Original Research Article

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Impact of COVID-19 on orthopaedic residents in South India: a survey

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ABSTRACT

Background: Since the outbreak of COVID-19 and its exponential spread throughout India, a lot burden has fallen upon the healthcare workers and in turn on the resident doctors who were posted on Covid duties. Increased risk of contracting the virus, limited patient inflow, suspended elective surgeries continued to be a reason of concern for most orthopaedic residents throughout the country during the peak of the virus outbreak.

Methods: An anonymous online survey of framed questionnaire was sent to the resident doctors in South India in order to perceive the state of mind they were in.

Results: The survey was completed by 314, second and final year residents from 5 major cities in South India.22.8% residents said that elective surgeries were still withheld in their department.27.9% residents believed that online teaching modality was not sufficient and 39.5% residents did not feel prepared enough for surgery with it. While, 21.1% residents stated that there were no surgeries in last one week in the unit. As a result, 33.3% residents expressed themselves as definitely stressed out in the then scenario.

Conclusions: The era post COVID-19 has brought with it a lot of challenges, the most important being the psychological impact on the residents. It needs to be taken as the foremost interest in the teaching module or structure to make them aware on how to overcome it and formulate new methods to cope up with the valuable training time

Keywords: COVID-19, Orthopaedic residents, South India, Stressed

INTRODUCTION

With the emergence of Corona virus (COVID-19) pandemic, as officially declared by WHO on March 11, 2020, health care system around the globe has largely been affected.1 India stood as the 3rd worst hit country with total cases crossing 10 lakhs countrywide, during the initial stage of unlock phase.2 The disease has not only led to a massive loss of life, but also brought turbulence to the financial markets all over the world. Following three months of intensive lockdown, India is now in Unlock Phase.3 There is still a considerable dip in outpatient visits, reduced volume of elective cases along with switching to online modes of teaching programmes and classes as a measure to combat this health crisis, even to this date.

All these issues are affecting Orthopaedic residents in most of the Level 1 and 2 trauma centres across South India. It is posing a great challenge for the residents in delivering patient care while ensuring own safety. Another challenge is to maintain the quality of training and medical education with limited patient inflow and suspended face to face classes in most institutes.

Residents are considered to be the first line health care providers in the Accident and Emergency department. They are equally responsible for providing in-patient care

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for the peri-operative patients. However, the most crucial part of orthopaedic surgical learning is the trainee's quality time spent in the operation theatre, where they provide assistance as well as gain knowledge and skills for future implementation in their professional life.

We have aimed to discuss the varied experiences and difficulties faced by the residents in these demanding times and to peek into the mindset of residents from this part of the country during the outbreak peak.

METHODS

A cross-sectional study was designed and conducted during Unlock Phase-2, from 14th to 28th July, 2020 through Google form, as an online survey, with a framed questionnaire set having 3-4 options each. The study was primarily focused only on the second and final year residents in tertiary care teaching hospitals, all pursuing M.S Orthopaedics course, of major metro cities in South India- Chennai, Mysore and Mangalore. Other cities like Kochi, Bengaluru and Hyderabad were also roped in for the study. The newly joined first year residents were not included in the study.

To optimise the integrity of the study, the online survey platform was designed to accept one response per computer/mobile IP address. Clicking on the link and submitting the response, qualified for the participants' consent and willingness to take part in this survey and no separate ethical approval was hence required. Furthermore, no personal details were asked for and disclosed at any point in this study. The survey was open for two weeks. Upon closure of the survey, responses were tabulated and plotted on Microsoft Excel/ Word.

RESULTS

A total of 314 residents responded to the survey. 170 residents (54%) from second year and 144 residents (46%) from third year submitted their responses (Figure 1). Chennai, Mysore and Mangalore have the 3 highest numbers of respondents (33.1%, 29% and 21% respectively), while the other metro cities of Kochi, Bangalore and Hyderabad collectively accounted for 16.9% of the responses (Figure 2).

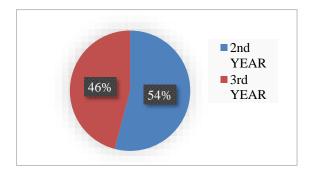


Figure 1: Distribution of the residents according to their current residency year.

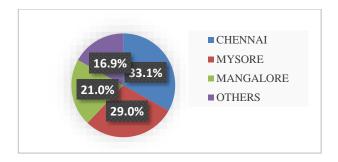


Figure 2: Distribution of the residents according to their place of residency.

Personal health and patient care

Residents were asked about the state of their outpatient department functionality in their institute. 248 (79%) residents said it was functional with limited patient load, 41 (13.1%) residents said it was still not functional while 19 (6.1%) residents stated it was fully functional as precovid times (Figure 3).

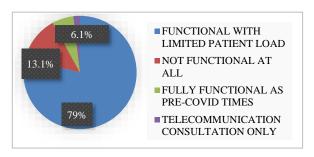


Figure 3: Kind of in patients are currently looking at in hospital.

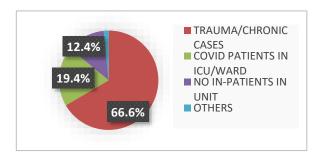


Figure 4: Distribution of type of patients the residents are currently looking at.



Figure 5: Distribution of the different protective measures followed by the residents

When asked about the type of patients, residents are looking at 209 (66.6%) residents stated they were looking at trauma/chronic cases, 61 (19.4%) residents reported they were looking at COVID patients in ICU/ward and 39 (12.4%) residents stated there were no in patients in the unit currently (Figure 4).

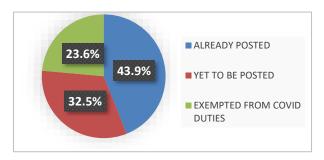


Figure 6: Distribution of the resident's postings in relation to COVID duties

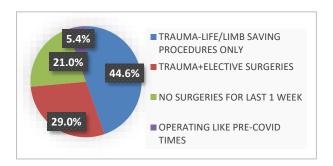


Figure 7: Distribution of the resident's current surgical exposure

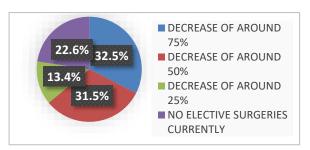


Figure 8: Distribution of resident's current surgical load

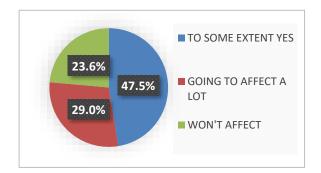


Figure 9: Distribution of resident's view, depicting impact on surgical training due to reduced case load

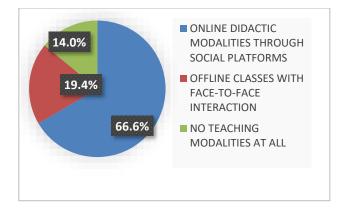


Figure 10: Distribution of the various teaching modalities followed by the institution.

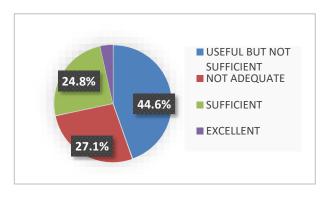


Figure 11: Distribution of the resident's view on the efficiency of the current online education modality.

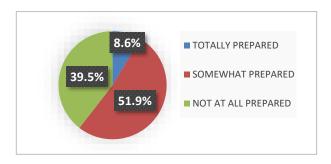


Figure 12: Distribution of the resident's view on preparedness of dealing patients with the current mode of education.

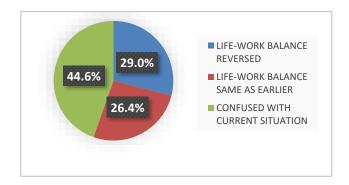


Figure 13: Distribution of the life-work balance as stated by the residents

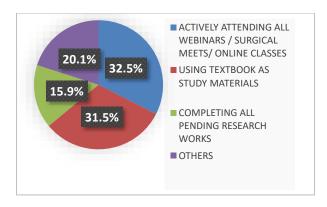


Figure 14: Distribution of the resident's current academic involvements.

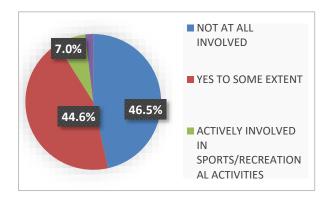


Figure 15: Distribution of the resident's participation in sports/recreational activities

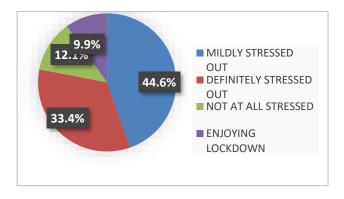


Figure 16: Distribution of current psychological condition as stated by the residents.

Residents were asked what protective measures they were using to see patients in outdoor / A and E (Accident and Emergency) department- 124 (39.5%) residents were using only N 95 mask, 107 (34.1%) residents responded they were using masks along with gloves and face shield, 44 (14%) were using full PPE gear while 39 (12.4%) residents were using only normal surgical mask (Figure 5).

Total 139 (43.9%) residents stated they were already posted in COVID ward duty, 102 (32.5%) residents stated they were yet to be posted and 74 (23.6%) residents stated

they were exempted from any COVID ward duties (Figure 6).

Impact on training

When asked about the type of surgeries the residents were assisting in their institute, 140 (44.6%) residents said that were assisting trauma, 91 (29%) residents stated their institute were doing elective surgeries as well. However, 66 residents (21%) stated there were no surgeries at all for the last one week in the unit. Only 17 residents believe (5.4%) that the surgery case load is like pre-covid times (Figure 7).

When asked about the decrease in elective cases, 102 (32.5%) residents said there was decrease of around 75%, 99 (31.5%) stated there was a decrease of about 50%, while 71 (22.6%) residents stated that their hospital is not doing any elective surgeries right now (Figure 8). 149 (47.5%) residents believe that this decrease in case load is going to affect their professional life to some extent while 91 (29%) residents is of the thought that it's going to affect them a lot in their professional life later on (Figure 9).

Academics

209 (66.6%) residents said that their department has changed to digital online education, while 61 (19.4%) residents stated that offline face-to-face classes are currently underway. However, 44 (14%) residents stated that there are currently no teaching classes going on in their institute (Figure 10). 140 (44.6%) residents said that this above-mentioned didactic teaching modality is useful but not sufficient while 85 (27.1%) residents believe that it's not adequate (Figure 11). When asked how confident the residents feel themselves to be prepared to independently conduct surgeries with the above teaching modalities 163 (51.9%) residents believe that they are somewhat prepared while 124 (39.5%) residents stated they are not at all prepared (Figure 12).

Psychological aspect

140 (44.6%) residents stated that they are confused and unable to come to any conclusion about their life-work balance. While, 91 (29%) residents believe this crucial balance is reversed and 83 (26.4%) residents believe it is same as earlier (Figure 13). When asked about how the residents are keeping themselves involved in lockdown, 102 (32.5%) responded to attend all webinars while 99 (31.5%) residents are using textbooks as study material (Figure 14).

146 (46.5%) residents stated they were not at all involved in any kind of recreational activities in lockdown. 140 (44.6%) residents said they were involved to some extent while 22 (7%) residents were actively involved in recreational activities (Figure 15). All these finally led us to comment on the stress levels of the resident in

lockdown with 140 (44.6%) residents stating they were mildly stressed out and 105 (33.4%) residents stated they were definitely stressed out (Figure 16).

DISCUSSION

It has been more than 9 months since lockdown. South Indian states of Andhra Pradesh, Karnataka, Tamil Nadu and Telangana did see sharp rise in their COVID 19 tally, during the study period.⁴ Tamil Nadu was the second worst hit state across India.5 All these had led to significant drop in outdoor patients and suspension of elective surgeries to keep the virus spread in check, in this part of the country. While researchers have toiled to develop vaccine and drugs, the most useful intervention to slow the spread of the disease was found to be quarantining peoples in their homes. 6 The idea of "social distancing" has been adopted as the only means to slow down the virus spread. The same strategy is being applied to the health-care sector too. Even now, after the world can boast about discovering the vaccine for the virus, many healthcare workers are sceptical about taking it, due to the rumoured side effects and still believe personal protection and social distancing being more dependable and effective.

Limiting duty hours of the residents, implementing alternate day duties to reduce exposure, ensuring adequate self-isolation period after COVID ward duties; were some of protective measures that most of the institutes followed during the initial days. Our study also arrived at a similar consensus where a significant proportion of residents stated that their duty hours were curtailed, face-to-face classes suspended and outpatient visits limited to reduce the risks of infection and to contain the transmission among the residents. While social distancing might be helping in curbing the spread of the virus, but it had definitely affected the resident's approach and aptitude towards clinical examination of patients, to some extent, due to constant fear of chances of infection. It has been quite a challenge in dispensing quality patient care while ensuring health of the residents in these tough times.

Surgical training and academics are two important fields of residency that has borne the impact of the pandemic. Orthopaedic residency training has evolved much and has started online education through various social media platforms (Zoom/Google Meets) but not much could have been done to compensate the quality time lost in surgical training. However, in our study significant section of residents believes that the online didactic education imparted to them is insufficient. A significant proportion also believes they are not confident enough to go to the operating room with this knowledge alone.

A comprehensive method to tackle these shortcomings could be introducing more of clinics-based discussions, case studies, examination videos, surgical exposures techniques thereby emphasising more on the clinical and practical approaches than just the theoretical part. It is also important to find alternatives to lost surgical exposures in these challenging times. There is emerging evidence suggesting that virtual interactive tools may be useful and accessible to support early academic development. Virtual reality and robotic simulators are widely in use in the western countries where work-hours limitations and concerns for patient safety, innovations in extra clinical surgical simulation have become a desired part of residency education. However, this field is still unexplored in this part of the world. Virtual and simulation surgical tools cannot replace the traditional didactical items, yet this could have proved useful to the residents during these times.

A third of the global population had been on corona virus lockdown.⁹ This is arguably the largest psychological experiment ever conducted. 10 Even in the early stages of the lockdown the World Health Organization issued a statement that noted "elevated rates of stress or anxiety" in the general population, before warning that, "as new measures and impacts are introduced especially quarantine and its effects on many people's usual activities, routines or livelihoods – levels of loneliness, depression, harmful alcohol and drug use, and self-harm or suicidal behaviour are also expected to rise."11 Psychological analysis of the residents in our study showed a significant number stating about their stress in the current situation. Life work imbalance and reduced surgical exposure is a reason of concern for many. Family support and emotional balance may have been disrupted due to social distancing in lockdown which further aggravated the mental stress. 12 Fear of risk of infection. loosing loved ones and prospects of financial hardship also loomed at large. This pandemic definitely had a psychological impact on most of the residents.

9 months since the breakout and still majority of the residents are facing a lot of issues related to their training. Though most of the hospitals have opened up, but the patient flow is regulated. Planned surgeries have begun but not adequate enough to give the residents enough exposures, to their content. Many institutions have started surgical skills classes, which are a routine curriculum activity in most institutions, which were held back for the entire period of the pandemic to avoid overcrowding. Commencement of these classes will definitely help the residents feel a bit confident when the start going back to the operating theatre and this can be taken as one way to make up for the lost surgical chances. Although online educations were started and were continued during the entire lockdown period, many institutes are slowly coming back to their face to face classes with social distancing norms. This is increasing the interaction level amongst the residents and is conceptually aiding. Amidst all these challenges, apart from looking after regular orthopaedic work, residents are also extending their helping hands in the COVID wards in almost all institutes still now.

Limitations

We surveyed around 314 residents, which might seem inadequate. Considering that the study was based only on the second and final year residents from the major cities of south India, as these cities were badly hit by corona-outbreak, this respondent number might just seem to be adequate enough. Another drawback to this study was, we were unable to comment on the response rate to the survey. There is a high chance that this survey was answered more by residents undergoing through some kind of stress due to this lockdown. However, this survey being a double blinded study, we believe the respondents were truly honest in expressing their feelings.

CONCLUSION

COVID-19 outbreak has been a unique situation in India. Home to over a billion people, managing this health crisis was a big challenge for us. Hospitals have run out of bed and health care workers have turned positive. Shortage of doctors had urged hospital administrators to post residents across all medical fields in COVID duties. Orthopaedic residents were no exception and they too have been utilised for COVID duties. Limited patient inflow with reduced surgical training has raised concerns about their preparedness in their professional life. Personal safety and family health issues have added to the stress of the residents, with 33.4% residents stating they were definitely stressed out in the current scenario. Effect of limited surgical exposure on the residents over these last 9 months, in this invaluable residency period of 3 years is difficult to quantify. We have come along a long way and current situation is definitely improving by each passing day.

Although this study highlights the hardship faced by the residents during the peak of corona outbreak, yet many of the problems stated above still exists to date. The psychological impact of COVID 19 on the residents is undeniable and needs to be addressed. But we should not lose hope as the fight against this pandemic continues. After all, this generation of residents will be unique; not only trained in orthopaedic surgery but also as doctors who extended their hand in fight against the deadly corona virus disease.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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