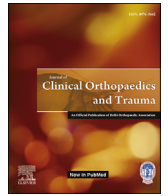




Contents lists available at ScienceDirect

Journal of Clinical Orthopaedics and Trauma

journal homepage: www.elsevier.com/locate/jcotImpact of COVID 19 lockdown on orthopaedic surgeons in India: A survey[☆]Dipit Sahu^{a, b, *}, Tushar Agrawal^c, Vaibhavi Rathod^b, Vaibhav Bagaria^a^a Department of Orthopaedic Surgery, Sir H.N. Reliance Foundation Hospital, Mumbai, India^b Mumbai Shoulder Institute, Mumbai, India^c Aastha Hospital, Kandivali, Mumbai, India

ARTICLE INFO

Article history:

Received 5 May 2020

Received in revised form

8 May 2020

Accepted 8 May 2020

Available online 12 May 2020

Keywords:

Orthopaedic surgeon

Stress

COVID 19

Lockdown

Corona virus

ABSTRACT

Background: In the fight against COVID 19, the government of India announced a 3 weeks lockdown of the entire country of 1.3 billion people on 24th March 2020.

Methods: One week after the lockdown was announced, we conducted an anonymous online survey of the orthopaedic surgeons in India through social media platforms to assess the impact of the lockdown during COVID 19. The survey had a total of 13 questions with (3–5) options and was designed with an aim to understand the perception and the state of mind of the Orthopaedic surgeons in the lockdown situation.

Results: The survey was completed by 611 orthopaedic surgeons from 140 cities in India. There were 22.5% orthopaedic surgeons who said that they were definitely stressed out, and 40.5% who said they were mildly stressed out. As the age decreased, the percentage of orthopaedic surgeons feeling “definitely stressed out” increased. Disruption of life-work balance and uncertainties regarding return to work were other strongly associated factors with the “definitely stressed out” group.

Conclusion: The psychological impact of the lockdown during COVID 19 on orthopaedic surgeons may become a potential concern that will require addressal through open discussion.

Level of evidence: diagnostic level 4.

© 2020 Delhi Orthopedic Association. All rights reserved.

1. Introduction

Coronavirus disease (COVID 19) caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), had started in China in the month of December 2019, but has overwhelmed the health care systems across the world.¹ As of 15th April 2020, 1,914,916 people around the world had tested positive for COVID-19.² Studies from China have shown that mitigation measures like isolation and social distancing were effective ways to stop the spread of the virus.³ In India, by March 24 there were 563 patients who had tested positive for COVID 19.⁴ The government of India had announced a complete lockdown of the entire country for 3 weeks from March 24th and further extended it till 3rd May on 14th

April.⁴ This early lockdown was unprecedented as it was a lockdown of 1.3 billion population,⁵ but a complete lockdown was the only way which was expected to potentially limit the spread of COVID 19. Although essential services were not closed during the lockdown, there were clear guidelines for the orthopaedic surgeons to reduce their outpatient department workflow and non-urgent surgeries.^{6,7} However, the orthopaedic surgeons were still not the frontline workers for care of the COVID patients as the disease had not yet overwhelmed the health services in India.⁸ In India the health system is in the hands of both the government and private sector. Several orthopaedic surgeons in India work only in private corporate hospitals or small hospitals of their own. Shutting down a significant part of their work and a constant threat of coronavirus in the workplace was increasing the stress levels of many physicians. Hence, we undertook an anonymous online survey of orthopaedic surgeons of the country to assess their stress levels and gain valuable information on their perspective and their response during this unique lockdown period due to COVID 19.

[☆] Investigation performed at Mumbai shoulder institute, Mumbai India.

* Corresponding author. Department of Orthopaedic surgery, Sir H.N. Reliance foundation hospital, Mumbai, India.

E-mail address: dip.it@me.com (D. Sahu).

Table 1

Questionnaire survey sent online to orthopaedic surgeons.

1. Please indicate your age in years * *Mark oval*
 <30 30-40 40-50 50-60 60-70 >70
2. Please enter your country & city where you practice * _____
3. Are you in government practice or private practice or both? * *Mark only one oval.*
 Only Government / municipal / public hospital practice
 Only private practice in corporate / non corporate hospitals
 I have my own small hospital / nursing home
 Government and private both
4. Are you involved in frontline care of COVID19 patients? *Mark one oval*
 Yes, I'm directly caring for COVID patients in ICU
 I'm involved in initial screening of patients with symptoms
 No, I'm only looking at the orthopaedics part
 No, I'm not actively caring for any type of patients in the lockdown
5. How stressed out are you w.r.t the lockdown? *Check all that apply.*
 I'm definitely stressed out
 I'm only mildly stressed out
 I'm not stressed out
 I'm actually happy in this lockdown
6. What type of surgeries are you still performing? *Check all that apply.*
 Only trauma surgeries which cannot be avoided
 Trauma and elective surgeries both
 No surgery at all
 I'm performing surgeries like earlier and there has been no change
7. Are you still looking after patients in the outpatient clinic <OPD>? *Mark only one oval.*
 Im looking after only acute trauma
 I'm only looking after the follow up patients
 I'm attending to all patients who express their urgent need to see me
 My opd is normal like earlier
 I'm not attending OPD at all

8. Are you using personal protective gears during the patient care? *Mark only one oval.*
- I'm using normal medical / surgical mask only
- I'm using N95 mask only
- I'm using mask and disposable gowns
- I'm using full PPE as prescribed
9. Are you involved in teaching/ learning during this lockdown period? *Mark only one oval*
- I'm involved in teaching through webinars on zoom
- I'm actively involved in learning through webinars
- I'm not involved in any webinars but I'm learning through other ways
- I'm not learning at all in this period.
10. Are you involved in any research during this lockdown period? *Mark only one oval.*
- I'm actively performing all my pending research
- I've been thinking about doing some research, however it has not started YET
- I hate research
11. Is your life-work balance reversed during the lockdown? *Mark one oval*
- Life-work balance is now completely reversed
- Work-life balance is the same as earlier
- There is NO balance at all
- I don't know where I'm going
12. Do you think this lockdown will affect your professional life eventually? *Mark only one oval.*
- No, I don't think so. Everything will be back to normal as soon as the lockdown is over
- No. I think it will be back to normal after few weeks / month
- Yes, I think it will be hard to recover from the disruption
- Yes, I will never be back to the same again
13. Are you happy with your country's response to COVID19 pandemic *Mark only one oval.*
- I'm very happy with it
- I'm completely unhappy with it.
- I'm ok with it but it could have been better

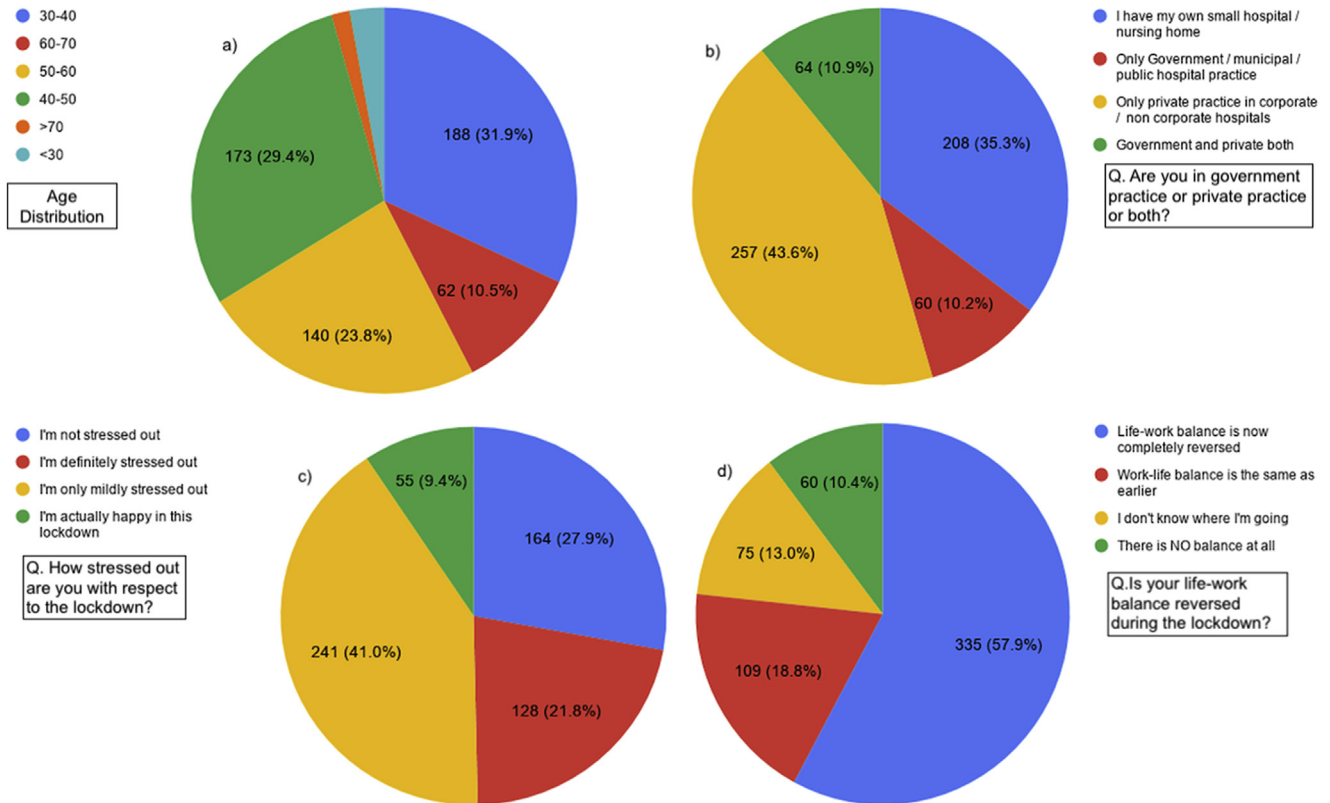


Fig. 1. Pie chart showing percentage distribution of orthopaedic surgeons with a) replies to "Please indicate your age in years" b) replies to "Are you in government practice or private practice or both?" c) replies to "how stressed out are you with respect to the lockdown" d) replies to "Is your life-work balance reversed during the lockdown".

2. Material and methods

From 31st march to 4th April (7th to 12th day of the lockdown announcement), we conducted an online anonymous survey using non-probability snowball sampling technique. The survey consisted of 3 mandated demographic questions and 10 other optional questions that were shared with orthopaedic surgeons across a social media platform (WhatsApp) in India (Table 1). The survey had a total of 13 questions with^{3–5} options and was in a simple language to understand the perception and state of mind of the Orthopaedic surgeons in the lockdown situation. The questionnaire was validated using face validation and content validation techniques of Lawshe criterion⁹ (Content Validity ratio = 1).

2.1. Statistical analysis

All categorical variables were presented as percentages and data was entered in SPSS version 25 (IBM Corp) for statistical analysis. The "definitely stressed out" group was compared with other categorical variables for statistical significance with the help of Chi square test. P value < 0.05 was considered significant.

Funding: No funding was received for this study

3. Results

3.1. General characteristics of the study population

The survey was completed by 611 orthopaedic surgeons from 140 cities in India. Among the respondents, 17 (2.8%) were below 30

years of age, 192 (31.4%) were aged 30–40 years, 181 (29.6%) were aged 40–50 years, 146 (23.9%) were aged 50–60 years, 66 (10.8%) were between the age group of 60–70 years and 9 (1.5%) surgeons were above 70 years (Fig. 1a). Out of the total 611 orthopaedic surgeons, 266 (43.5%) were working in a private corporate or non-corporate hospital, 217 (35.5%) had their own small hospital, 66 (10.8%) were working in both government as well private hospitals and 62 (10.1%) were practicing only in government, municipal or public hospitals (Fig. 1b).

3.2. State of mind of the orthopaedic surgeons

One hundred and thirty-seven orthopaedic surgeons (22.5%) said they were definitely stressed out, 247 (40.5%) were mildly stressed, 170 surgeons (27.9%) were not stressed at all, and 56 of them (9.2%) were actually happy during the lockdown period (Fig. 1c).

Majority of the orthopaedic surgeons felt that their work life balance was completely reversed [335 (57.9%)]. A lesser number also felt that their work life balance was the same as earlier [109 (18.8%)], or there was no balance at all [60 (10.4%)] and some also felt that "they did not know where they were going" during this period [75 (13.0%)] (Fig. 1d).

A high number of orthopaedic surgeons [321 (54.7%)] thought that everything would be back to normal after a few weeks or months after the lockdown period, but some also thought that everything will be back to normal as soon as the lockdown ends [169 (28.8%)], or some thought it will hard to recover from the disruption caused by the lockdown [86 (14.7%)], while few of them

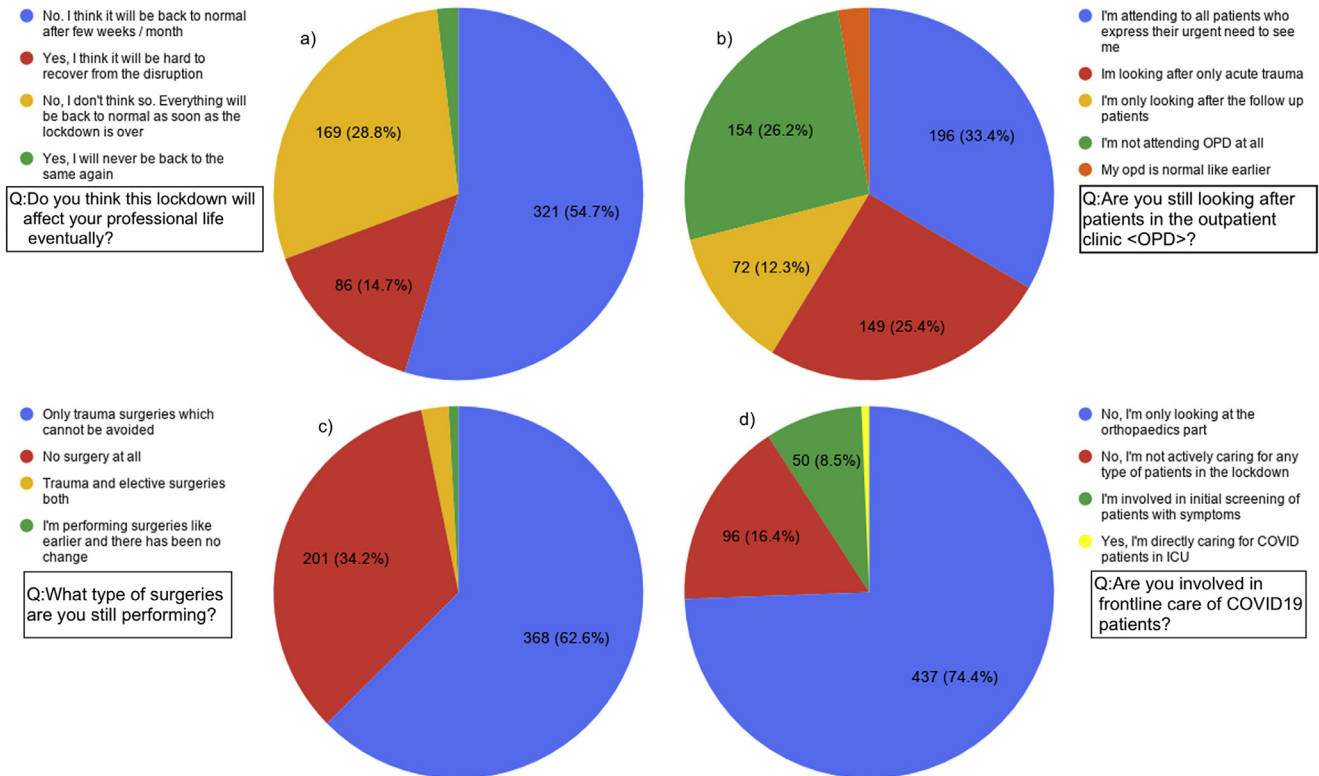


Fig. 2. Pie chart showing percentage distribution of orthopaedic surgeons with a) replies to “Do you think this lockdown will affect your professional life eventually?” b) replies to “Are you still looking after patients in the outpatient clinic <OPD>??” c) replies to “What type of surgeries are you still performing?” d) replies to “Are you involved in frontline care of COVID19 patients?”.

thought they will never get back to the same again. [11 (1.9%)] (Fig. 2a).

3.3. Patient care activities

In the outpatient department (OPD) care of the patients, most of the orthopaedic surgeons were attending to patients who expressed their urgent need to see them [201(33%)], not attending the OPD at all [162(26.6%)] or only looking after acute trauma [155(25.5%)] (Fig. 2b). A large number of orthopaedic surgeons were performing unavoidable trauma surgeries [371 (62.1%)] or no surgeries [212 (34.8%)] during this period (Fig. 2c). Similarly, majority of the Orthopaedic surgeons were only looking after the orthopaedic part [455 (74.4%)] or were not actively caring for any type of patients [100 (16.4%)] and only few [4 (0.7%)] of them were directly taking care of COVID patients (Fig. 2d).

3.4. Other activities

Several orthopaedic surgeons were actively involved in teaching [59 (10.1%)] and learning [156 (26.7%)] through webinars or learning via other means [237 (40.6%)] while some of them were not learning at all in this period. [132 (22.6%)] (Fig. 3a).

During this period of lockdown, a large number of orthopaedic surgeons were thinking of doing some research [399 (70.2%)] or actively conducting their pending research [88 (15.5%)] while some responded that they hated research. [81 (14.3%)] (Fig. 3b).

Many orthopaedic surgeons were using a normal medical/surgical mask [349(61.4%)], or N95 mask while attending patients

[137(24.1%)], while few of them were using masks and disposable gowns [78(13.7%)] or full PPE as prescribed. [4(0.7%)] (Fig. 3c).

Majority of the orthopaedic surgeons were either “ok with their country's response and thought it could be better” [295(50.3%)] or were happy with their country's response to the fight against COVID 19 [271(46.2%)] while a few of them were unhappy with it [20(3.4%)](Fig. 3d).

3.5. Statistical association with the definitely stressed out group

Age, effect of the lockdown on the professional lives of the surgeons and impact on the work life balance were statistically significantly associated with the “definitely stressed out” category during this period. ($p < 0.001$ for all three interactions).

Although all age groups felt they were “definitely stressed out”, there was a significantly higher percentage in the younger age groups than the older age group, with the percentage decreasing as the age increased (Fig. 4).

There was a significantly higher percentage of orthopaedic surgeons in the “it will be hard to recover from the disruption” (45.1%) group and “they will never recover” (41.7%) group (Fig. 5) who felt that they were definitely stressed out than in the group who thought they might recover once the lockdown is lifted (13.8%).

There were also significantly more orthopaedic surgeons in “there is no balance” (34.4%) and “did not know where they were going” (33.3%) group who felt that they were definitely stressed out (Fig. 6).

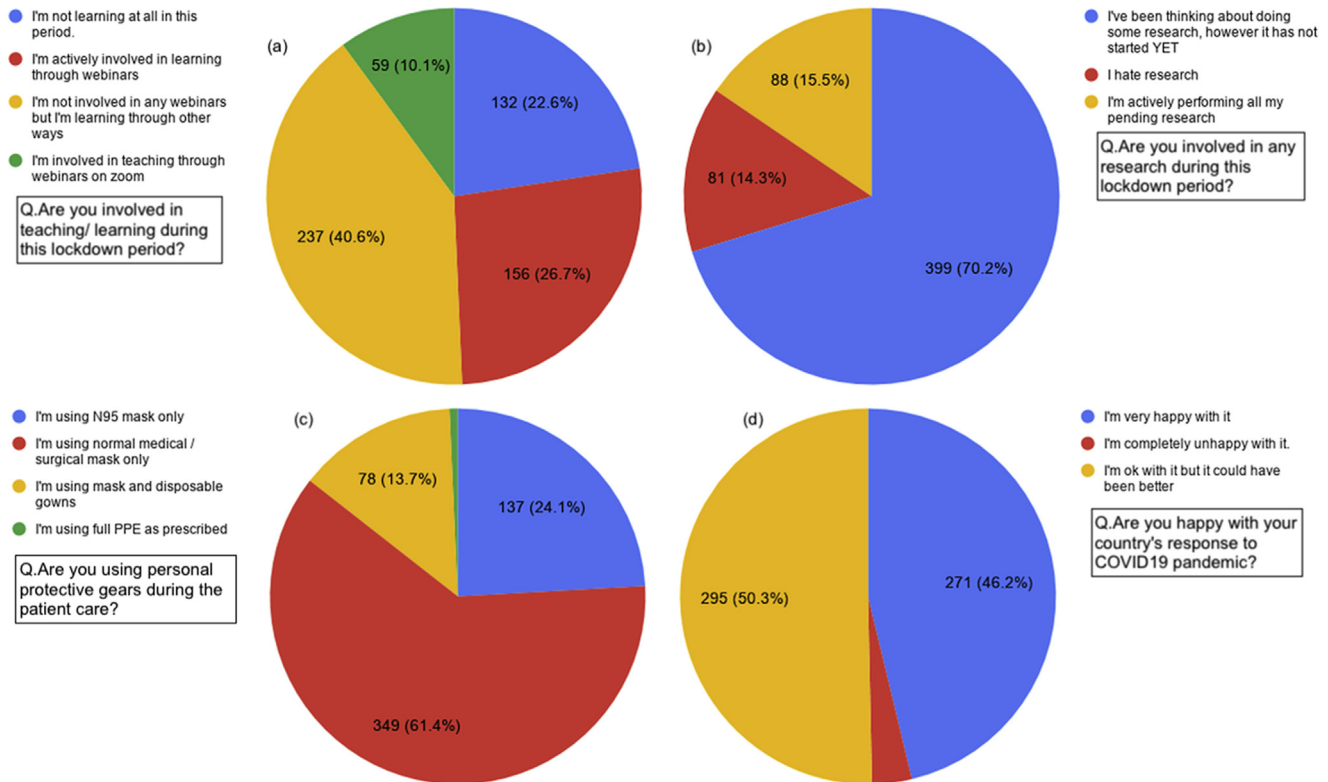


Fig. 3. Pie chart showing percentage distribution of orthopaedic surgeons with a) replies to “Are you involved in teaching/learning during this lockdown period?” b) replies to “Are you involved in any research during this lockdown period??” c) replies to “Are you using personal protective gears during the patient care?” d) replies to “Are you happy with your country's response to COVID19 pandemic”.

4. Discussion

Our study showed that 22.5% of the orthopaedic surgeons were definitely stressed out and this was significantly more in the younger age groups. The younger Orthopaedic population are either starting out in their Orthopaedic practice or they are in the initial few years of their practice and would need more support in these extraordinary times. A complete lockdown and social distancing also means removal of significant social and financial support.¹⁰ Although loss of social support may also affect the older age groups, but an uncertain future may be adversely affecting the younger age group. A previous study on COVID 19 lockdown by Wang et al. also showed that people younger than 40 years had a higher risk of anxiety during this period.¹¹

Significantly more orthopaedic surgeons who were “definitely stressed out” also felt that their professional life will never be back to the same way again or it will be hard to recover from the disruption. The stress may be due to loss of practice, financial burden, family health risk or the anxiety that they may be asked to work on the frontline care.¹² Many physicians have had to close their offices and their hospitals have to shut down, but they are still keeping their support staff employed.¹² All these changes were increasing the mental stress in the Orthopaedic fraternity.

The life work balance has also been disrupted with no balance at all in this lockdown and this factor was significantly associated with the feeling that they were definitely stressed out. Family support and emotional balance may be disrupted due to social distancing in lockdown which may further aggravate the mental stress.¹⁰ There may also be concerns of risking the health of their family members

and unknowingly contracting the infection through the workplace as a study by Guo et al. showed that 26 orthopaedic surgeons were infected by COVID 19 during patient care activity.¹³ The rate of transmission to family members in the same series was 20.8% and this transmission caused great psychological stress to the Orthopaedic surgeons.

The lockdown due to COVID 19 has been called the largest psychological experiment by some psychologists.⁵ A lockdown of 1.3 billion people in India (2.6 billion in the world) is a type of mass quarantine and such lockdowns have been done earlier in the Middle east countries during Ebola and Severe acute respiratory syndrome (SARS) outbreaks.^{5,10} A previous study on Belgian population showed rising levels of stress from 15 to 25% during the lockdown.⁵ The possible factors leading to psychological stress have been loss of financial support, emotional stress, fear of falling sick and health risks for the family.¹⁰ Irritability, anger, acute stress disorder and high anxiety levels have been associated with quarantines of health care workers.¹⁴

There is a 15.6% prevalence of clinical depression in the physician population.¹⁵ Hebert-Davies et al. had acknowledged that our orthopaedic profession is exposed to mental health vulnerabilities and more open conversations are needed.¹⁶ There is also a stigma attached to doctors who seek help for mental stress due to professional or personal reasons¹⁶⁽¹⁵⁾. We are expected to be in control of our professional life and our personal life.¹⁶ In this unique lockdown situation, even though the orthopaedic surgeons are not the frontline workers, their stress may be due to professional, personal and financial factors that cannot be ignored. Since the infection has steadily increased and the lockdown has been extended twice in the

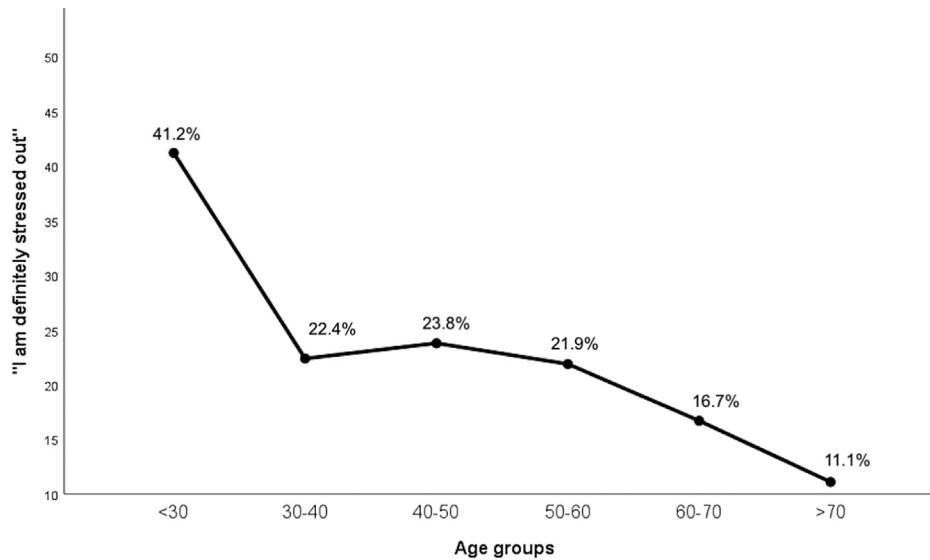


Fig. 4. Percentage of orthopaedic surgeons who said “I’m definitely stressed out” in each age group. The percentage decreased as the age increased ($p < 0.001$).

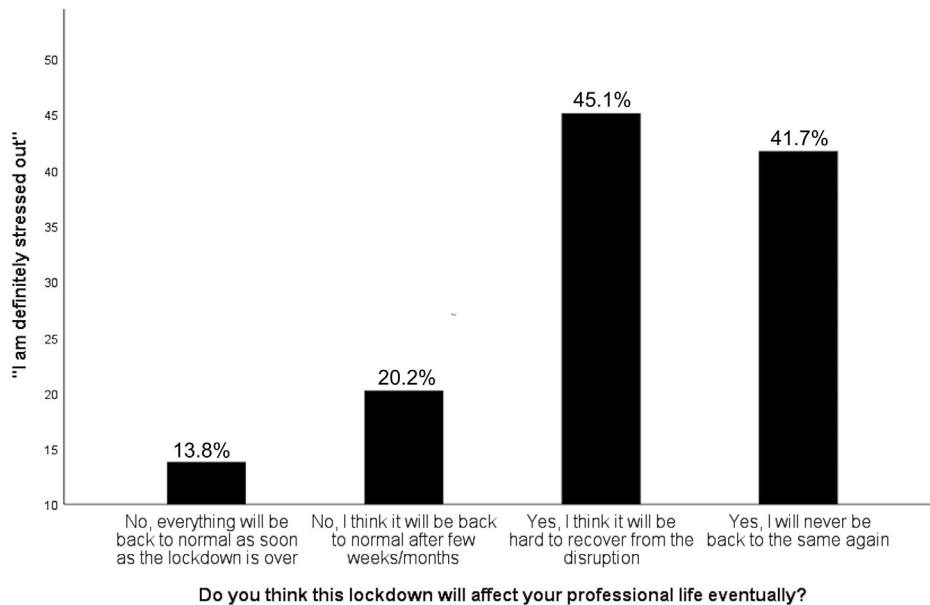


Fig. 5. Significantly higher percentage of orthopaedic surgeons in the groups “Yes, I think it will be hard to recover from the disruption” and “Yes, I will never be back to the same again” said “I’m definitely stressed out” ($p < 0.001$).

absence of any exit strategy, the future looks even more uncertain now. The community spread of the infection has infected several medical personnel, sometimes unknowingly and sometimes in the line of duty even after donning the full PPE. To that effect, the government regulations have been clouded in ambiguity. Several hospitals were asked to close down completely after exposure to an infected patient. Then, there were instances of FIR being filed against the doctors after they got infected during their outpatient clinic work. Although the recent orders under the ESMA (essential services maintenance act) indicated that all clinics and hospitals should remain open, the private hospitals were instructed not to ask for COVID testing for surgical patients. But the Orthopaedic surgeons are still looking after trauma work and will extend their services to active COVID care as needed. As doctors we have learned to always care for the sick, and as surgeons we are conditioned to be in

leadership positions, but the fact remains that anxiety, apprehension and stress about the right course of professional action in light of the above information, continues to increase. However, we do hope that maybe if we have support groups, occasional conversations, a lot of these burdens and stress will be shared and hopefully lessened. We may be asked to work on the frontlines in due course of time, and we agree with Dyer et al. that this would be a privilege to help the society.¹² These are the times when close cooperation, collaborative efforts, teamwork and open communication lines will be needed among the colleagues, with greater support to be extended to the younger members. Hopefully, soon enough we will all come out of the lockdown and the pandemic and would have endured its effect with resilience and vigor.

We recognize certain limitations in our study. The number of Orthopaedic surgeon surveyed (611) may seem an inadequate

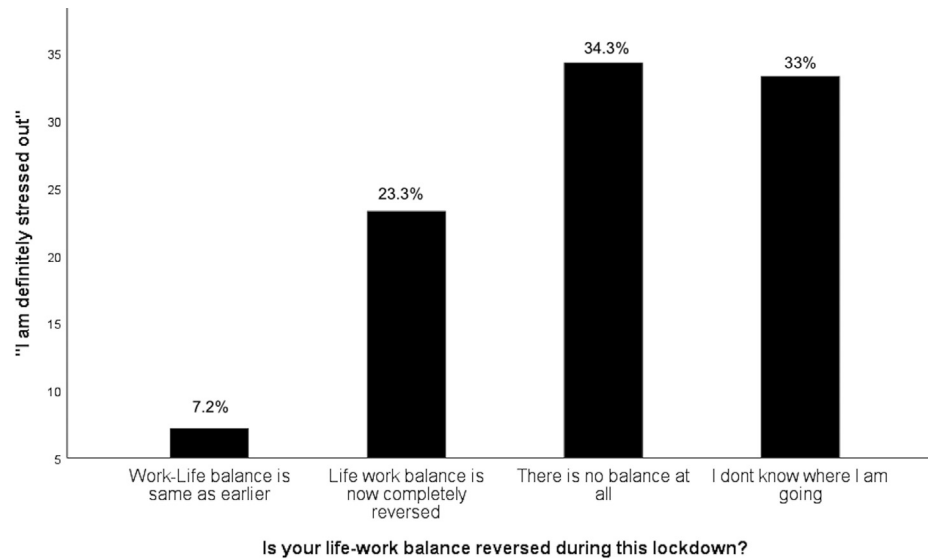


Fig. 6. Significantly higher percentage of orthopaedic surgeons in the groups “There is no balance at all” and “I don't know where I'm going” said “I'm definitely stressed out” ($p < 0.001$).

representation of the total 12000 orthopaedic surgeons in India (according to IOA membership),¹⁷ however all the recently published COVID surveys that represented a much bigger population have had 600–650 responses.^{11,18} Hence, not only, is this an adequate number for representing the relative smaller community of Indian Orthopaedic surgeons, but also, our strength of survey is bigger than any other published recent surveys of Orthopaedic surgeons. Another limitation is that the non-response rate could not be calculated, and it is possible that people who were experiencing psychological symptoms were more likely to respond to the survey. The number of orthopaedic surgeons who are stressed out may change as the lockdown extends further than 3 weeks and the pandemic spreads wider. We only examined how stressed the orthopaedic surgeons were through online surveys and not a face to face questionnaire. However, since our survey was anonymous, we believe that the participants were truly honest in declaring how they were feeling.

5. Conclusion

In the next few days, we may see other mitigation steps and extended lockdown measures in order to contain the spread of the COVID 19 pandemic. In our study, 22.5% of Orthopaedic surgeons said they were definitely stressed out in this lockdown period due to COVID 19. Even though the orthopaedic surgeons are not in the frontline care, their concerns should not be ignored. Since much of the future still remains uncertain, we may need to have support groups with open conversations to be better prepared to deal with the psychological aftermaths.

CRedit authorship contribution statement

Dipit Sahu: Conceptualization, Methodology, Writing - original draft, Data curation, Supervision, Writing - review & editing. **Tushar Agrawal:** Data curation, Writing - review & editing, Data curation, Methodology. **Vaibhavi Rathod:** Software, Supervision, Writing - review & editing. **Vaibhav Bagaria:** Writing - review & editing, Supervision, Data curation.

References

- Evidence C, Strategies E. TI novel coronavirus COVID-19. *J Bone Jt Surg - Am.* 2020;1–11.
- WHO [Internet]. *Coronavirus disease 2019 (COVID-19)*. 2019. 2020. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200415-sitrep-86-covid-19.pdf?sfvrsn=equals;c615ea20_6.
- Azman AS, Luquero FJ. Comment from China : hope and lessons for COVID-19 control [Internet]. *Lancet Infect Dis.* 2020;2019(20). [https://doi.org/10.1016/S1473-3099\(20\)30264-4](https://doi.org/10.1016/S1473-3099(20)30264-4), 2019–20. Available from:.
- Pulla P. Covid-19 : India imposes lockdown for 21 days and. 2020, 1251(March) <https://doi.org/10.1136/bmj.m1251>; 2020.
- Hoof DE Van. *Lockdown Is the World's Biggest Psychological Experiment - and We Will Pay the Price* [Internet]. World Economic Forum; 2020. Available from: <https://www.weforum.org/agenda/2020/04/this-is-the-psychological-side-of-the-covid-19-pandemic-that-were-ignoring/>.
- Boa T, Nhse T, Guides S, et al. *Management of Patients with Urgent Orthopaedic Conditions and Trauma during the Coronavirus Pandemic*. 2020;1–6 (March).
- Indian orthopaedic association 's suggestions for orthopaedic practice during CoVid-19 pandemic. Available from: <https://www.ioaindia.org/>.
- Surgery J, Halawi MJ, Wang DD. What ' S Important : Weathering the COVID-19 Crisis Time for Leadership , Vigilance , and Unity. :0–1.
- Ayre C, Scally AJ. Critical values for lawshe's content validity ratio [Internet]. *Meas Eval Counsel Dev*; 2014 Jan 8 [cited 2020 May 4];47(1):79–86. Available from: <https://www.tandfonline.com/doi/full/10.1177/0748175613513808>.
- Brooks SK, Webster RK, Smith LE, et al. Rapid Review the psychological impact of quarantine and how to reduce it : rapid review of the evidence [Internet]. *Lancet.* 2020;395(10227):912–920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8). Available from:.
- Wang Y, Di Y, Ye J, Wei W. Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China [Internet]. *Psychol Health Med.* 2020;8506:1–10. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/32223317>.
- Dyer GSM, Harris MB. What ' S Important : Facing Fear in the Time of COVID-19. :0–1.
- Guo X, Wang J, Hu D, Wu L. *The orthopaedic forum survey of COVID-19 disease among orthopaedic surgeons in Wuhan, People ' s Republic of China*. 2020;1–15.
- Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw open.* 2020;3(3), e203976.
- Wible P. Healing our healers: preventing physician suicide. Keynote address at Psych Congress;CA 2019 [Internet]. Available from: <https://www.idealmedicalcare.org/preventing-happy-doctor-suicides/>.
- Hebert-davies J, Little MM, Learned JR, Spittler CA. Orthopaedic AR TI what ' s Important : it ' s time to talk about mental health 2020;1:1–2.
- IOA. In: *IOA Newsletter 2018*. vol. 63. IOA; 2018.
- Roy D, Tripathy S, Kar SK, Sharma N, Verma SK, Kaushal V. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic [Internet]. *Asian J Psychiatr.* 2020;51:102083. <https://doi.org/10.1016/j.ajp.2020.102083>. Available from:.