



# Impact of the COVID-19 Pandemic on Gastroenterology Training in India

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## Abstract

**Introduction** The coronavirus disease 2019 (COVID-19) pandemic has affected the healthcare system. The residents who are at the frontline of this pandemic have suffered the most. The extent of the training loss due to the COVID-19 pandemic on gastroenterology (GE) training is not studied in India.

**Methods** We designed a 36-question based google survey and distributed it to the GE residents all across India, via email. All the responses collected were analyzed using appropriate statistical methods.

**Results** A total of 140 responses were received. No significant decrease in teaching sessions/ classes was reported. Most of the residents (83.5%) reported inability to complete the target thesis enrolment. The number of patients seen by the residents in outpatient department, patients managed in wards and endoscopic procedures done by residents have decreased significantly ( $p$ -value  $<0.001$  for all). An overwhelming 89.9% ( $n = 125$ ) of the GE residents were posted for COVID-19 duties. Almost half (50.4%) of them were COVID-19 positive.

**Conclusion** The COVID-19 pandemic has affected the training of GE residents in India immensely and an extension period of 3 months may be offered to them.

## Keywords

- ▶ COVID-19
- ▶ gastroenterology
- ▶ medical training
- ▶ endoscopy

## Introduction

The COVID-19 pandemic has a profound impact on the healthcare system worldwide. Healthcare workers, especial-

ly the resident doctors, were on the frontline in this fight against COVID-19. To deal with the shortage of healthcare resources, many hospitals or a particular portion of the

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hospital beds were dedicated to only COVID-19-related services. Residents from various specialities were posted in these wards to overcome the shortage of doctors.

One aspect that is ignored during the pandemic is the training of the residents and fellows in their respective specialities.<sup>1,2</sup> Many of the medical specialities have skill-based procedures, for which a minimum number of hands-on cases must be done for proper training. Gastroenterology (GE) as a specialty is both knowledge and skill-based. However, in the current scenario, how much the training of GE fellows has suffered in India is not known. In the current study, we aim to study the impact of the COVID-19 pandemic on GE training in India.

## Methods

We designed a 36 question-based google-survey to assess the different aspects of the GE training, like academics, research, patient management in out-patient clinics and inwards and endoscopic and endoscopic retrograde cholangiopancreatography (ERCP) procedures. The questionnaire is provided as **Supplementary Material S1** (available online only). We distributed it to the second- and third-year GE residents of all the GE training centers of India via email. The second- and third-year residents are specifically chosen as they have experience of both the pre-COVID-19 era and the COVID-19 era. The response data was collected in the excel sheets, and statistical analysis was done using the SPSS version 25. Data are represented in numbers and percentages. For comparison of pre-COVID-19 and COVID-19 ordinal data, Wilcoxon signed-rank test was used.  $p$ -value  $<0.05$  was taken as significant.

## Results

The survey questionnaire was sent by email to all the second- and third-year GE residents of different institutes of India in the second week of June 2021, and a time period of 10 days was provided to fill up the survey. We received a total of 140 responses from 54 institutions across 32 cities in India. One respondent refused the consent, so the analysis was done for 139 responses (**Table 1**). Only nine (6.5%) respondents were female. Most of the hospitals were working as partially COVID-19 centers (84.9%), followed by COVID-19 only (8.6%) and non-COVID-19 (6.5%) centers during the COVID-19 pandemic.

### Academic Research

The number of teaching sessions/classes did not decrease significantly during the COVID-19 pandemic ( $p$ -value = 0.83). Most of the students (71.2%) reported that their institutions have shifted to a virtual medium of teaching. Most of them (84.2%) found the virtual sessions organized by the Indian Society of Gastroenterology (ISG), Indian National Association for Study of the Liver (INASL), and Society of Gastrointestinal Endoscopy of India (SGEI) helpful, while 2.9% of respondents did not attend any such sessions.

**Table 1** Baseline, personal, and academic parameters

| Parameter                               |                      | Percent of respondents |
|---|----------------------|------------------------|
| Sex                                     | Male                 | 93.5                   |
|   | Female               | 6.5                    |
| Year of residency                       | 2nd yr               | 48.9                   |
|   | 3rd yr               | 51.1                   |
| Hospital status                         | Non-COVID-19         | 6.5                    |
|   | Partially COVID-19   | 84.9                   |
|   | COVID-19 only        | 8.6                    |
| Institution shifted to virtual classes  | No                   | 28.8                   |
|   | Yes                  | 71.2                   |
| Pre-COVID-19 classes                    | 0–1                  | 5                      |
|   | 2–3                  | 41                     |
|   | 4–5                  | 48.9                   |
|   | 6 or more            | 5                      |
| During COVID-19 classes                 | None                 | 24.5                   |
|   | Occasionally         | 18.7                   |
|   | 1–2                  | 33.8                   |
|   | 3–4                  | 23                     |
| Target thesis enrollment                | <25%                 | 20.9                   |
|   | 25–50%               | 18                     |
|   | 50–75%               | 30.2                   |
|   | >75%                 | 14.4                   |
|   | 100%                 | 16.5                   |
| Routine service shutdown                | No shutdown          | 48.2                   |
|   | <1 mo                | 13.7                   |
|   | 1–3 mo               | 18.7                   |
|   | >3 mo                | 19.4                   |
| Policy prohibiting trainee endoscopies  | No policy            | 61.9                   |
|   | Therapeutic and ERCP | 28.8                   |
|   | All                  | 9.4                    |
| Performed endoscopy on COVID-19 patient | No                   | 52.5                   |
|   | Yes                  | 47.5                   |
| Posted for COVID-19 duties              | No                   | 10.1                   |
|   | Yes                  | 89.9                   |
| Total number COVID-19 duties done       | <20                  | 34.4                   |
|   | 20–50                | 32                     |
|   | >50                  | 33.6                   |
| Detected COVID-19 positive              | No                   | 49.6                   |
|   | Mild                 | 37.4                   |
|   | Hospitalized         | 12.9                   |
| COVID-19 vaccination                    | No                   | 7.9                    |
|   | Partially            | 7.9                    |
|   | Yes                  | 84.2                   |

**Table 1** (Continued)

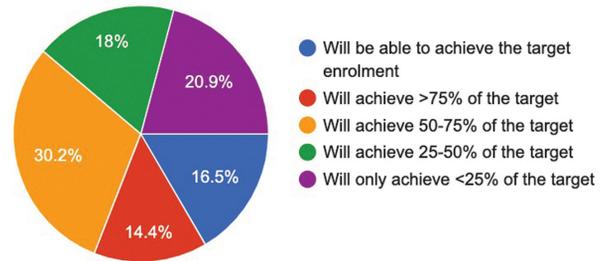
| Parameter                           |      | Percent of respondents |
|-------------------------------------|------|------------------------|
| Concerned about quality of training | No   | 11.5                   |
|                                     | Yes  | 88.5                   |
| Willing to extend training          | No   | 55.4                   |
|                                     | 3 mo | 28.8                   |
|                                     | 6 mo | 15.8                   |

Abbreviations: COVID-19, coronavirus disease 2019; ERCP, endoscopic retrograde cholangiopancreatography.

As far as thesis/ research work is concerned, only 16.5% ( $n = 23$ ) of respondents expressed that they will be able to achieve their target enrolment (► **Fig. 1**), while 20.9% ( $n = 29$ ) expressed inability to achieve even 25% of the target enrolment.

### Patient Management

The number of patients seen by the responding residents in the outpatient department (OPD) has decreased significantly ( $p$ -value  $< 0.001$ ) (► **Table 2**). While 20.9% ( $n = 29$ ) consulted more than 300 patients per week before COVID-19, only 1.4% ( $n = 2$ ) consulted as many patients during COVID-19 (► **Fig. 2**). About 43.2% ( $n = 60$ ) respondents said that the GE OPD services were completely shut at their institutions for various periods. The number of patients managed inwards has also decreased significantly ( $p$ -value  $< 0.001$ ). While 63.3% ( $n = 88$ ) of respondents managed more than

**Fig. 1** Impact of the coronavirus disease 2019 on thesis enrolment.

15 patients prior to COVID-19, now it has decreased to 2.9% ( $n = 4$ ).

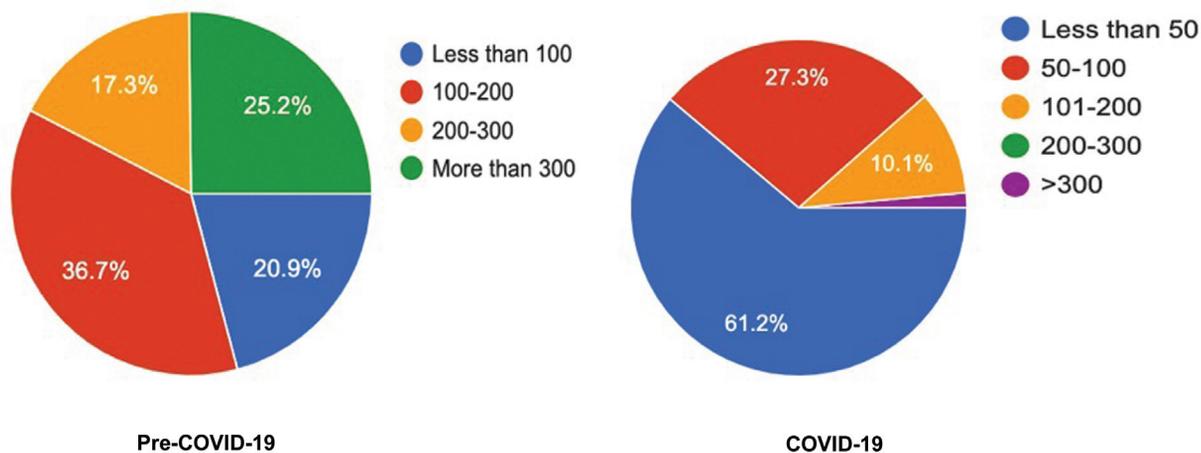
### Endoscopic Skills

The number of upper gastrointestinal endoscopies (► **Fig. 3**), colonoscopies, and ERCP procedures performed by residents has also been significantly reduced ( $p$ -value  $< 0.001$  for each) (► **Table 2**). The number of gastrointestinal bleeding patients scoped by the residents has also decreased significantly ( $p$  value  $< 0.001$ ) (► **Fig. 4**). The routine endoscopic services were completely shut as reported by 51.8% ( $n = 72$ ) respondents at their institutions for varying periods. Most respondents (61.9%,  $n = 86$ ) reported that trainees were not prohibited from performing endoscopic procedures during the COVID-19 pandemic. Almost half (47.5%,  $n = 66$ ) of the respondents have also performed endoscopic procedures on a COVID-19 patient. Similarly, around half (50.4%  $n = 70$ ) felt that a simulation training program, if available, would have helped them.

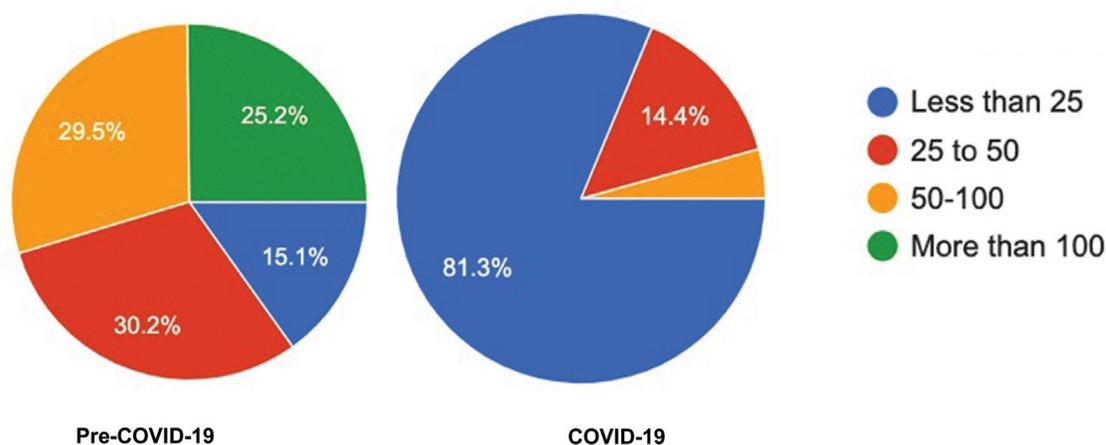
**Table 2** Clinical and endoscopy parameters

| Parameter               |        | Pre-COVID-19 times (% of responders) | During COVID-19 (% of responders) | $p$ -Value |
|-------------------------|--------|--------------------------------------|-----------------------------------|------------|
| No. of patients in ward | <5     | 3.6                                  | 37.4                              | <0.0001    |
|                         | 5-10   | 12.9                                 | 45.3                              |            |
|                         | 10-15  | 20.1                                 | 14.4                              |            |
|                         | >15    | 63.3                                 | 2.9                               |            |
| UGI endoscopy performed | <25    | 15.1                                 | 81.3                              | <0.0001    |
|                         | 25-50  | 30.2                                 | 14.4                              |            |
|                         | 50-100 | 29.5                                 | 4.3                               |            |
|                         | >100   | 25.2                                 | 0                                 |            |
| Colonoscopy performed   | <10    | 23.5                                 | 87.5                              | <0.0001    |
|                         | 10-20  | 35.3                                 | 9.6                               |            |
|                         | 20-30  | 25.7                                 | 2.2                               |            |
|                         | >30    | 15.4                                 | 0.7                               |            |
| GI bleedings scoped     | None   | 10.9                                 | 16.7                              | <0.0001    |
|                         | 1-2    | 4.4                                  | 29.7                              |            |
|                         | 3-5    | 14.6                                 | 24.6                              |            |
|                         | 5-10   | 16.1                                 | 17.4                              |            |
|                         | >10    | 54                                   | 11.6                              |            |

Abbreviations: COVID-19, coronavirus disease 2019; UGI, upper gastrointestinal.



**Fig. 2** Impact of coronavirus disease 2019 (COVID-19) on the outpatient services.



**Fig. 3** Impact of coronavirus disease 2019 (COVID-19) on upper gastrointestinal endoscopy procedures done by residents.

### Posting of Gastrointestinal Residents in COVID-19 Management

An overwhelming 89.9% ( $n = 125$ ) of the responding gastrointestinal residents were posted for COVID-19 duties, with one-third (33.6%,  $n = 45$ ) performing more than 50 COVID-19 duties in total. Almost half (50.4%,  $n = 70$ ) of respondents have been COVID-19 positive, with 12.9% ( $n = 18$ ) requiring even hospitalization. A total of 84.2% ( $n = 117$ ), 7.9% ( $n = 11$ ), and 7.9% ( $n = 11$ ) of respondents are fully vaccinated, partially vaccinated and not vaccinated for COVID-19, respectively. An overwhelming 88.5% ( $n = 123$ ) are concerned about the quality of their training, while 55.4% ( $n = 77$ ) feel the training period should be extended.

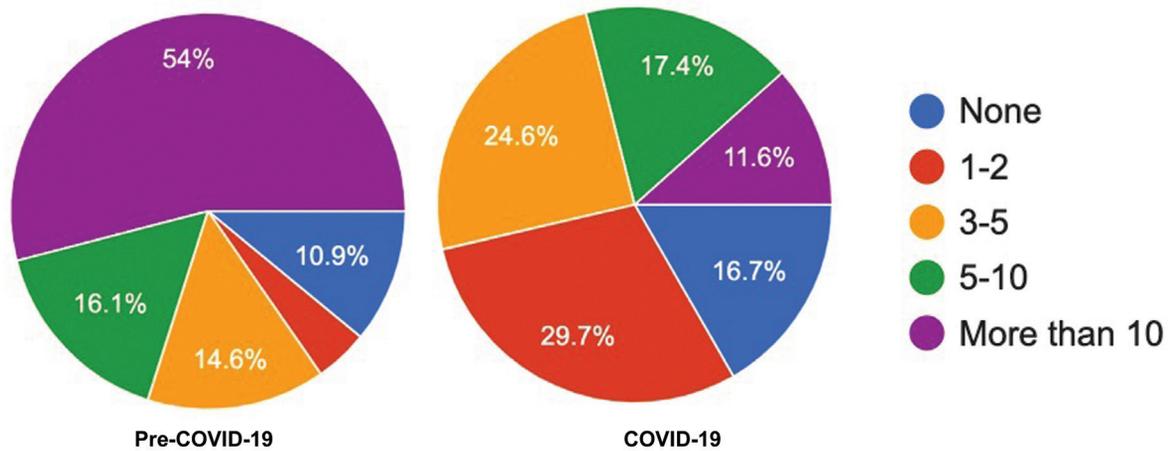
### Discussion

This survey documents that GE residents' clinical training in India has suffered during the COVID-19 pandemic, as shown by a significant reduction in the number of outpatients, inpatients, and endoscopic procedures. Research activities

like thesis have also suffered, but academic teaching has been ongoing, mainly due to the timely adoption of virtual teaching media. The virtual teaching activities organized by ISG, INASL, and SGEI have also helped the residents immensely.

The COVID-19 has led to disruptions in the routine GE OPD and endoscopy services at many centers. A total of 43.2 and 51.8% of respondents reported complete shutdown of OPD and endoscopy services at their institutions, respectively, impacting their training. However, similar studies conducted across various continents have also shown a similar reduction in the number of procedures done by the trainees.<sup>3-6</sup>

During this period, GE residents have ably shared the burden of COVID-19 duties as around 90% of them have worked in COVID-19 wards and around half of them have performed an endoscopic procedure on a COVID-19-positive patient. Most of the residents are concerned about the quality of their training, and the majority of them feel that the training period should be extended to compensate for the lost time. Therefore, we recommend that a 3-month extension be offered to the GE residents across all the training



**Fig. 4** Impact of coronavirus disease 2019 (COVID-19) on the number of gastrointestinal bleeding patients managed.

institutions. However, in long term, the disruptions due to the future waves of COVID-19 to the training can be offset by the early adoption of online teaching methods, and prompt restarting of the non-COVID-19 services as soon as number of COVID-19 patients reduce. They use of simulators for endoscopy training should be encouraged.

The limitation of our study is that not all the residents have responded to the survey, but we still have a large enough sample to represent a pan-India scenario. Besides, we cannot perform state-wise or institute-wise comparison from the available data. The strength of this study is that we have included all the aspects of training-clinical, research, and academic. We have also incorporated the feelings of the residents about their training and provided a possible solution.

## Conclusion

The COVID-19 pandemic has adversely affected the training of GE residents in India. Therefore, an extension of the training period may be offered to offset this loss.

### Funding

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### Conflict of Interest

None.

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