

**SPECIAL ISSUE**

# Impact of COVID-19 on the mental health of surgeons and coping strategies

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**Abstract**

Unprecedented times call for extraordinary measures. While surgeons across the globe try to comprehend the evolving facade of the COVID-19 pandemic and improvise surgical practice to the best of their ability, the psychological impact of the stress on their own mental health and well-being *has* been underestimated. This paper aims to review the indirect and overt factors that may affect the mental health of a surgeon in the present circumstances. Furthermore, it will aim to highlight key coping mechanisms at an individual and institutional level, so as to mitigate the negative psychological impact on surgeons.

**KEYWORDS**

COVID-19 impact, head neck, mental health, otolaryngology, surgeons

## 1 | INTRODUCTION

Surgical training hones one to be tough, yet calm especially during stressful periods. During these unprecedented times, all clinicians are susceptible to mental stress. Measures should be taken, both at an organizational and at a personal level to provide service while minimizing risks to all health care professionals.

Irrespective of specialty, health care workers fear the reality of the present and uncertainty of the future. It is evident that otolaryngologists (ORL), oral, maxillofacial, and head and neck surgeons are at significant risk of exposure. While all protective measures must be taken and guidance adhered to consciously at all times, maintaining a well-balanced physical and mental health is of paramount importance to function with optimal clarity.

This article will focus on consolidating the preexisting self-care tips and mental health resources, summarize webinars and teleconference proceedings from hard hit areas, and discussions with experts in the field, which will serve as a resource to mitigate the short and long-term psychological effects of the current pandemic.

### 1.1 | The risks of COVID-19 to surgeons

As of May 6, 2020, the Johns Hopkins Coronavirus Resource Center had reported 3 689 887 confirmed cases involving 187 countries worldwide, with 258 160 deaths. Data from Italy revealed that up to 20% of health care workers were potentially infected,<sup>1</sup> and as of April 29, 2020, a total of 154 Italian doctors had succumbed.<sup>2</sup> Surgeons dealing with the upper aerodigestive tract were found to be equally at risk as their counterparts in the emergency room, general ward, and intensive care units.<sup>3</sup> It is notable that the first health care workers to succumb of COVID-19 complications in China, and the UK were both ORL surgeons.<sup>4,5</sup>

High viral loads have been detected in the nose and throat especially after symptom onset.<sup>6</sup> Thus, both office-based and operating theatre-based procedures such as nasal endoscopy, laryngoscopy, tracheostomy, and all transoral interventions are considered to be aerosol generating procedures, and deemed to put the clinician at higher risk of viral infection. In their recent recommendations for the COVID-19 pandemic, the International Head and Neck Scientific

Group (IHNSG) have advised to avoid all forms of aerosol generating procedures and that they should be employed only when it is absolutely necessary.<sup>3</sup>

Issues with personal protective equipment (PPE) have been reported worldwide.<sup>7</sup> While the IHNSG have strongly recommended the use of full PPE for health care personnel involved with procedures of the upper aerodigestive tract,<sup>3</sup> reports of surgical teams having to resort to creating their own PPE using garbage bags, glue, rubber bands, and plastic cover of folders bought from stationary shops have emerged.<sup>8</sup> Health care workers have expressed concerns over acute supply shortages, insufficient time for adequate training, and unavailability of mask fitting test. A survey of 258 ENT surgeons was conducted across the UK during the peak of the pandemic in March 2020, seeking their opinion around PPE-related issues.<sup>9</sup> Among the respondents, 40% stated that they had not attended a PPE training course or that one was unavailable. More worrying was the fact that N95 masks were only available to 27% of ENT surgeons with 95% predicting that PPE stocks would deplete in due course. More than half were aware that there was a COVID-19 protocol in place implemented by their Trust.<sup>9</sup>

## 1.2 | The impact of COVID-19 on mental health

Surgeons and trainee doctors from various surgical disciplines have been redeployed to cover on COVID wards and work in the frontline in hotspot areas to help cope with rising demands attributed to the surge in patients. The stress of having to step out of the comfort zone of usual practice into a high-risk unfamiliar environment at a short notice can be overwhelming, as demonstrated by Lai et al, where 70% and 50% of 1257 health care workers (40% frontline professionals) in China reported symptoms of distress and depression, respectively.<sup>10</sup>

Similarly, Liang et al assessed the mental health status of 59 staff associated with COVID departments and other related departments at the Fifth Affiliated Hospital of Sun Yat-sen University using Zung's self-rating depression scale (SDS) and self-rating anxiety scale (SAS).<sup>11</sup> Although statistically insignificant, younger staff members ( $\leq 30$  years of age) were found to have higher SDS scores. Huang et al conducted a similar assessment of the mental health of frontline clinicians in China.<sup>12</sup> Across 230 responses, the prevalence of anxiety and stress disorders were 23% and 27%, respectively, with higher incidence of SAS scores and stress disorders among female clinicians.<sup>12</sup> On a larger scale, Lv et al found an incidence rate of 34.7% overall anxiety and 24.8% of mild anxiety

across 8028 surveyed doctors and nurses on the frontline.<sup>13</sup>

Further to this, Kang et al explored the impact of mental health and coping strategies of Wuhan medical personnel between January 29, 2020 and February 4, 2020.<sup>14</sup> Employing mental health measures for depression (Patient Health Questionnaire-9 [PHQ-9]), anxiety (Generalized Anxiety Disorder-7 [GAD-7]), and distress symptoms (Impact of Events Scale-Revised [IES-R])—a cohort of 994 staff responded to the study. The results revealed mental health disturbances were prevalent across all participants for the three outcome measures. Individuals reported to be symptomatic across the sub-threshold (36%), mild (34.4%), moderate (22.4%), and severe (6.2%) levels. Importantly, coping strategies were varied across all participants ranging from perusing psychological resources (36.3%), accessing digital psychological recommendations (50.4%), and participating in therapeutic support (17.5%). Individuals who experienced severe disturbances were less likely to access psychological materials or online mental health guidance. These aforementioned studies not only highlight the necessity for greater and earlier support, but also the versatility of resources that should be provided and promoted to frontline clinicians.

Finally, importance should be given to the social and practical factors associated with living through the social-isolation response to the pandemic. Several facets are adversely impacted including socialization with friends and family, regular engagement in leisure activities and procurement of sustenance and other essential items. Fundamentally, there is a detrimental impact on the freedom of movement and a risk of increased anxiety about the health and safety of friends and family. These factors, when consolidated, may affect the surgeon's ability to manage stress on a daily basis. As normal service resumes, there is a potential for a surge in referrals of the "worried well" group, leading to increased demand on services and further work stress.

## 1.3 | The role of the surgeon

As a team leader, manager, or senior clinician, the surgeon is expected to be at his/her best at all times. Personnel who are emotionally distressed may express fear, panic, anger, absenteeism, carelessness in protecting themselves, and inadvertently expose others to avoidable risk. In this context, The British Psychological Society's practical guidance outlines the role that is expected of a leader or manager in supporting staff who are apprehensive or emotionally affected during the COVID-19 pandemic, the various response phases and

**TABLE 1** Hyperlink to websites on self-care tips and resources

|   |
|---|
| The British Psychological Society (guide for leaders and managers)<br><a href="https://www.bps.org.uk/sites/www.bps.org.uk/files/News/News%20-%20Files/Psychological%20needs%20of%20healthcare%20staff.pdf">https://www.bps.org.uk/sites/www.bps.org.uk/files/News/News%20-%20Files/Psychological%20needs%20of%20healthcare%20staff.pdf</a>   |
| ORCHA COVID-19 Health App Formulary<br><a href="https://covid19.orchacare.co.uk/">https://covid19.orchacare.co.uk/</a>  |
| The Academy of Medical Royal Colleges (self-care tips and resources)<br><a href="https://www.aomrc.org.uk/covid-19-mentalwellbeing/">https://www.aomrc.org.uk/covid-19-mentalwellbeing/</a><br><a href="https://www.aomrc.org.uk/covid-19-mentalwellbeing/#1465857781244-0a5bb4ed-a2d0">https://www.aomrc.org.uk/covid-19-mentalwellbeing/#1465857781244-0a5bb4ed-a2d0</a>                                  |
| Patient Health Questionnaire-9 (PHQ-9)<br><a href="https://patient.info/doctor/patient-health-questionnaire-phq-9">https://patient.info/doctor/patient-health-questionnaire-phq-9</a>   |
| Generalized Anxiety Disorder-7 (GAD-7)<br><a href="https://patient.info/doctor/generalised-anxiety-disorder-assessment-gad-7">https://patient.info/doctor/generalised-anxiety-disorder-assessment-gad-7</a>   |
| Impact of Events Scale—Revised (IES-R)<br><a href="https://www.cpft.nhs.uk/PDF/Miscellaneous/PTSD%20top%20tips%20for%20GPs.pdf">https://www.cpft.nhs.uk/PDF/Miscellaneous/PTSD%20top%20tips%20for%20GPs.pdf</a>   |
| Zung's self-assessment scales<br><a href="http://www.mentalhealthministries.net/resources/flyers/zung_scale/zung_scale.pdf">http://www.mentalhealthministries.net/resources/flyers/zung_scale/zung_scale.pdf</a><br><a href="http://www.mentalhealthprofessionalsinc.com/Forms/Zung_Self-Rating_Anxiety_Scale.pdf">http://www.mentalhealthprofessionalsinc.com/Forms/Zung_Self-Rating_Anxiety_Scale.pdf</a> |
| FACE COVID<br><a href="https://www.baps.org.uk/content/uploads/2020/03/FACE-COVID-by-Russ-Harris-pdf.pdf">https://www.baps.org.uk/content/uploads/2020/03/FACE-COVID-by-Russ-Harris-pdf.pdf</a>   |
| Royal College of Psychiatrists (telemedicine consultation)<br><a href="https://www.rcpsych.ac.uk/about-us/responding-to-covid-19/responding-to-covid-19-guidance-for-clinicians/digital-covid-19-guidance-for-clinicians">https://www.rcpsych.ac.uk/about-us/responding-to-covid-19/responding-to-covid-19-guidance-for-clinicians/digital-covid-19-guidance-for-clinicians</a>                             |

the principles on responding well to the needs of the staff (Table 1).

In addition to the above, the surgeon is expected to provide holistic person-centered care in the outpatient setting. In the theatre environment, surgeons may undertake several responsibilities inclusive of allocating resources optimally, mobilizing staffs, managing daily issues while attempting to remain calm and composed, push their own thoughts aside, and continually make rational, crucial, and critical judgments when required to do so.

This pressure is further mounted by the fear of transmitting infection to family members when they return home. Reports have emerged that many doctors have resorted to isolating themselves from their family so as to protect their loved ones.<sup>15</sup> The pre-existing emotional stress is further aggravated by self-isolation.

Continual efforts have been made to create pathways, modify working practices especially where resources are severely constrained, as well as create guidance for the clinical management of COVID-positive patients and, to adapt the current management protocols in the pandemic setting, as evidenced by the constant updates on the ENT UK website.<sup>16</sup> However, there still remains the underlying fear, worry, panic, confusion, uncertainty, depression, grief, and anxiety in many members of the surgical fraternity, all of which have been overlooked and require equal and immediate attention.

#### 1.4 | The dangers of burnout

Prior to COVID-19 concerns, reviews have highlighted that up to 54% of medical professionals in the UK are emotionally exhausted.<sup>17</sup> Alongside fatigue and frustration, emotional exhaustion is a core symptom of burnout in clinicians. Vijendren et al found that within a cohort of 108 ENT surgeons in the UK, 56.5% of respondents were classified at high risk of developing psychological morbidity, with 28.9% of reported scores suggesting burnout.<sup>18</sup> As such, given the additional stresses and disruption caused by COVID-19, clinicians have a greater likelihood of developing burnout in the long-term.<sup>19</sup>

Burnout has several harmful ramifications including substance misuse, absenteeism and medical errors,<sup>20-22</sup> which can escalate to mental health difficulties such as increased suicidal ideation and depression.<sup>23,24</sup> Surprisingly, the sole study investigating burnout prevalence in clinicians during COVID-19 epidemic found a lower frequency of burnout in health care professionals working on the frontline compared to those who were working on wards with uninfected patients.<sup>25</sup> Several limitations were identified, including a small sample size and selection bias of responses (ie, distressed medical professionals may have not responded to the survey). Critically, the authors point out that the timing of their study (March 2020) was not a peak period for COVID-19 in Wuhan, China.

Furthermore, a cross-sectional study by Cai et al explored the psychological burden and coping strategies over 500 frontline medical staff in Hunan. Specifically, researchers found the core facets associated with stress were concerns for their families, personal and patient safety. Compared to other health care workers, doctors felt a higher degree of social and moral responsibility in their vocation and greater scores of anxiety associated with working overtime.<sup>26</sup>

The factors influencing mental health and well-being during COVID-19 pandemic are highlighted in Table 2. A surgeon should ideally be in a strong and stable frame of mind to focus on the work at hand, once the various

**TABLE 2** Factors affecting mental health and well-being during COVID-19 pandemic

|   |
|---|
| High viral load in upper aerodigestive tract posing high risk during exposure |
| Issues with personal protective equipment                                     |
| Stress of having to work outside usual practice environment                   |
| Subconscious fear of contracting illness                                      |
| Grief for loss of a known person/loved one                                    |
| Increased responsibility and leadership role                                  |
| Workload of balancing clinical and management tasks                           |
| Fear of infection transmission to family members                              |
| Decreased freedom of movement   |
| Less availability of businesses for leisure pursuits and sustenance           |

coping mechanisms have been adopted to deal with possible emotional effects of the current pandemic. Irrespective of specialty, Cai et al discovered that knowledge of COVID-19 prevention and transmission, social isolation measures, exhibiting positive self-attitude, and seeking family and peer support were all essential facets that significantly reduced stress and burnout in clinicians.<sup>26</sup>

## 2 | COPING STRATEGIES

### 2.1 | Positive lifestyle behaviors

Capitalizing on coping strategies akin to positive lifestyle behaviors can vastly improve mental health well-being. Eating healthy food, engaging in regular physical activity, practicing good sleep hygiene where possible, and guaranteeing sufficient rest between shifts have been recommended by the World Health Organization.<sup>27</sup> Furthermore, avoidance of harmful coping strategies such as alcohol and drug misuse, consistent rumination about COVID-19, or engaging in high-risk behaviors (ie, gambling/excessive spending) is pivotal due to these activities being more damaging in the long term. Alternatively, social media use for the purpose of maintaining social contact can be considered as a positive lifestyle behavior. However, consuming excessive media coverage pertinent to COVID-19 may impact negatively on mental health, comparable to the relationship found between viewing disaster media coverage and adverse psychological outcomes.<sup>28</sup>

### 2.2 | Mindfulness

In addition to positive lifestyle changes, compliance with mindfulness-based programs have been shown to

reduce symptoms of burnout in doctors.<sup>29</sup> Lebares et al's cross-sectional study indicated dispositional mindfulness was associated with a decreased risk of symptoms associated with burnout, distress, and severe stress in surgeons.<sup>30</sup> Similarly, research has shown that specific relaxation techniques (ie, progressive muscle relaxation) based on elements in mindfulness has been shown to reduce symptoms of anxiety and promote sleep quality in patients with COVID-19.<sup>31</sup>

In this age of exponential technological progress, mobile-health apps are being increasingly used as a source to enhance personal well-being. Mindfulness apps have been shown to significantly strengthen resilience and reduce burnout in medical trainees.<sup>32</sup> The American Psychiatric Association's "app evaluation model" is a framework that rates the efficacy and dangers of mobile and online apps.<sup>33</sup> This is in line with the Organization for the Review of Care and Health Apps (ORCHA), a health app evaluation and advisor organization for NHS Digital and NHS England, who have recently launched a COVID-19 specific health-app formulary supporting health care professionals and patients (Table 1). Pospos et al reviewed data on the effectiveness of these key apps used by clinicians and the general public, recommending the following for specific circumstances: meditation (headspace, guided meditation audios), suicide prevention (Stay Alive, Virtual Hope box), breathing (Breath2Relax), and Web-based Cognitive Behavioral Therapy (MoodGYM, Stress Gym).<sup>34</sup> Specifically, the MoodGYM app has been shown to decrease suicidal ideation amongst medical interns.<sup>35</sup> Given the ease and accessibility of the aforementioned apps, these mindfulness-based platforms act as a virtual space to disconnect, destress, and strengthen resilience.<sup>36,37</sup>

## 3 | EXTERNAL RESOURCES

The following sections will seek to provide resources for clinicians and highlight novel approaches for institutions to consider during this current climate. It should be noted that while extensive, the list of materials is not exhaustive. Consistent modifications to resources are being provided by several websites and services, and the most up-to-date advice should be prioritized.

### 3.1 | Supporting the individual

The Academy of Medical Royal Colleges have dedicated a page on self-care tips and resources to utilize during the pandemic, some of which have been summarized in Table 3 below.

**TABLE 3** Positive measures that can be adopted as an individual

| <b>Personal positive measures (refer Table 1 for links)</b>  |
|--|
| Pause, take a step back and reflect  |
| Retreat into a private space for a moment  |
| Gather your thoughts   |
| Speak to a close entrusted friend  |
| Write/record your feelings and thoughts  |
| Ensure adequate water intake   |
| Eat a balanced meal  |
| Get enough sleep   |
| Get regular exercise   |
| Practice mindfulness   |
| Set realistic goals  |
| Pray as per faith/belief   |
| Crying is a natural coping mechanism of the human body   |
| Engage in an activity that makes you happy for a short period (eg yoga, meditation, dancing, listening to music) |
| Keep updated on the current guidelines and evidence published  |
| Do not be overwhelmed by feed from social media/news reportage   |
| Contact psychology support services at institution if further support is required                                |
| <b>Positive measures for the workplace</b>   |
| Have a checklist and workplan for the day  |
| Use personal protective equipment as per guidelines  |
| Follow institutional guidelines and recommendations  |
| Know your fellow colleagues on duty for the day  |
| Be aware of the issues that need your attention  |

Several validated scales can be employed to assess one's own mental health state. The most prevalent outcome measure in the UK for depression and anxiety would be the PHQ-9 and GAD-7, respectively. Further notice should be given to IES-R as well, a short assessment for traumatic stress symptoms. Alternative measures also include Zung's SDS and SAS. All questionnaires are highlighted in Table 1.

If clinicians struggle with regular compliance for mindfulness apps, practical steps have been created that can be followed, specifically during this period. FACE COVID is a nine-step program that health care professionals can hold in mind, based on key principles of acceptance and commitment therapy.<sup>38</sup> Among the steps outlined involve acknowledging one's thoughts, identifying available resources and instituting the appropriate measures. (Table 1)

### 3.2 | Support from the institution

Health care provider organizations and institutions have a crucial role to play in terms of supporting health care staffs of all backgrounds in dealing with the emotional effects of the pandemic. Financial, digital platform, logistics, and psychological services support may be required according to the needs of every individual. Key mechanisms will be discussed that could be implemented across hospital sites and benefit individuals on managing their mental health well-being during the COVID-19 pandemic.

Schwartz rounds are an evidence-based forum that allows a group of staffs of all backgrounds to reflect and discuss their emotions related to work matters.<sup>39</sup> The positive impact of the Schwartz rounds has been demonstrated, with feedback indicating that emotions were acknowledged, validated, and staff members took pride in being a member of a strong supportive team.<sup>40,41</sup> In light of the present pandemic, this forum can be held on a virtual platform.

Greenberg and colleagues have described measures that may be implemented by health care managers and individuals in supervisory roles to promote and protect mental health among staffs. This includes utilization and enrolling staffs into pre-existing institution-based peer support programmes.<sup>41</sup>

Considerations regarding a shift rota system in place of the regular daily routine may be beneficial for health care professionals.<sup>42</sup> Breaks from the hospital environment for surgeons can be implemented in addition to assembling a secondary workforce from home, should a colleague need to be replaced. Furthermore, psychology consultation and counselling services that are presently being converted into telemedicine services via digital platforms in many institutions, should be easily accessible to staffs and surgeons alike.<sup>43</sup> Emphasis on maintenance of confidentiality is advocated by The Royal College of Psychiatrists. (Table 1)

Chen et al found that mental health can be strengthened creatively by setting up specific teams designed to provide psychologic support (ie, an assistance hotline team, an interventions team for stress-relief activities and a medical team providing online courses).<sup>44</sup> However, the authors stress on the importance of key resources that should be provided by hospitals (ie, comfortable place for rest, necessary PPE training and access to COVID-19 guidance and recommendations). These measures were implemented at the Second Xiangya Hospital of Central South University, the largest tertiary hospital in the epicentre of the Hunan province to support their staffs during the peak of the pandemic.<sup>44</sup> The relevant measures described above have been summarized in Table 4.

**TABLE 4** Role of institutions to support staff mental health and well-being**Measures that may be implemented by institutions**

Institution-based peer support programs

Shift rota system

Psychological online courses

Psychological assistance hotline team

Stress relieving leisure activities

Provide a comfortable place for rest and distress

Provide the necessary personal protective equipment supply and training

Develop detailed COVID-related guidance and recommendations

Virtual staff café

Schwartz rounds

Psychology consultation and counseling services via telemedicine

**4 | CONCLUSIONS**

Health care professionals and provider institutions have a self and corporate responsibility to ensure that the mental health aspect of all staff is adequately monitored and addressed especially during times of global crisis. Long term mental health issues among health care professionals as a result of the pandemic should be minimized. The stigma associated with mental health may result in internalizing unhelpful thoughts and emotions. Early recognition of symptoms of low mood and anxiety allows for interventions from friends, family and the organization. This cycle of support can continue to allow for safer and productive outcomes for surgeons in the workplace. It is imperative that the importance of mental health is championed during the COVID-19 pandemic.

**CONFLICT OF INTEREST**

The authors declare no potential conflict of interest.

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