Scientific Research Publishing

Open Journal of Pediatrics, 2026, 16(6), 822-831
https://www.scirp.org/journal/ojped
ISSN Online: 2160-8776
ISSN Print: 2160-8741

Endoscopic Profile of Gastrointestinal Lesions in Children in Congo

Lucie Charlotte Ollandzobo Ikobo[1,2*], Bienvenu Hostaud Atipo-Ibara[1,3], Bénédicte Bopéto[1], Néli Yvette Ngakengni[1], Jean-Robert Mabiala Babéla[1,2], Blaise Irénée Atipo Ibara[1,3]

[1]Faculty of Health Sciences, Marien Ngouabi University, Brazzaville, Republic of the Congo
[2]Department of Infant Pediatrics, Brazzaville University Hospital, Brazzaville, Republic of the Congo
[3]Department of Gastroenterology and Internal Medicine, Brazzaville University Hospital, Brazzaville, Republic of the Congo
Email: *Lucieatipo@hotmail.fr

How to cite this paper: Ollandzobo Ikobo, L.C., Atipo-Ibara, B.H., Bopéto, B., Ngakengni, N.Y., Mabiala Babéla, J.-R. and Atipo Ibara, B.I. (2026) Endoscopic Profile of Gastrointestinal Lesions in Children in Congo. *Open Journal of Pediatrics*, **16**, 822-831.
https://doi.org/10.4236/ojped.2026.166079

Received: October 21, 2026
Accepted: November 17, 2026
Published: November 20, 2026

Copyright © 2026 by author(s) and Scientific Research Publishing Inc.
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).
http://creativecommons.org/licenses/by/4.0/

Open Access

Abstract

Objective: to describe the endoscopic profile of gastrointestinal lesions in children in Congo. **Patients and Methods:** this was a cross-sectional, descriptive, multicenter study with retrospective data collection over a five-year period, from January 1, 2019 to December 31, 2023. It was conducted in ten healthcare facilities located in Brazzaville, Pointe-Noire and Oyo, and involved the analysis of 994 examination reports of children aged 0 to 19 years who underwent upper gastrointestinal endoscopy (UGIE) or lower gastrointestinal endoscopy (LGIE) and whose results were available and interpretable. **Results:** of the 1096 pediatric gastrointestinal endoscopy reports collected during the study period, 994 were included, corresponding to a mean annual frequency of 198.8 examinations over five years. The overall frequency of lesions found during these endoscopies was 72.64% (722/994). By type of endoscopy, of the 900 UGIE results analyzed, 73% (657/900) were abnormal and 27% (243/900) were normal; of the 94 LGIE results analyzed, 69.1% (65/94) were abnormal and 30.9% (29/94) were normal. For UGIE, the main indications were caustic ingestion (48.89%; n = 440), epigastric pain (22.11%; n = 199) and upper gastrointestinal bleeding (10.56%; n = 95). Among the 657 abnormal UGIEs, inflammatory lesions predominated (48.71%). For LGIE, of the 94 indications recorded, rectal bleeding was the most frequent (25.53%), followed by anal pain (17.02%) and mucous bloody diarrhea (14.89%). Medico-legal indications together accounted for 12.77% of LGIEs. Eleven complications were recorded among the 994 procedures, an overall rate of 1.11%. The most frequent was persistent abdominal pain after the examination (6 cases; 0.6%). **Conclusion:** gastrointestinal endoscopic lesions are frequently observed in Congolese children. These findings call for strengthened prevention of caustic ingestion, child protection, and enhanced training in pediatric gastrointestinal endos-

copy in Congo.

Keywords

Profile, Endoscopy, Gastrointestinal Lesions, Child, Congo

1. Introduction

Gastrointestinal endoscopy allows direct examination of the mucosa of the digestive tract for diagnostic and therapeutic purposes [1]. Initially designed for adults, it was adapted to children from the 1970s onwards thanks to the miniaturization of flexible endoscopes, offering greater safety, tolerance and accuracy [2] [3]. It has since become an indispensable tool for the diagnosis and management of pediatric gastrointestinal diseases. However, it requires dedicated equipment and carries an increased risk of complications [4] [5].

In developed countries, this specialty is well established and supported by modern infrastructure and multidisciplinary teams [5] [6]. In sub-Saharan Africa, by contrast, pediatric gastrointestinal endoscopy remains underdeveloped [7] [8]. In Congo, local data on gastrointestinal endoscopy in children remain limited [9]. To help fill this gap in the literature, we conducted this study, whose general objective was to examine the endoscopic profile of gastrointestinal lesions in children in Congo. The specific objectives were to determine the frequency of endoscopic lesions in children, to describe the indications for endoscopy and the types of lesions found, and to list the complications.

2. Patients and Methods

This was a cross-sectional, descriptive, multicenter study conducted over 12 months, with retrospective data collection covering a five-year period from January 1, 2019 to December 31, 2023. It was carried out in all ten public and private healthcare facilities performing gastrointestinal endoscopy in Brazzaville, Pointe-Noire and Oyo, which were systematically included. The study population consisted of children aged 0 to 19 years who underwent endoscopy during the study period. We included the reports of children aged 2 months to 19 years who underwent upper gastrointestinal endoscopy (UGIE) or lower gastrointestinal endoscopy (LGIE) in one of these facilities and whose results were available and interpretable. Unavailable reports were not included. Incomplete or illegible reports were excluded from the study.

Data were extracted from the gastrointestinal endoscopy reports and recorded on a pre-established data collection form validated by the research team. Missing information was rare and concerned only complications, which were not always recorded in the reports. The variables collected for each child included age, sex, place of residence (urban or rural), type of endoscopy (upper or lower), indication for the examination, endoscopic findings and any complications. Indications were

compared with the guidelines of the French Society of Digestive Endoscopy (SFED) and the French-speaking Group of Pediatric Hepatology, Gastroenterology and Nutrition (GFHGNP) to assess their appropriateness [10]-[13]. Endoscopic lesions were classified into five categories: inflammatory, functional, anatomical or malformative, ulcerative, and tumoral.

Data were entered and analyzed using Epi Info 7, Microsoft Excel and SPSS version 25. Qualitative variables were expressed as counts and percentages, and quantitative variables as means with standard deviations. The chi-square test was used to compare categorical variables, with a significance threshold of $p < 0.05$. The study was approved by the Health Sciences Research Ethics Committee of Congo (CERSSA) under number 223-24/MESRSIT/DGRST/CERSSA/-24. Data were processed anonymously, without any mention of the children's identities. Confidentiality of information was guaranteed throughout the study.

3. Results

Of the 1096 pediatric gastrointestinal endoscopy reports collected during the study period, 994 were included, corresponding to a mean annual frequency of 198.8 examinations over five years. The overall frequency of lesions found during these endoscopies was 72.64% (722/994). By type of endoscopy, of the 900 UGIE results analyzed, 73% (657/900) were abnormal and 27% (243/900) were normal; of the 94 LGIE results analyzed, 69.1% (65/94) were abnormal and 30.9% (29/94) were normal. The sample comprised 556 girls (55.94%) and 438 boys (44.06%), giving a sex ratio of 0.79. The mean age of the children was 10.99 ± 6.15 years, ranging from 2 months to 19 years. The most represented age groups were 15-19 years (31.39%), followed by children under 4 years (25.15%) (**Figure 1**). Most children came from urban areas (n = 942; 94.77%), versus 52 children (5.23%) from rural areas.

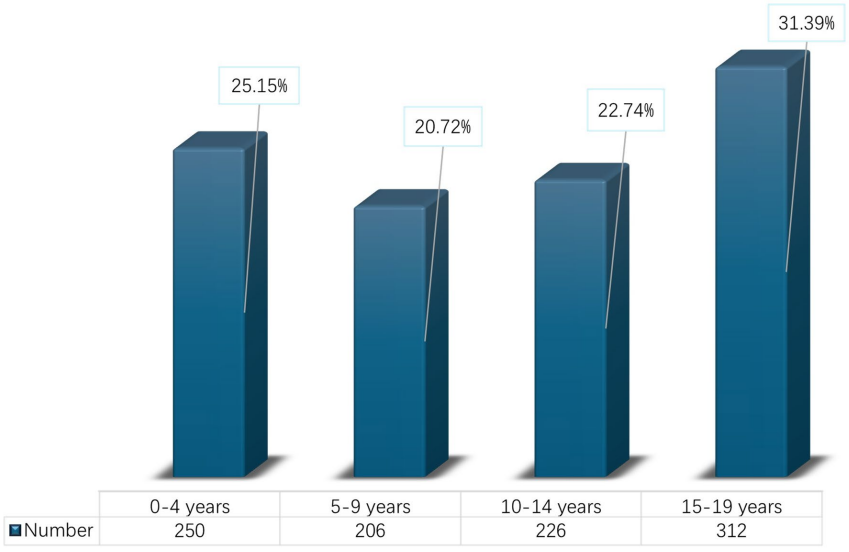


Figure 1. Distribution of children by age group.

Regarding UGIE, of the 900 indications recorded, the main ones were caustic ingestion 48.89% (440/900), epigastric pain 22.11% (199/900) and upper gastrointestinal bleeding 10.56% (95/900). Table 1 details all UGIE indications.

Table 1. Indications for upper gastrointestinal endoscopy.

Indication	n	%
Caustic ingestion	440	48.89
Epigastric pain	199	22.11
Upper gastrointestinal bleeding	95	10.56
Persistent vomiting	43	4.78
Gastroesophageal reflux	30	3.33
Follow-up of caustic lesions	30	3.33
Dyspeptic syndrome	12	1.33
Foreign body ingestion	12	1.33
Epistaxis	9	1.00
Persistent hiccups	9	1.00
Work-up of unexplained anemia	5	0.56
Dysphagia	5	0.56
Dyspnea	4	0.44
Ascites and lower-limb edema	3	0.33
Large drug ingestion	3	0.33
Dysphonia	1	0.11
Total	900	100

Caustic ingestion (n = 440) was accidental in 226 cases (51.36%), occurring mainly in children under 9 years of age, and intentional in 214 cases (48.64%), mostly involving adolescents. Bleach (sodium hypochlorite) was the most frequently involved substance (n = 317; 72.05%), followed by caustic soda (n = 44; 10%), "Sniper"-type pesticides (n = 42; 9.55%) and other caustic agents (batteries, cement paste and heavy metals) in 8.41% (n = 37).

Comparison with SFED and GFHGNP guidelines showed that 874 of the 900 indications (97.11%) were appropriate. The 26 inappropriate indications (2.89%) were epistaxis (34.62%), persistent hiccups (34.62%), dyspnea (15.38%), drug poisoning (11.54%) and dysphonia (3.85%).

Among the 657 abnormal UGIEs, inflammatory lesions were present in 48.71% (320/657) of cases, followed by functional or anatomical lesions 21.16% (139/657) and ulcerative lesions 12.63% (83/657) (see Table 2).

Among inflammatory lesions (n = 320), patulous cardia complicated by peptic esophagitis was the most frequent (119 cases; 37.19%), followed by caustic lesions (116 cases; 36.25%), erosive gastroduodenopathy (54 cases; 16.88%) and erythematous gastropathy (31 cases; 9.69%). Among functional or anatomical lesions (n =

139), uncomplicated cardia incompetence (70 cases; 50.36%) and hiatal hernia (59 cases; 42.45%) predominated; there were 10 cases (7.19%) of malformative lesions (one achalasia, three esophageal fistulas and six cardio-tuberosity malpositions). Ulcerative lesions (n = 83) were mainly located in the duodenal bulb (27 cases; 32.53%), the antrum (22 cases; 26.51%) and other sites (34 cases; 40.96%). Tumoral lesions (n = 58) corresponded to polypoid lesions of the duodenum and/or stomach and diffuse Brunner's gland hyperplasia.

Table 2. Classification of lesions found at upper gastrointestinal endoscopy by type.

Type of lesion	n	%
Inflammatory lesions	320	48.71
Functional or anatomical lesions*	139	21.16
Ulcerative lesions	83	12.63
Tumoral lesions	58	8.83
Unclassified	57	8.68
Total	**657**	**100**

*Malformative.

Regarding LGIE, of the 94 indications recorded, rectal bleeding was the most frequent 25.53% (24/94), followed by anal pain 17.02% (16/94) and mucous bloody diarrhea 14.89% (14/94). Medico-legal indications (sexual assault by sodomy and search for evidence of rape) together accounted for 12.77% (12/94) of examinations (Table 3).

Table 3. Indications for lower gastrointestinal endoscopy.

Indications	n	%
Rectal bleeding	24	25.53
Anal pain	16	17.02
Mucous bloody diarrhea	14	14.89
Constipation	13	13.83
Search for signs of sexual assault by sodomy	12	12.77
Chronic abdominal pain	6	6.38
Sensation of intrarectal foreign body/Anal prolapse	4	4.26
Encopresis	3	3.19
Follow-up of post-traumatic anal fissure	2	2.13
Total	**94**	**100**

Forty-four of the 94 indications (46.81%) were consistent with SFED and GFHGNP guidelines, namely rectal bleeding, mucous bloody diarrhea and chronic abdominal pain; in 65 cases (69.15%), they revealed lesions, in order of frequency: inflammatory (43.08%), followed by functional (26.15%) and tumoral lesions (20%)

(Table 4).

Table 4. Classification by type of lesions found at lower gastrointestinal endoscopy.

Type of lesion	n	%
Inflammatory conditions	28	43.08%
Functional conditions	17	26.15%
Tumoral conditions	13	20%
Malformative or anatomical conditions	3	4.62%
Fecaloma	4	6.15%
Total	**65**	**100%**

Among inflammatory lesions (n = 28), anal fissure predominated (n = 19; 67.86%), followed by diffuse erosions of the colonic mucosa (n = 5; 17.86%), erythematous anusitis (n = 3; 10.71%) and ulcerative hemorrhagic colitis (n = 1; 3.57%). Hemorrhoidal disease was also observed as an associated finding in 21 cases. Tumoral lesions (n = 13) consisted of rectocolic polyps (12 cases; 18.46%) and an ulcerative hemorrhagic anorectal tumor (1 case; 1.54%). Malformative lesions (n = 3) all corresponded to megarectum.

Eleven complications were recorded among the 994 procedures, an overall rate of 1.11% (11/994). These consisted of persistent abdominal pain after the examination (6 cases; 0.6%), respiratory distress with oxygen desaturation (3 cases; 0.3%), gastrointestinal perforation (1 case; 0.1%) and cardiac arrest (1 case; 0.1%).

4. Discussion

This multicenter, retrospective, descriptive study aimed to review gastrointestinal endoscopy reports in Congo in order to determine the frequency of lesions and to describe the indications, the endoscopic profile of gastrointestinal lesions and the complications in children. Although this study provides relevant data, certain limitations should be highlighted, notably its retrospective design, which exposes it to bias due to poor record keeping, and shortcomings in the collection of information on complications, whose documentation in endoscopy reports was not systematic, making their interpretation difficult. The concentration of participating centers in large cities (Brazzaville, Pointe-Noire, Oyo) leads to an overrepresentation of children from urban areas (94.77%) and limits the generalizability of the results to rural areas, where access to endoscopy remains very limited.

Our analysis showed an annual frequency of 198.8 pediatric gastrointestinal endoscopies performed in Congo between 2019 and 2023. This figure remains very modest compared with data from developed countries. In the United States, Kramer *et al.* reported 9577 pediatric endoscopic procedures over 48 months in a single pediatric center, *i.e.* about 2400 per year, reflecting far greater medical infrastructure and accessibility [4].

The overall frequency of endoscopic lesions in our study was 72.64%. Lesions

of the upper gastrointestinal tract (73%) predominated over those of the lower gastrointestinal tract (69.1%). This finding has already been reported by other authors in the literature [6] [14]. This predominance can be explained by the frequency of upper gastrointestinal tract disorders in children, particularly accidental caustic ingestion.

Regarding UGIE, caustic ingestion was the leading indication in our series (48.89%), followed by epigastric pain (22.11%). This profile contrasts with several African series. In Senegal, Diouf *et al.* reported a predominance of epigastric pain (24.2%), with caustic ingestion accounting for only 15.5% of indications [15]; in Togo, Bagny *et al.* made the same observation, with 50% epigastric pain and a marginal share of caustic ingestions [8]. Our results are, however, close to those of Abassa *et al.* in Côte d'Ivoire, where caustic ingestion also dominated the indications (63.5%) [13]. This preponderance of caustic ingestions in Congo, and the resulting predominance of inflammatory esophageal lesions, differs from the Senegalese and Togolese series, which mainly reported gastric lesions such as ulcers or gastritis, and from the Kenyan series of Kefa *et al.*, in which gastritis and esophagitis predominated [16]. The age distribution of our patients, with accidental ingestions before 9 years of age and intentional ingestions in adolescence in the context of self-harm, is consistent with the findings of other regional studies and highlights the role of inadequate household storage of caustic products in young children and the psychosocial vulnerability of adolescents.

In our series, rectal bleeding was the leading indication for LGIE (25.53%), followed by anal pain (17.02%) and mucous bloody diarrhea (14.89%). A study from Dakar reported similar data, with rectal bleeding predominating (32.5%), ahead of suspected rectal polyps and hemorrhoids [15]. The notable proportion of medico-legal indications in our cohort (12.77% for sexual assault and search for evidence of rape) is a specific feature of our context, rarely documented in the series compared. These corresponded to inappropriate or functional indications not recognized by the SFED and GFHGNP guidelines.

Anal fissure was the most frequent inflammatory lesion at LGIE, followed by rectocolic polyps (among tumoral lesions). This predominance of polyps is consistent with the data of Kefa *et al.* in Kenya, where colonic polyps were the most frequent finding at colonoscopy [16], and underlines the value of LGIE as a diagnostic and therapeutic tool. Polypectomy, together with excision or biopsy of these lesions, was one of the few indications for interventional pediatric endoscopy found in our series.

In our study, among the 994 endoscopic procedures performed, the overall complication rate was 1.11%. The most severe complications, namely perforation and cardiac arrest, occurred after conscious sedation, whereas persistent abdominal pain predominated in children examined under local anesthesia. This argues for strengthening peri-procedural analgesic management and longitudinal follow-up to better assess the course of the diagnosed lesions and the impact of the therapeutic measures undertaken. This result cannot be discussed further be-

cause of the shortcomings identified in data collection.

Overall, authors in the international literature report low rates of serious complications during endoscopy, notably in the United States, where Thakkar *et al.* reported an overall immediate complication rate of 2.3% during upper endoscopy, mainly hypoxia (1.5%), with bleeding in 0.3% [17], and Hsu *et al.*, in a series of more than 21,000 upper endoscopies, reported a perforation rate of 0.02% [18].

5. Conclusion

Endoscopic lesions of the gastrointestinal tract are frequently observed in Congolese children. In upper gastrointestinal endoscopy, caustic ingestion is the main indication, followed by epigastric pain. Rectal bleeding is the most frequent indication for lower gastrointestinal endoscopy, followed by anal pain. In both cases, inflammatory lesions predominate. Anal fissure is frequently found in cases of sexual assault. These findings call for strengthened prevention of accidental caustic ingestion in young children and of self-harm in adolescents, child protection, and enhanced training of healthcare teams in pediatric gastrointestinal endoscopy in Congo.

Declaration of Generative AI and AI-Assisted Technologies in the Manuscript Preparation Process

During the preparation of this manuscript, the authors used Claude (Anthropic) solely for limited editing of certain sentences to revise them and improve their clarity, and mainly for translation into English, as the original text was written in French. No AI tool was used to generate research content, analyze data, interpret results or prepare references: the ideas, arguments and intellectual contribution of the article are entirely original. All AI-assisted suggestions were reviewed, edited where necessary and approved by the authors, who take full responsibility for the final manuscript.

Author Contributions

- **Study conception and design**: Ollandzobo Ikobo Lucie Charlotte married name Atipo-Ibara;
- **Data collection**: Bopéto Bénédicte;
- **Statistical analysis**: Atipo-Ibara Bienvenu Hostaud, Bopéto Bénédicte;
- **Manuscript writing**: Bienvenu Hostaud Atipo-Ibara, Ollandzobo Ikobo LC married name Atipo-Ibara;
- **Critical review**: Mabiala Babela Jean-Robert, Atipo Ibara Blaise Irénée.

All authors read and approved the final version of the manuscript.

Conflicts of Interest

The authors state that they have no conflict of interest in connection with this work.

References

[1] Pankay, P. (2013) Gastrointestinal Endoscopy. In: Goldman, L. and Schafer, A.I.,

Eds., *Goldman's Cecil Medicine* (25*th edition*), Elsevier, 11-21.

[2] Viala, J., Michaud, L. and Guimber, D. (2019) Endoscopie digestive pédiatrique: Des débuts aux progrès technologiques récents. *Gastroentérologie Clinique et Biologique*, **43**, 341-347. (In French)

[3] Olives, J.P. and Chouraqui, J.P. (2002) Spécificité des techniques d'endoscopie digestive chez le nouveau-né et l'enfant. *Acta Endoscopica*, **32**, 541-543. (In French) https://doi.org/10.1007/bf03020314

[4] Kramer, R.E. and Narkewicz, M.R. (2016) Adverse Events Following Gastrointestinal Endoscopy in Children. *Journal of Pediatric Gastroenterology and Nutrition*, **62**, 828-833. https://doi.org/10.1097/mpg.0000000000001038

[5] Thomson, M., Tringali, A., Dumonceau, J., Tavares, M., Tabbers, M.M., Furlano, R., *et al.* (2017) Paediatric Gastrointestinal Endoscopy. *Journal of Pediatric Gastroenterology and Nutrition*, **64**, 133-153. https://doi.org/10.1097/mpg.0000000000001408

[6] Gilger, M.A. and Gold, B.D. (2005) Pediatric Endoscopy: New Information from the PEDS-CORI Project. *Current Gastroenterology Reports*, **7**, 234-239. https://doi.org/10.1007/s11894-005-0040-y

[7] Bassène, M.L., Diallo, S., Deye, B., Halim, A., Gueye, M.N., Dia, D., *et al.* (2015) Endoscopie digestive pédiatrique: Analyse rétrospective de 408 cas dans le centre d'endoscopie du CHU Aristide Le Dantec de Dakar. *Medecine d'Afrique noire*, **52**, 125-130. (In French)

[8] Bagny, A., Akolly, D., Yakoubou, R., Kogoe, L., Lawson, A. and Douti, N. (2021) L'endoscopie digestive haute pédiatrique au CHU Campus de Lomé: Analyse rétrospective. *Health Sciences and Disease*, **22**, 52. (In French)

[9] Mbika, C.A., Missambou, M.S. and Okoko, A. (2011) Endoscopie digestive haute en milieu pédiatrique à Brazzaville. *Medecine d'Afrique noire*, **58**, 123-128. (In French)

[10] Mougenot, J.F., Faure, C. and Olives, J.P. (2002) Fiches de recommandations du Groupe Francophone d'Hépatologie, Gastroentérologie et Nutrition Pédiatrique (GFHGNP). Indications actuelles de l'endoscopie digestive pédiatrique. *Archives de Pédiatrie*, **9**, 942-944. (In French) https://doi.org/10.1016/s0929-693x(02)00041-6

[11] Lachaux, A., Michaud, L., Viola, S., Heresbach, D. and Laugier, R. (2009) Consensus en endoscopie digestive (CED). *Acta Endoscopica*, **39**, 322-326. (In French) https://doi.org/10.1007/s10190-009-0092-1

[12] Cardey, J., Lachaux, A., Mougenot, J.F., Bellaiche, M. and Heresbach, D. (2012) Consensus en endoscopie digestive: Préparation à l'endoscopie digestive basse en pédiatrie. *Acta Endoscopica*, **42**, 197-204. (In French) https://doi.org/10.1007/s10190-012-0245-5

[13] Abassa, K., Attia, A.K., Diawara, M.A., Konan, P.G., Boka, S.B. and Kissi, O. (2010) Endoscopie digestive haute pédiatrique: Une expérience hospitalière en Côte d'Ivoire. *Medecine Tropicale*, **70**, 267-271. (In French)

[14] Lamchahab, M., Ettayebi, F., Anajar, S., Zerouali, N.O. and El Abkari, M. (2015) Indications et résultats de l'endoscopie digestive pédiatrique au Maroc: Expérience du CHU Hassan II de Fès. *Revue Maghrébine de Pédiatrie*, **10**, 215-220. (In French)

[15] Diouf, M.L., Ka, M.M., Diallo, A., Sow, A., Ndour, O., Diop, B. and Badiane, A. (2014) Pratiques et indications de l'endoscopie digestive chez l'enfant: Expérience du CHU Aristide Le Dantec, Sénégal. *Archives de Pédiatrie*, **21**, 1245-1252. (In French)

[16] Kefa, O., Laving, A., Muiva, J., Ogutu, E., Aabakken, L. and Bhat, P. (2022) Practices in Paediatric Gastrointestinal Endoscopy at Kenyatta National Hospital and Gertrude's Children's Hospital in Nairobi, Kenya. *Gastroenterology & Hepatology Inter-*

national Journal, **7**, 1-11. https://doi.org/10.23880/ghij-16000193

[17] Thakkar, K., El-Serag, H.B., Mattek, N. and Gilger, M.A. (2007) Complications of Pediatric EGD: A 4-Year Experience in PEDS-CORI. *Gastrointestinal Endoscopy*, **65**, 213-221. https://doi.org/10.1016/j.gie.2006.03.015

[18] Hsu, E.K., Chugh, P., Kronman, M.P., Markowitz, J.E., Piccoli, D.A. and Mamula, P. (2013) Incidence of Perforation in Pediatric GI Endoscopy and Colonoscopy: An 11-Year Experience. *Gastrointestinal Endoscopy*, **77**, 960-966. https://doi.org/10.1016/j.gie.2012.12.020