

Left Further Behind after the COVID-19 School Closures: Survey Evidence on Rohingya Refugees and Host Communities in Bangladesh

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Source: *Journal on Education in Emergencies*, Vol. 9, No. 1 (December 2023), pp. 64-94

Published by: Inter-agency Network for Education in Emergencies

Stable URL: <http://hdl.handle.net/2451/69895>

DOI: <https://doi.org/10.33682/a1zn-5nda>

REFERENCES:

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Østby, Gudrun, Haakon Gjerløw, Sabrina Karim, and Emily Dunlop. 2023. "Left Further Behind after the COVID-19 School Closures: Survey Evidence on Rohingya Refugees and Host Communities in Bangladesh." *Journal on Education in Emergencies* 9 (1): 64-94.
<https://doi.org/10.33682/a1zn-5nda>.

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LEFT FURTHER BEHIND AFTER THE COVID-19 SCHOOL CLOSURES: SURVEY EVIDENCE ON ROHINGYA REFUGEES AND HOST COMMUNITIES IN BANGLADESH

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ABSTRACT

School closures stemming from the COVID-19 pandemic led to the largest disruption of education in history, affecting nearly 1.6 billion learners worldwide. Rohingya refugees in Bangladesh were facing an education crisis even before the pandemic, as the Bangladesh government forbids unregistered Rohingya refugees from accessing the country's public schools. In place of these schools, the UN Children's Fund and international nongovernmental organizations provide nonformal education through informal learning centers in the Rohingya camps. Building on this pre-existing education crisis, the pandemic in Bangladesh led to some of the longest school closures in the world. Using original phone and in-person survey data, we explore the impact the closing of schools and learning centers during COVID-19 had on refugee and host community children in Cox's Bazar, Bangladesh. While we do not find clear evidence that the pandemic affected refugee education in general, we do identify an especially detrimental effect that the closing of education services had on the attendance of teenage girls among the Rohingya refugees after the learning centers reopened. The heterogenous effects are important because they highlight how the pandemic differentially affected different groups of refugees.

Received April 27, 2023; revised October 3, 2023; accepted November 9, 2023; electronically published December 2023.

Journal on Education in Emergencies, Vol. 9, No. 1.
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ISSN 2518-6833

INTRODUCTION

At the onset of the COVID-19 pandemic, governments around the world used school closings as a key tool to curb the spread of the disease (Yao et al. 2021), as the virus was spreading rapidly. This led to an almost global shutdown of education systems at the peak of the pandemic in March-April 2020 (UNESCO, UNICEF, and World Bank 2021). The breadth and length of the school closures are two features that set the COVID-19 pandemic apart from previous large-scale health crises (Smith 2021). While evidence suggests that the school closures may have helped mitigate the spread of COVID-19, at least initially, the detrimental effects the closings had on learning and on student and community wellbeing are increasingly acknowledged (Viner et al. 2022). Marginalized groups were particularly affected (Cone 2020; UNHCR 2022). In this paper, we explore the impact the closing of schools and learning centers during the COVID-19 pandemic had on dropout rates (not returning to school) among one of the most vulnerable groups in the world—the Rohingya refugees in the Cox’s Bazar refugee camp in Bangladesh (Milton et al. 2017). In doing so, we compare the refugees’ experiences with education to those of the immediate local Bangladeshi population.

First, we expect a decline across all types of education services due to the pandemic (H1). In addition, previous literature highlights the fact that refugees and girls are disproportionately disadvantaged during crises. Before the pandemic, refugee children worldwide were already twice as likely to be out of school than nonrefugee children (UNHCR 2020). In 2020, the UN Educational, Scientific and Cultural Organization (UNESCO) and others estimated that 11-20 million girls and young women would drop out of school in the next year, due to COVID-19 (Malala Fund 2020). Building on this literature and the general expectation that the pandemic negatively affected school attendance (H1), we expect the largest dropout rate to be among refugees (H2) and females (H3). We expect the biggest impact to be on female refugees, especially as they reach puberty (H4), given the high rates of child marriage and pregnancy among secondary school girls, which, among other issues, disproportionately affect teenage girls (Bandiera et al. 2020).¹

To investigate our expectations, we use original phone survey panel data that we collected in three waves in 2020 and 2021 in Cox’s Bazar, Bangladesh, among both Rohingya refugees and the host communities located in the Teknaf and Ukhiya subdistricts. These data were collected through 10-minute phone calls with caregivers and other adults in the households. We supplement this with

¹ Each hypothesis is elaborated in greater detail below.

additional analyses from in-person surveys conducted in July 2022. We focus on Rohingya refugees in Bangladesh because the country saw some of the longest closures of education institutions in the world; schools were partially or fully closed for 82 weeks after March 2020, and only reopened for the second time in mid-March 2022.² Moreover, the majority of the Rohingya refugees who arrived in Bangladesh after the big influx in 2017 are unregistered, either with the UN High Commissioner for Human Refugees (UNHCR) or the Bangladesh government, which leaves them without guaranteed access to basic humanitarian protections and services, including formal education.³

While we find a large decline in the use of education services by teenage girls among the Rohingya refugee population after the schools reopened, we do not find clear evidence that the pandemic caused a particular decline in education use for refugees in general, or for girls under age 11, once we differentiate between age groups. Our results are in line with studies from the 2013-2016 West African Ebola epidemic, which showed that school closures caused a drop in enrollment among young girls, even long after the schools had reopened (Bandiera et al. 2020; Malala Fund 2020).

Our study contributes in several ways to the existing scholarship on pandemics and education outcomes. First, we expand the geographic and temporal focus of prior studies, many of which focus on Africa, the Ebola-affected countries in particular. We expand this group of countries to include Bangladesh, one of the most populous countries in the world and home to one of the world's largest and most protracted refugee situations (UNHCR n.d.). Second, while significant evidence exists to suggest that girls have been particularly marginalized in education because of the COVID-19 school closures, evidence on the effects these closures have on refugees in general, and especially on female refugees, remains scarce (Tanner et al. 2021). We explore these heterogeneous effects by looking at the possible compounding negative effects being a female refugee has on dropout. Finally, our comparison of host and refugee populations enables us to understand the challenges refugees face as compared to the host population.

² In Bangladesh, the schools and informal learning centers in the refugee camps were partially or fully closed for 82 weeks. They first closed in March 2020 and stayed closed until September 2021. Schools closed again in December 2021 and did not open again until March 2022, exceeding the average 22 weeks of school closure during the COVID-19 pandemic (UNHCR 2022).

³ Before the 2017 influx of refugees, the Bangladeshi government allowed officially registered refugee children to access nonformal education services using the Myanmar curriculum. In 2007, it allowed these registered refugee children to use the formal Bangladesh national curriculum in grades 1-7. In 2012, the government changed its position and allowed only informal education to be provided in temporary learning centers and religious schools for registered refugee children from age 3 to age 14. It prohibited use of the Myanmar curriculum in Rohingya refugee camps.

BACKGROUND ON COVID-19 AND THE ROHINGYA REFUGEE CRISIS IN COX'S BAZAR

Bangladesh is one of the world's top refugee-hosting countries. Though refugees began fleeing neighboring Myanmar in the 1970s, most of the nearly one million refugees now living in Bangladesh fled a campaign of government violence that was unleashed in 2017. Most are members of the Rohingya ethnic group. Approximately 60 percent of the nearly 700,000 Rohingya refugees who have arrived in Bangladesh since 2017 are under age 18. Before the COVID-19 pandemic, Rohingya refugee children were already facing an education crisis: "Over 39% of children aged 3-14 and 97% of adolescents aged 15-24 [were] not attending any type of education facility" (Magee, Diwakar, and Nicolai 2020, 20), and the Bangladesh government prohibited their access to formal education (Dupuy, Palik, and Østby 2022). However, many nongovernmental organizations (NGOs) provide nonformal education programs in the refugee camps in southern Bangladesh (Dupuy et al. 2019). Moreover, before the pandemic, 43 percent of 10-year-old students in Bangladesh were proficient in reading and just 25 percent of secondary school graduates achieved basic education competencies (UNICEF n.d.). Specific refugee literacy rates are difficult to come by.

In March 2020, Bangladesh shut down all schools because of the COVID-19 pandemic. The Refugee Relief and Repatriation Commissioner, which is based in Cox's Bazar, defined education as a nonessential activity during the pandemic response; all learning centers in the camps run by NGOs also closed (Pillai and Zireva 2020). All education institutions stayed fully or partially closed for 82 weeks, from March to September 2020; they closed again in December, and only reopened for the second time in mid-March 2021. At the onset of the COVID-19 crisis, just 6 percent of adolescents in the host communities said their schools provided learning support, and only 1 percent of adolescents in the camps were enrolled in informal schooling using the internet or media (Rahman 2020).

There is limited systematic research on the effects of these closings in terms of both learning loss and long-term dropout from education services after they reopened. The knowledge gaps are particularly pronounced when it comes to heterogeneous effects, such as differences between girls and boys, refugee and host community students, and urban and rural populations. However, some studies do exist. Gjerløw, Karim, and Østby (2021) found, counterintuitively, that the Rohingya refugees were able to maintain somewhat higher levels of school attendance during the lockdown than the local Bangladeshi population. They argue that this was due to the informal networks of education providers in the

camps, who were able to continue operation despite the lockdown. Nevertheless, once society reopened, the availability of education in the camps was likely far worse than elsewhere in Bangladesh, as it was before the pandemic.⁴

We next focus on what happened to host community and refugee children's use of education services after the government and international organizations resumed their activities. Cox's Bazar is an ideal setting for coming to understand the possible consequences of closing schools when remote alternatives are nearly impossible to implement. This is true for both the refugee population and the local Bangladeshi population. The context, therefore, helps us compare the effects of the school closures on both the refugee and host populations. Below, we situate the case of Bangladesh within the larger literature on school closures and dropouts.

COVID-19 SCHOOL CLOSURES AND DROPOUTS

Extended school closures have wide-ranging socioeconomic effects on children and their families, including learning loss and reduced educational achievement for children.⁵ Experience from other crises shows that the longer children stay out of school, the less likely they are to return (UNICEF 2015).⁶ For example, the UN Children's Fund (UNICEF) estimates that the share of children in low- and middle-income countries that don't learn how to read by the age of ten may increase from 50 percent to 70 percent.

4 The Government of Bangladesh prohibits Rohingya refugees from accessing formal education. However, many NGOs are providing nonformal education programs in so-called learning centers in the Rohingya refugee camps. The Cox's Bazar Education Sector (also known as the Education Cluster) is a coordinating body for the Rohingya response in the Bangladesh subdistrict of Cox's Bazar, including nearby host community support that aims to strengthen the accountability of the education in emergencies response. The Education Sector is globally led by UNICEF and Save the Children. The learning centers teach both cognitive and soft skills, including language instruction and mathematics, as well as drawing, games, singing, and life skills. To date, most of the children have been learning through the Learning Competency Framework Approach, which covers levels one to four and caters primarily to children ages 4-14. The Learning Competency Framework Approach was created as an emergency measure for Rohingya refugee children and is a largely informal learning system. The curriculum that is now being piloted is based on the Myanmar national curriculum, and it provides Rohingya refugee children with formal, standardized education. In response to the pandemic, the Refugee Relief and Repatriation Commissioner released a statement on March 24, 2020, that announced the closing of all learning centers during the COVID-19 response. For more information on the learning centers and other education options for refugee children in the Rohingya camps in Cox's Bazar, see Dupuy et al. (2019).

5 By learning loss, we mean any "general loss of knowledge and skills or reversals in academic progress... due to extended gaps or discontinuities in a student's education" (EdGlossary 2013). Learning loss is a combination of the "deterioration" of knowledge that is forgotten over time and the "opportunity cost" of lost learning; that is, the learning students would have gained during a typical year of schooling had schools not been closed (Angrist et al. 2021).

6 By dropout, we mean a pupil no longer attending school in a program or at the level where they started (Depover and Orivel 2013).

Predictions of the consequences of school closures vary. At the onset of the pandemic, Iqbal et al. (2020) estimated that between 0.3 and 0.9 quality-adjusted years of schooling would be lost, based on data from 157 countries.⁷ Others suggested a loss of 0.6 years of quality-adjusted years of schooling after five months of school closure, bringing down the effective years of basic schooling that children achieve during their schooling life from 7.9 to 7.3 years, an increase of 25 percent for insufficient-level scores on standardized tests, especially in the poorest countries (Azevedo et al. 2020). Azevedo et al. (2022) recently suggested that quality-adjusted years of schooling could fall by 1.1 years. In their simulation on school closures in sub-Saharan Africa, Angrist et al. (2021) predicted an effect of close to three years of learning loss. These studies show that large-scale global learning loss is expected (Engzell, Frey, and Verhagen 2021; Gore et al. 2021; Schult et al. 2022; Hevia et al. 2022; Moscoviz and Evans 2022).⁸

Studies on past epidemics largely confirm these predictions. For example, Carvalho et al. (2020), using post-Ebola phone surveys in Liberia, found that, one month after the pandemic, one in four households reported that their children had not returned to school. Similarly, Santos and Novelli (2017) found that the lack of Ebola protocols in some schools led students to enroll in private schools or to drop out completely. In Sierra Leone, school closures resulted in a 17 percent decrease in school enrollment (Bandiera et al. 2020), and an estimated 13 percent of primary school-age children did not return to school in the short term after Ebola, although fewer than 1 percent of households reported that no children re-enrolled (Selbervik 2020; World Bank 2015). Using data from the Demographic and Health Surveys and Multiple Indicator Cluster Surveys from before and after the 2013–2016 Ebola pandemic in Guinea and Sierra Leone, Smith (2021) examined changes in school enrollment and dropout patterns. He found that, post-Ebola, youth in the poorest households saw the largest increase in school dropout. He found further that the epidemic was associated with an 8.6 percentage point increase in the probability of the poorest secondary school-age youth in Guinea dropping out, and a 5.6 percentage point increase in Sierra Leone. Although marginalized groups were substantially influenced by the school closures, Yao et al. (2021) found that, about three to four years after the crisis, attendance

7 Quality-adjusted years of schooling refers to effective years of basic schooling that children achieve during their schooling life (Azevedo et al. 2020).

8 There are some exceptions. In a systematic review of studies on COVID-19 learning loss, Moscoviz and Evans (2022) found mixed patterns for learning loss in low- and middle-income countries, with strong effects for learning loss at the secondary level. For example, in rural Bangladesh, Amin et al. (2020) found a 5 percent to 6 percent learning loss, and a study in South Africa showed that students only learned one-quarter of the expected content in their mother tongue (Shepherd et al. 2021). But surprisingly, in other low-income countries such as Burkina Faso, Burundi, and Senegal, there was no evidence of learning loss at the fifth- and sixth-grade levels (Moscoviz and Evans 2022, 7).

returned to the long-term trend, regardless of differences in the occurrence of Ebola among districts. The study also showed no discernable effect on attendance trends for children from vulnerable backgrounds.

During the COVID-19 global school closures, the number of children who dropped out of school increased, even after schools reopened, which contributed further to learning loss. Months after the schools reopened, many students had not returned after the long hiatus because they “took up work, were married or started families or because schools had gone broke, or the teaching staff had left” (Buchholz 2022). Studies in a few low-income countries have looked at the effects of COVID-19-related school closures on dropouts. In a study in Ethiopia, for example, drawing from mixed methods data collected virtually with a pre-existing cohort of 3,066 adolescents at the immediate onset of the pandemic and following the reopening of schools, Jones et al. (2021) found that rural adolescents, girls, and adolescents with disabilities were less likely than their urban peers, male peers, and adolescents without disabilities, respectively, to access distance education during the school closures due to connectivity challenges and discriminatory norms. They also were less likely to re-enroll when the schools reopened. Also in Ethiopia, a self-reported adolescent survey found that 2 percent of children said they would be unlikely to return to school after reopening, citing fear of COVID-19 and, among boys, a commitment to work to support their family (Akmal, Hares, and O’Donnell 2020). Girls were slightly more likely than boys to say they would not return.

There is consensus that the pandemic-related school closures will likely lead to higher dropout rates. There are various ways the disruption of education facilities during a health crisis may negatively affect (re-)enrollment, both of them linked to the demand for and supply of education services. First, parents hesitate to send their children back to schools and learning centers for fear of COVID-19 infection. Adding to this potential reduced demand effect is the fact that poor countries, including Bangladesh, are also facing significant budget cuts, which further limit their capacity to adapt to the impact of COVID-19 (Jones et al. 2021).⁹ This in turn may lead to a reduced supply of education services.

⁹ Bangladesh is considered a “least developed country” according to the United Nations, which means they are considered “low-income suffering from structural impediments to sustainable development” (United Nations 2021). While Bangladesh does rank 129 out of 191 on the Human Development Index (UNDP 2022), which is considered a medium rating, the country also experiences significant inequality, including large refugee populations.

Second, due to the increased poverty stemming from the pandemic, some families may abstain from sending their children back to school. A reduction in household income, an illness, or the death of a breadwinner may increasingly force children to engage in wage labor to help provide for their families. Further factors that may prevent girls from returning to school in the aftermath of a pandemic or epidemic include an increase in adolescent pregnancy (Bandiera et al. 2020; Villegas et al. 2021 Menzel 2019), and an increase in both child marriages and violence against children (Villegas et al. 2021).

Third, school closures, lockdowns, and increased financial stress may increase the risk of child abuse, mental health breakdowns, the emotional exhaustion of caregivers, and higher rates of depression and anxiety. Recent surveys of children have shown that children are at higher risk of lasting psychological distress, including depression, due to school the closures (Banati, Jones, and Youssef 2020; Radesky 2020). Baird et al. (2020) underscore the fact that social isolation during the pandemic exacerbated adolescent girls' psychosocial problems, particularly older girls, due to the intersecting effects of both cultural and pandemic-related restrictions on their mobility. Social isolation and the resulting mental health challenges may prevent some children from re-enrolling in education institutions. This suggests that long-lasting school closures may mean that fewer children return to school after re-opening. In the Bangladesh context, we posit the following general hypothesis:

H1: The long-lasting closure of education services in Bangladesh led to a higher share of host community and refugee children not participating in any education services than before the lockdown.

HETEROGENEOUS EFFECTS OF COVID-19 SCHOOL CLOSURES AND DROPOUTS

While school closures may lead to dropout in general, they may have differential effects on different populations, including marginalized groups, refugees (Cone 2020), and girls (Rafaeli and Hutchinson 2020). This leads us to several additional hypotheses.

At the onset of the pandemic, there were concerns about the disproportionate impact school closures would have on vulnerable communities and refugees. However, little evidence exists on the impact such closures have on refugee

communities (Tanner et al. 2021). Most of the literature on these disparate effects focuses on the economic sector (see Dempster et al. 2020; Gorevan 2021). For example, UNHCR (2022) found that parents of refugee children in Costa Rica and Mexico cited unaffordable school fees as a key reason for not re-enrolling their children when schools reopened. In a study that conducted surveys in eight countries, including Bangladesh, Tanner et al. (2021) found that the COVID-19 pandemic negatively affected the educational opportunities of both refugee and host populations, and that school closures removed protective measures that had been in place for refugees. This increased the risk that they would not return when the schools reopened. However, they also found that, in Bangladesh, teen engagement with education (not necessarily attainment) was higher in refugee households than in the host communities. While there are mixed findings with respect to a “refugee disadvantage,” most of the literature suggests that refugees are worse off than the host communities. Specific to the Bangladesh context, we thus expect the following:

H2: The refugee disadvantage. Refugee children were more likely to drop out of education services than host community children when the schools and learning centers reopened in Bangladesh.

During crises, out-of-school girls in poorer countries may fare worse than boys because they are expected to spend more time at home doing domestic work and are at greater risk of child marriage. However, out-of-school boys also face specific risks, including involvement in child labor, which rose by an estimated 8.9 million children during the pandemic (ILO and UNICEF 2021). Both child marriage and child labor are more prevalent among children above age 11, especially among households in poorer contexts. Since there is a shortage of jobs in our study area, especially for the refugees who cannot take on formal employment, we find it less likely that families will have opportunities to put their children to work. Furthermore, refugees and residents of hard-to-reach locations often receive little or no attention during crises, despite their urgent need for policy support (Bhattacharya et al. 2021). The refugee community in Bangladesh faced additional challenges, such as increased government restrictions. These included several periods of internet shutdowns in the camps, which limited access to online education (Olney et al. 2022).

COVID-19 affected adolescent pregnancy and, therefore, school dropout. In Western Kenya, for example, Zulaika et al. (2022) found that the COVID-19 pandemic negatively affected the sexual and reproductive health of girls and

exacerbated school transfers and dropout. Secondary school girls who remained out of school for six months due to the COVID-19 lockdown had twice the risk of becoming pregnant and three times the risk of dropping out of school than similar girls who graduated just before the pandemic. In Malawi, Kidman et al. (2022) found that only 69 percent of girls surveyed who were ages 13 to 16 returned to school, compared to 85 percent of boys. They also found that marriage and pregnancy contributed to girls not returning to school after reopening. This suggests that the pandemic magnified pre-existing gender gaps in schooling. Taken together, this means there is likely a “female disadvantage,” whereby girls are less likely to return to their schools when they reopen after a crisis. This leads to our third hypothesis:

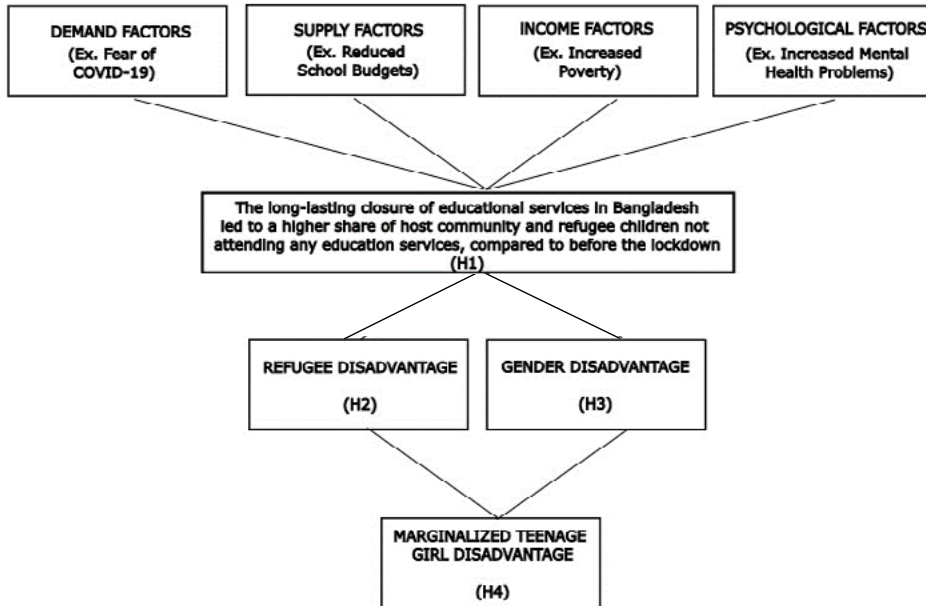
H3: The female disadvantage. Girls were more likely than boys to drop out of education services when schools and learning centers reopened in Bangladesh.

The above literature (e.g., UNHCR 2020; Malala Fund 2020) suggests that girls, especially older girls of childbearing age, and refugees were the groups most likely not to return to school following the pandemic. In line with this, a Refugees International (Cone 2020) report noted that, “within already vulnerable displaced communities, women and girls are at even greater risk” of being adversely affected by the pandemic. Even before the pandemic, refugee girls were only half as likely to enroll in secondary school as boys. Additionally, Corwith and Ali (2022) found that, during the pandemic, South Sudanese girls faced significant adversity, including pregnancy, gender-based violence, and weak social supports. This affected their ability to return to school, although many girls remained determined in their desire to do so. Moreover, Jones et al. (2022) note that adolescents, particularly girls at risk of child marriage, are especially marginalized, not only in their lack of access to resources during the pandemic but also in being marginalized in receiving support for their return to school. Thus, some literature suggests that adolescent refugee girls are the group worst off, as they have intersecting identities that can prevent them from returning to school. In the Bangladesh context, this leads to a natural fourth hypothesis that relates to the interaction between gender, age, and refugee status when schools and learning centers reopened:

H4: The marginalized teenage girl disadvantage. Refugee girls above age 11 were more likely to drop out of education services than refugee boys and host community girls and boys when schools and learning centers reopened in Bangladesh.

Figure 1 details the relationships between the underlying factors and our four hypotheses.

Figure 1: The Relationships between the Underlying Factors Contributing to Dropout, and the Four Hypotheses, Including Heterogeneous Effects



METHODS AND DATA

To investigate patterns in the use of education services in Cox’s Bazar, Bangladesh, we partnered with Innovations for Poverty Action. We conducted three waves of panel phone household surveys: (1) July 18 to August 2, 2020, about four months after the education shutdown in March 2020; (2) June 26 to July 12, 2021; and (3) November 1-17, 2021, about two months after the schools and learning centers reopened. In each wave, we surveyed approximately 600 households, including 300 from the Rohingya refugee camps and 300 from the Bangladeshi community. All households were in Teknaf and Ukhiya in Cox’s Bazar, Bangladesh, the two *upazilas* (administrative units) where the 34 Rohingya refugee camps are located. We opted for these two upazilas to get variation in the longevity of the camps, as Teknaf hosts camps that were established in the 1990s, whereas Ukihya only hosts the newer camps. If we failed to reach any of the households from previous waves, we added new households so that the total number of households included in each wave was approximately 600. The households were selected at random, using sampling frames based on *mauzas* (administrative districts) for the host community and the camp block for the refugee community.¹⁰ This is the same

¹⁰ A mauza is a type of administrative district, corresponding to a specific land area within which there may be one or more settlements.

sampling procedure used by Lopez-Pena et al. (2020). We surveyed both male and female heads of households and only sampled households with school-age children (4-18). The phone surveys were conducted by enumerators who were fluent in the Rohingya language and Bangla so that they could survey all respondents in their mother tongue. They entered the information gathered into the translated Bangla questionnaire. The enumerators were recruited from the pool of enumerators used by Innovations for Poverty Action in Bangladesh, and most had experience from previous similar phone surveys. The enumerators were trained to use the questionnaire, including discussions and clarifications of the survey items. All respondents were informed about the larger study and its purpose so that they could decide whether they were willing to consent. Table 1 shows the number of households that participated in the various unique combinations of waves, separated according to households from the Bangladeshi host community and the Rohingya refugee community. We had a total unbalanced panel dataset of 802 unique households that represented the households with school-age children and youth in Teknaf and Ukhiya.¹¹

Table 1: Number of Households Included in the Phone Survey across Waves

Included in Waves	Frequency among Host Community	Frequency among Refugee Community	Total
1	28	50	78
1 and 2	45	56	101
1 and 3	16	18	34
2	13	17	30
2 and 3	31	54	85
3	58	13	71
1, 2, and 3	226	177	403
Unique households	417	385	802

To supplement our analyses based on the three waves of phone surveys, we conducted a fourth, in-person survey with 1,226 households (612 in the camps and 614 in the host communities) in July 2022. This included individual schooling information on 2,805 children.¹² The in-person survey was also conducted by enumerators with the necessary language proficiencies. We used this survey to learn why, in July 2022, families chose not to send their children and youth to school; this question was not included in our phone surveys.

¹¹ The balance between the host and refugee communities is not worryingly skewed, with 46 percent refugee households and 54 percent host community households.

¹² The in-person survey relied on the same sample procedure as the phone surveys. The overlap with the phone survey samples was not deemed sufficient to include the in-person survey in the time series.

Since the surveys took place over two years, we are unable to test the effects for longer time horizons. Nevertheless, our proposed theoretical mechanisms point to potential medium- to long-term effects, about which we can only speculate. For example, fear of COVID-19 infection is likely to decline over time, but the reduction in the supply of services will be difficult to reverse in the short term. We also propose mechanisms relating to alternative life trajectories caused by the lockdowns, including paid work, pregnancy, and psychological distress. We believe these factors have the potential to permanently change the education levels of the affected cohorts. We leave it to future research to study such medium- to long-term effects.

MEASURING THE USE OF EDUCATION SERVICES

In each wave of the phone survey, we asked the respondents (i.e., caregivers with school-age children in the household) about the use of various education services in their household at the time of the survey and before the initial lockdown in March 2020. We use the responses on these variables to track the use of education services before, during, and after the education shutdown. Table 2 lists these questions as they were asked in the third wave, which was conducted in November 2021.

Note that we are interested not merely in the difference in the enrollment rates of these different groups in November 2021 but in how the groups differ in terms of how much their enrollment declined from before the schools closed in March 2020. While recall bias could increase the measurement error when asking about past education attendance, most households answered this question in the first wave in July 2020, only four months after the lockdown. We believe, therefore, that recall bias will only have had a minimal effect on our measurement.

Table 2: Questions about Current and Past Use of Education Services

Question	Possible Answers
Since September 2021, have any of the boys in your household ages 4-18 attended any of the following learning services? (Tick all relevant answers)*	NGO-based learning center (refugee community only)
	Government school (host community only)
	Private school (host community only)
	Madrasa/religious school
	Community-based/private tutoring outside of your home
	Private tutoring in your home
	Other (specify)

Question	Possible Answers
Since September 2021, have any of the girls in your household ages 4-18 attended any of the following learning services? (Tick all relevant answers)*	NGO-based learning center (refugee community only)
	Government school (host community only)
	Private school (host community only)
	Madrassa/religious school
	Community-based/private tutoring outside of your home
	Private tutoring in your house
	Other (specify)
Before the pandemic started, did any of the boys in your household ages 4-18 attend any of the following learning services on a regular basis? (Tick all relevant answers)	NGO-based learning center (refugee community only)
	Government school (host community only)
	Private school (host community only)
	Madrassa/religious school
	Community-based/private tutoring outside of your home
	Private tutoring in your home
	Other (specify)
Before the pandemic started, did any of the girls in your household ages 4-18 attend any of the following learning services on a regular basis? (Tick all relevant answers)	NGO-based learning center (refugee community only)
	Government school (host community only)
	Private school (host community only)
	Madrassa/religious school
	Community-based/private tutoring outside of your home
	Private tutoring in your house
	Other (specify)

Note: * Only asked in the third wave, conducted in November 2021.

OTHER SOCIOECONOMIC VARIABLES

We asked the respondents questions about their socioeconomic situation that could explain variations in the use of education services between households. First, we asked about the gender, age, and education of the respondent. Second, we asked about the household income over the past month. Third, we asked about the number of male and female children in the household and the ages of the oldest and youngest male and female children. Tables A1 and A2 and Figure A1 in the Online Appendix provide additional descriptive information for these variables.¹³ Online Appendix Tables C1 and C2 list all relevant survey items.

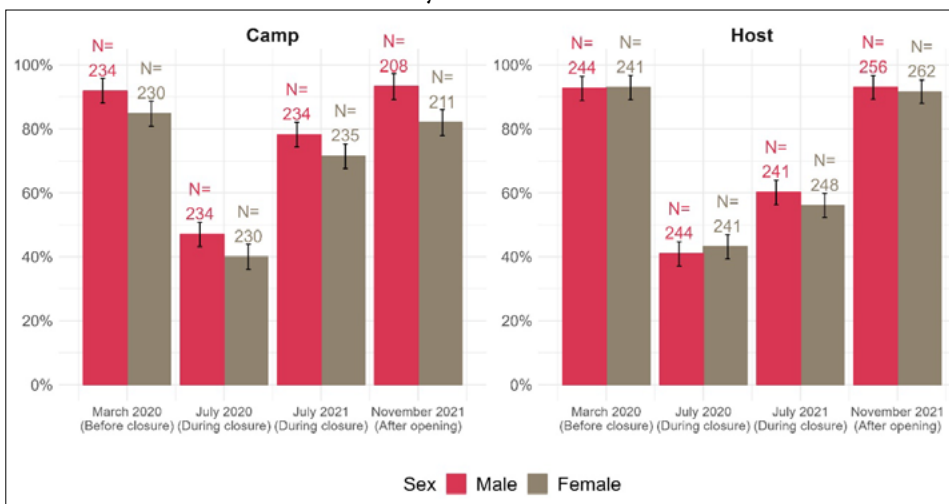
¹³ The complementary tables and materials—referred to as Online Appendix A, B, and C—can be found at <https://www.prio.org/publications/13694>.

Due to time restrictions related to conducting surveys by phone, we did not include questions on the enrollment of individual children in each household. The respondents instead provided us with general information about the girls and boys in the household.¹⁴ We use the information about household-level characteristics to gain additional empirical evidence for or against our hypotheses.

ANALYSES

To answer our first hypothesis, we look at the changes in the reported use of education services between March 2020 and November 2021. Figure 2 shows the percentage of households reporting that they used at least one of the listed education services before the school closures in March 2020. It uses data from the first wave in July 2020 and the same number taken from the third wave in November 2021, after the schools reopened. We divide this number by gender and population. Only households with children of the respective gender are included in the denominator.

Figure 2: Percentage of Reported Use of Any Education Service before, during, and after the School Closure, Separated by Refugee/Host Community Status and Gender



Note: The black bars represent the 95 percent confidence interval (CI). Denominator for each percentage is indicated above the respective bar.

14 Specifically, long surveys would increase attrition.

While there is evidence that females in fewer households used education services in November 2021 than in March 2020 in both populations, neither change is statistically significant. Therefore, this decline could simply be due to random differences in the sample. We do note, however, that there has been a change in the type of education services that households report using. Most notably, the share of Rohingya refugee households using the NGO-run learning centers was more than 70 percent in March 2020 but less than 60 percent in November 2021. There has been a simultaneous increase in the use of religious education services (madrasas), as well as community-led initiatives. These results are available in Online Appendix Figure A1. In sum, we do not find support for the hypothesis that the pandemic led to a general decline in the use of education services, or that there has been a particular decline among females, or that there has been a particular decline among the refugee population. This is a first indication that we do not find support for hypotheses 1-3.

HETEROGENOUS EFFECTS

The overall percentage reported above may hide heterogenous differences between subgroups of households. We investigate this using multivariate regressions. Our dependent variable is the same as in Figure 2. If a household uses any education services for boys or girls, respectively, this can only take the values 0 (No) and 1 (Yes). Since the variable is binary, we use a logistic regression model.¹⁵

To test our expectation that there is a higher dropout rate (or higher dropout tendency) among teenage refugee girls and teenage host community boys, as formulated in hypothesis 4, we regress this variable against a three-way interaction between population, whether the youngest child of the respective gender is older than 11, and time. This enables us to see whether the decline since March 2020 has been stronger among any of the age groups for a particular combination of gender and population, as demanded by this hypothesis. While three-way interactions raise concerns about empty cells (e.g., no observations for a particular combination of variables), this is not a problem in our data, as shown in Online Appendix Tables A3 and A4.

We run regressions separately for the use of education services by male and female children, since we cannot give a score to the age of the youngest child of a given gender unless a family has a child of that gender. Thus, models investigating the use of education services by females only include households with female school-age members and measure whether or not the youngest female is older than 11.

¹⁵ Using a more traditional ordinary least square method results in the model predicting values greater than 1.

Similarly, the models investigating the use of education services by males only include households with male children and youth and measure whether or not the youngest male is older than 11.

In our analyses, we control for several socioeconomic factors. First, we consider the gender, age, and education level of the respondent. Second, at the household level, we control for income in the past month, number of school-age boys, and number of school-age girls. We also include an interaction term between all control variables and time to control for possible time-variant endogeneity.

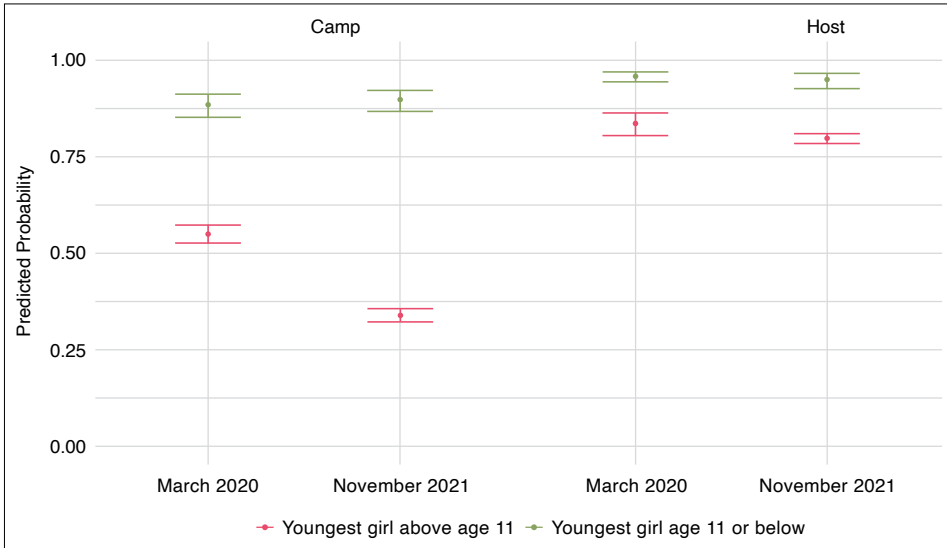
Our quantities of interest are the differences in the probability of using any education services for school-age members of a household between March 2020 and November 2021 for each combination of groups in our three-way interaction term. For H4 to be correct, the decline in the use of education services between March 2020 and November 2021 for refugee females older than age 11 should be greater than for any other combination of population, gender, and age.

Since point estimates from logistic regressions with multiple interactions in tabular format are impossible to interpret in a meaningful way, we instead provide simulated predicted probabilities of the quantities of interest. The full results are available in Online Appendix Table B1, together with the full equation for the logit models. The predictions are calculated as if the respondent is a female without education, and all other variables in the model are held at their mean values.

The results in Figure 3 indicate a dramatic reduction in the use of education services by females above age 11, but only among the refugee population. In March 2020, the estimated probability that a Rohingya refugee household with females younger than age 11 used some education service was about 88 percent. The same probability for households where the youngest girl was older than age 11 was, at the time, 55 percent. In November 2021, the former number was unchanged, while the latter had decreased to 34 percent. For the host population, the difference between March 2020 and November 2021 is negligible for both genders.

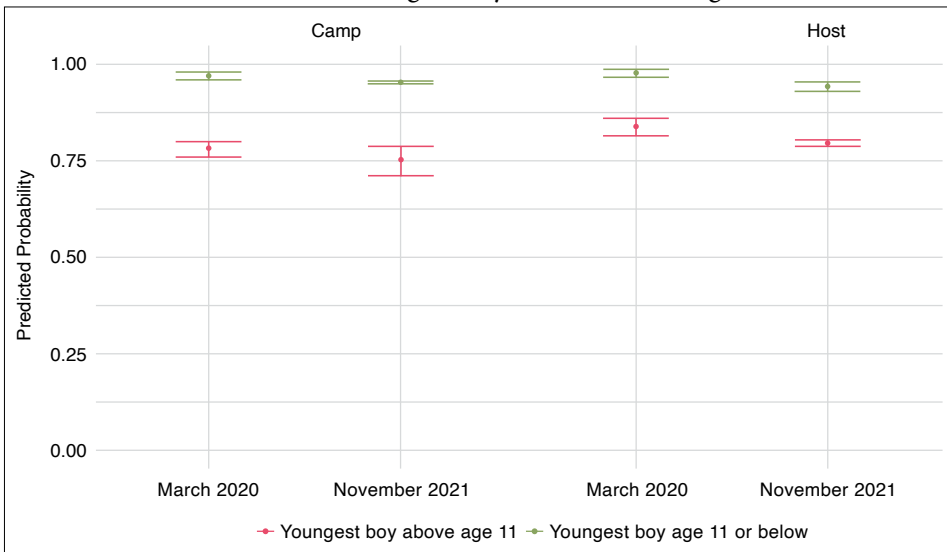
There are fewer education options for individuals above age 11 in the camps, which explains the overall lower probability of older members of a household using education services. However, this cannot explain the reduction over time for households with females older than age 11. Furthermore, the change cannot be explained by females in our sample getting older, since this would equally affect both males and females, as well as refugee households and Bangladeshi households, yet the change only appears for females in refugee households.

Figure 3: Simulated Predicted Probability for Household Use of Any Education Services for Female Members, Divided by Population, Time, and Whether the Youngest Girl Is Older Than Age 11



Note: Vertical bars indicate the 95 percent CI of the prediction, based on population-clustered standard errors. N=1083. The regression formula for the predictions is available in Appendix B.

Figure 4: Simulated Predicted Probability for Household Use of Any Education Services for Male Members, Divided by Population, Time, and Whether the Youngest Boy Is Older Than Age 11



Note: Vertical bars around the expected value indicate the 95 percent CI of the prediction, based on population-clustered standard errors. N=1071. The regression formula for the predictions is available in Appendix B.

Since the underlying the male versus female models have different samples (e.g., households that have children of the respective gender), our results could be driven by differences in the samples. We therefore also run regressions where we restrict the sample to households with children of both genders, thus using the same sample. These results are presented in Online Appendix Table B3 and Figures B1 and B2. They are similar to our benchmark models and support the conclusions.

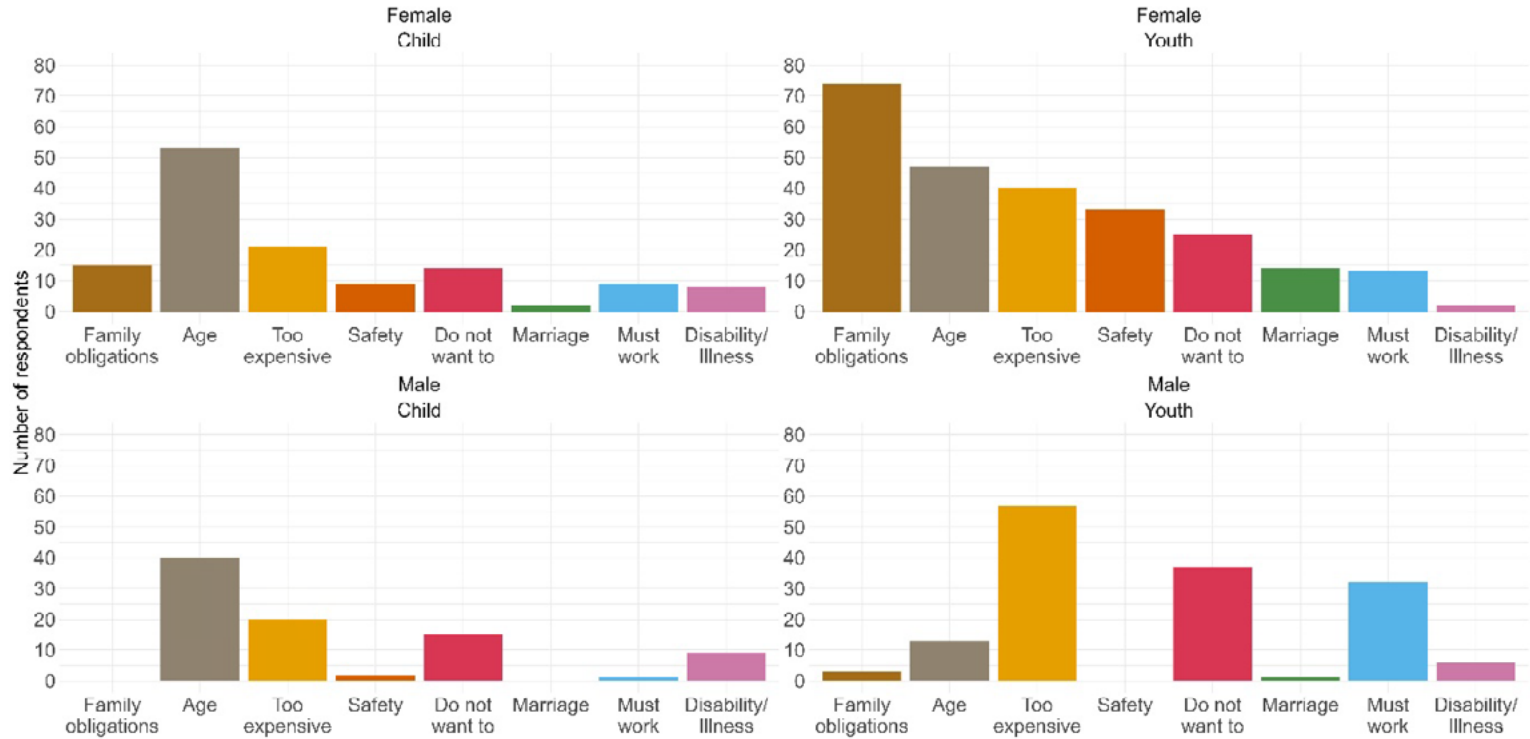
To support this result, in the third wave of the survey conducted in November 2021 we also asked the respondents directly whether all boys and girls who attended some form of education before the pandemic had returned to school. Using this as a dependent variable confirms the same pattern: children from the Bangladeshi host communities have returned to school to a greater degree than the Rohingya refugees. In refugee households, it is less likely that all children returned to their education if all school-age members are older than age 11. This is true for both genders, but the dropout rate among females is greater than among males. Note, however, that this does not give us the relative decline since March 2020 for each group, just a snapshot of the situation in November 2021. These results are available in Online Appendix Table B2, models 1 and 2.

In the third survey wave, we also asked about the number of boys or girls who had attended a learning center, madrasa, and/or private tutoring at least two days in the previous week. We calculate the share of household attendance for each gender by dividing this number by the total number of boys or girls in the household. Using a similar regression design as that above, we again confirm that refugee teenage girls were less likely to participate in any of these three forms of education. As with the previous robustness check, this does not give the relative decline since March 2020 for each group. These results are available in Online Appendix Table B2, models 3-8. Nevertheless, we find clear and strong support for our hypothesis (H4) that female refugee teenagers are especially vulnerable to long-term dropout from education.

WHY DO TEENAGE REFUGEES DROP OUT?

During the in-person surveys conducted in July 2022, we asked the household heads why individual children did not make use of education services. Figure 5 illustrates the most common reasons given for why a certain child was not attending school. For the subsample of refugee households, we present the answers by the child's gender and age.

Figure 5: Reasons Given for Why Children and Youth (above age 12) in Refugee Households Are Not Receiving Any Education, by Gender



Note: The y-axis indicates absolute numbers, since households could choose multiple reasons for not using education services for a particular child. Data from in-person survey conducted in July 2022.

There are several striking differences with respect to gender. First, as expected, the most common reason offered as to why female youth are not receiving an education is that they must attend to family obligations, but this reason is rarely cited for males of similar age.¹⁶ Similarly, being of an age that is too low or too high is an obstacle to education for 30 percent of female youths, whereas being the wrong age is only cited by household adults for 10 percent of male youth. Finally, marriage is a reason given for 10 percent of female youths who do not receive an education but for less than 1 percent of male youths.

Our survey results do not reveal directly whether the pandemic exacerbated some of these gender differences, but we contend that school closures are likely to have increased the rate of teen marriage, as well as the need for labor at home because of pandemic-related economic constraints.

We also observe that females were more affected than males by the deteriorating security situation. For 20 percent of female youths, safety was offered as a reason they did not return to their education, but no respondent mentioned security as an issue for male youths. Any change in the security situation is therefore highly likely to have a much greater impact on girls' enrollment than on boys'. Boys, as expected, were more likely to abandon their education for work; 25 percent of respondents offered this reason to explain why a male youth in their household stopped his education, but only 8 percent cited this explanation for female youths. This may explain why the price of education was also cited more often for male than female youths who were not receiving an education. Paying to educate a male youth as opposed to a female is more likely to be seen as a tradeoff with gaining household income. It is somewhat surprising that male attendance did not drop after the reopening of schools and learning centers. This could indicate that constraints on household income between March 2020 and June 2022 were less significant than expected.

Two caveats with our survey results are that we (1) relied on caregivers' reports on their children's education situation rather than speaking directly to the children/students, and (2) that caregivers did not report on individual children but about the general situation for older and younger boys and girls. As for the first caveat, which applies to both the phone and in-person surveys, it is of course possible that the caregivers (knowingly or unknowingly) gave false answers. As with all

16 This answer could also imply that girls have to stay home because of social taboos, rather than only because it is strictly necessary to tend to family obligations. Because of the sensitivity of the subject, we could not distinguish between these two reasons.

survey data, we have no way to know this. As for the second caveat (which only pertains to the phone surveys), information about each individual child would have strengthened the causal inference. However, we contend that, by accounting for the gender and age composition of the household and asking gender-specific questions, we are still able to demonstrate systematic group-based differences.

CONCLUSION

COVID-19 led to an unprecedented shutdown of society, including the closing of schools and education services around the world. Bangladesh experienced some of the longest school closures in the world. Previous literature has highlighted the fact that refugees and girls are at a disadvantage during crises. Our study contributes to the growing field of literature that examines the potential heterogeneous educational effects of school closures as related to gender and refugee status, and adds nuance to this scholarship that predicts large-scale setbacks.

Using three rounds of original phone survey panel data, we explored the long-term impact of closing schools and learning centers on dropout among refugee and host community children in Cox's Bazar, Bangladesh, during the COVID-19 pandemic. Our results from repeated phone surveys do not support the hypothesis that the pandemic led to a general decline in the use of education services, contrary to several studies on learning loss and school dropouts during COVID-19 (see Moscoviz and Evans 2022¹⁷). However, we do identify an especially negative impact of the closure of education services when it comes to the significantly greater reduced attendance of teenage Rohingya refugee girls as compared to other groups after the re-opening of the learning centers.

The latter seems to correspond with the overall findings in the literature, which *inter alia* find that learning loss was consistently higher among girls and students with lower socioeconomic status, even in contexts with little or no average learning loss. Taken together, this suggests that the pandemic led to increased educational inequalities. Findings from our in-person survey conducted in July 2022 suggest that security concerns and family obligations constitute a significant threat to girls' attendance at these learning centers and may cause permanent dropout.

¹⁷ Moscoviz and Evans (2022), in a review of the literature conducted two years after the COVID-19 shutdown, found that most estimates of average learning loss are negative, especially in low- and middle-income countries.

The findings presented herein underscore the fact that international humanitarian support for the refugee camps and the host communities must continue to assist the government of Bangladesh in handling the crisis. The international community in particular should target interventions to households with pubescent and teenage girls, as they are most at risk of dropping out. Interventions might include cash incentives, improved security or safe spaces, improved access to the internet in the camps and free SIM cards, and educational interventions that showcase the importance of secondary education for girls. These interventions could improve dropout rates, in particular for teenage girls whose parents do not allow them to leave the home to attend in-person classes in the learning centers. There is a particular need to further develop and evaluate interventions aimed at improving education attendance among young women. We also need a more nuanced understanding of how school closures affect individuals in low-income countries. This should be a main priority for future research.

ACKNOWLEDGMENTS

Funding for this work was provided by the Research Council of Norway (grant 287047). We would like to thank Nishat Jui, Naomi Kimani, Håvard Strand, Jerin Tasnim, and the participants of the panel on Vulnerable Populations and Conflict Processes at the 2023 ISA Convention in Montreal for their helpful comments and ideas on previous drafts. All errors are our own.

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