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The Upsurge of Diarrhea Amid COVID-19 Pandemic Makes Matter Worse in Bangladesh: A Call to Action

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Abstract

We have seen an alarming increase in diarrhea prevalence amid Coronavirus Disease-2019 (COVID-19) in Bangladesh. Healthcare professionals might face difficulty in diagnosis as these two infectious diseases have some common symptoms. Though there are confirmatory diagnostic tests for individual cases, there are chances of misdiagnosis as co-infections occur. Here we presented distinct clinical features of diarrhea and COVID-19 for differential diagnosis. We demonstrated the common overlapping symptoms of these two infectious diseases to facilitate fast diagnosis of patients. Also, we have discussed possible reasons for this upsurge of diarrheal infections in Bangladesh. Finally, we have made some recommendations based on our findings for managing this upsurge of diarrheal disease during the COVID-19 pandemic in Bangladesh. The healthcare authorities should take immediate measures before the tremendous twin effects of these two infectious diseases.

Keywords

diarrhea, rotavirus, coinfection, SARS-CoV-2, COVID-19, public health, Bangladesh

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Background

Coronavirus disease 2019 (COVID-19) was first identified in December 2019 in Wuhan, Hubei Province, China (Zhu et al., 2020). The coronavirus then quickly escalated to the other parts of the world. The World Health Organization (WHO) announced COVID-19 as a pandemic on March 11, 2020 (Cucinotta & Vanelli, 2020). Since its introduction, the coronavirus has heavily mutated over time and created challenges to the global healthcare systems (Daria et al., 2022; M. R. Islam, 2022; S. Islam et al., 2022; M. R. Islam & Hossain, 2022; Mohapatra et al., 2022; Rahman, Ether, & Islam, 2021; Sohan et al., 2022). The COVID-19 pandemic has tremendously impacted physical, emotional, and social well-being worldwide. It has negatively affected the standard of living of human life worldwide (Das et al., 2021; Daria & Islam, 2022a; Ether et al., 2022; Hossain et al., 2022; Hossain, Soma, Bari, et al., 2021; M. R. Islam, Daria, et al., 2021; M. R. Islam, Quaiyum, et al., 2021; M. R. Islam & Hossain, 2021a, 2021b). On March 8, 2020, Bangladesh confirmed its first COVID-19 case among its citizen (Moona et al., 2021). According to WHO, there have been 1,951,911 confirmed COVID-19 cases with 29,123 deaths as of April 7, 2022 (WHO, 2022a). During that time, Bangladesh had been subjected to several lockdowns, both total and partial, which had a substantial impact on the overall economy, education, public health, and other sectors (Daria et al., 2021; Daria & Islam, 2021; Rahman & Islam, 2021; M. R. Islam, Qusar, et al., 2021). The COVID-19 pandemic has overloaded the healthcare system of Bangladesh. The healthcare authorities are fighting the pandemic with its limited resources and facilities (Repon et al., 2021). At present, the situation of the COVID-19 pandemic is comparatively better in Bangladesh than at any previous time due to the subsequent measures and mass vaccination (Bari et al., 2021; Daria & Islam, 2022b; Hossain, Rahman, et al., 2021; M. R. Islam, 2021; M. R. Islam, Hasan, et al., 2021). In the middle of 2021, we have seen a slight upsurge in

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dengue prevalence and black fungus infections during the COVID-19 pandemic (Hossain, Soma, Islam, & Emran, 2021; Moona & Islam, 2021; Rahman, Islam, & Bhuiyan, 2021). However, the recent increase in diarrhea prevalence has been exacerbated amid the COVID-19 pandemic in Bangladesh.

The Recent Upsurge of Diarrhea in Bangladesh

On March 28, 2022, Mohakhali hospital of the International Centre for Diarrheal Disease Research, Bangladesh (ICDDRB) admitted 1,334 diarrhea patients for the first time in its 60 years of history (55 patients/hour). Since March 21, more than 1,300 patients have been admitted to the hospital every day. The number of patients is increasing day-by-day (The Daily Star, 2022a). Different parts of the country and the capital city Dhaka reported outbreaks of diarrhea in the past 2 weeks. According to the Health Emergency Operations Center and Control Room, more than 4.5 million people across the country have contracted diarrhea in the first 3 months of the current year (January–March). Of these, Mohakhali Hospital of ICDDRB has treated more than 55,000 patients. According to ICDDRB, 23% of patients coming to their hospital were suffering from severe diarrhea or cholera. Among diarrhea patients, about 70% to 80% of the patients were adults (The Daily Star, 2022b). For the last 3 months, the Dhaka division ranked first with 159,246 patients with diarrhea infection. The Barisal division ranked the lowest with 5,415 patients. In eight divisions, the number of diarrhea cases in the Mymensingh and Rangpur divisions decreased in March compared to February. The number of victims has increased in all other divisions (The Daily Prothom Alo, 2022).

Causes of Diarrhea in Bangladesh

An imbalance in the regular functioning of the small and large intestine causes diarrhea, which results in reduced water absorption by the colon or excessive water secretion in stools (WHO, 2022b). Bangladesh experiences biannual seasonal peaks in diarrheal illnesses where *V. cholera* and enterotoxigenic *E. coli* (ETEC) are responsible for the summer peak, and rotavirus is primarily responsible for the winter (Hasan et al., 2021). A dedicated diarrheal disease research institute and hospital, ICDDRB, is located in the capital city of Bangladesh. The hot and humid atmosphere, the economic situation, the lifestyle, the safety of the water supply, sanitation, and hygiene are all factors that contribute to diarrhea outbreaks (S. K. Das et al., 2014; NIPORT, 2015). According to the WHO/UNICEF Joint Monitoring Program (JMP) for Water Supply, Sanitation, and Hygiene, 61.7 million people in Bangladesh lack access to basic sanitation and hygiene services (UNCEF, 2021).

Diarrhea and COVID-19 Overlapping Symptoms

Diarrhea is one of the most common symptoms of COVID-19 patients. Studies show that about 2% to 50% of COVID-19 patients show an incidence of diarrhea (D'Amico et al., 2020). A retrospective cohort study of 183 patients showed a 37.1% incidence of diarrhea (Luo et al., 2020). According to a study report, 31% of COVID-19 patients presented with diarrhea in Wuhan, China (Wei et al., 2020). Several studies supported these early findings that an average of 11% to 39% of all COVID-19 patients may suffer from gastrointestinal symptoms such as diarrhea and abdominal pain (Hajifathalian et al., 2020; Wang et al., 2022). The possibility of SARS-CoV-associated diarrhea is plausible as the virus's entrance is dependent on the binding of viral spike protein with the host receptor's angiotensin-converting enzyme 2 (ACE2). ACE2 is abundantly present in the small intestine, duodenum, and colon than the lungs (Balawender et al., 2022; GENE, 2022; Guo et al., 2020).

Actionable Items to Fight Emerging Co-Infections

It is hard to deal with additional diarrheal patients during the era of the COVID-19 pandemic. Nearly 80% of the population in Bangladesh does not seek professional healthcare when they have diarrhea. As a result, the actual number of patients remains unknown. Therefore, the authorities have to take some initiative to make people aware. These could be averted by widely sharing health education information, expanding the availability of qualified healthcare practitioners, and providing minimal, high-quality healthcare services (Chowdhury et al., 2015). Moreover, the authorities should ensure water safety, proper sanitation, and basic hygiene for the general population. Since diarrhea is the second highest cause of death for under-5 children, extra precautions should take to protect them. Particularly for those living in slum areas where the severity of diarrheal cases is high (CDC, 2012). Moreover, a meta-analysis showed that people aged 70 years or more have a higher risk of infection and severe symptoms. Also, they need intensive care support, and the mortality rate is higher compared to individuals under 70 (Pijls et al., 2021). Recently we observed high hospitalization and death rates associated with BA.4 and BA.5 subvariants in Portugal due to their demographic pattern where older people were infected more by these new subvariants (Callaway, 2022). Therefore, we should take proper care of the older population during this COVID-19 pandemic. Additionally, the recent monkeypox outbreak has created panic across the nations during this pandemic crisis (M. R. Islam, Asaduzzaman, et al., 2022; M. R.

Islam, Hasan et al., 2022). As diarrhea is a common symptom among COVID-19 patients, the healthcare authorities in Bangladesh need to develop guidelines for differential diagnosis of diarrhea. They should expand their research capabilities to determine the source of excessive diarrheal patients in Bangladesh. Also, COVID-19 vaccines may cause gastrointestinal symptoms such as diarrhea. So, we recommend further epidemiological studies regarding the recent outbreak of diarrhea during the COVID-19 pandemic in Bangladesh to find the actual cause and preventive measures. The authorities must combat this diarrheal outbreak by taking all necessary precautions and therapeutic approaches. Water supply and sewerage authority should increase chlorine concentration in the water. We suggest people boil water before drinking; open food should not be allowed on the side of the road. People should wash their hands with soap before and after eating. Also, we suggest avoiding baby feeders while feeding babies. Moreover, mothers should breastfeed their young children during diarrhea. Societies and healthcare authorities should ensure extra care for the pediatric and geriatric population during the twist effect of two infectious diseases.

Conclusions

The increased incidence of diarrhea during the COVID-19 pandemic has become a concern for public healthcare authorities in Bangladesh. In most cases, viruses and bacteria are causative agents for diarrheal diseases. Differential diagnosis, early intervention, and special care for the vulnerable population can save many lives during the combined effects of these two infectious diseases. Furthermore, we recommend further local studies to find the actual causative factors for the recent outbreak of diarrhea and proper interventional approaches.

Author Contributions

Smaranika Rahman and Md. Jamal Hossain collected data, wrote the initial draft of the manuscript. Md. Rabiul Islam conceived the idea, gave intellectual contents, and revised the initial draft of the manuscript. All authors reviewed and approved the final submission.

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