



# Stress, anxiety, and burnout of orthopaedic surgeons in COVID-19 pandemic

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Published online: 6 April 2022

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## Orthopaedic practice in COVID-19 pandemic

The SARS-CoV-2 pandemic has led to worldwide crisis (from the Greek *krisis* used by Hippocrates and Galen as the “turning point of a disease when an important change takes place, indicating recovery or death”). In this crisis, the medical profession paid a high tribute to the pandemic with lethal cases and major stress exposure for the healthcare personnel [1]. Physicians in the front-line such as internists and anesthesiologists were mostly at risk, not simply of getting infected but of getting the infection in its most severe form. Orthopaedic surgeons were not in the front-line; however, they were definitely affected by the pandemic. Being an orthopaedic surgeon is a complex task that became more subtle and difficult in crisis; in the most affected countries, orthopaedic surgeons were urged to work outside their specific areas of training and expertise [2–4].

The SARS-CoV-2 pandemic impacted deeply the orthopaedic facilities worldwide [5, 6]. Clinical practice changed with fewer patients seen in all health systems. Surgical practice changed as well; elective operations were cancelled, and non-urgent operations were suspended, with a resultant substantial revenue loss for hospitals and surgeons. Surgery was mostly reserved for trauma and life-threatening conditions such as cancer, bone and soft-tissue sarcomas, or severe infections. Additionally, in times of pandemic, most surgeons did not want to operate, and many admitted to change management to non-operative for certain fractures. This was due to the hazards of poor protection and testing including the inability of routine checks on patients, lack of personal protective equipment, poor subsequent psychology

for the risk of getting infected, and increased stress of going to the emergency room for non-urgent things. During the pandemic, we were told that standard surgical face masks do not provide sufficient protection; FFP2 and FFP3 face masks are more protective but they were not available from the start, as well as they were reserved only for front-line infectious diseases specialists. Cancellation of elective surgical operations led to a significant financial loss for the orthopaedic physicians, an increased backlog of numerous orthopaedic operations and substantial waiting list for the patients, and a significant reduction of the number of procedures for residents and trainees. Reassignment of trainees to high-volume institutions in the future may be a plausible approach to mitigate significant training deficits in the trainees worst impacted by the reduction in operative case volume [1–4, 7–13].

Orthopaedic surgeons' incomes changed during COVID-19 pandemic [10, 14, 15]. The rapidly spreading threat imposed an unprecedented burden on the effectiveness and sustainability of the healthcare systems. The COVID-19 pandemic led to an overall increase in visits to clinical emergency and hospitalization numbers, and cancellation of elective surgery and clinical appointments that impacted the financial incomes of the medical practitioners. According to a survey of 975 orthopaedic surgeons in Brazil, approximately 98% of them suffered some monetary impact; 80% had a financial reserve from which 45% could last for three months. Longer the time of professional experience, greater the reduction percentage of the monthly income [14].

An alternative for replacing loss of activity and face-to-face clinics is the virtual consultation. Telemedicine has been used in some countries to deliver orthopaedic care to patients remotely. It is a useful technique for offering advice on for patients' care, pain control, and rehabilitation. However, although it might work for a tendinitis or carpal tunnel syndrome, it cannot be useful if the patient has a fracture. It is our opinion that the use of telemedicine will continue in the post-pandemic era; yet, telemedicine may facilitate the

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care but does not appear to replace in-person clinics [15, 16]. Virtual clinics should be expected to benefit the patients. Virtual visits and care will be especially convenient if the patients live far away, are elderly or disabled, and will probably require more timely interventions. The development of telemedicine was enhanced by the pandemics. However, even if the medical care can be effectively accomplished by virtual prescriptions and avoidance of unnecessary referrals, we doubt on the effectiveness and quality of the virtual nursing [4].

## Stress, anxiety, and burnout of orthopaedic surgeons

The COVID-19 pandemic had a significant impact on the physical and mental health of healthcare professionals and hospital workers, including orthopaedic surgeons. Existing evidence highlighted the high prevalence of anxiety (23.21%), perceived vulnerability, traumatic stress, depression (22.8%), and insomnia (34.32%) of healthcare professionals [17, 18]. Increased stress levels at work in healthcare professionals were associated with fear of contamination and well-being of self and family, poor communication and inadequate planning among healthcare professionals, unclear work instructions and information, deficient or non-functioning equipment, lack of personal protective equipment, exposure to infected patients, work overload, poor infection

control, preexisting medical conditions, and financial liabilities. Table 1 lists the sources of stress and anxiety among health professionals during the pandemic. These important factors induced fear of COVID-19 infection among health professionals, including surgeons [19–21].

Early-phase evidence on COVID-19 pandemic suggested that healthcare professionals experienced mood and sleep disturbances during the outbreaks, stressing the need to establish ways to minimize mental health risks and support interventions aiming at pandemic conditions [18]. In the short-term, this work-related stress can cause fatigue, sleep disorders, mistakes, and moral distress. Long-term effects of high work pressure include burnout, depression, and post-traumatic stress, resulting in dropout due to illness and abandonment of paid employment [22]. In contrast to high workload, stress, and less recovery time, vitality, resilience, and job satisfaction were described as characteristics of professionals that counterbalance work-related stress. These characteristics could strengthen professionals' mental and physical well-being and their retention for work. Therefore, professionals with a high level of vitality and resilience seem more resistant to work under pressure [21].

Stress and anxiety among surgeons is not a new phenomenon resulting in burnout, as well as in suicide in extreme situations [11, 23, 24]. There is a consensus that healthcare professionals are at an increased risk of high levels of stress, anxiety, depression, burnout, addiction, and post-traumatic stress disorders that could have long-term psychological

**Table 1** Reported causes of stress, anxiety, depression, and insomnia of healthcare professionals in COVID-19 pandemic

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Fear of contamination and well-being of self and family
Fear of taking home infection to family members or others
Significant change in daily social and family life
Financial liabilities
Poor communication and inadequate planning among healthcare professionals and hospital workers
Unclear work instructions and information
Lack of access to up-to-date information and communication
Concerns about rapidly changing information
Deficient or non-functioning equipment
Shortage of ventilators and intensive care unit beds
Vaccine availability and emergence of effective drugs and treatment protocols
Lack of specific drugs
Depletion or lack of personal protective equipment
Exposure to infected patients
Work overload
Poor infection control
Lack of knowledge of the disease
Concerns about not being able to provide competent care
Preexisting medical conditions
Deaths among healthcare professionals
Feelings of being inadequately supported
Not having rapid access to testing

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implications [25]. Stress may have been related to the generalized climate of wariness and uncertainty, particularly among healthcare professionals, due to a range of causes such as the rapid spread of COVID-19, the severity of symptoms it can cause in a segment of infected individuals, the lack of knowledge of the disease, and the deaths among healthcare professionals. Stress may also be caused by organizational factors, such as depletion of personal protection equipment, concerns about not being able to provide competent care if deployed to new area, concerns about rapidly changing information, lack of access to up-to-date information and communication, lack of specific drugs, shortage of ventilators and intensive care unit beds necessary to care for the surge of critically ill patients, and significant change in their daily social and family life. Further risk factors for stress include feelings of being inadequately supported, concerns about health of self, fear of taking home infection to family members or others, and not having rapid access to testing through occupational health if needed, being isolated, feelings of uncertainty and social stigmatization, overwhelming workload, or insecure attachment [25]. In a study, 63.5% of surgeons believed that vaccine availability and emergence of effective drug and treatment protocol will reduce their fear of COVID-19, and a significant number of surgeons expressed interest to participate in support groups, which suggest stronger psychological well-being and their adaptability to unprecedented pandemic [26].

Early recognition of anxiety among orthopaedic surgeons is essential. The present pandemic has impacted orthopaedic surgeons psychologically in the form of definite or mild anxiety that is related to factors such as younger age group, working in a primary or secondary healthcare facility, unavailability of adequate personal protective equipment, disruption of life-work balance, and uncertainties regarding return to work [11, 27]. COVID-19 has had a significant impact on all adult reconstruction surgeons including residents, fellows, and early career surgeons, with different impacts on each subgroup. A considerable impact has been identified in young arthroplasty surgeons in training and within the first five years of their career concerning compensation, redeployment, and career advancement opportunities or losses. The younger orthopaedic surgeons are either starting their orthopedic practice or they are in the initial few years of their practice and would need more support, including social and financial [27]. Orthopaedic practices should be conscious of these implications on young arthroplasty surgeons, and additional resources including loans, counseling, or educational support should be offered to this group of surgeons to mitigate the impact of the crisis [28].

Healthcare professionals should be supported during the COVID-19 and similar working conditions to prevent and reduce possible negative consequences. Follow-up and management with targeted interventions and mental health

support are warranted to assess long-term psychological outcomes and alleviate the psychological burden of the pandemic on healthcare professionals. Regular burnout prevention programs should be instituted to decrease emotional exhaustion of the physicians. Maintaining their vitality and resilience will contribute to improvement in healthcare quality.

## Orthopaedic science in COVID-19 pandemia

Orthopaedic surgeons had the opportunity to work with sponsors for research. Unavoidably, due to the pandemic, a large number of orthopaedic studies have been paused; fortunately, at the time of this writing, most have been resumed. Many international and national meetings, congresses, and courses have been cancelled, or rescheduled. Again, at the time of this writing, many meetings have been resumed in physical presence. However, not many orthopedic surgeons eventually attend or are expected to attend these meetings.

Medical education and writing should be resumed as well. It is a responsibility of a medical doctor to provide medical information and transfer knowledge despite casualties. With ethos of diversity and equality, and foreseeing a continuous virtual medical education, SICOT organized the SICOT Virtual Education Program 2020 and the SICOT Hybrid Education Program 2021 in Budapest, Hungary. This year, the 41st SICOT Orthopaedic World Congress will be held in physical presence only in Kuala Lumpur, Malaysia. The 2020 and 2021 SICOT Education Programs consisted of a series of webinars, webcasts and podcasts, and surgical tips and techniques on variable orthopedic surgery by key opinion leaders with high skills in their area of specialization. The SICOT Programme of Innovative Orthopaedic Networking, e-learning, Education and Research (SICOT-PIONEER) was free for all the SICOT members, along with the publication of resources and research stored in a user-friendly repository. It allowed the opportunity to participate in e-learning modules, recorded lectures, and interactive discussion boards on different virtual platforms. The aim was for everyone, in the most remote geographic areas of the world to remain up-to-date with surgical techniques, stay on track with their professional development, and remain connected to a supportive network of like-minded surgeons in these uncertain times.

Over the last two years of the pandemic, we appreciated an unprecedented rise of submissions to International Orthopaedics [29] and SICOT-J [30]. Both journals represent along with the annual World Orthopaedic Congress of SICOT the academic side of our multinational organization. The paper submissions to the journals were interesting material that we, as editors, acknowledge and review carefully. Finding good reviewers in crisis was not easy, but it turned out to be less

difficult compared to other occasions such as summer holidays. We were pleased to see that the journal's reviewers reply promptly and accept a review assignment, and return on time with a good and constructive review. Taking the opportunity from this editorial, we wish to thank our reviewers for their pro bono exceptional work in the review process of the journal with quality, informative, objective, and reliable reviews that aim to improve the submitted papers to the journal [31–36]. The editors and reviewers of the journal opt for quality publications to increase the impact of the journal and the visibility of the submitted/published papers. Because we acknowledge the effort and amount of time that are required to perform a study and to prepare and submit a manuscript, our review process aims to improve and to accept an article. As editors, we support continuous orthopaedic education, and we look forward to your submissions to *International Orthopaedics* [37–39].

SICOT and *International Orthopaedics* are growing. *International Orthopaedics* is the academic face of SICOT that we turn to the world and by that we are largely judged by the orthopaedic community. As a major general scientific journal, *International Orthopaedics* has been a catalyst for change and we foresee this continuing in the future. Although we hope that the pandemic will fade in a favourable way for the orthopaedic surgeons/scientists, we have adapted to an optimal scientific and educational environment for the members of SICOT and the readers of our journals. Regaining efficacy and maintaining process quality and safety while reinstating orthopedic surgery represent the next challenge for the orthopedic specialists. We shall probably face the long-term effects on orthopedic training, practice, and science worldwide.

## Epilogue

COVID-19 presented challenges to the medical profession and impacts to orthopaedic and traumatology practices and surgery. Despite attempts at reduction, there remains a substantial demand on orthopaedic and trauma care. In this setting, protecting healthcare professionals with interventions that promote mental well-being and train healthcare professionals on mental help and crisis management is important. We hope that the observations and lessons from this pandemic will enhance understanding of the mental health risk factors among healthcare professionals including orthopaedic surgeons, and will be useful in mounting a better approach towards similar crises in the future.

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