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Experiences and Responses of Oral Health Care Professionals during the First Wave of the COVID-19 Pandemic in Malta

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Initial impetus for action: Maltese Oral Health Care Professionals (OHCP) experienced changes to clinical practice and redeployment during the COVID-19 pandemic. In the early stages, there were few data on the resultant changes to the provision of dental services or their impact on the wellbeing of dental professionals. ***Solutions Suggested***: Two questionnaires were designed to explore different domains in OHCP working on the frontline of the COVID-19 pandemic as well as in other areas/sectors. The findings were intended to inform guidance documents and to better support the profession. ***Findings***: Anxiety-provoking factors, challenges, and areas of concern of OHCP were identified and practical recommendations to support transitioning to the 'new normal' were presented. OHCP expressed anxiety about contracting COVID-19 from their workplace and passing infection to other family members, friends, or patients. As a result, OHCP expressed the need for better protective clothing, workplace ventilation, and air filtration systems. ***Future implications***: Provision of adequate PPE for OHCP was a priority. New guidelines for dental practice were informed by the experiences of the particpating OHCP. University modules to enhance the resilience of OHCP were among the recommendations to support practitioners.
Public health competencies illustrated:
- Understanding the barriers to provision of oral care and health protection of the workforce and population during the COVID-19 pandemic.
- Understanding the experiences and needs of oral health care professionals (OHCP) during the pandemic and learning from them.

Keywords: *Anxiety, Coping strategies, Dentistry, COVID-19, Dental team, Frontliners*

Initial impetus for action

The first SARS-CoV-2 (COVID-19) positive case was recorded in Malta on the 7th of March 2020. As the virus progressed around the globe, Malta prepared to maximise the readiness of its healthcare system for the arrival of the pandemic. The primary COVID-19 strategy was based on widespread testing to identify and isolate confirmed cases and contacts as soon as possible. Malta had one of the highest testing rates per capita in the European Union (EU) (Government of Malta, 2020). This strategy was crucial as the country is densely populated, having a population of 515,000 within a territory of 316km^2. High population density enables rapid transmission of airborne pathogens such as COVID-19.

Health care professionals worldwide were called upon during the COVID-19 pandemic, and the dental team were no exception (Klasen *et al.,* 2020) In Malta, dental team members including dental surgeons (DS), dental hygienists (DH), dental surgery assistants (DSA), and dental students were officially redeployed to other areas of the health service. The temporary closure of the university dental school and home studying supported the availability of dental students for redeployment (Agius *et al.,* 2020). Redeployment activities included supporting COVID-19 testing centres, helpline call centres, contact tracing, and other COVID-19 related duties (Rossito, 2020).

The pandemic also changed dental practice. Many dental procedures aerosolise salivary particles, increasing the risk of transmission of infection if particles are inhaled or there is contact with contaminated surfaces (van Doremalen *et al.,* 2020). In response to this higher infection risk, Maltese health authorities, professional organisations, and councils published guidance and recommendations to inform oral health care professionals (OHCP). These documents advised reductions in Aerosol Generating Procedures (AGPs) and postponement of non-urgent treatment during the first wave of the pandemic (Centres for Disease Control and Prevention, 2020; Superintendence of Public Health, 2020).

As a result of these changes and subsequent redeployment, stress and anxiety became common in the dental workforce. OHCP social media groups were flooded with concerns about the uncertainty of clinical practice and the difficulties of navigating the new challenges. There were anecdotal reports of the detrimental impact of the pandemic for clinical dentistry and furthermore, the wellbeing of the redeployed workforce. This prompted us to investigate the extent and impact of these issues.

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Solutions Suggested

To gain insight into OHCP experiences and responses to the pandemic, a cross-sectional study of the local dental workforce was carried out using two questionnaires. The aim was to determine how the workforce had responded to changes in practice including reductions in clinical workload and introduction of new measures / equipment in the workplace e.g. ventilation, filtration/disinfection, air conditioning, suction systems, and personal protective equipment (PPE). Furthermore, the questionnaire aimed to understand the experiences of re-deployed OHCP and evaluate the need for psychological and financial assistance. The data were intended to inform recommendations for action.

The University of Malta, Faculty of Dental Surgery research team developed the two questionnaires after discussions with members of Maltese dental associations, dental practice owners, and other OHCP. These discussions took place online, over the phone, and in Maltese OHCP social media groups. Questionnaires were sent to relevant dental associations and the national dental public health unit for endorsement. These same organisations facilitated online distribution to their members via emails stored in their database of members. The associations for each of the three OHCP groups (DS, DH, and DSA) distributed the questionnaire link to the dental workforce. Links were also shared on OHCP social media groups. The results and any resultant guidelines were distributed to the OHCP community through the same channels. The first questionnaire was sent to OHCP who worked in public, private, and university sectors. These dental professionals were recruited through their membership with the Dental Associations in Malta (DAM); all OHCP members of the DAM were invited to respond. Participants were invited to complete the questionnaire between March and May 2020. This questionnaire enquired about work and lifestyle changes during the pandemic in three domains: participant demographic information, current work situation including immediate pandemic response, and planned changes to clinical procedures and environment.

The second questionnaire was designed by identifying areas of concern reported by OHCP working at COVID-19 testing centres. These informal discussions took place in OHCP support groups and social media groups online. Some of the investigators were active members of these groups or worked in the testing centres and clinics. The second questionnaire was sent to OHCP who had volunteered for re-deployment to COVID-19 testing centres. Participants included DS, practice owners and associates, DH, and DSA working in public service, private practice, or at the University of Malta. It asked about the impact of the pandemic on OHCP lifestyle, work and financial obligations, experiences at the testing centres, and mental and emotional well-being. Measures of wellbeing included questions about sources of anxiety and perceived severity of anxiety.

Actual outcome

Questionnaire 1

A total of 105 (30%) of 318 OHCPs responded to the first questionnaire. These included 73 DS, 13 DH, and 17 DSA; these figures are largely representative of the distribution of dental team members in the country.

Many OHCP in Malta reported greatly reduced workload during the first quarter of the pandemic. At the time, 25.2% of the participants reported ceasing all patient contact in the workplace. Almost all (93.0%) DH were not providing clinical dental treatment for patients. A small minority (3.9%) were still providing routine dental care. The remainder were treating only emergencies including swellings, trauma, or severe pain. Most dental services were limited to prescriptions and advice. Some practice owners made significant changes to the facilities, namely ventilation, air filtration/disinfection systems, and suction methods to provide a safer environment for staff and patients (Table 1).

Most participants preferred more extensive equipment and PPE such as ducted forced ventilation, HEPA + UV filtration systems, and full coverage suits.

All groups felt that better masks need to be worn for AGPs when compared to non-AGPs. Preferred PPE for AGPs was FFP2/3 masks and face-shielding, full coverage suits, and possibly overshoes. Female respondents were more likely to opt for extensive PPE.

Updates of national guidance for dental practice took place as the pandemic progressed, based on emergent understanding of the longer-term implications of the virus. The national standards for dental practice now include COVID-19 related updates. The OHCP experiences and concerns outlined in the study informed these updates.

Questionnaire 2

Thirty-six (63%) of 57 re-deployed OHCPs responded to the second questionnaire. Participants included 21 DS (58.3%), seven DH (19.4%), five DSA (13.9%) and three final year dental students (8.3%). Most participants felt that the pandemic brought about additional risk when working at the dental clinic and some opted to decrease their clinical workload to assist in the COVID-19 effort.

Almost three quarters (72.2%) reported major lifestyle changes resulting from the perceived COVID-19 risk associated with redeployment to testing centres. Lifestyle changes included limited meetings with family members and friends, moving to another place of residence outside of the home, and isolating from vulnerable family members within their household. The greatest source of anxiety was worrying about family members contracting COVID-19, not knowing when and how the pandemic would end and uncertainty about delivering the same quantity of dental activity as before the pandemic. Coping mechanisms used by OHCP on the frontline included working/studying to keep busy and to focus less on the pandemic, cooking and eating good/healthy food, increasing exercise, including long walks in the country, mindfulness exercises and meditation to decrease anxiety.

There were significant differences between participants working in the public, private, and academic sectors regarding financial concerns. Participants who worked in private practice were more concerned about ‘not being able to

Table 1. OHCPs current and planned facilities and equipment during the COVID-19 pandemic

Question	*CURRENT % (n=105)*	*PLANNED % (n=105)*	*p*
Ventilation			
a) No ventilation	6.7	0	
b) Open window to the outside	54.4	52.4	
c) Extractor fan achieving less than 6 air changes/ hour	4.8	5.7	0.003*
d) Extractor fan achieving more than 6 air changes/ hour	9.5	14.3	
e) Ducted forced ventilation system achieving a minimum of 6 air changes/hour	9.5	21.9	
f) I don't know	15.1	5.7	
Air Conditioning System			
a) No air conditioning in use	2.9	19	
b) Split systems (indoor/outdoor unit) with recirculation, turned off – not used	22.9	10.5	0.401
c) Split systems (indoor/outdoor unit) with recirculation, in use	21.0	28.6	
d) Air conditioning (cooling) unit integrated with forced ventilation system	19.0	34.3	
e) I don't know	31.4	7.6	
Air Filtration/Disinfection System			
a) No filtration	32.4	29.5	
b) Coarse filter	7.6	7.6	
c) Medium or fine filter	7.6	21	<0.001*
d) HEPA filter	10.5	38.1	
e) Ultraviolet disinfection	3.8	22.9	
f) Electronic field Precipitation	1.0	6.7	
g) I don't know	39.0	6.7	
Suction methods/systems			
a) Saliva ejector only	14.3	6.7	
b) High volume evacuation (suction) used by operator (dentist/hygienist)	54.3	49.5	
c) Dentist has assistant with high volume evacuation (four handed dentistry)	46.7	41.0	=0.002*
d) Hygienist has assistant with high volume evacuation (four handed dentistry)	8.6	16.2	
e) Additional extra-oral suction devices	7.6	29.5	
f) Not applicable to me	5.7	7.6	

*answers ranked in order of increasing safety where possible (worst to best) ** answer

fulfil financial obligations,' than OHCPs in other settings. The Maltese 'fee-per-item' remuneration system in private practice may account for this difference. OHCP in the public and academic sectors are salaried, which negates the financial pressures of delivering a specific quantity of dental activity.

There were high levels of stress and anxiety that illustrated how OHCPs struggled to cope with the changes resulting from the pandemic. Consequently, the national dentistry course will include more study units related to resilience, coping with stress, and psychological support for dental students. Consideration has been given to including these training and support study units at a postgraduate level as part of continued professional development. The aim of these educational packages will be to prepare the workforce for the future as the pandemic continues to affect day-to-day life, and to have in place strategies to adapt and cope in the face of uncertainty and anxiety.

The second wave of the pandemic brought many more new cases, but also a better prepared workforce and the emergence of a 'new normal' for clinical dental practice. The virus and its implications were better understood, and new guidelines were issued in June 2020 for a safe return to work for OHCP.

Challenges addressed

Due to restrictions in face-to-face meeting, developing the questionnaire required adaptations to usual working practice. The investigators were predominantly working from home or based at redeployment sites. Therefore, meetings were conducted exclusively using online telecommunications, emails, and phone calls between researchers, dental team members, and dental associations.

At the start of the pandemic, there was limited evidence available about the best approaches to provide dental treatment safely and reduce risk of transmission to staff and patients. Therefore, it was challenging for some dental practitioners to answer questions about rapidly emerging recommendations and plans for adapting clinical practice to the pandemic. Participants were asked to answer to the best of their knowledge and experience.

Our findings have important implications for dental practice; however, achieving change is challenging especially when resources are scarce. All OHCP preferred more extensive PPE, but it was still difficult for the health department to source PPE due to the global shortage. Following our findings, the Ministry for Health and Health Promotion and Disease Prevention directorate, started sourcing PPE for OHCP in all sectors. These actions supported the provision of safe dental treatment during the global PPE shortage. It was challenging and costly for dental practices to adapt to the pandemic and more research in the future is planned to analyse the effect of the 'new normal' on OHCP.

Future implications

Our findings informed the guidelines for adapting to a *new normal* in dental practice. These guidelines advised dental practices to opt for better PPE, longer appointments,

social distancing in waiting areas, and spaced appointments. The findings will also be used to inform the update to the standards for dental practice and the provision of holistic support for OHCP.

OHCP feel at risk performing AGPs with standard equipment and usual PPE (surgical mask and visor) during the COVID-19 pandemic. Standard PPE in dentistry should be revised to keep the dental workforce safe. This includes use of FFP2/3 masks instead of surgical masks and the use of full-coverage gowns. Changes to clinical practice and equipment bring about increased costs for dental service providers. Salaried dental professionals working in publicly funded services have not experienced the financial repercussions experienced by private practice owners. Ultimately, some of the financial burden will be carried by private practice patients as the additional equipment required to safely deliver dental care causes cost of dental treatment to increase.

Other future considerations beyond the pandemic include greater focus on preventive treatments and Minimally Invasive Dentistry (MID), and designated times and facilities for AGPs to avoid unnecessary time-lags between procedures. These changes pose a burden to practice owners and a threat to the financial viability of dentistry in the longer term (Marcenes, 2020).

The implications of decreased dental service activity during the first wave of the pandemic remains to be fully realised within the coming months. Hospitals have reported lower cases of cancer detection related to population-level reluctance to access health services (The Malta Independent, 2021). Public and private service waiting lists for provision of restorative treatment have increased with resulting treatment being more extensive due to late presentation of dental problems.

Psychological support for professionals working in high-risk environments should be considered, including building resilience in the event of major upheavals in personal and working life. Further recommendations include holding weekly/monthly virtual team meetings and support groups with professional psychotherapists to motivate and encourage OHCP on the frontline. Other recommendations for the future relate to the provision of isolated living areas for OHCP on the frontline who live with vulnerable people or who require a period of self-isolation.

Redeployment of skilled health professionals is essential to improve the pandemic response; however, consideration must be given to avoiding anxiety related to unemployment.

Learning points

Improved communication and preparedness of health authorities and professional bodies is required to provide timely guidance and support for their members when usual practice is disrupted at a national level. OHCP, especially DH, feel that more robust PPE is required to proceed with routine dentistry due to the associated risks of AGPs and transmission of COVID-19. During the pandemic, provision of dental treatment decreased; therefore, an increased focus on prevention is recommended to reduce further inequalities in oral health.

OHCP working on the frontline experienced high stress levels and underwent significant lifestyle and work changes to protect their family and friends. The challenges they experienced during this first quarter of the pandemic informed recommendations for practice owners and public health authorities about the working conditions of OHCP and the support they needed to continue providing dental care for their patients.

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