Original Article

Patterns of Gastrointestinal Symptoms of Covid-19 Patients in a University Hospital of Bangladesh

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Abstract:

The World has experienced a devastating pandemic of COVID-19 caused by SARS-CoV-2 that started at March, 2020 and ended in May, 2023. Most patients of COVID-19, presented with respiratory symptoms and signs. But the number of COVID-19 patients experiencing gastrointestinal symptoms were also significant. The spectrum of gastrointestinal symptoms in the second wave of COVID-19 was observed in this study from July 2020 to September 2020 with an aim to describe the frequency of occurrence and the possible timing of onset and duration of these symptoms. This cross-sectional study was carried out in the COVID-19 outpatient (triage of fever clinic) and COVID dedicated inpatient department of Bangabandhu Sheikh Mujib Medical University (BSMMU) involving at least 79 consecutive patients who were RT-PCR positive for coronavirus 2 (SARS-CoV-2). Gastrointestinal symptoms including anorexia, nausea, vomiting, altered taste, diarrhoea, haematemesis or melena were recorded precisely by face to face interview maintaining proper infection control protocol. Among the 79 COVID-19 patients, 70.88% patients had at least one gastrointestinal symptom & the rest had no GI symptom. Most patients suffered from anorexia (70.88%), followed by diarrhoea (62.02%), nausea (41.77%), loss of taste (36.70%), vomiting (32.90%) & abdominal pain (7.59%), melena (2.53%). Diarrhoea was mild in most cases. The mean duration of diarrhoea and dysgeusia/loss of taste was 2.83 days and 5.8 days respectively. Mean duration of exposure to COVID 19 patient and onset of diarrhoea and dysgeusia was 7.69 days and 3.8 days respectively. This study did not exhibit any association between GI symptoms and severity of the disease.

Key words: COVID-19, Gastrointestinal symptoms, Diarrhoea.

Introduction:

The world has experienced more than six million deaths from more than seven hundred million confirmed cases due to COVID-19 pandemic between 2020 to 2023[1]. Although lung is considered to be the primary organ of involvement by COVID-19 infection and most patients presented with typical respiratory symptoms & signs, there are evidences that SARS-CoV-2 illness also presents with non-respiratory symptoms, most notably digestive symptoms[2]. The gastrointestinal tract is believed to be affected because of a direct viral invasion mediated by the binding of the virus to the angiotensin-converting enzyme-2 (ACE-2) receptor, thereby causing cytotoxic damage[3,4].

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Gastrointestinal (GI) symptoms, including diarrhoea, anorexia, nausea, vomiting, abdominal pain and dysguisea (distortion of the sense of taste) have been reported in patients with COVID-19[3]. The prevalence of these general GI symptoms has been reported to vary between 3% and 79% in patients with confirmed COVID-19 cases[5-8]. In the review article published in March 2020 by Tian et al, anorexia was the most commonly reported GI symptom in adults, occurring in 39.9% to 50% of confirmed cases. The next most common symptom was diarrhoea, reported for 2% to 49.5% of patients and the prevalence of nausea and vomiting ranged between 1% and 29.4% in COVID-19 positive adults[5]. Abdominal pain has been less reported in the literature, with prevalence ranging between 2.2% and 6% of patients with confirmed COVID-19[3]. There was no statistically significant difference in severity of COVID-19 between patients with and without GI symptoms, but the proportion of severe disease in patients with GI symptoms was higher than in patients without GI symptoms[9].

Diarrhoea had emerged as an early symptom of COVID-19 because of its prevalence in otherwise asymptomatic COVID-19 patients. Reports suggest that diarrhoea presents between 1 and 8 days after infection onset, with a mean onset of 3.3 days[3]. Awareness of the time course of GI symptoms is crucial because these symptoms may be one of the first signs of COVID-19 infection[10]. The first confirmed COVID-19 patient in the United States initially presented to the hospital because of nausea and vomiting and not because of fever or dyspnea[11]. The presence of early GI symptoms may provide early clues suggesting COVID-19 infection and precipitate follow-up testing and precautions[3].

Materials and Methods:

This cross sectional study was carried out in Bangabandhu Sheikh Mujib Medical University (BSMMU), a tertiary care hospital of Bangladesh, during the period of July 2020 to September, 2020. Consecutive 79 COVID-19 positive patients from the inpatient department and triage of the fever clinic of BSMMU were included in the study. The principal author was directly involved in the COVID-19 response team of BSMMU COVID-19 unit & interviews in preformed questionnaire were carried out maintaining proper infection control protocol. Informed written consent was obtained from each patient. The study protocol along with the ethical clearance was approved by the Institutional Review Board of BSMMU.

Based on clinical and laboratory parameters, COVID-19 patients were categorized as mild, moderate, severe and critical in accordance with Interim Guidance, 27th May, 2020 on the Management of COVID 19 from WHO. For the convenience of analysis, patients were divided into severe (severe & critical) & non-severe (mild & moderate) groups on the basis of presence of hypoxaemia (SPo2 < 90%)[12].

Presence of loss of taste, loss of appetite, nausea, vomiting, diarrhoea, abdominal pain, melena were documented. In case of loss of taste and diarrhoea, mean duration of these two symptoms and mean duration between exposure to COVID-19 patient and the onset of the symptoms were also documented. The study was carried out during the second wave of COVID in Bangladesh. As the whole nation was on strict lockdown condition at that time, and the COVID 19 cases were just starting to spread in the community, point of exposure was relatively definite at that time which could easily be documented. Comorbidities were also documented on the basis of history and laboratory investigations.

Diarrhoea was divided into mild, moderate and severe according to frequency, volume, presence or absence of dehydration. Frequency of 0 to1time/day was considered mild, 2 to 5 times/day was considered moderate and a frequency of 6 or more times/day was considered severe[13].

Results:

Total 79 RT PCR confirmed COVID-19 patients were enrolled consecutively in this cross sectional study. Among them 39 patients were in severe COVID-19 group and 40 patients were in non-severe COVID-19 group.

Mean age of the participants was 56.5±11.6 years. Most of the patients belonged to 61-70 years' age group (36.71%) followed by 51-60 (26.58%) and 41-50 (20.25%) years' age group (Table I). Among the study population male was more predominant than the female (70.88% vs 29.12%).

Table I: Distribution of the study patients according to age (n=79)

Age group	Number (%)
30-40	9 (11.39)
41-50	16 (20.25)
51-60	21 (26.58)
61-70	29 (36.71)
71-80	4 (5.06)

Most of the patients (83.55%) had co-morbidities; either single or multiple. Among them Diabetes Mellitus (55.70%) and Hypertension (51.90%) were more prevalent, 16.45% patients had no comorbidity (Figure-1).
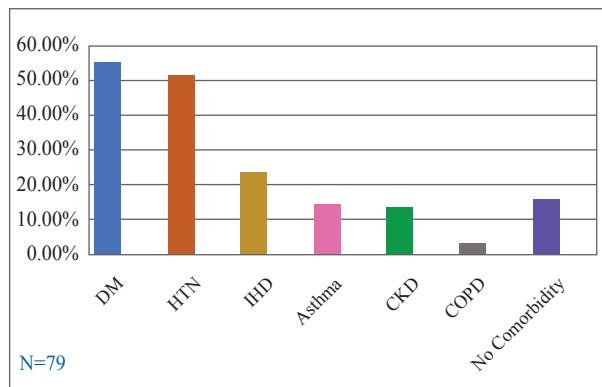

N=79

Figure-1: Bar diagram showing comorbidities of the study participants (n=79)

In this study, along with respiratory and general symptoms & signs, the study participants were found to have following gastrointestinal symptoms i.e. anorexia, diarrhoea, nausea, dysgeusia, vomiting, abdominal pain & melena. Among the 79 COVID-19 patients, most suffered from anorexia (70.88%). Diarrhoea was present among 62.02% patients. These were followed by nausea (41.77%), loss of taste (36.70%), vomiting (32.90%) & abdominal pain (7.59%). Melena was present only in 2.53% cases. Thirteen (16.45%) patients had no gastrointestinal symptoms. So, 70.88% patients suffered from at least one gastrointestinal symptoms (Table-II).

Table-II: Distribution of the study patients according to GI symptoms (N=79)

GI symptoms	Number (%)
Anorexia	56 (70.88)
Diarrhoea	49 (62.02)
Nausea	33 (41.77)
Dysgeusia	29 (36.70)
Vomiting	26 (32.90)
Abdominal pain	6 (7.59)
Melena	2 (2.53)
No GI symptoms	23 (29.11)

Among the 79 COVID-19 patients, 49 (62.02%) had history of diarrhoea. Among the 49 patients who suffered from diarrhoea, 65.40% had mild, 21.30 % had moderate and 14.28 % had severe diarrhoea. (Figure-2)
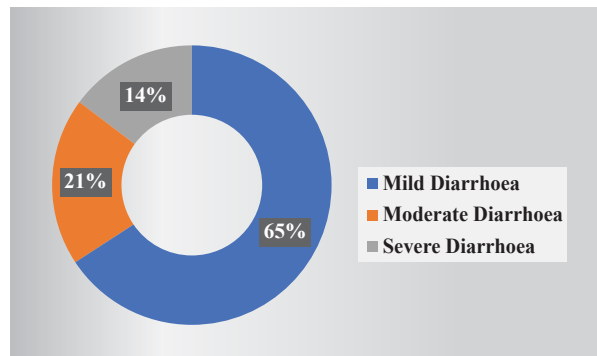

Figure-2: Pie Chart showing the distribution of diarrhoea patients according to severity (N=49)

In most of the patients, diarrhoea was self-limiting and resolved within 3 days (34.17%). In 25.31% of cases diarrhoea lasted for up to 5 days and in only 2.53% cases for more than 5 days. Mean duration of diarrhoea was 2.83 days. Mean duration of exposure to COVID 19 patient and onset of diarrhoea was 7.69 days. On the other hand, mean duration of dysgeusia/loss of taste was 5.8 days and mean duration from exposure to COVID 19 patient and onset of dysgeusia/ loss of taste was 3.8 days (Table III).

Table-III: Distribution of study population according to the duration of diarrhoea (N=49)

Duration of Diarrhoea	Number (%)
0-3 days	27 (34.17)
3-5 days	20 (25.31)
>5 days	2 (2.53)

Discussion:

Gastrointestinal symptoms are common in COVID-19 patients and sometimes may appear earlier even before the beginning of respiratory symptoms. This study has described the common gastrointestinal symptoms of COVID-19.

In this study mean age of the patients were 56.5±11.6 years and most of the participants were male (70.88%). A study in Bangladesh conducted by Hossain MI in a COVID dedicated hospital found that, the mean age was

53.47±13.86 years and out of 486 cases, 62.9% were male and 37.1% were female[14]. In another study conducted in a Spanish tertiary care hospital during the similar time period found that the mean age of the patients was 58±26 years with a slightly increased number of male than female (54.5% vs 45.5%)[15]. A study conducted by Liu K et al reveals that majority of the patients were female[16]. The population in the Spanish study was slightly older which represent the older age group in the western world in comparison to South Asian population. On the other hand, the differences in gender distribution may be explained by different socioeconomic condition, geographical variation and gender based attitudes towards the access to the health care facility of different country.

Anorexia, diarrhoea, nausea, dysgeusia, vomiting, abdominal pain, melena were the GI symptoms observed in this study. Among them, anorexia (70.88%) and diarrhoea (62.02%) were more prevalent. Nausea was observed in 41.77%, dysgeusia/loss of taste in 36.70%, vomiting in 32.90% and abdominal pain in 7.59% patients. Melena was observed only in 2.53% patients. Other studies have also consistently reported digestive symptoms among COVID-19 patients. A study of 1141 confirmed COVID-19 cases observed 183 (16%) patients presented with gastrointestinal symptoms. These symptoms included diarrhoea (68, 37%), vomiting (119, 65%), nausea (134, 73%), loss of appetite (180, 98%) and abdominal pain (45, 25%)[17]. On the other hand, according to a study carried out in Bangladesh, digestive symptoms were reported in 40% cases that included diarrhoea (47.9%), anorexia (16.5%), nausea (31.4%), vomiting (45.5%), abdominal pain (29.8%), abdominal bloating (24.8%), jaundice (3.3%) and altered sense of taste (44.6%)[18].

Diarrhoea as a symptom of COVID-19 was found in all the studied cohorts with a variable percentage from 2 % to 55%[3]. In fact, the first case of COVID-19 of the United States presented with a two-day history of vomiting and nausea upon admission and diarrhoea appeared by the second day of hospitalization[11]. In the current study, 62% COVID-19 patients suffered from diarrhoea with a mean duration of 2.83 days. Diarrhoea was in mild form in most cases. A meta-analysis of 26 articles including 7860 COVID-19 patients showed that the mean duration of diarrhoea was 4.2 (3.6–4.9) days (range 1–16 days) and of mild variety in most cases[19].

Dysgeusia/loss of taste was observed in 36.70% cases in this study. Mean duration of dysgeusia was 5.8 days and mean duration from exposure to COVID 19 patient and onset of dysgeusia was 3.8 days. Loss of taste was considered as a common symptom of COVID-19 from March 2020 when the pandemic started in Western countries. A meta-analysis conducted by Hannum ME et al including 376 papers published between 2020–2021 showed that, among 138,897 COVID-19-positive patients, 39.2% reported taste dysfunction[20].

The majority of COVID-19 associated GI symptoms were mild and self-limiting which included anorexia, diarrhoea, nausea, vomiting and abdominal pain/discomfort. A minority of patients presented with an acute abdomen with etiologies such as acute pancreatitis, acute appendicitis, intestinal obstruction, bowel ischemia, haemo-peritoneum or abdominal compartment syndrome[21].

Both healthcare professionals and the general public should take into account the non-pulmonary effects and symptoms of the illness. It has been found that in up to 2% of COVID-19 cases, patients may present with GI symptoms and no pulmonary symptoms[22]. So, many mild cases might have been missed who were capable of spreading the infection as demonstrated by the contribution of asymptomatic and pre-symptomatic transmission to COVID-19 spread[23,24].

Conclusions:

This was a cross sectional study where data were collected by direct face to face interview maintaining proper infection control protocol during the hospital admission and attending period. Most of the other similar studies used retrospective pooled data or gathered by telephonic interview which has a chance of having recall bias. Gastrointestinal symptoms were common among COVID-19 patients in this study. Anorexia and diarrhoea were more prevalent; diarrhoea was mild in most of the cases. But this study did not exhibit any association between GI symptoms and severity of COVID 19. Further large scale and multi-centered study is warranted to explore this association. There were certain limitations of the study. Sample size was small. The hospital course and outcome of the patients were not assessed in this study. Presence of SARS-CoV-2 viral load in the GI tract was not measured. Comparison of clinical feature between different variants of SARS CoV-2 in different waves could also be investigated.

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