

PPE: polluting Planet Earth

Sir, the COVID-19 pandemic has seen a huge surge in the worldwide demand for personal protective equipment (PPE), leading to a large increase in the manufacture and distribution of plastic-based face masks, gloves, and gowns.¹ The demand for PPE is expected to stay at an elevated level, with an estimated annual increase of 20% in the production of single use face masks between the years 2020 and 2025.² The environmental impact of this should not be underestimated, with discarded PPE being observed in the environment on a global scale.

Studies suggest that if each individual in the UK wore a single-use face mask every day for one year, 66,000 tonnes of unrecyclable plastic waste would be generated.^{3,4} There is no system in place for the safe or environmentally friendly disposal of potentially contaminated single use face masks for the general population, and a large amount are discarded in the general waste to go to landfill, or worse, are littered in the environment.

Disposal of single use PPE in the domestic general waste has led to a detrimental impact on our environment. Mismanaged plastic waste pollutes both marine and land environments, and there is a high risk of ingestion or trauma to organisms and contamination of habitats, threatening the safety of our ecosystems.⁵

Sustainable management of plastic-based PPE is challenging, and further research on green materials is paramount. As clinicians, we should be seeking multidisciplinary input from biomedical and environmental scientists to focus on the reuse and recycling of plastic-based PPE where possible within our working environment, and where contamination is not a potential risk. More importantly, we should be actively encouraging our patients and the general public to wear washable, reusable face masks, and shift towards the use of sustainable alternatives wherever possible.

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References

1. Singh N, Tang Y, Ogunseitan O. Environmentally sustainable management of used personal protective equipment. *Environ Sci Technol* 2020; **54**: 8500-8502.
2. Personal Protective Equipment Market. Personal Protective Equipment Market by Type (Hands & Arm Protection, Protective Clothing, Foot & Leg Protection, Respiratory Protection, Head Protection, End-Use Industry (Manufacturing, Construction, Oil & Gas, Healthcare) - Global Forecast to 2022. Available at: <https://www.marketsandmarkets.com/Market-Reports/personal-protective-equipment-market-132681971.html> (accessed August 2020).
3. Department of Health and Social Care. Experimental statistics - personal protective equipment distributed for use by health and social care services in England: 22 June to 28 June 2020. Available at: <https://www.gov.uk/government/publications/pp-e-deliveries-england-22-june-to-28-june-2020/experimental-statistics-personal-protective-equipment-distributed-for-use-by-health-and-social-care-services-in-england-22-june-to-28-june-2020> (accessed August 2020).
4. UCL Plastic Waste Innovation Hub. The environmental dangers of employing single-use face masks as part of a COVID-19 exit strategy. UCL. Available at: <https://d2zly2hmfvx0.cloudfront.net/Covid19-Masks-Plastic-Waste-Policy-Briefing.final.pdf?mtime=2020042170934&focal=none> (accessed August 2020).
5. Silva A L P, Prata J C, Walker T R et al. Increased plastic pollution due to COVID-19 pandemic: Challenges and recommendations. *Chem Eng J* 2020; **405**: 126683. <https://doi.org/10.1038/s41415-020-2130-5>

CASE REPORT

OMFS

TMD during AGPs

Sir, a 26-year-old female presented to the oral surgery department in July 2020 with severe, diffuse, non-specific pain in the oro-facial region. Over the preceding two months, she reported recurrent and progressively deteriorating episodes of pain. No history of jaw locking, clicking or grinding/clenching habit nor any recent life stressors noted. Medically, she is fit and well and takes no regular medications. She is a non-smoker, drinks less than four units of alcohol a week and works as a dental core trainee within a dental hospital. On examination, the muscles of mastication were tender on palpation bilaterally with no other abnormalities. A DPT radiograph was taken to exclude any dental pathology. A GAD-7 and HADS score was completed, which noted no symptoms of generalised anxiety or depression.

In view of the spontaneous nature of her symptoms and a lack of relevant

co-morbidities, we were keen to investigate for any potential contributors to this pain. A pain diary recorded by the patient revealed recurrent episodes of pain precipitated by wearing an elastomeric respirator when carrying out AGPs. The patient had been fit-tested for a reusable elastomeric respirator and Pure Flo Size: Small was selected.

In the acute phase, conservative management involved regular pain relief, soft diet, hot/cold compress and limiting mouth opening. We encouraged avoiding the use of a respirator for two weeks. At review, she reported a significant improvement in her symptoms and no further episodes of pain. A diagnosis of acute TMJ dysfunction – myofascial pain was confirmed.

The patient noted use of the respirator induced clenching and inadvertently postured the mandible forward. Prolonged forced posture in this way causes mechanical stress on the TMJ and associated structures. Similar findings have been reported in a group of scuba divers when using mouthpieces propelling unnatural

mandibular positioning, consequently placing significant stress on the TMJ.¹

Despite fit-testing to determine the most appropriate size mask to use, she continued to develop TMD symptoms, highlighting the need to also consider comfort beyond accomplishing a tight seal. To prevent future episodes of pain, we suggested the use of a hood powered air purifying respirator (PAPR) which does not exert pressure on the temporomandibular joint system.² Failure to tackle this potential complication early may create a group of professionals with chronic TMD, known to be a difficult entity to manage.

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References

1. Aldridge R, Fenlon M. Prevalence of temporomandibular dysfunction in a group of scuba divers. *Br J Sports Med* 2004; **38**: 69.
2. Gentex Corporation. PUREFLO 1000 HALF MASK (EN). 2020. Available at: <https://shop.gentexcorp.com/pureflo-1000-half-mask-en/> (accessed 14 August 2020). <https://doi.org/10.1038/s41415-020-2131-4>