

The Perils of PPE Use during COVID-19: A Dentist's Perspective

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As the battle against the COVID-19 pandemic wages on, health care workers (HCWs) especially dentists are witnessing a paradigm shift in the general environment in dental offices. One of the major changes include the mandatory use of full coverage and heavy-duty Personal Protective Equipment (PPE). The extensive PPE kit includes N95 respirators, high-grade surgical masks, safety goggles, face shields, hazmat suits and full length disposable gowns. The use of PPE is critical since the dentist and his/her team work in close proximity to the patients in presence of aerosols containing blood and tissue fluids. However, the HCWs are facing a whole new set of challenges from wearing additional PPE as they adapt to providing care in the COVID-19 era.

Owing to the increased demand and reduced supply, availability has become an issue. PPE has never been so expensive and the market is teeming with counterfeit products. Thus, procuring safe and quality tested PPE has become a challenge to HCWs. Internationally there have been reports of a shortage of PPE kits from the US, Russia, Canada, UK, Ireland, Australia, China, Pakistan and many other countries. Several countries have also shown increased incidence of re-use of PPE due to shortage. However, the general situation has improved over time as manufacturing units have increased worldwide to meet the urgent need.

The protracted use of extensive PPE has resulted in HCWs experiencing high levels of physical and emotional distress. These include excessive sweating, breathlessness, dehydration, severe headaches, suffocation, and fatigue. There are also reports of skin

allergy/dermatitis, nasal pain due to impinging protective eyewear, pain at the root of pinna due to mask straps and slipperiness of shoe covers [1]. Donning the three part combination: a respirator mask, a surgical mask and a face shield has become common place. This along with extended hours of wearing and reduced fluid intake has been causing severe dehydration leading to muscle cramps, dizziness, vertigo and nausea. There also has been reports of clinicians experiencing heat strokes in tropical countries like India [1]. A survey was conducted in North America which included total of 2,529 respondents who were dental professionals. Data obtained showed around 30 to 50% of the respondents experienced a myriad of symptoms including facial skin soreness, increased facial acne, muscle fatigue, dry mouth, mouth breathing, reduction in urine output, racing heart, difficulty in nasal breathing and exhaustion. Emotional conditions experienced were mental fatigue, irritability, mood swings, depression and difficulty focusing [2,3]. Moreover, HCWs have been reported to exhibiting a rising trend of multi-surface dental cavities, localized periodontitis and oral candidiasis probably as a consequence of mouth breathing and dry mouth [4]. As dental professionals we have pledged to provide the best care possible to our patients, but how will this happen if the clinician is breathless or has a raging headache?

Another issue that has been highlighted is improper sizing and fit of PPE kits. It is important to note that there is never a one size fits all PPE. Sizing related difficulties were reported more by female HCWs due to improper fit in masks, visors, glasses and gloves [5]. Improper fit of masks along with breathing issues prompts users

to repeatedly adjust their N95 masks which raises the risk of self-contamination.

It must be emphasized that during dental treatments like endodontics or exodontia, a clinician needs to work with precision on an extremely small scale. Additionally, superior hand eye coordination is required in cases while performing intricate procedures like crown preparations or microsurgical cases. Majority of treatment procedures including restorations and oral prophylaxis are carried out under indirect vision using a mouth mirror. Consequently, compromised visibility due to fogging of protective eye-wear or face shields along with reduced dexterity due to double gloving impacts the performance and increases stress levels in dentists. Moreover, HCWs have found verbal communication also challenging while wearing PPE. It is advisable to follow the guidelines of World Health Organization (WHO) which specifies the sizing and types of PPE applicable for COVID-19 [6].

It is interesting to know that firefighters are specially trained to work in PPE to manage fatigue and overheating. Similarly, the importance of formal face-to-face training of dentists and support staff in standard protocols of using extensive PPE cannot be stressed enough. There is also an urgent need of incorporating space and time towards the donning and doffing of PPE as a part of dental surgery design and management. Changing rooms with an established donning and doffing routine like the Buddy System can help promote safer practices in dental offices. There has also been reports of increased levels of anxiety responses from high-fear dental patients in a simulated interaction study where they were attended to by dentists wearing PPE [7].

Solutions to these issues are numerous few of which are straight-forward like maintaining hydration while using PPE, promoting use of shielded dental operating microscope instead of naked eye viewing of operating field and knowledge augmentation by watching online videos or webinars regarding PPE use. However, the fact remains that, in the midst of all this information there is still a dearth of evidence based data which needs to be upgraded with further research in this area. Added investigation should promote fabrication of breathable PPE kits which are designed for people, support communication and tasks and most importantly prevent any health hazards or injuries to the HCWs. Good practice protocols should be designed to promote better hydration, usage and work efficiency while using PPE so that it serves as an armor rather than a burden.

Bibliography

1. Agarwal A., et al. "Difficulties Encountered While Using PPE Kits and How to Overcome Them: An Indian Perspective". *Cureus* 12.11 (2020): e11652.
2. Dentistry iQ and Guignon A. "Headaches, exhaustion, anxiety: The physical and emotional challenges of returning to work during the pandemic [Internet]. Houston: Dentistry iQ (2020).
3. Ong JJY., et al. "Headaches Associated With Personal Protective Equipment - A Cross-Sectional Study Among Frontline Healthcare Workers During COVID-19". *Headache* 60.5 (2020): 864-877.
4. Dentistry iQ and Reynolds L. "A pulmonologist, an ob-gyn and a surgeon walk into a dental office: The effect of increased PPE on the oral health of medical workers [Internet]. Philadelphia: Dentistry iQ (2020).
5. Dentistry Online Bisset G, Women report more difficulties with PPE than men, report finds [Internet].UK: Dentistry Online (2020).
6. Personal Protective Equipment for COVID -19: World health Organization (2020).
7. Das S and Rajalingham S. "Personal protective equipment (PPE) and its use in COVID-19: important facts (Epub ahead of print)". *The Indian Journal of Surgery* (2020).

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