

Table S1. Demographic and clinical data of the included patients as reported by 24 studies.

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean \pm SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|------------------------------|-----------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Parrela et al., 2022 [18] | Case report Brazil | 1 M | 1 <u>Diagnoses</u> SMA and jejunal branches Thromboembolism Short bowel syndrome <u>Signs and symptoms:</u> Nausea Vomiting Fever Bloating Abdominal pain Diarrhea which progressed to obstipation Anasarca Hyporexia Abdominal pain Hypoalbuminemia | 62 | NR | <u>Date</u> August 2020 <u>Duration</u> NR <u>Severity</u> NR | 20 days post COVID-19 hospitalization | NR | Thromboembolic tomy Enterectomy Rivaroxaban 20 mg daily Dietary adjustments | 2 months after discharge Developed: Anasarca Hyperoxia Abdominal pain Diagnosed with short bowel syndrome | 5 Murad et al., scale |
| Enas et al., 2023 [19] | Case control Egypt | 210 (1 COVID-19 history and <i>Cryptosporidium</i> + = 49 (23.3% M) | <u>Diagnoses</u> <i>Cryptosporidium</i> spp. infection | > 18 (<i>Averages</i> NR) | (1) <i>H. pylori</i> infection (49.9%) Diabetes (20.5%) | NR | NR | NR | NR | NR | 7 NOS |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | GI Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| | | (2) COVID-19 history and <i>Cryptosporidium</i> - = 161 (76.6% M) COVID-19 negative controls n = 220 Gender NR | <u>Signs and symptoms</u> Chronic diarrhea Vomiting Weight loss Fecal occult blood Elevated inflammatory biomarkers | | (2) <i>H. pylori</i> infection (16.8%) Diabetes (18.3%) | | | | | | |
| Golla, et al., 2023 [20] | Prospective cohort study India | 920 <u>Cohort 1</u> (COVID-19 cases): 320 M (50.9%) <u>Cohort 2</u> Group A (Age matched controls for cohort 1):320 (54.6% M) Group B Healthcare workers COVID-19 negative: 280 (61.4% M) | 50/320 (15.6%) <u>Diagnoses</u> NR <u>Signs and symptoms</u> Diarrhea 23 (7.2%) Abdominal pain 16 (5.0%) Nausea with vomiting 11 (3.4%) At 1 month after infection, 36/320 (11.3%) FGID-like symptoms | Cohort 1 38.02 ± 11.4 | Cohort 1 Diabetes 8.4% HTN 11.5% CAD 2.5% CKD 1.2% | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> Cohort 1 Mild 74.3% Moderate 22.1% Severe 3.4% | 1 month after infection | NR | NR | At 3 months, 27 (8.4%) persisted to have symptoms At 6 months, 21 (6.6%) had persistent symptoms Of the various reported FGID at 3 months: 8 (2.5%) IBS, 7 (2.2%) functional diarrhea | 8 NOS |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | GI Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|---------------|-------------------------------------------|---------------------------------|------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| | | | | | | | | | | 6 (1.9%) functional dyspepsia (FD) 3 (0.9%) functional constipation 2 (0.6%) FD-IBS overlap 1 (0.3%) functional abdominal bloating/distention Of the 27 patients with persistent symptoms at 3 months: 8 (29.6%) isolated carbohydrate malabsorption | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|-------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------|--------------------------|
| | | | | | | | | | | 1 (3.7%) 2 positive tests for MAS 1 (3.7%) IMO | |
| Zollner et al., 2022 [21] | (Observational study, Analytical) Austria | 46 COVID-19 positive IBD patients (56.5% M) | <u>Diagnoses</u> 70% (32/46) of patients with positive qPCR signal in at least 1 segment of the gut. 52% (24/46) of patients with immunoreactivity against the viral nucleocapsid phosphoprotein in the small and large intestine NR | 44.67 (25.45, 50.58) | Crohn's Disease (22/32 (68.8)) UC 8/32 (25.0) IBD unclassified 2/32 (6.2) Heart disease 2/32 (6.2) Diabetes 2/32 (6.2) Lung disease 1/32 (3.1) | <u>Date</u> October 2020 and- February 2021 <u>Duration</u> NR <u>Severity</u> Asymptomatic (2.2%) Mild (91.3%) Moderate (4.3%) Severe (2.2%) | Days since PCR)- confirmed SARS-CoV-2 infection and biopsy: 218.50 (94.50, 256.75; Range) | NR | No follow up, 3 single sample NOS | | |
| Ferreira et al., 2022 [22] | Case- Control Study Brazil | COVID-19 positive cases: 149 (34.23% M) Control group (COVID-19 negative): 71 (28.17% M) | <u>Diagnoses</u> Comparing both groups, significant differences were seen in microbial diversity in post- COVID-19 patients <u>Signs and symptoms</u> | NR | Obesity (38.26%) Systemic arterial hypertension (21%) T2DM (7.4%) | <u>Date</u> October to December 2020 presenting positive COVID-19 test | 1-8 months after positive COVID-19 test | <u>Total SARS- CoV-2 Antibodies</u> Asymptomatic: 29.2 ± 49.1 | NR | Ranges from 1 month follow up to 8 month follow up | 5 NOS |

| Author | Study Type Country | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|-----------------------|----------------------------|--------------------------|-------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------|--------------------------|
| | | | 49 had diarrhea | | Heart diseases, such as arrhythmias, coronary artery disease and cardiac dispositive (5.4%) Chronic lung diseases, including asthma (4.7%) Chronic renal disease (2.7%) Depression (3.3%) Autoimmune diseases (2%) | <u>Duration</u> NR <u>Severity:</u> Asymptomatic: 10 Mild: 117 Moderate: 10 Severe: 12 | | Mild: 68.6 ± 58.8 Moderate: 101.1 ± 57.5 Severe: 87.3 ± 43.4 <u>CRP (mg/dL)</u> Asymptomatic: 0.42 ± 0.27 Mild: 0.56 ± 0.92 Moderate: 1.56 ± 1.68 Severe: 3.22 ± 4.35 | | | |
| Lee et al., 2021 [23] | Case Report South Korea | 1 M | <u>Diagnoses</u> Oropharyngeal dysphagia <u>Signs and symptoms</u> Dysphagia | 73 years | Parkinson's Disease | <u>Date</u> NR <u>Duration</u> 14 days after testing positive <u>Severity</u> NR | 21 days after negative PCR | NR | Swallowing therapy Enteral feeding | NR | 6 Murad et al., scale |

| Author | Study Type Country | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|-------------------------------|-----------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-------------------------------------------------------------------------------|-----------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------|
| Banerjee et al., 2023 [24] | Case Report India | 1 F | <u>Diagnoses</u> Intestinal and Mesenteric Mucormycosis Pneumoperitoneum with thrombosis of the ileocolic artery <u>Signs and symptoms</u> Abdominal Pain Nausea Vomiting | 38 years | Type 2 diabetes Mellitus | <u>Date</u> NR <u>Duration</u> 2 weeks <u>Severity</u> NR | After 2 weeks of infection | NR | Exploratory laparotomy Inotropes and vasopressors Formation of barrel stoma and a mesh laparostomy <u>Postoperatively:</u> Liposomal amphotericin B (200 mg IV) Broad spectrum antibiotics | NR | 4 Murad et al., scale |
| Anayat et al., 2022 [25] | Cross Sectional Study Pakistan | 30 (50% M) | <u>Diagnoses</u> Dyspepsia (6.7%) <u>Signs and symptoms</u> NR | NR | NR | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> NR | NR | NR | NR | NR | 2 NOS |
| AbdurRaheem et al., 2022 [26] | Case report (2 cases) | 2 M | <u>Diagnoses</u> (1) Abdominal cocoon and SBO | (1) 46 | None | <u>Date</u> NR | Both cases are recovered patients | NR | NR | NR | 5 Murad et al., scale |

| Author | Study Type Country | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|-----------------------------|------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------|---------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------|
| | Country NR | | <u>Signs and Symptoms</u> (1) Abdominal pain, nausea, vomiting, constipation | | | <u>Duration</u> NR <u>Severity</u> Severe | (1) 6 months post-COVID-19 recovery | | | | |
| | | | <u>Diagnoses</u> Abdominal cocoon <u>Signs and symptoms</u> Abdominal pain, nausea, vomiting | (2) 47 | None | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> Severe | (2) 6 months post COVID-19 diagnosis | NR | NR | NR | |
| Jain et al., 2022 [27] | Case report India | 1 F | <u>Diagnoses</u> Mesenteric thrombosis with invasive Mucormycosis <u>Signs and symptoms</u> Abdominal pain Constipation | 57 | Diabetes | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> NR | 20 days after COVID-19 diagnosis | Hgb 11.8 gm/dl | IV fluids, analgesics, and antibiotics Right hemicolectomy Inotropic support | Post-operative cardio- pulmonary arrest - Could not be resuscitated | 4 Murad et al., scale |
| Cooney et al., 2022 [28] | Retrospecti ve cohort UK | 122 (48% M) | <u>1st survey</u> 87 (71.3%) total <u>Diagnoses</u> Dyspepsia 27 (22.1%) <u>Signs and symptoms</u> | NR | IBS (7.4%) | <u>Date</u> Between Feb 4 2020-April 17 2021 <u>Duration</u> NR <u>Severity</u> | NR | NR | NR | NR | 2 NOS |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|-------------------------|--------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------|-----------------------------------------------------------------------------------------------|---------------------------|--------------------------|
| | | | Abdominal pain 28 (23%), Diarrhea 37 (30.3%) Constipation 15 (12.3%) Nausea 32 (26.2%) | | | 36% required ICU admission | | | | | |
| | Retrospective Cohort UK | 48 (48% M) | <u>6-month follow-up survey</u> <u>Diagnoses</u> Dyspepsia 14 (29.2%) <u>Signs and symptoms</u> New abdominal pain 14 (29.2%) Diarrhea 9 (18.8%) Constipation 5 (10.4%) Nausea 5 (10.4%) | NR | NR | <u>Date</u> Between Feb 4 2020-April 17 2021 <u>Duration</u> NR <u>Severity</u> 16.7 % needed ICU | 6 months after infection | NR | NR | NR | |
| Sandal et al, 2023 [29] | Retrospective study (Cohort) Turkey | 8 Cases (37.5% M) | <u>Signs and symptoms</u> Vomiting 28.5% Epigastric pain 57.1% Regurgitation 57.1% Anorexia 71.4% | Median 16 (Range: 7-17) | NR | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> | 5.8 months after COVID-19 PCR positivity | NR | Anakinra for the patient who went to ICU for MIS-C 3 patients received PPI and antacid | NR | 9 NOS |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|---------------------------|---------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------|
| | | | | | | NR | | | | | |
| | Retrospective study Cohort Turkey | 8 controls (with NR GI symptoms but no previous COVID-19 infection) (37.5% M) | <u>Diagnoses</u> NR <u>Signs and symptoms</u> Chronic Abdominal Pain | Median - 16 y/o (7-17) | NR | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> NR | NR | NR | NR | NR | |
| Wang et al., 2022 [30] | Case Report | 1 F | <u>Diagnoses</u> GERD Gallbladder dyskinesia SIBO <u>Signs and symptoms</u> Nausea Abdominal pain Loss of appetite Constipation | 55-60 | Graves disease HTN HLD prediabetes | <u>Date</u> April 2020 <u>Duration</u> NR. <u>Severity</u> Mild-to-moderate | 1 month after COVID-19 diagnosis | <u>Initial</u> (4mo prior): ALP: 173 (IU/L) ALT: 15 (U/L) AST: 27 (U/L) Serum Leptin: N/A Cholesterol: N/A HDL: N/A LDL: N/A <u>Day 9:</u> ALP: 205 (IU/L) | Cholecystectomy Dicyclomine Pantoprazole Ondansetron Paroxetine Experimental high fiber diet | Symptoms resolved in 2 months | 6 Murad et al., scale |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | GI Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|---------------|-------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|--------------------------|
| | | | | | | | | ALT: 14 (U/L) AST: 29(U/L) Serum leptin: 121.2 (ng/mL) Cholesterol: 184 (mg/dL) HDL: 76 (mg/dL) LDL: 86 (mg/dL) Day 58: ALP: 144 (IU/L) ALT: 12 AST: 24 serum Leptin: 91.7 (ng/mL) Cholesterol: 145 (mg/dL) HDL: 57 (mg/dL) LDL: 70 (mg/dL) | | | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------------------------------|------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------|-----------------------------|
| Abbassi et al., 2021 [31] | Case report Texas, US | 1 M | <u>Diagnoses</u> Bowel perforation Intra-Abdominal adhesions Numerous Duodenal and Gastric Ulcers <u>Signs and symptoms</u> Abdominal Pain Nausea Vomiting | 34 year old | Morbidly Obese with no comorbidities | <u>Date</u> NR <u>Duration</u> 26 ICU days <u>Severity</u> Severe | 2 months after COVID-19 infection | Reported as unremarkable | Midline Laparotomy requiring adhesiolysis, small bowel resection and anastomosis. | NR | 4 Murad et al., scale |
| Natarajan et al., 2022 [32] | Randomize d controlled trial | 111 (59% M) | <u>Diagnoses</u> NR <u>Signs and Symptoms</u> Any GI symptoms (54) Abdominal pain (13) Diarrhea (29) Nausea (31) Vomiting (5) | Median: 36 (IQR = 29–51 years) | NR | <u>Date</u> NR <u>Duration</u> Between 25 April and 17 July 2020. <u>Severity</u> mild to moderate COVID-19 | Symptoms at enrollment | Overall: Absolute lymphocyte count: 1.5(cells/μL) ALT: 30 (IU/L) AST: 30 (IU/L) Seropositivi ty at enrollment: n(46) WBC: 5.5 (cells/μL) | NR | 10-month post COVID-19 | 2 Jadad Scale |

| Author | Study Type | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|----------------------------|-------------|--------------------------|--------------------------------------------------------------------------|------------------------------------------|---------------|------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------|------------------------------|
| | | | 57 (with no GI symptoms) | | | | | No GI symptoms at enrollment: Overall: Absolute lymphocyte count: 1.6(cells/μL) ALT: 28 (IU/L) AST: 29 (IU/L) Seropositivity at enrollment: n(24) WBC: 5.8 (cells/μL) | | | |
| Gundogdu et al., 2022 [33] | Case Report | 1 M | <u>Diagnoses</u> partial thrombosis in SMV Jejunal perforation | 58 | NR | <u>Date</u> NR <u>Duration</u> NR | 15 weeks after positive test | WBC: 11.79/uL neutrophils 9.86/uL | -Anticoagulation -Small bowel resection | 12 days with no further complications Outcome: | 5 Murad et al., scale |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|----------------------------------|----------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------|--------------------------|
| | | | jejunal dilation and thickening Abscess formation in abdominal cavity <u>Signs and symptoms</u> Abdominal Pain Nausea Vomiting | | | <u>Severity</u> NR | | CRP: 125.4 mg/L Lactate: 2.4 mmol/L fibrinogen 592.6 mg/dL D-dimer 12.77 mg/L 2 weeks later: CRP: 288.1 mg/L, procalcitonin: 13.25 ng/mL | Abscess drainage. | survived | |
| Chanchaonthana et al., 2023 [34] | Observational cohort study Thailand | 577 (48% M) | <u>Diagnoses</u> Anorexia 90.9% <u>Signs and symptoms</u> Abdominal pain 62.5% Loss of taste 64% | NR | NR | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> NR | NR | NR | None, self-resolved in 2-3 months | 3 months after initial presentation | 6 NOS |
| | Observational cohort study | 524 on HD (46.9% M) | <u>Diagnoses</u> Anorexia Dysphagia Peritonitis | 48 (+/- 9) | -HTN (92.9%) -Diabetes (77.9%) | <u>Date</u> between January 2022 to 31 July 2022 | Detected during infection | During COVID-19 infection: | NR | 3 months after initial presentation | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------|--------------------------|
| | Thailand | | <u>Signs and symptoms</u> Abdominal pain Diarrhea Constipation Belching Loss of taste | | -Heart disease (85.9%) -Pulmonary Disease (9.9%) -Hepatic disease (2.7%) | <u>Date</u> <u>Duration</u> NR <u>Severity</u> Mild= 48.1% Moderate=26.1% Severe= 25.8% | | Baseline Creatinine: 8 +/- 2 mg/dL CRP 32+/- 14 mg/L D-dimer 2749 +/- 578 ng/mL | | | |
| | Observational cohort study Thailand | 34 on PD (58.8% M) | | 71+/-2 | HTN (100%) Diabetes (88.2%) Heart disease (82.4%) Pulmonary Disease (14.7%) Hepatic disease (11.8%) | <u>Date</u> NR <u>Duration</u> Between January 2022 to 31 July 2022 <u>Severity</u> Mild= 5.9% Moderate=20.6% Severe= 73.5% | Detected during infection | During COVID-19 infection: Baseline Creatinine: 11 +/- 2 mg/dL CRP 59+/- 11 mg/L D-dimer 5339 +/- 786 ng/mL | | | |
| | Observational cohort study Thailand | 19 kidney transplantation (57.9% M) | | 44+/-12 | HTN (63.2%) Diabetes (31.6%) Heart disease (47.4%) | <u>Date</u> NR <u>Duration</u> | Detected during infection | During COVID-19 infection: Baseline Creatinine: | 6 of 19 abdominal pain found to be due to mesenteric panniculitis which were all effectively | | |

| Author | Study Type Country | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|-----------------------------|-----------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------|
| | | | | | Pulmonary Disease (5.3%) Hepatic disease (0%) | between January 2022 to 31 July 2022 <u>Severity</u> Mild= 0% Moderate=21.1 % Severe= 0% | | 2.5 +/- 0.8 mg/dL CRP 17 +/- 9 mg/L D-dimer 1699 +/- 175 ng/mL | treated with 8 weeks of oral corticosteroids | | |
| Morita et al., 2023 [35] | Case report Japan | 1 F | <u>Diagnoses</u> UC Mesenteric lymphadenopathy intestinal inflammation erosions & luminal bleeding of colon <u>Signs and Symptoms</u> Abdominal pain Diarrhea Hematochezia | 13 | NR | <u>Date</u> NR <u>Duration</u> 1 month after self limiting COVID-19 <u>Severity</u> NR | one month after acquiring COVID-19 | Collected period (M - months) erythrocyte sedimentati on rate (mm/h) M2 - 22 M2.5 - 21 M3.5 - 5 M5 - 4 WBC (#/μL) M1 - 5,400 M2 - 12,000 M2.5 - 9,700 M3.5 - 18,700 M5 - 12,000 | Antiflatulent (hematochezia subsided; abdominal pain & diarrhea persisted) Aminosalicylate therapy (did not work) Sulfasalazine (did not work) Steroid therapy (achieved remission) | 5 months (after the onset of GI symptoms) M0 - onset of GI M1 M2 M2.5 M3.5 M5 | 6 Murad et al., scale |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|---------------|-------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|--------------------------|
| | | | | | | | | CRP (mg/dL) M1 - 0.05 M2 - 1.61 M2.5 - 0.24 M3.5 - <0.03 M5 - <0.03 Lymphocytes (#/μL) M1 - 2,215 M2 - 5,880 M2.5 - 4,355 M3.5 - 5,142 M5 - 6,360 leucine-rich α ₂ glycoprotein (μg/mL) M2 - 30.6 M5 - 10.2 IgG (250 mg/dL) hemoglobin (11.4 g/dL) serum | | | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | GI Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|---------------|-------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|--------------------------|
| | | | | | | | | amyloid A (36.3 µg/mL) serum proteinase 3 antineutrop hil cytoplasmic antibodies (32.3 U/mL) serum iron (8 U/mL) ferritin (11.0 µg/mL) fecal calprotectin (6,110 mg/kg) Elevated levels of IL- 6, IL-8, IL- 12/IL-23p40, CXCL9, CXCL10 which demonstrat e CD8+T cell activation | | | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | GI Blood markers | Management | Follow up time Outcome | QA score Type of test |
|------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------|
| | | | | | | | | Elevated anti-SARS- CoV-2 spike IgG | | | |
| Altuwaijri et al., 2023 [36] | Prospective Study Saudi Arabia | 50 (62% M) | <u>Diagnoses</u> 19 participants developed IBS (around 25%) <u>Signs and symptoms</u> Nausea Vomiting Diarrhea Abdominal pain | ≤50 years: 48 >50 years: 52 | NR | <u>Date</u> NR <u>Duration</u> Between June 2020 and June 2021 <u>Severity</u> NR | After the recovery (NR specifically; at least 3 months later) | NR | NR | Follow up period of each participant NR | 2 -NOS |
| Marinoni et al., 2023 [37] | Phase 3, randomized, double-blind, placebo controlled Italy | 39 (20 in treatment group and 19 in placebo group) (52.6% M) | Reported as %: 73.7% <u>Diagnoses</u> Acute pancreatitis Hepatic and biliary disease <u>Signs and symptoms</u> Abdominal pain/discomfort Gastroesophageal reflux (acid related) Reduced appetite | 54.16 (±7.9) | NR | <u>Date</u> NR <u>Duration</u> Between Nov. 2022 to May 2023 <u>Severity</u> NR | Data collected after: 27.0 months (±10.7) Symptom persists for more than 4 weeks | NR | VSL#3 (independent variable) relationship between VSL#3 treatment and GI complication: Overall significant (p=0.0429) epigastric pain (p=0.0768) | 8 weeks | 5 Jadad Scale |

| Author | Study Type | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|------------------------------|-------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|
| | | | Nausea/vomiting Diarrhea | | | | | | IBS (p= 0.9826) acid regurgitation - significant (p =0.0159) nausea and vomit (p = 0.2343) constipation (p =0.0964) | | |
| Tong et al., 2022 [38] | Case report | 1 M | <u>Diagnoses</u> Terminal ileitis Phlegmon adjacent to the mesentery Pediatric Inflammatory Multisystem Syndrome <u>Signs and Symptoms</u> Abdominal pain Vomiting | 15 | None | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> NR | 8-weeks Post COVID-19 which was complicated by encephalopath y | CRP: 100 mg/L Neutrophili a: 8.51 × 10 ⁹ /L Ferritin: 118ug/L D-dimer: 1.68 mg/L Lymphopen ia: 1.17 × 10 ⁹ /L | Initial treatment: IV antibiotics,IVIG 2 weeks: TPN Next 2 weeks: gradual diet upgrade which did not resolve symptoms, thus he got ileocecal resection | 4-weeks post discharge | 6 Murad et al., scale |

| Author | Study Type Country | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|------------------------------|-----------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Hosoda et al., 2022 [39] | Case report Japan | 1 M | <u>Diagnoses</u> Bowel dilatation Ascites Extensive pneumatosis in gastric intestinalis Portal venous gas Acute mesenteric ischemia Hemorrhagic necrosis in gastric and extensive small bowel mucosa <u>Signs and Symptoms</u> Constipation Abdominal distension | 82 | CAD, DM, HTN | <u>Date</u> NR <u>Duration</u> 6 weeks post positive result <u>Severity</u> Severe | Day 36 after disease onset | Elevated AST and ALT D dimer >20 µg/mL Lactate 13 mmol/L | Favipiravir and dexamethasone Fluid resuscitation and vasopressors | Fatal case: cause of death was extensive gastrointestinal necrosis induced by excessive portal hypertension due to portal and mesenteric vein thrombosis | 5 Murad et al., scale |
| Basravi et al., 2023 [40] | Case Report | 1 M | <u>Diagnoses:</u> SBO and gangrene due to acute mesenteric ischemia from venous thrombosis Peritonitis <u>Signs and Symptoms</u> Periumbilical non- radiating pain Nausea | 68 | None | <u>Date</u> NR <u>Duration</u> NR <u>Severity</u> NR | During COVID-19 infection | CRP: 116 mg/L WBC: 11,000 CPK: 660 µg/L | Side-to-side resection- anastomosis Post-surgery: Required ICU care for COVID- 19 | 6 months | 5 Murad et al., scale |

| Author | Study Type Country | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of GI problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|-------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| | | | Vomiting No defecation or gas passing for 3 days | | | | | | | | |
| Xu et al., 2023 [41] | Case- Control Study USA | COVID-19 Cohort: 154,068 (89.04% M) Control 1 (contemporary): 5,638,795 (90.31% M) Control 2 (historical): 5,859,621 (90.60% M) | <u>Diagnoses</u> GERD PUD Acute pancreatitis Functional dyspepsia Acute gastritis IBS Cholangitis <u>Signs and Symptoms</u> <u>Signs and Symptoms</u> Constipation Abdominal pain Diarrhea Vomiting Bloating | COVID-19 Cohort: 61.42 ± 15.64 Control 1 (contemporary): 63.46 ± 16.23 Control 2(historical): 62.89 ± 16.48 | (% listed in order of COVID - 19, Contemporary control, and Historical control cohort) Cancer: (8.14%, 6.14%, 5.93%) CVD: (17.32%, 12.66%, 13.04%) Cerebrovascular disease : (1.41%, 0.84%, 0.91%) CKD: (19.51%, 16.67%, 15.38%) Chronic lung disease: (15.27%, 10.86%, 11.19%) Diabetes mellitus type 2: (32.12%, 22.68%, 22.85%) | COVID-19 Cohort: Positive PCR test between March 1st 2020 and January 15th 2021 <u>Severity</u> Non- hospitalized: 131,915 Hospitalized: 16,764 Intensive Care: 5,389 | Detected 30 days after positive COVID-19 test until end of follow up (1 year) | (Provided as Absolute burden; difference per 1000 persons at 12 months (95% confidence interval provided) COVID-19 cohort compared to Contempor ary control (Coagulation): PT>13s : 7.90 (6.99, 8.84) PTT>35s :2.11 (1.63, 2.64) INR>1 : 1.37 (0.93, 1.85) | NR | Median follow up provided with IQR in days: COVID-19 Cohort: 408 (interquartile range: 378–500) Contemporary Control Cohort: 409 (379–505) Historical Control Cohort: 409 (379–504) | 8 NOS |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|----------------------------------|-------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|--------------------------|
| | | | | | HLD: (62.08%, 49.08%, 51.36%) | | | COVID-19 cohort compared to Contempor ary control (Liver and biliary tree function tests): Albumin<3. 5 g/dL: 20.90 (19.27, 22.57) ALT>35 U/L: 16.39 (14.60, 18.22) Total protein<6.0 g/dL: 14.54 (13.26, 15.85) AST>35 U/L: 10.69 (9.33, 12.10) | | | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|---------------|-------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------|------------------------------|
| | | | | | | | | LDH>100 U/L: 10.22 (9.17, 11.31) CRP>0.8 mg/dL: 9.43 (8.49, 10.40) ALP>92 U/L: 9.21 (7.94, 10.52) Total bilirubin>1. 2 mg/dL: 7.40 (6.11, 8.73) GGT>30 U/L: 3.25 (2.54, 3.99) Direct bilirubin>0. 3 mg/dL: 1.43 (0.98, 1.92) Lipase>300 U/L: 0.54 (0.30, 0.82) | | | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | GI Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|---------------|-------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|--------------------------|
| | | | | | | | | Amylase>390 U/L: 0.07 (0.01, 0.16) COVID-19 cohort compared to Historical control (Coagulation): PT>13s : 4.02 (3.12, 4.97) PTT>35s: 1.25 (0.77, 1.78) INR>1: 0.70 (0.26, 1.18) COVID-19 cohort compared to historical control (Liver and biliary tree function tests): Albumin<3. | | | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|---------------|-------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------|------------------------------|
| | | | | | | | | 5 g/dL: 16.71 (15.08, 18.38) ALT>35 U/L: 14.08 (12.29, 15.91) Total protein<6.0 g/dL: 12.42 (11.15, 13.73) AST>35 U/L : 9.98 (8.61, 11.38) LDH>100 U/L: 11.67 (10.62, 12.76) CRP>0.8 mg/dL: 10.67 (9.74, 11.65) | | | |

| Author | Study Type County | N (total) Gender (%M) | Type of GI problem | Age (years) Mean ±SE/ Median (IQR) | Comorbidities | COVID-19 Date/ duration Severity | Time of problem detection | Blood markers | Management | Follow up time Outcome | QA score Type of test |
|--------|----------------------|--------------------------|--------------------|------------------------------------------|---------------|-------------------------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------------------------|--------------------------|
| | | | | | | | | ALP>92 U/L: 7.85 (6.58, 9.16) Total bilirubin>1. 2 mg/dL: 6.30 (5.01, 7.62) GGT>30 U/L: 2.08 (1.37, 2.82) Direct bilirubin>0. 3 mg/dL: 1.48 (1.03, 1.96) Lipase>300 U/L: 0.14 (- 0.10, 0.42) Amylase>39 0 U/L: 0.03 (- 0.04, 0.12) | | | |

HTN: Hypertension; CKD: Chronic Kidney Disease; UC: Ulcerative Colitis; AST: Aspartate transaminase; ALT: Alanine transaminase; ALP: Alkaline phosphatase; LDH: Lactate Dehydrogenase; HLD: Hyperlipidemia; GTT: γ -glutamyl transferase; SBO: Small Bowel Obstruction; SIBO: Small Intestine Bacterial Overgrowth; PT: Prothrombin Time; PTT: Partial Thromboplastin Time; INR: International Normalized Ratio; CRP: c-

reactive peptide; PD: Peritoneal Dialysis; HD: Hemodialysis; WBC: White Blood Cell Count; CPK: Creatinine Phospho Kinase; GERD: Gastroesophageal Reflux Disease; PUD: Peptic Ulcer Disease; IBS: Irritable bowel Syndrome; CVD: Cardiovascular Disease; NOS: Newcastle - Ottawa Quality Assessment Scale.

Table S2. Quality assessment results for case reports and case series using Murad et al. scale [16].

| Study | Score/6 |
|-------------------------|---------|
| Parrela et al. [18] | 5 |
| Lee et al. [23] | 6 |
| Banerjee et al. [24] | 4 |
| AbdurRaheem et al. [26] | 5 |
| Jain et al. [27] | 4 |
| Wang et al. [30] | 6 |
| Abbassi et al. [31] | 4 |
| Gundogdu et al. [33] | 5 |
| Morita et al. [35] | 6 |
| Tong et al. [38] | 6 |
| Hosoda et al. [39] | 5 |
| Basravi et al. [40] | 5 |

Table S3. Quality assessment results for cohort studies using New Castle Ottawa Scale (NOS) [14].

| Study | Score/8 |
|------------------------------|---------|
| Enas et al. [19] | 7 |
| Golla, et al. [20] | 8 |
| Zollner et al. [21] | 3 |
| Ferreira et al. [22] | 5 |
| Anayat et al. [25] | 2 |
| Cooney et al. [28] | 2 |
| Sandal et al. [29] | 9 |
| Chancharoenthana et al. [34] | 6 |
| Altuwaijri et al. [36] | 2 |
| Xu et al. [41] | 8 |

Table S4. Quality assessment results for clinical trials using Jadad scale [15].

| Study | Score/5 |
|-----------------------|---------|
| Natarajan et al. [32] | 2 |
| Marinoni et al. [37] | 5 |

Table S5. Post-COVID-19 GI inflammatory conditions.

| Disorder | Number of studies | Total number of patients | Outcome |
|----------------------------|-------------------------------------------------------------------|--------------------------|-----------------|
| UC | 1 Study [35] Morita et al., 2023 | 1/1 | Recovered |
| Mesenteric lymphadenopathy | 1 Study [35] Morita et al., 2023 | 1/1 | NR |
| Acute pancreatitis | 2 Studies [37,41] Marinoni et al., 2023** Xu et al., 2023** | NR | NR |
| Acute gastritis | 1 Study [41] Xu et al. 2023** | N/A | NR |
| MIS-C | 1 Study [38] Tong et al., 2022 | 1/1 | Did not recover |
| Terminal ileitis | 1 Study [38] Tong et al., 2022 | 1/1 | Did not recover |
| Peritonitis | 1 Study [40] Basravi et al., 2023 | 1/1 | NR |

** No. of patients was not reported in this study. UC: Ulcerative Colitis; MIS-C: MIS-C: Multisystem Inflammatory Syndrome in Children; NR: Not reported.

Table S6. Post-COVID-19 GI infections.

| Disorder | Number of studies | Total number of patients | Outcome |
|------------------------------------------------------------------|-----------------------------------|--------------------------|---------|
| <i>Cryptosporidium</i> spp. and <i>H. Pylori</i> infection | 1 Study [19] Enas et al., 2023 | NR | NR |

| | | | |
|-------------------------------------------------------|---------------------------------------|-------|-----------------|
| Detected SARS-CoV-2 anti-nucleocapsid in intestines | 1 Study [21] Zollner et al., 2022 | 32/46 | NR |
| Intestinal and mesenteric mucormycosis | 1 Study [24] Banerjee et al., 2023 | 1/1 | NR |
| Positive qPCR signal in at least 1 segment of the gut | 1 Study [21] Zollner et al., 2022 | 32/46 | NR |
| invasive mucormycosis | 1 Study [27] Jain et al., 2022 | 1/1 | Did not recover |
| Phlegmon adjacent to the mesentery | 1 Study [38] Tong et al., 2022 | 1/1 | Did not recover |
| Abscess formation | 1 Study [33] Gundogdu et al., 2022 | 1/1 | Recovered |

NR: Not Reported; qPCR: quantitative Polymerase Chain Reaction.

Table S7. Post-COVID-19 GI vascular disorders.

| Disorder | Number of studies | Total number of patients | Outcome |
|----------------------------------------------------------|---------------------------------------|--------------------------|-----------------|
| SMA and jejunal branches thromboembolism | 1 Study [18] Parrela et al., 2022 | 1/1 | Did not recover |
| Pneumoperitoneum with thrombosis of the ileocolic artery | 1 Study [24] Banerjee et al., 2023 | 1/1 | NR |
| Mesenteric thrombosis | 1 Study [27] Jain et al., 2022 | 1/1 | Did not recover |
| Thrombosis in SMV | 1 Study [33] Gundogdu et al., 2022 | 1/1 | Recovered |
| Portal venous gas | 1 Study [39] Hosoda et al., 2022 | 1/1 | Did not recover |

| | | | |
|---------------------------|------------------------------------------------------------------|-----|---------------------------|
| Acute mesenteric ischemia | 2 Studies [39,40] Hosoda et al., 2022 Basravi et al., 2023 | 2/2 | 1 did not recover 1 NR |
|---------------------------|------------------------------------------------------------------|-----|---------------------------|

SMA: Superior Mesenteric Artery; SMV: Superior Mesenteric Vein.

Table S8. Post-COVID-19 GI structural abnormalities.

| Disorder | Number of studies | Total number of patients | Outcome |
|------------------------------------|-----------------------------------------------------------------------|--------------------------|----------------------------------|
| Short bowel syndrome | 1 Study [18] Parrela et al., 2022 | 1/1 | Did not recover |
| SBO | 2 Studies [26,40] AbdurRaheem et al., 2022 Basravi et al., 2023 | 2/3 | 1 recovered 1 did not recover |
| Abdominal cocoon | 1 Study [26] AbdurRaheem et al., 2022 | 2/2 | 2 recovered |
| Bowel perforation | 2 Studies [31,33] Abbassi et al., 2021 Gundogdu et al., 2022 | 2/2 | 1 did not recover 1 recovered |
| Intra-abdominal adhesions | 1 Study [31] Abbassi et al., 2021 | 1/1 | 1 did not recover |
| Phlegmon adjacent to the mesentery | 1 Study [38] Tong et al., 2022 | 1/1 | 1 did not recover |
| Gallbladder dyskinesia | 1 Study [30] Wang et al., 2022 | 1/1 | 1 recovered |
| Abscess formation | 1 Study [33] Gundogdu et al., 2022 | 1/1 | 1 recovered |

SBO: Small Bowel Obstruction.

Table S9. Other post-COVID-19 GI diagnosed abnormalities.

| Disorder | Number of studies | Total number of patients | Outcome |
|-----------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|-----------------------|
| Oropharyngeal dysphagia | 1 Study [23] Lee et al., 2021 | 1/1 | NR |
| Dyspepsia | 3 Studies [25,28,41] Anayat et al., 2022 Cooney et al., 2022 Xu et al., 2023 | 67% of 30 pts* 27/122 | NR |
| Anorexia | 2 Studies [29,34] Sandal et al., 2023 Chancharoenthana et al., 2023 | 530/585 | 5 NR 525 recovered |
| GERD | 3 Studies [30,37,41] Wang et al., 2022 Marinoni et al., 2023 Xu et al., 2023 | 1/1 | Recovered |
| SIBO | 1 Study [30] Wang et al., 2022 | 1/1 | Recovered |
| Gastric ulcers | 1 Study [31] Abbassi et al., 2021 | 1/1 | Did not recover |
| Duodenal ulcers | 1 Study [31] Abbassi et al., 2021 | 1/1 | Did not recover |
| Hematochezia | 1 Study [35] Morita et al., 2023 | 1/1 | Did not recover |
| erosions & luminal bleeding of colon | 1 Study [35] Morita et al., 2023 | 1/1 | NR |
| IBS | 2 Studies [36,41] Altuwaijri et al., 2023 Xu et al., 2023 | 25%* | NR |
| Ascites | 1 Study [39] Hosoda et al., 2022 | 1/1 | Did not recover |
| Extensive pneumatosis in gastric intestinalis | 1 Study [39] Hosoda et al., 2022 | 1/1 | Did not recover |

| | | | |
|------------------------------------------------------------------------|-------------------------------------|-----|-----------------|
| Hemorrhagic necrosis in gastric and extensive small bowel mucosa | 1 Study [39] Hosoda et al., 2022 | 1/1 | Did not recover |
| PUD | 1 Study [41] Xu et al., 2023** | NR | NR |

GERD: Gastroesophageal Reflux Disease; SIBO: Small Intestinal Bacterial Overgrowth; IBS: Irritable Bowel Syndrome; PUD: Peptic Ulcer Disease. * only reported as percentage. ** No. of patients was not reported in this study.

Table S10. Post-COVID-19 GI undiagnosed conditions.

| Disorder | Number of studies | Total number of patients | Outcome |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------|
| | 11 Studies [18,20,24,26,28,30–33,36,37] | | |
| | Parrela et al., 2022 Golla et al., 2023 Banerjee et al., 2023 AbdurRaheem et al., 2022 Cooney et al., 2022 Wang et al., 2022 Abbassi et al., 2021 Natarajan et al., 2022 Gundogdu et al., 2022 Altuwaijri et al., 2023 Marinoni et al., 2023** (No NR) | 82/561 | 2 did not recover 2 recovered Rest NR |
| | 17 Studies [18,20,24,26–38,41] | | 5 Did not recover |
| Abdominal pain | Parrela et al., 2022 Golla, et al., 2023 Banerjee, et al., 2023 AbdurRaheem, et al., 2022 | 439/1149 | 16 Recovered Rest NR |

| Disorder | Number of studies | Total number of patients | Outcome |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------|
| | Jain, et al., 2022 Cooney, et al., 2022 Sandal, et al., 2023 Wang, et al., 2022 Abbassi, et al., 2021 Natarajan, et al., 2022 Gundogdu, et al., 2022 Chancharoenthana, et al., 2023 Morita, et al., 2023 Altuwaijri, et al., 2023 Marinoni, et al., 2023** Tong, et al., 2022 Xu, et al., 2023** | | |
| | 10 Studies [18–20,22,28,32,35–37,41] | | |
| Diarrhea | Parrela, et al., 2022 Enas, et al., 2023 Golla, et al., 2023 Ferreira, et al., 2022 Cooney, et al., 2022 Natarajan, et al., 2022 Morita, et al., 2023 Altuwaijri, et al., 2023 Marinoni, et al., 2023** Xu, et al., 2023** | 141/705 | 2 did not recover Rest NR |
| Hyporexia | 3 Studies [18,30,37] Parrela, et al., 2022 Wang, et al., 2022 Marinoni, et al., 2023** | 2/2 | 1 did not recover Rest NR |

| Disorder | Number of studies | Total number of patients | Outcome |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------|
| | 12 Studies [18–20,24,26,29,31–33,36,37,41] | | |
| Vomiting | Parrela, et al., 2022 Enas, et al., 2023 Golla, et al., 2023 Banerjee, et al., 2023 AbdurRaheem, et al., 2022 Sandal, et al., 2023 Abbassi, et al., 2021 Natarajan, et al., 2022 Gundogdu, et al., 2022 Altuwaijri, et al., 2023 Marinoni, et al., 2023** Xu, et al., 2023** | 25/446 | 2 did not recover 3 Recovered Rest NR |
| Weight loss | 1 Study [19] Enas, et al., 2023** | NR | NR |
| FGID-like symptoms | 1 Study [20] Golla, et al., 2023 | 36/320 | NR |
| Dysphagia | 1 Study [23] Lee, et al., 2021 | 1/1 | NR |
| | 6 Studies [26–28,30,39,41] | | |
| Constipation | AbdurRaheem, et al., 2022 Jain, et al., 2022 Cooney, et al., 2022 Wang, et al., 2022 Hosoda, et al., 2022 Xu, et al., 2023** | 19/127 | 1 recovered 2 did not recover NR |
| Regurgitation | 1 Study [29] Sandal, et al., 2023 | 4/8 | NR |
| Loss of taste | 1 Study [34] | 372/577 | 372 recovered |

| Disorder | Number of studies | Total number of patients | Outcome |
|-------------------------------|-----------------------------------------------------------------|--------------------------|-------------------------|
| | Chancharoenthana, et al., 2023 | | |
| Abdominal distension/bloating | 2 Studies [39,41] Hosoda, et al., 2022 Xu, et al., 2023** | 1/1 | 1 did not recover NR |

FGID: Functional Gastrointestinal disorders. ** No. of patients was not reported in this study.