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## RAPID REPORTS AND PERSPECTIVES FROM THE FIELD

# Translational Strategies to Control and Prevent the Spread of COVID-19 in the Rohingya Refugee Camps in Bangladesh

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### Abstract

The World Health Organization (WHO) has identified the COVID-19 pandemic as a severe health threat to the global population. The disease is particularly concerning for the approximate one million Rohingya people living in 34 refugee camps in Cox's Bazar district of Bangladesh due to many ongoing challenges with basic needs (e.g. poor living conditions, physical and mental health risks) and gaps in the response to COVID-19 prevention in the camps. According to the WHO, as of 2 August 2020, a total of 2,205 tests were conducted at the refugee camps and 87 dwellers tested positive; of them, seven have died. Although the incidence rate is currently low, epidemiological modeling estimates with a sample of the 23 camps suggest a mortality rate of around 1,500 Rohingya refugees per day. This estimated rate of mortality, together with existing challenges and gaps in response preparedness to COVID-19, warrants rapid and comprehensive preventative measures to control the COVID-19 outbreak and reduce aggravating the existing humanitarian crises in the camps. This paper highlights epidemiological insights into the need for a rapid response to the prevention of COVID-19 in the Rohingya refugee camps. It offers translational strategies at the community, health service, and political levels to help control the spread of COVID-19 among the extremely vulnerable Rohingya refugees in Bangladesh.

**Key words:** COVID-19; Rohingya Refugees; Vulnerability; Strategies, Cox's Bazar; Bangladesh.

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### Background

The highly pathogenic severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes the COVID-19 disease, is a serious health threat to the approximate one million Rohingya people living in the world's largest refugee camps in Cox's Bazar, the second most impoverished district of Bangladesh [1,2]. In August 2017, because of genocidal violence against the Rohingya Muslim ethnic minority by the military in Myanmar, approximately one million Rohingya were forcibly displaced from their native land of Myanmar [3,4]. The Bangladeshi government, with the help of its development partners, sheltered the displaced refugees in 34 camps in the hilly terrain of Cox's Bazar district [5,6]. The displacement of Rohingya refugees from their homeland and consequent migration to Bangladesh caused a humanitarian crisis in the refugee camps [5,7]. The recent identification of COVID-19 in the camps is causing serious concerns for Bangladesh and the international community as it aggravates the existing humanitarian crisis [5].

### Current Situation of the Camps and the Refugees

The refugee camps in Cox's Bazar are situated across 6,000 acres of land, with a population density of approximately 15 useable square meters per person (over 40,000 persons/square kilometer) [5,8,9]. The United Nations standard is three times higher, at 45 square meters per person [10]. Approximately 75% of families share a residence in the camps, often with five or more family members living in a cramped shelter [11]. Around 20 people share a single outdoor latrine with long wait times for washing and bathing [12]. Refugee children experience severe malnutrition, abuse, and deficiency in education [4]. World Vision reports that 97% of all youth aged 14 to 24 lack access to any form of education or vocational training [12]. These poor living conditions, combined with a limited supply of potable and running water, may increase the vulnerability of Rohingyas to the transmission of COVID-19 in the camps [1,9]. Moreover, the prevalence of Human Immunodeficiency Virus (HIV), Tuberculosis (TB), Acute Respiratory Infection (ARI), unexplained fever, diabetes and hypertension

among the camp dwellers, accompanied by a significant number of older people, may increase the likelihood of deleterious health impacts of COVID-19 amongst the Rohingya refugees [4,13,14].

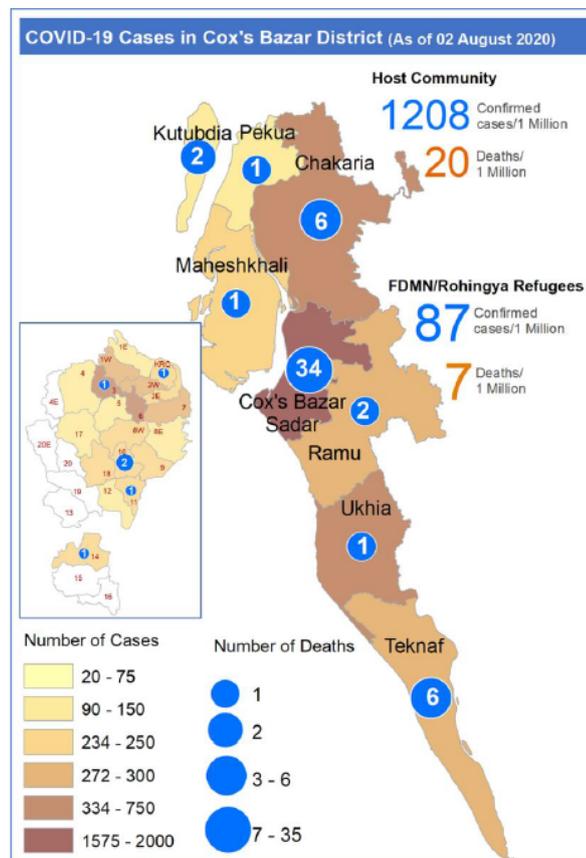
**Epidemiological Pattern and Transmission of COVID-19**

The outbreak of COVID-19 is of utmost concern to the health and wellbeing of refugees [5]. Given the widespread and ongoing transmission of COVID-19 in Bangladesh, transmission into the refugee camps was inevitable [15]. Since the first two confirmed COVID-19 cases detected on 14 May 2020, the number of confirmed cases in the camps has increased considerably, with 38 and 57 cases reported on June 14 and July 14 respectively [16–18]. As of 2 August 2020, the total number of COVID-19 cases reported in Cox’s Bazar district was 3,350, of which 87 were in the Rohingya refugee camps and with an additional 44 individuals in isolation [19]. Figure 1 below indicates confirmed cases and deaths per one million people and relays that the death rate is higher among the Rohingya refugees (8.04%) compared to the host community (1.66%).

Given that there are limited testing facilities in the camps, the number of COVID-19 positive cases among Rohingya refugees may be higher than reported [20,21].

Based on the known epidemiological pattern and transmission speed of COVID-19, and the absence of a study of all camps in Cox’s Bazar, a sub-study of 23 camps in the Kutupalong-Balukhali expansion site of Cox’s Bazar with 600,000 residents is drawn upon. It predicts that the daily hospitalization rate of COVID-19 cases in the site would range between 2,391 and 6,143 (with a daily incidence of 8,873 cases) in a low infection transmission scenario and between 8,228 and 15,865 (with a daily incidence of 28,890 cases) in a high transmission scenario [5]. Furthermore, it is estimated that with 10% of cases being severe, it may result in over 1,500 daily deaths in a low transmission setting, and over 2,000 deaths in a high transmission setting [5].

**Figure 1.** COVID-19 Positive Cases in the Refugee Camps (Source: WHO 2020, Situation Report) [19]



## **Physical and Mental Health Risks**

As with most refugees worldwide, poor health and nutritional status are concerns for Rohingya refugees and so too are comorbid health conditions [4,9,22]. Evidence suggests that Rohingya refugees have limited access to basic healthcare facilities in the camps [5], which places them at a high risk of health outbreaks caused by (infectious) diseases [23]. This includes Acute Respiratory Infections (ARIs), diarrhoea, measles, diphtheria, unexplained fever, Human Immunodeficiency Virus (HIV) and Tuberculosis (TB) [1,2,4,24]. Limited access to healthcare facilities also increases vulnerability to poor comorbid health outcomes. The comorbidity history of the population in the camps, accompanied by limited access to healthcare facilities, may exacerbate a COVID-19 outbreak among the refugees [5].

The modeling study on COVID-19 transmission in the Kutupalong-Balukhali expansion camp suggests that within three months from the successful detection of any positive patient in the site, 0.5%-91% of the total population might be infected [5]. The study also suggests that, based on the transmission scenario, approximately 70%-98% of the camp dwellers might be infected with the virus 12 months following the onset of the disease at the sites [5]. Meanwhile, findings from a recent telephone-based study conducted in the camps indicate that around 25% of respondents reported one of the three most common symptoms of COVID-19 [25].

### Mental Health Challenges

According to the Inter-Agency Standing Committee of Bangladesh's government and the WHO's COVID-19 report on interim guidance for refugees and migrants, people currently living in camp-like settings regularly experience neglect and discrimination [22]. They are also stigmatized by society in general and by healthcare workers in particular [23]. Stigmatization and discrimination can increase camp dwellers mental health challenges, including post-traumatic stress disorder, anxiety and stress [21]. Moreover, the stigmatization and discrimination experienced by camp-dwellers can adversely impact their healthcare-seeking behaviors, which has negative implications for the transmission of COVID-19 [26].

## **Key Challenges for Controlling COVID-19 in the Camps**

There are key critical challenges to controlling the spread of COVID-19 in the refugee camps where Rohingya people dwell.

### Difficulty in Crowd Management

Daily life in the camps is highly dependent on humanitarian assistance [27] and it is very difficult to maintain social and physical distancing at food and relief distribution points [3]. Failure to manage a crowd during the distribution of food and relief may increase the risk of community transmission of COVID-19 through both symptomatic and asymptomatic patients [28]. This is a

documented concern amongst the Bangladeshi government, Non-Governmental Organizations (NGOs) and other development partners [5,20,21].

### Misinformation and Stigmatization in the Campsites

Despite awareness programs led by the Bangladeshi government and NGOs, misinformation about COVID-19 is widespread in the refugee camps [21]. This is potentially due in part to a lack of accurate and adequate information about the transmission and prevention of the disease [5,27,29]. The level of literacy is low among refugees and there are at least five languages, including Rohingya, Bangla, Burmese, Chittagonian and English [4]. This limited or no literacy level and diversity in languages act as a barrier to disseminating urgent health messages and accurate information related to COVID-19. In turn, this may increase fear, stigma and discriminatory practices associated with COVID-19 among camp dwellers [21,29,30]. Although Site Management and Site Development teams at the camps attempt to provide refugees with accurate information and counseling, as well as attempt to reduce misinformation, fear and stigma [29], evidence suggests that refugees showing symptoms for COVID-19 tend to avoid testing and treatment for the disease [9].

### Inadequate Personal Protective Equipment

Evidence indicates that healthcare workers in the camps do not have adequate personal protective equipment [5]. This may increase their risk of becoming infected with COVID-19, which, in turn, may increase the risk for camp dwellers to be infected with the disease and transmitting it in the refugee camps [9].

### Challenges in Contact Tracing

Contact tracing is very essential for identifying individuals who are infected with COVID-19 and are at high risk for infecting others with the disease [31]. However, doing contact tracing activities (e.g. case investigation, checking contacts, suggestions for maintaining physical distancing and isolation, and monitoring) for the prevention of COVID-19 in the camps is very challenging due to the high density of the population, the limited education level of refugees, congested living conditions, and limited training of support staff. This was learned during the outbreaks of other infectious diseases (e.g. measles, diphtheria, cholera) in the camps [4].

### Poor Supply of Water and Sanitation

Although the number of handwashing stations has been increased in the camps, they are inadequate compared to the total number of dwelling refugees [29,32]. Additionally, there is a limited supply of soap, water and toilet facilities (one toilet for approximately 25 persons) for the refugees of the camps [25]. This may increase the risk of transmitting COVID-19 in the camps [6,27].

### Inadequate Testing Facilities

The number of samples collected and tested for COVID-19 per week has increased considerably: from 507 tests in the last week of July to 559 tests between 27 July and 2 August, 2020 [29,32]. However, this is insufficient compared to the total refugee population in the camps [5].

### Disruption in Delivery of Essential Services

Due to a restriction on entry into the campsites, there is a disruption in the assistance and delivery of essential services to refugees [27]. This may lead to unrest and a threat to law and order in the camps, as well as a rise in domestic violence and deterioration in their mental health [1]. These critical challenges, together with the known epidemiological pattern and transmission speed of COVID-19 to date, underscore the need for taking immediate measures to prevent and control the spread of COVID-19 in the Rohingya refugee camps [5].

### **Current Response to COVID-19 Prevention in Rohingya Refugee Camps and Gaps**

While some preventive measures have been undertaken for the prevention of COVID-19 among Rohingya people dwelling in refugee camps in Cox's Bazar, there are considerable gaps in the response mechanisms to control the spread of the disease.

### Existing COVID-19 Response Mechanisms in the Camps

Since the onset of the first COVID-19 infection in Bangladesh in early March 2020, the Ministry of Health and Family Welfare and the Refugee Relief and Repatriation Commissioner office in Bangladesh, alongside national and international development partners, have worked together to prevent the spread of

COVID-19 among the Rohingya refugees [33]. As of 2 August 2020, key actions taken in response to COVID-19 have included strengthening multi-sectoral collaboration, COVID-19 risk communication strategies, community engagement through Communication with Community mechanisms and Behavior Change Communication by showing films and distributing child-friendly flyers, community consultation meetings, neighborhood sessions, radio-listener group sessions, installation of cost-effective hand-washing stations, and increasing the number of Severe Acute Respiratory Illness (SARI) and isolation beds [19,27,29,33,34].

### Healthcare Preparedness for COVID-19 Response and Gap

To date, some healthcare facilities, including hospital beds and COVID-19 testing centres, have been established to manage the outbreak of COVID-19 at the refugee camps [19]. However, these are limited (see Table 1). Also, there is no transparent directive regarding Rohingya refugees' access to government hospitals for treatment [32,35]. A recent study suggests that without any effective treatment and intervention, after one year of transmission (with 95% Prediction Interval), approximately 73% (in low transmission scenario) to 98% (in high transmission scenario) of the total Rohingya population will be infected and 2,040 to 2,880 individuals will die in the first 12 months [5].

The limited availability of healthcare facilities and related gaps in preparedness for COVID-19 prevention in the Rohingya refugee camps suggest that it is imperative to undertake urgent, effective interventions for containing the transmission of COVID-19 and to avoid further humanitarian crisis in the camp areas.

**Table 1.** Availability of Healthcare Facilities and Gaps in Preparedness for COVID-19 Prevention in the Camps

<b>Availability of healthcare facilities</b>	<b>Gaps in preparedness</b>
Four specialized healthcare facilities [5].	No Intensive Care Unit (ICU) or ventilator capacity.
Five hospitals with 340 beds, expandable to 640 [5].	5.7 current beds per 10,000 population and expandable to 10.6 per 10,000 population [5].
910 beds and six ICU beds are available at district hospitals in Cox's Bazar district at public, private and NGO-run hospitals [15].	The hospital facilities including ICU beds are outside the encampment area and are mainly for the treatment and care of the mainstream communities [5].
10 ICU beds without ventilator facility in Cox's Bazar district [15].	Lack of transportation for suspected and/or confirmed COVID-19 patients [36].
One testing facility available for Rohingya refugees in the camps [37].	One testing facility is inadequate for a population of one million. Importantly, there is also a lack of trained specimen collectors [36].
Two Severe Acute Respiratory Infection Isolation and Treatment Centres.	391 and 126 beds for a population of one million [32]. An additional four quarantine centres and four SARI centres with 1,900 beds is planned [9].
One institutional quarantine centre [36].	One quarantine centre is inadequate for a population of one million [5].

## Recommendations for COVID-19 Control in the Rohingya Refugee Camps

Based on the above discussion, and all of the latest accessible reports available to the authors of this paper, strategies are suggested at three levels in order to control the spread of COVID-19 among Rohingya people dwelling in the refugee camps. They are discussed below.

### a) Strategies at Community Level

#### *(i) Develop a Communication Plan to Control COVID-19*

Rohingya refugees have limited access to television, radio and internet in the campsites. As a result, government and other humanitarian agencies have become the only sources of reliable information [15,29]. To control the spread of COVID-19 in the camps, a well-defined communication plan for sharing evidence-based information among refugees needs to be expanded immediately. For example, the WHO's COVID-19 interim guidance report for refugees and migrants suggest that oral or written messages should be developed in the native language of the target community (e.g. Rohingya refugees) so as not to impede understanding [23]. Furthermore, mosque-based awareness and message-sharing sessions with camp dwellers through interpersonal communication, community consultation and involvement of religious groups to disseminate information on COVID-19 should be strengthened [16,29,32].

#### *(ii) Effective Health Education*

Attention should be placed on strengthening the education of Rohingya camp dwellers about the transmission and prevention of COVID-19 in the camps [32]. The content of health education may include how the virus is transmitted, including air droplets from an infected person's sneezing, coughing, or exhaling near another person or on a transmittable surface [38]. The content may also include the symptoms of COVID-19, including fever, tiredness, dry cough, nasal congestion, aches and pains, sore throat and diarrhoea [39]. A challenge with communicating COVID-19 symptoms at the campsites is that they overlap with symptoms of common illnesses already present amongst the refugees (e.g. diarrhea, ARI) [4,25]. Therefore, careful attention must be paid to detailed health education related to COVID-19. This should include that infected, asymptomatic individuals can transmit the disease. Given that refugees lack access to running water and cleaning supplies and reside in a densely populated setting, environment-specific health education related to COVID-19 should be provided [4]. Attention should also be placed on where to access assistance for more information, steps to be taken once the virus is detected and how to protect others from the virus. Public health response measures suggested by the WHO and different governments across the globe include frequent handwashing with soap, coughing etiquette, physical distancing of 1.5 meters, and environmental cleaning

(e.g. cleaning homes, living areas, and public spaces) [40].

#### *(iii) Reduce Fear, Rumours and Stigma*

The presence of misinformation and associated stigma during disease outbreaks is common [22,41]. The United Nations identifies fear, rumours and stigma as key challenges for preventing disease transmission [42,43] and these may be exacerbated with COVID-19 considering the living conditions in the Rohingya refugee camps [21,44]. The provision of accurate information and use of person-centred, non-stigmatizing language in all communications may help counter fear, rumours and stigma related to COVID-19 and stigmatization of infected and affected individuals [45].

#### *(iv) Minimize Mental Health Impacts*

Given the restricted movements within the camps, limited or no recreational facilities, and the potential for long-term isolation or home quarantine, mental health is a great concern for the Rohingya refugees [22]. The WHO's guidance for mental health and psychological support during emergencies can be applied to reduce the negative impacts of COVID-19 [46]. The United Nation Children's Fund (UNICEF), WHO and the British Broadcasting Corporation Media Action technical working group on risk communication have developed critical messages on mental health support for the Rohingya camp dwellers [5]. Importantly, special attention must be paid to those Rohingya refugees, including women and children, who have experienced various forms of acute trauma and grief, as well as gender-based violence [47].

### b) Strategies at Health Service Level

#### *(i) Provision of Information and Training for Healthcare Providers*

Increased awareness and coordinated, accurate and timely information about COVID-19 must be shared with workers and volunteers in the refugee camps. A global challenge regarding such communication is the ever-evolving understanding of the COVID-19 virus [22]. It follows that the WHO and national preventative guidelines to avoid potential transmission risks should be highlighted on an ongoing and updated basis to workers, and specifically to those who are working as front-line healthcare providers [22,23]. Past training programs for refugee leaders have proven effective and may be one source to consider for guidance [4]. Also, it is important to bolster training for family caregivers about providing care and support for infected and affected individuals [48].

#### *(ii) Telemedicine Care to Reduce the Risk of Transmission*

The 2019 Health Surveillance Report on the Rohingya refugee camps suggests that a significant number of Rohingya people visit healthcare facilities daily for routine care and thus contribute to overwhelming the healthcare systems [4,24]. A telemedicine strategy to

help combat the potential spread of COVID-19 may be an effective alternative to routine in-person care in some circumstances. This may be particularly important with increasing pressure on healthcare facilities due to COVID-19.

### *(iii) Expansion of Healthcare Facilities*

Planning for expanding the health centres for diagnosing and caring for COVID-19 patients needs to be undertaken. Specific attention must be given to front-line emergency patient care [49]. This should include well-defined referral pathways for providing clinical care to patients. It may be possible that the learning centres inside the camps, which are currently closed due to the pandemic, could be used as isolation centres for COVID-19 patients or individuals (e.g. elderly and those with respiratory problems) who are more highly susceptible to the health impacts of COVID-19. As outlined in the WHO situation report, Bangladeshi government healthcare and its development partners are planning home-based healthcare facilities for the camp dwellers in partnership with a community health working group and community-based volunteers [48]. This should be undertaken immediately.

### *(iv) Increasing Use of Non-pharmaceutical Interventions*

Non-pharmaceutical interventions (e.g. face masks, social distancing) have been reported as practical measures to reduce the spread of COVID-19 [5,50]. Therefore, it is imperative to focus on the provision of non-pharmaceutical interventions where possible for containing COVID-19 in the camps [25].

## Strategies at Political Level

### *(i) Legislative Barriers Related to COVID-19 Response*

Bangladesh is neither a state party to the United Nations High Commissioner for Refugees (UNHCR)-1951 Convention Relating to the Status of Refugees (known as the 1951 Refugee Convention) nor to the related 1967 Protocol [51]. Furthermore, Bangladesh does not have any international legislation, other than constitutional provisions and national laws, to follow in its COVID-19 response with Rohingya refugees [52]. It is imperative that this is considered when developing effective, multi-sectoral and collaborative responses to preventing and controlling the spread of COVID-19.

### *(ii) Encourage Multi-sectoral Collaboration*

An effective response to the prevention of COVID-19 among refugees in the camps will require rapid and joint collaboration and coordination of local, national and international preparedness and response programs [22]. Coordination efforts should include, for example, management of cases identified with COVID-19, patient isolation and contact tracing for persons infected with the virus [22,23]. Additionally, it is important to undertake risk assessment, real-time data surveillance and supply chain continuation of essential services,

including food and medicine. For example, the Bangladeshi government health sector and United Nations Development Programme (UNDP) are working collaboratively to develop public service announcement on COVID-19 for visually impaired people at the camps [32]. In addition, Health and Site Management sector partners (e.g. WASH and Shelter partners) are providing human resources to manage the COVID-19 situation at the campsites [33]. These partners are maintaining handwashing and thermal screening stations at the point of entry of the camps, assisting the government in COVID-19 case surveillance, testing, sample collection and transportation, isolation, and contact tracing [29,32,37]. As was learnt from the diphtheria and measles outbreaks in the camps [4], collaboration is required between NGOs and government bodies to ensure the continued provision of basic disease-specific needs and services.

### *(iii) Mobilize COVID-19 Resources*

To date, the Government of Bangladesh and its development partners have set up testing facilities in 64 districts, including Cox's Bazar [36]. Within the refugee camps, only one testing site has been established as of 2 August 2020 [19]. Testing facilities must be increased as large-scale testing can mitigate the spread of COVID-19. Attention must also be paid to securing testing kits. It is also recommended that personal protective equipment (e.g. face masks, goggles, gloves, and alcohol-based sanitizer) be secured for all camp workers and a sufficient number of isolation centres for suspected and/or confirmed COVID-19 patients be established. Residents of the camp also require protective wear (e.g. facemasks). Quick mobilization of such resources would limit the transmission of COVID-19, as has been evident in the Wuhan province of China and elsewhere [41].

## **Conclusion**

As of 2 August 2020, there were 87 confirmed cases in the Rohingya refugee camps [19]. However, the actual number of COVID-19 cases may be higher than that reported because only a limited number of tests have been conducted [21,31]. Since the number of COVID-19 positive patients in Bangladesh is increasing, an epidemiological-informed rapid and comprehensive preventative response needs to be undertaken for the refugees in the camps as well as the host community. Otherwise, the community transmission of COVID-19 in the camps, together with the poor living and physical and mental health conditions, may put the refugees at serious risk and deteriorate their humanitarian crisis [5]. The recommendations at the community, health service and political-levels can contribute to controlling the spread of COVID-19 among the Rohingya population and help protect their physical and mental wellbeing. These recommendations may also have implications for the approximate 26 million vulnerable refugee populations who live in similar settings across the world [5,6].

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## Authors Contributions

All authors contributed to the content of this paper. AHMK and MNH conceptualized the topic and suggested the literature review search. AHMK drafted the manuscript and coordinated the project. MNH, CAD, SZH and SSA edited the manuscript and provided critical input and reviewed it in detail several times. All authors approved the final version of the manuscript.

## Competing Interests

The authors declare that they have no competing interests.

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