

# How did the COVID-19 pandemic change the practice of Paediatric Endoscopists in Europe?

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**Keywords:** Children, COVID-19, endoscopy, ESPGHAN recommendations

**Posted Date:** July 20th, 2020

**DOI:** <https://doi.org/10.21203/rs.3.rs-44454/v1>

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# Abstract

**Background:** As endoscopists are at risk to get infected by the novel Coronavirus SARS-CoV-2 during endoscopic procedures, the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) published recommendations regarding protection for the paediatric endoscopist and endoscopy suite staff.

The aim of this survey was to investigate whether European paediatric gastroenterology centres applied the recommendations and how this extraordinary situation was handled by the different centres.

**Results:** Twelve Paediatric European gastroenterology centers (from Belgium, Greece, Italy, Portugal, Slovenia, Spain, Switzerland, and United Kingdom) participated. Nine centres (75%) screened their patients for a possible COVID-19 infection before the procedure, the same amount of hospitals changed their practice based on the ESPGHAN recommendations. 67% of the centres reduced the staff in the endoscopy suite, 83% of the units used FFP2/3 masks and protective goggles during the procedure and 75% wore waterproof gowns.

**Conclusion:** The global situation caused by COVID-19 changed so rapidly, and hospitals had to react immediately to protect staff and patients and could not wait for guidelines to be published. Furthermore, uniform guidelines could not be applied by all European hospitals at a certain time point of the viral spread, as different regions of Europe were not only affected differently by COVID-19, but also had different access to personal protective equipment.

## Background

A novel coronavirus (SARS-CoV-2) causing coronavirus disease 2019 (COVID-19), was first identified in early December 2019 in Wuhan, China, to then cause a pandemic, as it has affected over 200 countries and territories. SARS-CoV-2 is a positive-sense, single-stranded RNA virus (1). In order to reduce the transmission rate, authorities instructed among other directives to reduce social gatherings to a minimum and maintain distances in between people. As endoscopists are at particular risk given the recently identified exposure of the endoscopist's face to biological material during the procedure (2), the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN) and the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) published recommendations (3, 4) for the paediatric endoscopist regarding personal protection for the paediatric endoscopist and theatre staff before and during endoscopic procedures.

Different European countries not only have different incidence of affected people, but also have different barriers against the adoption of these recommendations (e.g. shortage of medical resources, cultural factors). Our aim was to investigate whether paediatric gastroenterology centres throughout Europe applied the recommendations and how the current situation was handled by the different centres.

## Methods

This study was conducted as a survey between 22<sup>nd</sup> April to 7<sup>th</sup> May 2020.

Members of the ESPGHAN Endoscopy special interest group (5) and other paediatric gastroenterology centres were contacted by email and were invited to participate in this survey. Participants were informed that survey completion was voluntary, completion of a survey implies consent and results would be reported anonymously and in aggregate.

A questionnaire, containing questions regarding characteristics of the endoscopy unit and 12 questions related to the current situation caused by the COVID-19 pandemic (supplementary table 1), including COVID-19 screening processes and use of personal protective equipment (PPE), was sent out. The questionnaire was designed in a responder-friendly manner with a clear language and the possibility to select the answers to ensure a complete compilation of the questionnaire.

Data was transferred into an Excel table, analysed using descriptive statistics.

The present study was approved by the local ethical committee (Ethics committee of Northwest Switzerland, EKNZ, trial number 2020-01209). Furthermore, the study was conducted in accordance to the ethical principles laid down in the Declaration of Helsinki and its later amendments.

## Results

### *Characteristics of Endoscopy Units*

Twelve Paediatric gastroenterology centers throughout Europe (Belgium, Greece, Italy, Portugal, Slovenia, Spain, Switzerland, and United Kingdom) were invited and all participated. Five participating units (5/12, 41.7%) have a volume of 500-1000 endoscopies/ year, followed by four units (4/12, 33.3%) performing 100-500 endoscopies/ year and three units (3/12, 25%) with a performance of >1000 endoscopies/year. Paediatric gastroenterologists perform the endoscopies in all centres. In eight (8/12, 66.6%) of the centres, endoscopies are additionally performed by paediatric gastroenterology trainees. In four (4/12, 33.3%) of the units, endoscopies are performed by paediatric surgeons and in three of these centres pediatric surgery trainees are performing endoscopies as well. In only one centre (1/12, 8.3%) additionally adult gastroenterologists and their trainees perform endoscopies.

### *Screening of patients and staff*

All (12/12) centres had to cancel or postpone elective endoscopies due to COVID-19 outbreak, mainly beginning at mid-march 2020. Nine centres (9/12, 75%) screened their patients for a possible COVID-19 infection before the endoscopic procedures. No unit tested the endoscopy staff routinely, but all did in case the staff presented with typical symptoms (fever, cough, muscle ache, shortness of breath, sore throat, sudden loss of smell and/or taste, gastrointestinal symptoms).

### *Infection prevention in Endoscopy Units due to COVID-19*

In more than half (7/12, 58.3%) of the paediatric endoscopy units 3-5 health care professionals are present during an endoscopy, in four centres (4/12, 33.3%) between 5-10 staff members are involved and in one centre (1/12, 8.3%) less than three people are present.

Eight centres (8/12, 66.6%) reduced the staff in the endoscopy suite due to the pandemic, see Table 1.

Nine centres (9/12, 75%) hospitals changed their practice based on the ESPGHAN COVID-19 endoscopy statement (5). Eight centres (8/12, 66.6%) had guidelines provided by their local institution on which cases are considered emergent/urgent and/or can proceed.

Five endoscopy units (5/12, 41.6%) added additional disinfecting steps: total disinfection of the suite in between patients and disinfection with viricidal agents in high risk patients.

Regarding the use of personal protective equipment, nine paediatric endoscopy centres (9/12, 75%) were using protective goggles during endoscopic procedures. All centres (12/12, 100%) were using FFP2/3 or N95 masks. Eight centres (8/12, 66,7%) were using face shield and ten centres (10/12, 83,3%) provided endoscopists with waterproof gowns. From the above mentioned centres two reported the use of PPE only in endoscopies performed on patients who had tested positive for COVID-19 and one centre reported use of FFP2/3 masks only for highly suspected or COVID-19 positive patients.

## Discussion

Our survey reveals the burden for paediatric gastroenterology departments caused by the outbreak of COVID-19. All centres had to cancel elective procedures and limit endoscopies to urgent cases only. Although ESPGHAN reacted quickly to this exceptionally difficult situation and provided clinicians with early recommendations during the evolution of the viral spread, not all centres followed those guidelines, and most centres complied in addition with the recommendations of their own institutions. This reflects the fact, that uniform guidelines could not be applied by all European hospitals at a certain time point of the COVID-19 pandemic as different regions of Europe were not only affected differently and at certain timepoints but also had different access to personal protective equipment. It is a fact that it is extremely difficult to define the right time to publish guidelines or statements during a pandemic. The reasons for these difficulties are the differing impact of the virus in each country or region, the different rules given by the governments and the compliance to those rules and that these may change rapidly during a pandemic.

Centres from regions, which had high numbers of infected people, tended to screen their patients for COVID-19 before performing the endoscopies, whilst centres from countries, which were only mildly affected, abstained from it. This might reflect the different awareness of the burden of the viral impact and the different chosen approaches of infection prevention in different countries.

Consistently, most centres reduced the amount of staff present during endoscopic procedures and provided staff with PPE as recommended by ESPGHAN. Wearing single or double pair of gloves was handled very differently, as well as disinfecting the endoscopy unit in between the procedure

## Conclusion

The global situation caused by COVID-19 changed so rapidly, that hospitals had to react immediately to protect staff and patients and could not wait for guidelines to be published. The burden of COVID-19 on endoscopy units is substantial- not only does the pediatric gastroenterologist need to make the decision about which endoscopies are urgent, but also how to protect the staff with the medical supply available for PPE.

Time and upcoming studies will also show if delayed elective endoscopic procedures will have an impact on children's health and/or on health economy.

## Abbreviations

NASPGHAN North American Society for Pediatric Gastroenterology, Hepatology and Nutrition

ESPGHAN European Society for Paediatric Gastroenterology, Hepatology and Nutrition

PPE Personal protective equipment

# Declarations

## Ethics approval and consent to participate

This study was approved by the local ethical committee (Ethics committee of Northwest Switzerland, EKNZ, trial number 2020-01209).

## Consent for Publication

Study was approved by above ethical committee to be published without individual patient's consent.

Availability of data and material: The dataset used/analyzed during the current study is available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no conflict of interest.

Funding: There is no funding source.

## Author's contribution:

Study concept was designed by IL, CL and RF. Data collection was performed by PB, LD, PD, JD, BH, MH, PN, LN, SO AP, CR, MT, VVM. Data was analyzed by CL. All authors commented on previous versions of the manuscript and read and approved the final one.

Acknowledgements: Not applicable

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# Tables

| Centre | Average endoscopies/ year |          |       | Patients screened prior to endoscopy | Staff involved changed during pandemic | Changes based on ESPGHAN recommendations | Local guidelines | Personal protective equipment used during endoscopy |             |                       |                       |               |                    |                 |       |
|--------|---------------------------|----------|-------|--------------------------------------|--|--|------------------|---|-------------|-----------------------|-----------------------|---------------|--------------------|-----------------|-------|
|        | 100-500                   | 500-1000 | >1000 |                                      |  |  |                  | Protective goggles                                  | Face shield | Single pair of gloves | Double pair of gloves | Surgical mask | FFP2/3 or N95 mask | Waterproof gown | other |
| 1      |                           |          | X     | No                                   | Yes                                    | Yes                                      | Yes              | X   | X           | X                     |                       |               | X                  | X               |       |
| 2      |                           |          | X     | Yes                                  | No                                     | No                                       | Yes              | X   | X           | X                     |                       | X             | X                  |                 |       |
| 3      | X                         |          |       | Yes                                  | Yes                                    | No                                       | No               |   | X           |                       | X                     |               | X                  | X               |       |
| 4      | X                         |          |       | No                                   | Yes                                    | No                                       | Yes              | X   | X           |                       | X                     |               | X                  |                 |       |
| 5      | X                         |          |       | No                                   | Yes                                    | Yes                                      | Yes              | X   |             | X                     |                       |               | X                  | X               |       |
| 6      |                           | X        |       | Yes                                  | Yes                                    | Yes                                      | No               | X   |             |                       | X                     |               | X                  | X               |       |
| 7      |                           | X        |       | Yes                                  | No                                     | Yes                                      | Yes              | X   | X           |                       |                       | X             | X                  | X               |       |
| 8      | X                         |          |       | Yes                                  | No                                     | Yes                                      | Yes              | X   |             | X                     |                       |               | X                  | X               |       |
| 9      |                           | X        |       | Yes                                  | No                                     | Yes                                      | Yes              | X   | X           | X                     |                       | X             | X                  | X               |       |
| 10     |                           |          | X     | Yes                                  | Yes                                    | Yes                                      | No               | X   |             |                       | X                     |               | X                  | X               |       |
| 11     |                           | X        |       | Yes                                  | Yes                                    | Yes                                      | Yes              | X   | X           |                       | X                     |               | X                  | X               |       |
| 12     |                           | X        |       | Yes                                  | Yes                                    | Yes                                      | No               |   | X           | X                     |                       | X             | X                  | X               |       |

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Supplementarytable.docx](#)