneezes, or talks.[2] Dental and oral procedures like use of rotary instruments,

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air water syringe, ultrasonic scaling, etc. increase chance of producing aerosols and droplets.[3,4] Thus the COVID-19 disease has brought about many challenges in dental practice for dental professionals and their team. The route of transmission of the virus and the nature of dental service has put dental professionals at risk of being exposed and infected by the virus and at the same time making dentistry itself a part of the infectious chain of COVID-19. The World Health Organization (WHO) has advised dental professionals across the world to limit dental practice to emergency cases only and postpone all non-essential dental services.[5] Amid the pandemic, universal infection control and prevention measures are encouraged to maintain for safety in dental setting.[4]

According to Bangladesh Dental Society, about 10,000 practicing dentists and near about 20,000 supporting staff are involved in dental and oral health practice in the country. There are about 4,000 dental clinics only in Dhaka city.[6] Under the circumstances, Bangladesh Dental Society also recognized the possible risk of disease transmission and advised Bangladeshi dental professionals to continue only emergency dental services and suspend all routine and other elective dental procedures to minimize the COVID-19 disease transmission.[6,7] A recent study reported that dental professionals of Bangladesh had good knowledge related to the COVID-19 disease, its transmissions and impacts; however, practice of proper safety precautions was less evident among them.[8]

Dental practice guideline developed in Bangladesh is recommended by Bangladesh Dental Society to be employed by dental professionals.[6] However, we feel that efforts to explore the real scenario of proper safety precaution and maintenance of public health measures in COVID-19 is less evident in the manuals in the context of public health and patient safety in Bangladesh. Hence, we proposed the current review to explore the risks of COVID-19 transmission inside dental settings, explore recommended safety protocols to minimize those risks and address the challenges associated with resuming regular dental practice.

Materials and method

This study is a narrative review which has been done after an extensive literature search (PubMed/Medline and Google Scholar) and the guidelines of international health organizations and professional bodies on dentistry across the globe. Keywords used for searching are: “COVID-19”, “dental practice”, “dentistry”, “infection prevention”, and “patient safety”. Review of literature included both original research and review articles and some international organizations’ and professional association’s guidelines (only of English language). Only relevant documents were downloaded after going through the abstracts and undergone further reading. A total of 18 journal articles and 7 guidelines were finally selected for this review. The review was done between January and June of 2021.

Results

The World Health Organization (WHO) has declared the COVID-19 disease as a pandemic.[9] In Bangladesh the first case of the COVID-19 disease was identified on 8th March, 2020.[10,11] Soon after, Bangladesh saw first death from Corona virus on March 18th, 2020.[11] It is known that in close contact, the virus transmits from human to human via respiratory droplets.[2]

Risk of Covid-19 transmission in dentistry

It is documented that among all other profession, dentistry possesses highest risk of COVID-19 transmission.[12] The nature of dental service requires both patients and dental professionals with their staff to be on face-to-face communication and in close contact. This increases the risk of exposure to respiratory droplets, saliva or blood for dental professionals and their staffs.[3,4,12-15] The transmission of

COVID-19 may occur possibly in three ways involving both direct and indirect mode of transmission in dental settings - firstly, droplets may be inhaled directly by humans if they do not cover their mouth and nostrils during coughing, sneezing or yawning; secondly, exposure of mucous membrane such as ocular, nasal to infectious droplets can cause transmission; and thirdly, contaminated surface of dental clinical area may indirectly transmit the virus.[13]

The World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) have outlined dental procedures like use of rotary hand piece, surgical hand piece, air water syringes and ultrasonic scaling device etc. generate respiratory droplets, saliva and blood. These droplets may contaminate surfaces and dental setting.[3,4] Thus, dental procedures and nature of work put dental professionals, dental technologists, and other staff and patients at risk of the COVID-19 transmission. The World Health Organization (WHO) acknowledges the fact that as dental professionals' works in close contact with patients; they are at high risk of this disease transmission. Hence, they advised to continue emergency dental services and postpone routine dental checkups, preventive procedures and dental cleaning to minimize the risk of COVID-19 transmission among dental professionals.[3,5]

Dental emergencies and non-urgent dental services

As defined by American Dental Association (ADA), dental emergencies are regarded as those conditions which are potentially life threatening and require immediate treatment like managing acute oral infections and swelling, trauma, controlling severe pain and prolonged bleeding, etc.[16] According to the interim guidance provided by WHO and ADA, emergency dental service may include management of acute pain and swelling due to acute infection or fractured teeth, pain and bleeding due to acute pericoronitis, broken denture, broken orthodontic appliance, pain due to extensive carious lesion or restorations, etc.[3,16]

Non-urgent dental services are the interventions that can be delayed.[3] It doesn't compromise patient's oral functions or quality of life. These include routine checkups, orthodontic and aesthetic treatment, dental cleaning, restoration and extraction of asymptomatic tooth, etc.[17] Aerosol generating procedures (AGPs) are advised to avoid or minimize whereas possible. AGPs are dental procedures that creates aerosol or air borne particles (size less than 5 micrometer) and include use of air-water spray, cleaning with ultrasonic scaling device and polishing; dental preparation with high or low-speed hand-pieces; direct and indirect restoration and polishing; surgical extraction, placement of implant, crown or bridge cementation, mechanical endodontic treatment.[3,17-19]

Safety recommendations for dental professionals in dental setting

International organizations like WHO, CDC, Occupational Safety and Health Administration (OSHA), and several professional bodies' guidelines and recent studies have provided detailed guidance on emergency and nonemergency dental services and ways to tailor dental practice to limit the spread of the coronavirus disease.[3,4,17-30]

Based on those recommendations, dental professionals should maintain safety precautions and design dental care settings as follows -

<u>*For dental professionals and staffs*</u>

At Entry

- Dental professionals and their staffs are encouraged to measure their temperature twice daily (morning and evening). If any of them finds high temperature, should refrain himself from going to workplace.
- The dental professionals and staffs should enter dental clinic wearing a mask.
- After entering, the mask should be disposed in a closed container, wash or sanitize their hands, put on shoe covers.

- While entering into operating area, they should wear surgical mask and maintain distance among themselves.

In the clinical area

- When a patient enters in the clinical area, the dental surgeons and their staffs must wear disposable personal protective equipment (PPE). This includes fully covered gown, protective glasses, masks, gloves, shoe cover and headgear caps.
- The use of rubber dam while dental procedures are highly recommended to limit spread of the aerosols. Use of rubber dam is proven in reducing airborne particles within the operating area.
- Whereas aerosol generating procedures (AGPs) cannot be avoided, use of rubber dam and high evacuation suction along with the use of appropriate personal protective equipment (PPE) including a well-fitting N95 or FFP2 respirator and minimizing number of staff is recommended.
- Intraoral x-ray procedures should be avoided as there is chance of aerosol formation if coughing is triggered. If required, the sensor should be covered doubly and disinfected after use to avoid cross-contamination.

After dental procedures

- After completing clinical dental procedures, dental professionals should dispose used PPE (gown, mask, gloves, shoe wrap and head cap) in double layered garbage bags.
- Disposable instruments are to be disposed maintaining medical disposal protocol.
- If eyewear and face shields are reusable, these should be disinfected.
- Hand washing with soap and water for atleast 20 seconds or hand sanitization should be done by the dental professionals and staffs.
- Masks should be changed in between patients.
- Reuse of mask can be considered if there is shortage of supply, though this practice is scientifically less evident.

For patients

Before entering into dental practice

- Screening of all patients preferably through teledentistry and triage to prevent spread of the disease inside the dental clinic.
- Based on dental professionals' judgment about emergency and non-emergency treatment need of patients, appointment should be scheduled.

At patient entry

- Plastic or glass separators can be placed as physical barriers at the reception area to protect dental staffs from the Covid-19 exposure.
- Patients must wear mask while entering into dental room/clinic.
- Number of attendants to the patients should be limited and encourage them to remain unaccompanied, if applicable.
- Upon entry, the temperature of the patients must be measured and documented. If symptoms are similar like the COVID-19 disease, dental appointment should be rescheduled, and immediately sent back home and advised to contact medical facilities.
- Posters containing instruction on respiratory hygiene cough etiquette and hand hygiene may be displayed at entrance and in waiting area of dental room/clinic.

In the clinical area

- Patient should be asked to remove their mask while dental procedure is initiated but should wear it back while leaving the clinic.
- Patients can be advised to rinse mouth with 0.1% hydrogen per oxide or 0.2% povidone iodine for 15-20 seconds before dental procedures. Povidone-iodine is safe to administer in the mouth with up to 2.5% and it rapidly inactivates coronaviruses when applied for 15 seconds.
- Postponing non-urgent dental services as well as aerosol generating procedures (AGPs).

- Ensuring hand hygiene and respiratory hygiene practice by dental professionals, staffs and patients.
- Proper use of personal protective equipment (PPE) by dental professionals and staffs. They should be trained on how to put on and remove PPE to help them to avoid self-contamination. The PPE guideline developed by OSHA may be considered by dental professionals[18].
- Whenever AGP can't be avoided, use of rubber dam and high evacuation suction along with the use of appropriate personal protective equipment (PPE) including a fit tested N95 or FFP2 respirator and minimizing number of staff is recommended.

For dental clinic disinfection

- Ensuring adequate ventilation naturally or using mechanical device. For mechanical ventilation, air purifiers with HEPA (High Efficiency Particulate Arrestor) filters, use of industrial fans, creating negative pressure room, etc. can be considered.
- Maintaining proper infection control and prevention in dental office including disinfection and sterilization of dental instruments.
- Routine cleaning and disinfection of surface should be done.
- WHO recommends use of 70% ethyl alcohol to disinfect small surface areas and reusable instruments, while 0.1% sodium hypochlorite can be used for disinfecting surfaces and 0.5% for disinfection of large blood or bodily fluids spills in dental clinical area.
- Also, cleaning and disinfecting surfaces and dental instruments in between patients must be ensured for best possible dental practice.

For patient suspected or confirmed with the Covid-19

If any COVID-19 suspected or confirmed patient is in need of any emergency dental or oral procedure, the patient should be referred to such dental setting that is well equipped with separate arrangements for COVID-19 patients under proper isolation protocol.[3,6,26,27]

Initiatives for dental practice in Bangladesh

Dental services in Bangladesh are provided both in private and public settings. Like other countries, Bangladesh has also tried to respond responsibly to limit COVID-19 transmission in dental health settings. Aligning with the recommendations of WHO, CDC, and other countries' professional bodies, e.g. Indian Dental Association (IDA). Zimbabwe Dental Association (ZiDA), Bangladesh Dental Society (BDS) has advised Bangladeshi dental professionals to stop all non-urgent routine dental procedures and only to continue emergency dental services amid the pandemic.[6]

Challenges in dentistry for Bangladesh

Initially, Bangladeshi dentists were only providing emergency dental services to relieve pain or discomfort experienced by the patients; however, it has been more than one year, and the pandemic still prevails. While some of the dental professionals have attempted to resume dental practice, they found themselves at a double-edged sword situation.[8,20] The number of patients has dropped but the expense of purchasing safety equipment for dental clinics has increased. It has created financial burden on dental professionals. To adjust financial crisis, they may have to charge high or reduce the number of dental staffs.[20-25]

Globally shortage of PPE supply was one of the major challenges that dental professionals and their staffs were facing while preparing for fighting against COVID-19.[22-24] Similar situation was encountered in Bangladesh, too.

The concept of infection control and prevention in pandemic is challenging for dental students, interns and professionals. A working study conducted in Bangladesh found that although they acknowledge that dental office is a potential source of COVID-19 disease contamination, 57.1% of the dental surgeons were found not using separate gown or apron for individual

patients.[8] Again, practice of safety precaution varies between private and public dental surgeons. It was also observed that the private dental professionals were four times more likely to follow safe practice compared to the dentists engaged in government services.[8]

Lack of awareness, lack of knowledge and inappropriate practice of effective infection control and preventive measures may put many dental surgeons at risk and many of them to suffer from the disease itself.[8,21,24] If dentists want to reopen their dental clinic for emergency and non-emergency dental services, it needs proper utilization of safety precaution measures for protecting both the dental professionals and patients.[22-28] Moreover, dental professionals and their staffs should receive adequate training on infection control and prevention protocol for dental settings as well as on proper use of personal protective equipment (PPE).[22-28] Last but not the least, while reducing face-to-face consultation is necessary to reduce the risk of infection, dental surgeons can ensure continuity of care through 'oral telemedicine'.[29] Using telemedicine option could provide an effective alternative to face-to-face visits for many dental and oral mucosal conditions; this virtual system could be used as a complement to standard oral diseases management to some extent.[29,30]

Conclusion

In the process of re-opening, dental professionals and supporting staff must be vaccinated; they should postpone nonemergency dental care and inform patients about the problems which may arise, when COVID-19 cases are rising, give priority to patients needing emergency consultation and urgent dental care needs that present as life-threatening, avoid work if experiencing influenza-like illness or with symptoms of respiratory infections and seek medical attention immediately, if experiencing clear signs of the disease. If applicable, telemedicine can be an alternative to current practice to some extent. More continuing educational activities and more training on infection prevention should be arranged for dentists, dental technologists, and supporting staffs practicing both in government and private settings in the country. This will enable dental health practitioners to follow those updated recommendations which will strengthen safe dental practice until the end of this pandemic.

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