



Journal Homepage: -[www.journalijar.com](http://www.journalijar.com)  
**INTERNATIONAL JOURNAL OF  
 ADVANCED RESEARCH (IJAR)**

Article DOI:10.21474/IJAR01/13925  
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/13925>



### RESEARCH ARTICLE

## IMPACT OF COVID-19 PANDEMIC ON GASTROINTESTINAL ENDOSCOPY PROCEDURES

Dr. Sandesh Gawade, Dr. Divyangi Sarvankar and Dr. Shivani Chikhale

#### Manuscript Info

##### Manuscript History

Received: 10 October 2021

Final Accepted: 14 November 2021

Published: December 2021

##### Key words:-

COVID-19, Impact, Gastrointestinal Endoscopy

#### Abstract

**Background-** COVID-19, an emerging coronavirus disease is a major health problem. It has markedly affected the routine medical procedures including Gastrointestinal(GI) endoscopies. In spite of guidelines suggested by various GI societies, for safe GI endoscopy procedures in period of COVID pandemic, most of the endoscopists as well as the patients were hesitant for the endoscopy procedures. We sought to measure the impact of the same on GI endoscopy activity in Pune.

**Method-** A pre-validated questionnaire containing 28 questions was sent across to the GI endoscopy surgeons. Responses were collected to assess the perception of GI endoscopists regarding the practice of endoscopy and the risk of self-contamination during COVID-19 Pandemic. This data was analysed using appropriate statistical applications.

**Result-** 51 GI endoscopists from Pune participated in our study; out of which 80.3% (41/51) were involved in the management of COVID-19 patients outside the endoscopy department. During the study period, 86.28% (44/51) of endoscopists had to cancel procedures on grounds of COVID-19 pandemic. Symptoms compatible with COVID-19 infection were reported by 29.41% (15/51) of the endoscopists; out of which 13 (86%) responders had a positive RTPCR test for COVID-19

**Conclusion-** COVID-19 pandemic has seriously affected GI endoscopy practice. COVID 19 infection rate was also remarkable in endoscopists and endoscopy staff. As the screening of patients with GI problems was hampered, there was definitive delay in diagnosis and treatment. Nevertheless, endoscopy centers should adapt and make changes in their practice to face future pandemic, emphasizing safety of staff without delaying patient care.

Copy Right, IJAR, 2021., All rights reserved.

#### Introduction:-

COVID-19 is caused by a novel coronavirus, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) that emerged in December 2019 in Wuhan, China as a cluster of cases with severe acute respiratory syndrome (SARS).<sup>[1]</sup> Being highly contagious, SARS-CoV-2 not only spread exponentially throughout China, but also rapidly spread across more than 205 nations in most continents, hence declared a global pandemic.<sup>[2]</sup> Hospital settings are considered at higher risk for viral contamination and bidirectional human to human transmission among health care professionals and patients<sup>[3,4,5]</sup> Data reported from the index SARS-CoV-2 outbreak in Hubei Province of China

confirmed a three-fold higher rate of SARS-CoV-2 infection among health care workers than the general population.<sup>[6]</sup>

COVID-19 is thought to spread primarily through droplets of saliva, but airborne transmission and fecal excretion have been documented <sup>[7,8]</sup>. Periendoscopic aerosolized infections have also been reported, placing upper gastrointestinal (GI) endoscopy among the major aerosol-generating procedures<sup>[9]</sup>. In particular, while performing gastrointestinal endoscopy, there is risk of exposure to the endoscopists as well as the endoscopy team, including nurses, endoscopy technicians and anesthesia staff <sup>[10]</sup>. In addition, the high number of patients and accompanying persons visiting an endoscopy unit each day further increases the risk of contaminating the staff. <sup>[11]</sup> There remains very limited data to have insight into creating a safe model for rationing of GI endoscopy that does not compromise patient care.

Endoscopy requires close proximity to patients for a significant length of time, increasing the likelihood of endoscopists being exposed to infection either direct contact or through aerosol generation. Endoscopists and endoscopy staff may therefore have a higher risk of acquiring SARS-CoV-2 <sup>[12,13,14]</sup>. Several national and international gastrointestinal (GI) societies have released guidelines, to prevent nosocomial transmission and protect healthcare workers and patients, advocating performing only emergency and semi-emergency endoscopic procedures and delaying elective endoscopic procedures during COVID-19 pandemic <sup>[14,15]</sup>. A review of published national and international guidelines emphasized the mandatory use of personal protective equipment (PPE) while performing endoscopies by all GI societies <sup>[15]</sup>. While deferring elective procedures could assist in decreasing the peak of SARS-CoV-2, this strategy was also leading to an exponentially expanding pool of patients with delayed procedures. Moreover, the implementation of these recommendations in endoscopy units across the globe is challenging with wide variations in incidence and health care resources such as personnel, equipment and PPE <sup>[16]</sup>

Based on GI society guidelines, many hospitals stopped elective endoscopic procedures, diverted healthcare providers to participate in dedicated “COVID-19 teams” and planned a reduction in endoscopy staff. Most non-urgent endoscopic procedures have been restricted as a consequence of COVID-19, however the difference was significant (5 times larger numbers before COVID-19) with the common endoscopic procedures (Esophagogastroduodenoscopy, colonoscopy, Endoscopic Retrograde Cholangiopancreatography and Endoscopic Ultrasonography) which occur daily in most centers with Esophagogastroduodenoscopy being the most affected <sup>[17]</sup>. Previous reports from China showed marked decrease of the number of endoscopic procedures during COVID-19 compared to 6.3 times higher number of endoscopic procedures before COVID-19<sup>[18]</sup>

Due to the observed paucity of data in Indian scenario, we determine to conduct a similar study, from March 2020 to July 2021. This survey was conducted to specifically study the impact of COVID-19 on gastrointestinal endoscopy practice in Pune and also to determine the perception of risk of contamination of endoscopists and staff over the period of pandemic.

#### **Implications-**

To revise and formulate better guidelines to safeguard endoscopic practices and hence reducing the contamination of patients as well as endoscopy staff.

#### **Methodology:-**

This was a cross-sectional study. We performed a web based survey using an online questionnaire. The nature and purpose of the study was explained by the researcher and informed consent was taken from the participants. 200 practicing GI endoscopists in Pune were sent a self-administered, pre-validated questionnaire via Google forms assessing the perception of GI endoscopists regarding the practice of endoscopy and the risk of self-contamination during COVID-19 pandemic. A follow-up reminder through social networks were given 2 days before the closure of the survey responses for those who did not respond initially. We received 51 responses which were automatically retrieved in the excel sheet and analyzed.

#### **Sampling Method**

Previous study report stated that 98.7% of GI endoscopy surgeons had to cancel their procedures due to the Covid-19 pandemic <sup>[8]</sup>. Considering this data with 95% confidence interval and 10% allowable error, the estimated sample size is 48.

### Statistical Analysis

For the statistical analysis a Microsoft Office Excel® spreadsheet was used, since only a descriptive analysis was performed. Data were presented as frequencies for categorical variables and medians (IQR) for continuous variables

### Results:-

There were 51 GI endoscopists who responded to the survey, with a mean age of 37 years. 46 GI endoscopists worked in a private setup, 4 in government hospitals and 3 in non profit hospitals.

### Consequences for gastroenterology and endoscopy practice

There were 47 GI endoscopists (92.51 %) who reported that, they admitted COVID positive patients in their hospital, with a mean of 83.25 % of the beds occupied by them. 58.82% of the endoscopy staff had been requisitioned in COVID-19 wards and ICU duties. The majority of GI endoscopists, 80.3% (41/51) participated in healthcare activities related to the COVID-19 pandemic and contributed to many such services at the same time. 66.66% (34/51) looked after COVID 19 patients admitted in ICU, 33.33% (17/51) in OPD, 27.45% (14/51) performed telephone consultations of COVID-19 patients and 35.29% (18/51) did on-call duty in the emergency department.

Among the 58.82% (30/51) of the responders providing telephone consultations for gastrointestinal symptoms, 80% made <10 phone consultations per day and 3% made >30 phone consultations per day. Nevertheless, 88.2 % responders ultimately cancelled the consultations, as clinical examination was needed for deciding further plan of treatment. (Fig 1)

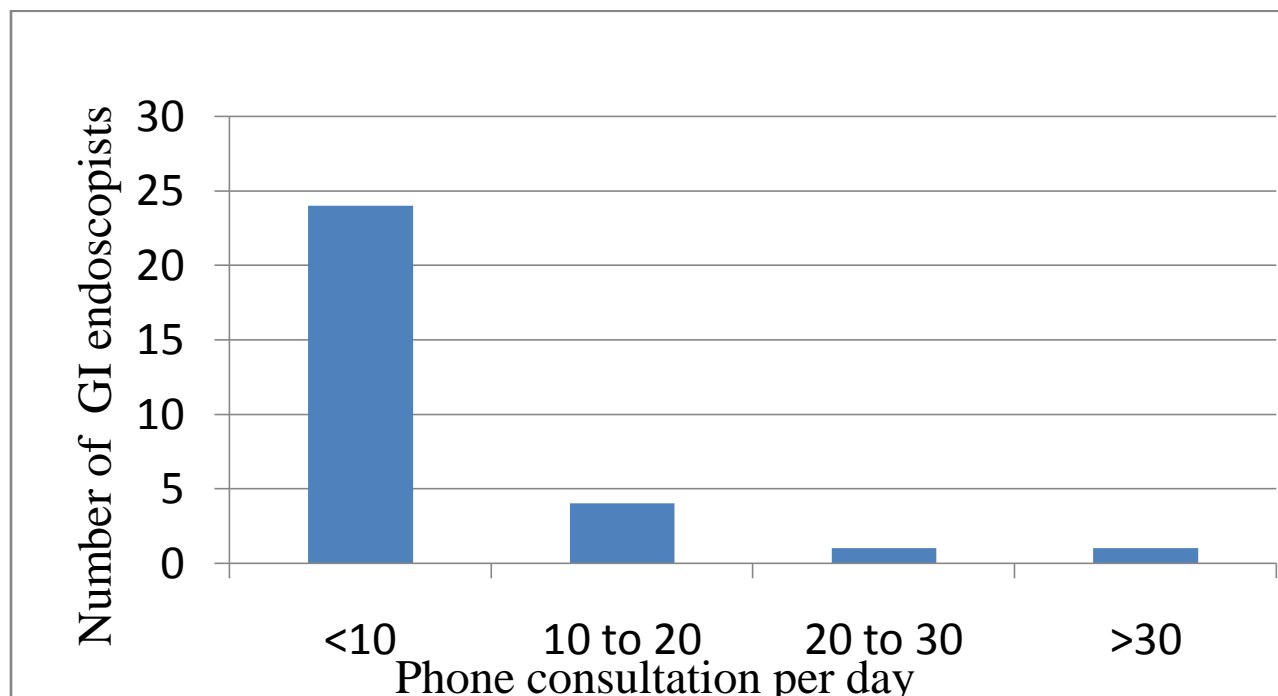


Figure 1:- Phone consultations per day.

86.28% (39/51) of the gastroenterologists had to cancel endoscopy procedures. 45% (23/51) had >50% cancellations of endoscopy procedures whereas 14% had zero cancellations. 26% (13/51) GI endoscopists had cancellations of endoscopy procedure without any further appointment.

71% (36/51) had not cancelled any emergency or they rescheduled the appointment to avoid rush and maintain social distancing. 22% (11/51) did not perform GI endoscopies during pandemic out of risk of infection.

A total of 33.33% (17/51) of the endoscopy outpatient clinics were closed. 79% (40/51) performed endoscopy in pandemic, out of which 25% (10/40) performed it only for vital emergencies.

A specific circuit for COVID-19 patients had been organized in 58.82% of the endoscopy departments. 88.23% performed gastrointestinal endoscopic procedures according COVID 19 protocols still a maximum of 40 (78.43%) responders thought that their job always exposes them to COVID 19 infection. 19.60% (10/51) performed gastrointestinal endoscopic procedures in COVID positive patients as well. 52.94% (27/51) responders found patients COVID 19 patients retrospectively (Accidental exposure).

88% (35/40) GI endoscopists, disinfected their endoscope with 2% glutaraldehyde and 13% (5/40) disinfected with ethanol, after each procedure to reduce the risk of infection to patients.

#### COVID-19 infection rates among gastroenterologists and implementation of protective measures

Only 9.8% (5/51) responders worked exclusively for endoscopies.

The practitioners reported difficulty obtaining the following protective equipments for endoscopy: face shield (49.01%), eye protection (39.21%), N95 mask (33.33%), surgical mask (19.60%), gown (27.45%), gloves (13.72%), surgical cap (15.68%), sanitizer (11.76%). ( Fig.2)

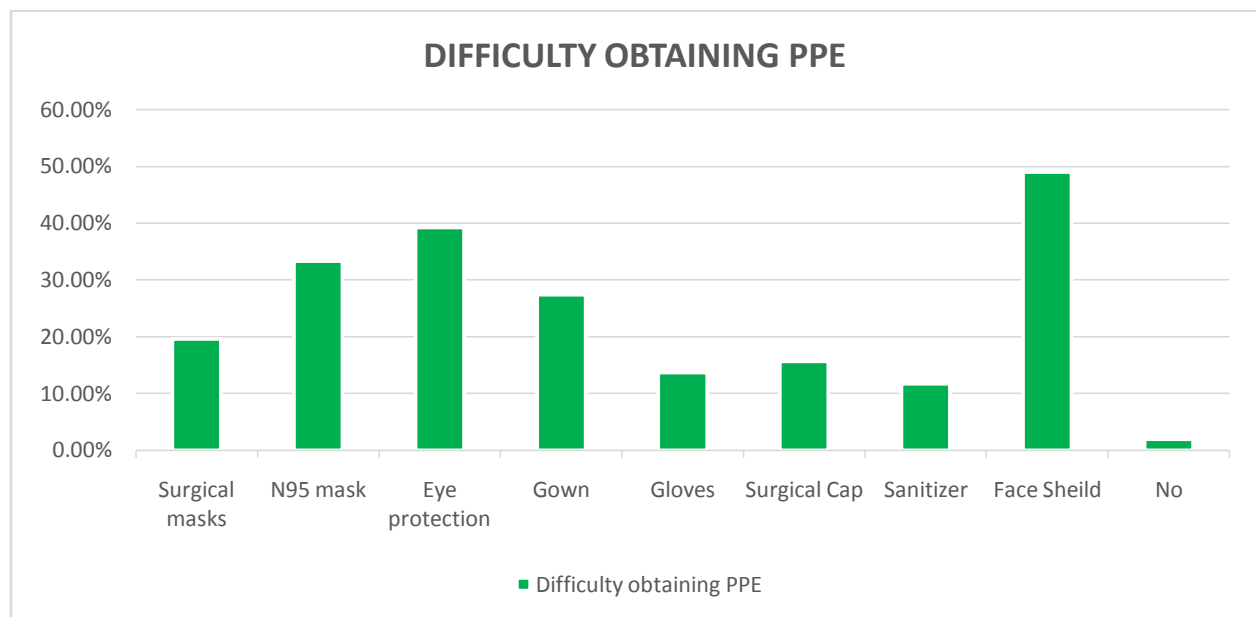


Figure 2:- Difficulty in obtaining PPE.

Symptoms compatible with COVID-19 infection were reported by 29.41% (15/51) of the responders; out of which 13 (86%) responders had a positive RTPCR test for COVID-19. Six responders had required hospital admission. Of those reporting symptoms, 86.6% (13/15) believed they had been contaminated at work.

Though the number of COVID 19 patients have gone down in India, still around 12% of GI endoscopists are not performing endoscopic procedures.

#### Discussion:-

This study definitely gives an idea of the impact and the changes in endoscopy practices, in response to the COVID-19 pandemic, across Pune. In our survey, we observed a major reduction (87%) of GI endoscopy activity in Pune during pandemic. Similarly, reports from New York mention an 80–90% procedural volume reduction and 91.2% reduction in France<sup>[11]</sup> M Goenka et al, reported that endoscopy units in India performed <10% of their usual volumes<sup>[19]</sup>. In addition to the health hazard, human and logistics resources, reallocation in the midst of the pandemic led to this endoscopic “lockdown.”

We observed that 80.3% of responders and 58.82% of endoscopy staff was requisitioned in COVID 19 healthcare activities, reducing the working manpower of endoscopy units.

Also, the recent guidelines published by various societies recommended categorizing endoscopic procedures into emergency, urgent, and routine endoscopies based on indications, with cancellation and/or postponement of routine endoscopies until the current threat due to COVID-19 was reduced. In our study 78% of the study's responders only performed emergent endoscopies during the pandemic. 19.60% responders performed endoscopy in COVID 19 positive patients, in our survey. Deferring semi-urgent cases could delay the diagnosis of cancers, and few other illnesses and loss of window of therapeutic intervention (endoscopically resectable lesions can become unresectable due to spread). Although multiple GI societies have provided a road map, clinical judgment should prevail, and every case should be individualized to prioritize for endoscopic procedures.

Telehealth is defined as the provision of healthcare remotely by means of a variety of telecommunication tools, including telephones, smartphones, and mobile wireless devices, with or without a video connection<sup>[20]</sup>. It proved to be a valuable tool in providing health care with maintaining safety on either side during pandemic. In our study, 58.82% of GI endoscopists provided telephone consultations for gastrointestinal symptoms. However, remote consultation cannot be an option when physical examination or direct patient contact is required.

The American Gastroenterological Society has stated that for eradication of SARS-CoV-2, standard manual cleaning followed by high-level disinfection could be effective. Although there is a theoretical risk of endoscopes acting as potential vectors for viral infections, so far, there is no published report of SARS-CoV-2 transmission via endoscopes<sup>[21]</sup>. 86.27% of responders used 2% glutaraldehyde for disinfecting the endoscope before using it for the next patient.

Given the inherent nature of the procedure, endoscopists are almost always in a "high transmission zone" (within 3 feet of the patients). Johnston et al. reported that during endoscopy, the endoscopists face has significant exposure to potentially infectious biologic samples<sup>[22]</sup>.

We documented a 29.4% prevalence of COVID-19 symptoms among GI endoscopists.

Symptoms compatible with COVID-19 infection were reported by 12.8 % of the GI endoscopists in France<sup>[11]</sup>. Chen et al. reported that 5.7% gastroenterologists or their colleagues developed work related COVID-19 infections<sup>[24]</sup>. This could be due to difficulty in obtaining PPE, as reported by our responders. 86.6% GI endoscopists believed that they had been contaminated at work. Furthermore, an increased degree of anxiety and burnout were noted among endoscopists<sup>[21]</sup>.

This study has few limitations. It was a web based survey and we could not collect data from all endoscopists across Pune due to few limitations and hospital policies. So a limited number of responders with an over representation of private setup and possible bias cannot be ignored.

Hence, this survey cannot be generalized as a representing sample for all.

### **Conclusion:-**

COVID-19 pandemic has seriously affected GI endoscopy practice. COVID 19 infection rate was also remarkable in endoscopists and endoscopy staff. As the screening of patients with GI problems was hampered, there was definitive delay in diagnosis and treatment. Nevertheless, endoscopy centers should adapt and make changes in their practice to face future pandemic, emphasizing safety of staff without delaying patient care.

### **References:-**

1. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med* 2020;382(8):727–33.
2. Danese S, Ran ZH, Repici A, Tong J, Omodei P, Aghemo A, et al. Gastroenterology department operational reorganisation at the time of covid-19 outbreak: an Italian and Chinese experience. *Gut* 2020;69(6):981–3.
3. Wang Y, Wang Y, Chen Y, Qin Q. Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures. *J Med Virol* 2020;92(6):568–76.
4. Sultan S, Lim JK, Altayar O, Davitkov P, Feuerstein JD, Siddique SM, et al. AGA institute rapid recommendations for gastrointestinal procedures during the COVID-19 pandemic. *Gastroenterology* 2020(20). S0016-5085(20)30458-3.

5. Hormati A, Niya MHK, Ghadir M, et al. COVID-19 in the endoscopy ward: a potential risk for gastroenterologists [published online ahead of print, 2020 Apr 23]. *Infect Control HospEpidemiol* 2020;1–2. <https://doi.org/10.1017/ice.2020.160>.
6. WHO. Report of the WHO-China joint mission on coronavirus disease 2019 (COVID-19). [Internet]. [cited 2020 Apr 13].
7. Tian Y, Rong L, Nian W et al. Review article: gastrointestinal features in COVID-19 and the possibility of faecal transmission. *Aliment Pharmacol Ther.* 2020;51:843–851.
8. Wilson N M, Norton A, Young F P et al. Airborne transmission of severe acute respiratory syndrome coronavirus-2 to healthcare workers: a narrative review. *Anaesthesia.* 2020 doi: 10.1111/anae.15093.
9. Parodi S M, Liu V X. From containment to mitigation of COVID-19 in the US. *JAMA.* 2020 doi: 10.1001/jama.2020.3882
10. Soetikno R, Teoh AY, Kaltenbach T. et al. Considerations in performing endoscopy during the COVID19 pandemic. *Gastrointestinal Endoscopy* 2020;
11. Belle A, Barret M, Bernardini D, et al. Impact of the COVID-19 pandemic on gastrointestinal endoscopy activity in France. *Endoscopy.* 2020 Dec;52(12):1111-1115. DOI: 10.1055/a-1201-9618.
12. Zhang Y, Zhang X, Liu L, Wang H, Zhao Q. Suggestions for infection prevention and control in digestive endoscopy during current 2019-nCoV pneumonia outbreak in Wuhan, Hubei province, China. *Endoscopy* 2020;52(4):312–4
13. Li LY, Wu W, Chen S, Gu JW, Lou LX, Song HJ, et al. Digestive system involvement of novel coronavirus infection: prevention and control infection from a gastroenterology perspective. *J Dig Dis* 2020;21(4):199–204.
14. Chiu PWY, Ng SC, Inoue H, Reddy DN, Ling HE, Cho JY, et al. Practice of endoscopy during COVID-19 pandemic: position statements of the Asian Pacific Society for Digestive Endoscopy (APSDE-COVID statements). *Gut* 2020;69(6):991–6.
15. Castro Filho EC, Castro R, Fernandes FF, Pereira G, Perazzo H. Gastrointestinal endoscopy during COVID-19 pandemic: an updated review of guidelines and statements from international and national societies. *GastrointestEndosc* 2020(20). S0016-5107(20)34132-8
16. Repici A, Pace F, Gabbiadini R, Colombo M, Hassan C, Dinelli M, et al. Endoscopy units and the coronavirus disease 2019 outbreak: a multicenter experience from Italy. *Gastroenterology* 2020(20):30466–72. S0016-5085(20)30466-2
17. M. Alborai, et al. The global impact of COVID-19 on gastrointestinal endoscopy units: an international survey of endoscopists *Arab J Gastroenterol*, 21 (3) (2020), pp. 156-161
18. Zhu L, Cai MY, Shi Q, Wang P, Li QL, Zhong YS, et al. Analysis of selective endoscopy results during the epidemic of coronavirus disease 2019 (COVID19). *Zhonghua Wei Chang WaiKeZaZhi* 2020;23(4):327–31.
19. Mahesh K. Goenka, Impact of COVID-19 on gastrointestinal endoscopy practice in India: a cross-sectional study, *Endoscopy International Open* 2020; 08: E974–E979
20. Tiago Leal, et al. COVID-19 in Gastroenterology Departments: The Impact of the First Wave, *GE Port J Gastroenterol* 2021;28:385–391 DOI: 10.1159/000516019
21. Abhilash Perisetti, Hemant Goyal, Neil Sharma, Gastrointestinal Endoscopy in the Era of COVID- *Frontiers in Medicine*, November 2020, Volume 7, Article 587602
22. Johnston ER, Habib-Bein N, Dueker JM et al. Risk of bacterial exposure to the endoscopists face during endoscopy. *Gastrointest Endosc* 2019; 89: 818–824
23. Mohamed Alborai, et al, The global impact of COVID-19 on gastrointestinal endoscopy units: An international survey of endoscopists, *Arab Journal of Gastroenterology* 21 (2020) 156–161
24. Chen Y, Yu Q, Farraye FA, Kochhar GS, Bernstein CN, Navaneethan U, et al. Patterns of endoscopy during COVID-19 pandemic: a global survey of interventional inflammatory bowel disease practice. *Intest Res.* (2020) doi: 10.5217/ir.2020.00037.