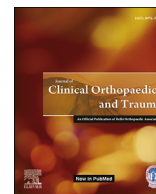




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## Orthopaedic surgeons and covid- 19, the fear quotient “What are we really worried about?”

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## ABSTRACT

**Introduction:** The COVID-19 pandemic swiftly affected the world in a very short duration, and the orthopaedic surgery practice is no exception. Unprecedented lockdown was enforced in many countries including India as a first response to contain virus and its spread. That led to a lot of confusion, fear, anxiety among general population as well as orthopaedic surgeons. We have studied the impact of this pandemic with fear as a denominator and how it affected the practice and health of orthopaedic surgeons.

**Methods:** Cross-sectional web-based national survey distributed to orthopaedic surgeons by social media platform over period of one month from July 25, 2020 to August 25, 2020.

**Results:** Among 1065 responders, 731 completed the survey. Among 1065 responders, 27.22% had orthopaedic practice experience ranging from 10 to 20 years while 21.48% had orthopaedic experience more than 20 years. Scientific literature as well as social media and news media contributed significantly to Covid-19 knowledge and fear. 98.88% were worried about contracting disease by themselves or by family members. 89.47% were worried due to financial loss due to pandemic. 37 (5.06%) surgeons had a FCV- 19 scale (Fear for Covid-19 scale) score more than 60 (8.2%) while 291 (39.8%) had 41–60 and score was <40 in 403 (55.12%) surgeons. According to survey vaccine availability and emergence of effective drug and treatment protocol will alleviate most of the concerns. 70.81% felt mildly depressed during pandemic times while 65.33% surgeons expressed interest in joining discussion groups and meetings encouraging positive thoughts.

**Conclusion:** Financial liabilities and well-being of self and family are important factors which induced fear of Covid-19 among orthopaedic surgeons. Positive discussions and timely information from credible sources regarding prevention, diagnosis and management and will reduce psychological burden due to Covid-19, also this will help to form policies for future pandemics.

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## 1. Introduction –

COVID-19 or SARS-CoV-2 was first identified as a potential threat in China in December 2019,<sup>1,2</sup> and on March 11, 2020 declared as a pandemic by the World Health Organization.<sup>3</sup> Indian government announced a nationwide lockdown on March 24 2020 to contain the pandemic which lasted till the May 31, 2020 after which phased reopening began in first week of June. On the day of beginning of this survey total number of positive cases 13,70,339 as

of July 25. All essential, emergency and healthcare services were functional throughout the lockdown including orthopaedic and trauma services. However, due to the massive burden on health systems around the world, COVID-19 has heavily impacted all aspects of the medical practice including specialties that are not directly related to it such as orthopaedic surgery. Elective surgical procedures were postponed in order to reduce the burden on health systems and allow for more availability of hospital beds for COVID-19 patients and Orthopaedic surgery practice was no exception to that.<sup>4</sup> Although the new coronavirus disease is not an orthopaedic condition per se, given the high number of infected individuals in the community, a portion of patients with COVID-19 require orthopaedic care. Orthopaedic surgeons also responded to

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this pandemic and served as frontline health-workers according to need.<sup>5,6</sup>

Fear is an adaptive response to uncertainty and potential danger and the uncertainty about nature of disease has led to wide spread fear of loss of health, life and livelihood across the society. As routine orthopaedic work is affected and this risk to self, family as well as earning potential prevails, we undertook this online survey to assess knowledge among practicing orthopaedic surgeons regarding COVID 19, how it affects their practice, socioeconomic burden perceived by them, fear of the disease and gain information on their perspective and their response to the adversity. One would expect more worry and fear if the person perceives more personal threat (e.g., because of worse general health) or threat to loved ones (e.g., spouse, parents, children).<sup>7,8</sup>

In all, the goal of our study was to assess the orthopaedic surgeon's fears and concerns regarding the coronavirus pandemic, its effect on their practice and establish contributory factors for the same. The responses will be put into the already established FCV19 scale.

## 2. Materials and methods

Cross-sectional web-based national survey distributed to orthopaedic surgeons by social media platform over period of one month from July 25, 2020 to August 25, 2020.

A fear of COVID-19 scale questionnaire was included in online questions to quantify fear component. Comparison of various responses made to COVID-19 fear scale score.

### 2.1. Survey instrument

The 42-item self-administered questionnaire was designed based on the literature review of previous viral outbreaks<sup>9,10</sup> and the survey comprised two sections. The first section involved demographic and workplace characteristics of the participants while the second part analyzed source of infection, implications of COVID-19 and Fear of Covid-19 (FCV-19) scale.<sup>11</sup> Fear scale contains following questions. Participants' level of agreement was assessed by a five – item Likert type scale. These answers were “strongly disagree,” “disagree,” “neutral” “agree” to “strongly agree” and respondent has to select one of them. The least score possible for each question is 1, and the maximum is 5. A total score could be calculated by adding up each item score which ranged from 7 to 35.

### 2.2. Survey distribution

The survey was distributed via various social media platforms like what's-app, telegram, Facebook and email to orthopaedic surgeons all over India.

### 2.3. Statistical analysis

All categorical variables were presented as percentages. Data was analyzed in SPSS version 25 (IBM Corp) for statistical analysis. P value < 0.05 was considered significant.

## 3. Results

A total of 1065 respondents participated in the survey. Inclusion criteria were: (a) Orthopaedic surgeon, and (b) Living in India. All participants voluntarily completed the anonymous survey and gave their informed consent within the survey. Out of 1065 respondents, 731 surgeons completed the survey.

## 4. Working place –

17.5% (n-130) of the respondents were hospital owners and practiced at the same hospital exclusively .14.2% (n-104) owned a hospital but also consulted at other places .22.7% (n-166) work at a single corporate hospital. 14.5% (n- 106) work at multiple corporate hospitals .12.7% (n-93) work at a single government hospital .8.7% (n-64) are working at government as well as multiple corporate hospital .9.5% (n-70) are working in elsewhere or in other combinations not mentioned in the options.

### 4.1. Financial and family aspect -

54.9% (n-401) surgeons are sole earning member of their family while 70.6 (n-516) have dependent children and 66.1 (n-483) have dependent senior citizens. 65.1 (n-476) have housing loans while 58.8% (n-430) have loans other than housing loan. Only 26.5% (n-194) are paying rent for clinic/hospital while 60.2% (n-440) employed staff whom they have to pay in pandemic.

### 4.2. Co-morbidity-

Out of 731 surgeons, majority of orthopaedic surgeons 70% don't have any medical illness. While 15.3% (n-112) are affected by hypertension followed by 9.4% (n-69) have diabetes. 3.4% (n-25) have asthma while 4.8% (n-35) are chronic smoker.

### 4.3. COVID-19 exposure-

36% (n-263) were involved in management of COVID-19 positive patients and 5.3% themselves (n-39) tested positive for COVID-19. At the same time 38.7% (n-283) had near ones tested COVID-19 positive.

### 4.4. Source of information –

69.2% (n-506) preferred to visit scientific literature for COVID-19 information. According to survey 50.07% of the surgeon gathered COVID-19 pandemic information from News Paper/News Channels but for larger proportion of surgeons (65.98%) source of information was Social Media [WhatsApp, Facebook, etc.].

8.45% feel that the pandemic will last 3 months or more. 32.06% feel it will last 6 months or more, 14.67% feel it will last 9 months or more and 14.51% say up to 12 months and 30.30% say > 12 months.

Risk perception-[Table 1](#) (response of orthopaedic surgeons to COVID-19 terms of worry).

### 4.5. Vaccine and treatment-

63.5% surgeons believed that vaccine availability will reduce fear of COVID-19.

### 4.6. Group statistics

Fear of COVID-19 is found to be associated with fear for loved ones. Fear COVID-19 score was more in people with dependent children (p value – 0.013). Financial loan and knowledge acquisition from scientific source were also found to be positively associated with fear score.

The Outcome variable COVID-19 Score Divided in the two groups by using the Median of the score is 16. The Score more than 16 is considered Significant Fear.

Univariate analysis performed by using the Chi-square test and Multivariate analysis performed by using the Binary logistic regression.

**Table 1**  
(Response of orthopaedic surgeons to COVID-19 terms of worry).

|   | Number of cases n (%) |          |                   |       |              |
|---|-----------------------|----------|-------------------|-------|--------------|
|   | Not at All            | A Little | A Moderate Amount | A Lot | A Great deal |
| I am worried about me and my family getting infected  | 1.1                   | 16.4     | 37                | 23.6  | 21.9         |
| I am worried about being quarantined  | 15.9                  | 27.4     | 27.4              | 17.9  | 11.3         |
| I am worried about having severe disease requiring medical management                                       | 13.2                  | 26.6     | 29.3              | 16.9  | 13.9         |
| I am worried about non availability of drugs and ICU beds in case I or my family members get severe disease | 8.8                   | 20.1     | 26.2              | 20.1  | 24.9         |
| I am worried about financial losses during Pandemic Period  | 10.5                  | 25.4     | 26.8              | 19.9  | 17.4         |
| I am worried about loss of my clinical practice during this pandemic  | 17.1                  | 25.2     | 27.3              | 16.9  | 13.6         |
| I am worried about inability of Government authorities to effectively control covid-19                      | 4.8                   | 14.8     | 26.3              | 27.6  | 26.5         |
| I am worried about my own inability to control the disease spread within my sphere of influence             | 17.7                  | 29.7     | 29.5              | 15.6  | 7.5          |
| I am worried about loss of social life and freedom to travel  | 13.4                  | 26.8     | 23.1              | 23.1  | 13.6         |
| I am worried about uncertainty about availability of vaccine or cure of covid-19                            | 9.3                   | 24.9     | 30.5              | 21.7  | 13.7         |

With respect to univariate analysis, it was observed that (Table 2) fear score is higher with respect to factors such as single earning member in the family, dependent children and senior citizens, and significant loan. Only 5.6% (n=37) surgeons had score more than 60 while 39.80% (n=291) has 41–60 and score was <40 in 55.12% (n=403) surgeons. This suggested that more than respondents had score below mean while only 5.6% surgeons had significant FCV19 scale score. (Table 5)

Multivariate analysis Table 3 multivariate analysis of risk factors.

By using Multivariate analysis only two factors were found to increase fear, Single earning member in the family and Significant loan. Table 4

**5. Discussion**

A pandemic is a public health emergency and a life-threatening condition with an impact on community’s normal functioning. Even before the Covid-19 pandemic has reached India and moreover during the pandemic, a psychological burden was imposed on the medical fraternity. Anxiety, fear and uncertainty are common psychological responses to this frightening condition<sup>12,13</sup>.

Pandemics are frequently marked by uncertainty, confusion and a sense of urgency<sup>14</sup> In various stages of pandemic, there is wide-spread uncertainty about odds and becoming a victim of disease, possible misinformation and various treatment modalities for prevention as well as cure. Surgeons, to a large extent, are societal examples of fear free people, and within the surgical communities orthopaedic community in regarded as more adaptable to change. In a study by Klein, Guy et al. stated, almost 72.5% orthopaedic surgeons are motivated by and accepts new challenges.<sup>15</sup> In our study also, only small portion of orthopaedic surgeons had FCV-19 scale score more than 60, this reflects the fact that orthopaedic specialty, despite of unprecedented challenges, adapts and responds without much fear and stands differently. Personal financial struggle may occur if a family’s primary earner is unable to work

because of illness and financial threats to oneself and loved ones. The current report investigated predictors of fear of the coronavirus outbreak on orthopaedics surgeons in an online survey study. COVID-19 impacted orthopaedic surgeons in a difficult way as it came without any warning or preparedness, also most of them forced to do changes in their outpatient practice, reschedule/cancel appointments and surgeries. Exposure to the COVID-19 patients in hospitals, fear of quarantine, the death or illness of a loved one from COVID-19, and increased self-perception of danger by the severity of the virus can all negatively impact the mental well-being of health professionals. A study done in Wuhan among orthopaedic surgeons found that surgeons were infected at their workplace and were also infecting other co-workers and there was also transmission from to others in 25% of subjects, also to family members (20.8%), colleagues, patients and friends (4.2% each). Based on the literature, we expected that individual variables and differences would predict increased fear of the Covid-19. Fear is considered a biologically “basic” emotion and associated with risk-avoiding behaviors as well as preparedness.<sup>16</sup> Fear of the coronavirus depends on the perceived risk of the virus for loved ones and this was found as the strongest predictor of the FCV-19s in our sample and the most commonly reported concern by the surgeons. This worry could be handled by providing the surgeons with clear information about the risk of threat and by taking proper guided steps to protect vulnerable groups for risk of infection. Our results may also be taken as indicative that mis-guided information in literature and media may induce more fear and therefore, we suggest to formulate evidence-based guidelines and policies.

In earlier pandemics 2009–2010 Swine flu pandemic and the 2015–2016 Zika virus outbreak<sup>17,18</sup>, health concern was related to increased fear of the current coronavirus pandemic. Our study reported that information spread in media are related to more fear<sup>19,20</sup> (Table 4) A recent study assessed fear of COVID-19 by the FCV-19S scale in 324 participants from the United Kingdom. According to the results, population having increased levels of fear

**Table 2**  
Un Adjusted (Univariate analysis) and risk factors performed by using the Binary logistic regression.

| Risk Factors                                   | Un Adjusted (Univariate analysis) |             |                        |             |
|--|-----------------------------------|-------------|------------------------|-------------|
|  | p-value                           | Odds Ratio  | 95% C.I.for Odds Ratio |             |
|  |                                   |             | Lower                  | Upper       |
| Are you the sole earning member of your family | <b>0.009</b>                      | <b>1.49</b> | <b>1.11</b>            | <b>2.00</b> |
| Do you have dependent children                 | <b>0.015</b>                      | <b>1.51</b> | <b>1.09</b>            | <b>2.07</b> |
| Do you have dependent senior citizens          | <b>0.024</b>                      | <b>1.43</b> | <b>1.05</b>            | <b>1.94</b> |
| Do you have a Significant Housing Loan         | 0.485                             | 1.12        | 0.83                   | 1.52        |
| Do you have other significant Loans            | <b>0.005</b>                      | <b>1.54</b> | <b>1.14</b>            | <b>2.07</b> |
| Have you been tested COVID-19 positive         | 0.211                             | 1.92        | 0.97                   | 3.80        |
| Co-morbidity                                   | 0.070                             | 1.25        | 0.90                   | 1.73        |

**Table 3**  
Multivariate analysis of risk factors.

| Adjusted                                       | B     | S.E. | p-value      | Odds Ratio  | 95% C.I. for Odds Ratio |             |
|--|-------|------|--------------|-------------|-------------------------|-------------|
|  |       |      |              |             | Lower                   | Upper       |
| Are you the sole earning member of your family | 0.32  | 0.15 | <b>0.035</b> | <b>1.38</b> | <b>1.02</b>             | <b>1.86</b> |
| Do you have dependent children                 | 0.32  | 0.17 | 0.063        | 1.38        | 0.98                    | 1.93        |
| Do you have dependent senior citizens          | 0.26  | 0.16 | 0.109        | 1.30        | 0.94                    | 1.80        |
| Do you have a Significant Housing Loan         | -0.10 | 0.17 | 0.538        | 0.90        | 0.65                    | 1.25        |
| Do you have other significant Loans            | 0.44  | 0.16 | <b>0.006</b> | <b>1.55</b> | <b>1.13</b>             | <b>2.11</b> |
| Have you tested COVID-19 positive              | 0.65  | 0.35 | 0.064        | 1.92        | 0.96                    | 3.83        |
| Co-morbidity                                   | 0.21  | 0.17 | 0.229        | 1.23        | 0.88                    | 1.72        |
| Constant                                       | -3.49 | 0.87 | 0.000        | 0.03        |                         |             |

**Table 4**  
Group statistics.

| Group Statistics                            |                  |             |           |                |       |
|---|------------------|-------------|-----------|----------------|-------|
| Do you have dependent children?             | N                | Mean        | SD        | p-value        |       |
| Fear_Covid_Score                            | Yes              | 516         | 16.62     | 6.52           | 0.013 |
|   | No               | 215         | 15.26     | 6.81           |       |
| <b>Do you have other significant Loans?</b> | <b>N</b>         | <b>Mean</b> | <b>SD</b> | <b>p-value</b> |       |
|   | Fear_Covid_Score | Yes         | 301       | 17.09          | 6.98  |
|   | No               | 430         | 15.62     | 6.32           |       |
| <b>Source_Scientific Literature</b>         | <b>N</b>         | <b>Mean</b> | <b>SD</b> | <b>p-value</b> |       |
|   | Fear_Covid_Score | Yes         | 506       | 15.76          | 6.27  |
|   | No               | 225         | 17.27     | 7.28           |       |

**Table 5**  
Fear of Covid 19 scale score.

| Fear of covid 19 score | N   |
|------------------------|-----|
| ≤40                    | 403 |
| 41–60                  | 291 |
| >60                    | 37  |
| Total                  | 731 |

p-value, 0.283.  
ANOVA test used.

tends to adopt more appropriate public health behavior. Therefore, the authors concluded that this “functional” form of fear could be carefully used to nurture safety behaviors<sup>21</sup>. Bombarding of news related with worldwide fatalities or infection severity of the pandemic has caused individuals to experience fear, anxiety, and depression. The Fear of COVID-19 Scale (FCV-19S) is considered as highly associated with evidence and psychometric properties in various studies.<sup>22</sup> The worries about the risk of getting infected increase fear among the general public<sup>23</sup>. Related with same, in our study we expected that more media exposure and higher personal relevance of the threat (for both oneself and loved ones, and less risk control) would predict increased levels of fear. In line with these predictions, we found that all these factors resulted into higher scores. Additionally, scientific source of covid-19 knowledge was found to be associated with increased Fear scale score. This may be attributed to vast amount of unregulated and limited evidence literature about covid-19. If we look at the publications related to COVID-19 and orthopaedic surgery, most of them have been either guidelines or author's opinions or letter to the editor or commentaries.<sup>24–27</sup> Due to the sudden onset of epidemic orthopaedic surgeons got very little time to adapt and to do any required changes in practice and personal life. Government declared the nationwide lockdown and directed to stop routine OPDs, this caused fear of uncertainty. Together with the medical pandemic, there has been a corresponding info-demic as well.<sup>28–30</sup> We are

constantly hearing newer and newer guidelines and that has caused a lot of confusion.<sup>31</sup> Overall health anxiety, risk to loved ones, and searching additional information (i.e., through traditional media and social media) were independent predictors for the FCV19 scale.

It is interesting to observe that the most commonly reported concern and the best predictor fear of the Covid-19 was concerns for the health of loved ones. This important finding relates well with the initial reports that the coronavirus may be particularly dangerous for certain risk groups (e.g., elderly, people with chronic disease).

To conclude, analysis from survey suggested various factors responsible for fear among orthopaedic surgeons, safeguarding those fear factors and addressing them will reduce impact and prepare in future pandemics.

## 6. Conclusion

The challenges general population are also faced by the orthopaedic community but most of the Orthopaedic surgeons found to have mild score on FCV19 scale, and significant number of surgeons expressed interest to participate in support groups, which suggest stronger psychological well-being and their adaptability to unprecedented pandemic. Financial liabilities and well-being of self and family are important factors which induced fear of Covid-19 among orthopaedic surgeons. Positive discussions and timely information from credible sources regarding prevention, diagnosis and management and will reduce psychological burden and should serve to galvanize our efforts due to Covid-19.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jcot.2021.101647>.

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