Impact of the COVID-19 outbreak on endoscopy training in a tertiary care centre in Germany

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INTRODUCTION
The novel coronavirus (SARS-CoV-2) has led to a global health emergency with reports of coronavirus disease (COVID-19) from over 100 countries. In Germany, more than 150,000 cases of COVID-19 infection and more than 7000 deaths have been reported. Due to the rapid increase in the number of infected persons, Germany’s national Public Health Institute (Robert Koch-Institut) declared a moderate COVID-19 infection risk for the general public on 28 February and on 17 March, this risk level was raised to ‘high’.

Various position statements were published on strategies to protect patients and staff in endoscopy units from SARS-CoV-2 infection, including prioritisation of indications and postponement of non-urgent procedures. In addition, it was recommended that only essential endoscopy personnel is present during endoscopy and, whenever possible, a limited team of endoscopy staff be designated to endoscopy procedures in patients with or suspected to be infected with COVID-19. These stringent protection strategies may also affect the endoscopy training programmes of gastroenterology fellows and residents in affected centres. In this paper, we present data on the impact of the COVID-19 outbreak on endoscopy training in a tertiary care centre in Germany.

METHODS
This single-centre, retrospective descriptive study was done in the Department of Gastroenterology at the University Hospital Augsburg.

The reorganisation of the endoscopy unit and its effects on the endoscopy training programme is also described.

Study data
The absolute number (case volume) of endoscopic examinations performed by four gastroenterology fellows over a 4-month period (January to April 2020) was evaluated and compared with the case load in the year prior to the COVID-19 outbreak (January to April 2019). Differences between case volumes are shown in percentages.

Endoscopy training and skills assessment
The gastroenterology fellowship in Germany lasts for 3 years and includes basic endoscopy training with independent accomplishment of 200 abdominal ultrasounds, 300 diagnostic gastroscopies, 50 therapeutic gastroscopies, 300 diagnostic colonoscopies, 50 polypectomies, 150 endoscopic retrograde cholangiopancreatographies, 50 endoscopic ultrasounds and 50 proctoscopies. Additionally, basic knowledge and skills in interventional procedures include endoscopic control of gastrointestinal bleeding, variceal band ligation, oesophageal/colonic stent placement and argon plasma coagulation treatment.

Education and research meetings
Journal club meetings and endoscopy research meetings are held once a week while departmental meetings are conducted daily. During these meetings, fellows and residents present and discuss current medical and gastroenterology literature.

RESULTS
In accordance with the position statement of the European Society of
Gastrointestinal Endoscopy, the endoscopy unit of the University Hospital Augsburg stopped all non-urgent procedures on 13 March and reduced the number of endoscopy personnel to a required minimum.

**Restructuring of the endoscopy unit with respect to the gastroenterology fellowship**

Due to the rapid increase in the number of confirmed and suspected patients with COVID-19 in the hospital, three gastroenterology fellows were transferred to the infectious disease (ID) and the intensive care unit (ICU) on 13 March. One fellow continued work in the endoscopy unit caring for urgent and emergency cases.

**Total case volume in centre**

The total case load in the centre fell from 1587 to 1029 between January and April 2020. In comparison between 2019 and 2020, the centre’s total case load for all procedures reduced in January from 1624 to 1587 (−2.3%), in February from 1486 to 1416 (−4.7%), in March from 1602 to 1197 (−25.3%) and in April from 1549 to 1029 (−33.6%) (table 1 and figure 1).

**Case volume of gastroenterology fellows**

Between January and April 2020, the case load of gastroenterology fellows (n=4) fell from 372 to 113. In comparison between 2019 and 2020, the number of cases performed by the gastroenterology fellows in February reduced from 301 to 286 (−5.0%), in March, the case load dropped from 330 to 227 (−31.2%) and in April from 307 to 113 (−63.2%) (table 2 and figure 1).

**Endoscopy skills assessment evaluation/medical meetings/outpatient clinic**

Endoscopy skills assessment of fellows was stopped indefinitely. Weekly educational and endoscopy research meetings were cancelled. Furthermore, participation of fellows in gastroenterology outpatient clinics was affected as all non-urgent outpatient appointments were cancelled; instead patients were contacted via telephone.

**DISCUSSION**

The COVID-19 pandemic has had direct and indirect effects on all aspects of healthcare. The data we show in this paper, though largely descriptive, demonstrate the impact the crisis has on the training of gastroenterology fellows in a tertiary care hospital in Germany. The results show a decline in the case volume of examinations done in the centre as well as a decline in examinations carried out by fellows between January and April 2020, especially when compared with the case load done 1 year prior to the outbreak. The decline in case load was seen across all examinations performed by the trainees as part of the fellowship curriculum. Additionally, educational and research meetings as well as skills assessment for evaluation of endoscopic abilities were cancelled.

In the University Hospital Augsburg, about 16,000 endoscopy examinations are performed yearly. With this case volume, the centre belongs to the largest in Europe. Between two and four fellows receive training in the centre at any given time. The centre is located in the German state of Bavaria which is one of the worst-hit regions of the COVID-19 outbreak in Germany. Following the lessons learnt from the outbreaks in China and Italy, a step-up plan was put into place to create resources for potential patients with COVID-19 and reduce the risk of in-hospital infection for patients and staff. This included cancellation or indefinite postponement of all non-urgent procedures on 13 March and reducing the number of endoscopy personnel to a required minimum.
Table 2  Case load of all fellows for January to April 2019 and 2020

| All fellows (n=4) | January 2019 | Difference (%) | February 2019 | Difference (%) | March 2019 | Difference (%) | April 2019 | Difference (%) |
|------------------|--------------|----------------|--------------|----------------|------------|----------------|------------|----------------|
| Abdominal ultrasound | 89 | +47.2 | 102 | −16.7 | 97 | −28.9 | 82 | −82.9 |
| Endoscopy | 243 | +0.8 | 199 | +1.0 | 233 | −32.2 | 225 | −56 |
| Total | 332 | +12 | 301 | −5.0 | 330 | −31.2 | 307 | −63.2 |

Table 3  Case load of fellows transferred to the ID unit (January to April 2019 and 2020)

| Fellows transferred to ID unit (n=3) | January 2019 | Difference (%) | February 2019 | Difference (%) | March 2019 | Difference (%) | April 2019 | Difference (%) |
|-------------------------------------|--------------|----------------|--------------|----------------|------------|----------------|------------|----------------|
| Abdominal ultrasound | 74 | +66.2 | 89 | −13.5 | 75 | −13.3 | 50 | −100 |
| Endoscopy | 118 | +25.4 | 135 | −32.6 | 149 | −53.0 | 121 | −87.6 |
| Total | 192 | +41.1 | 224 | −25.0 | 224 | −39.7 | 171 | −91.2 |

ID, infectious disease.

surgical and endoscopic procedures and strict prioritisation of indications. Furthermore, specific endoscopy rooms were designated for examination of patients with confirmed or suspected COVID-19. Gastroenterology fellows were transferred to other units because procedure volume in the endoscopy unit declined rapidly and also because of the rapid increase of COVID-19 cases in other ID and ICU. The redesign of services was structured locally on a regional basis but with regulatory policies and recommendations from the Bavarian Health Ministry. Since all hospitals and medical facilities across the country were obliged to follow these recommendations, we assume that a break in training has happened in all facilities across Bavaria and Germany.

In this situation of crisis, there was no room for dedicated training of gastroenterology fellows as all hands were on deck to ensure the speedy restructuring and reorganisation of the hospital to accommodate for a rapid influx of patients with COVID-19. Furthermore, the sparing of personal protective equipment, postponement of elective procedures necessary for training and skill assessment as well as prioritisation of indications made further training of gastroenterology fellows impossible. Unfortunately, no clear alternative training plan was provided due to the time pressure brought about by the need for quick and speedy reaction to the pandemic. However, there was strong support by all fellows who were involved to aid in solving the problems brought about by the crisis.

Up until now, data on the impact of the COVID-19 pandemic on endoscopy training have not been reported. However, it is obvious that the crisis will have an impact on medical education and training in all fields of practice. It is important that endoscopy units involved in education and training take this into consideration when planning their ‘return-strategies’ at the end of the pandemic. This is necessary so as to ensure that gastroenterology fellows have the chance to catch up on lost ground after practice has returned back to ‘normal’. Initially, fellows were worried that their training time may not be recompensated or rescheduled. However, after resumption of training and elective endoscopy procedures, plans will be put into place to catch up on endoscopy skills development. The major block in recovery of training will be service pressure because of the large number of postponed cases which have to be accomplished in a short period of time. This means that initially, endoscopic procedures will be performed mainly by the expert gastroenterologists of the unit so as to guarantee for speedy processing of cancelled procedures. However, to make sure that fellows catch up on loss of skills development, training time will be lengthened or rescheduled so that the slated number of training
procedures as well as skills assessment is accomplished within the time frame of the fellowship.

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