Early Effects of the COVID-19 Lockdown on Children in Rural Bangladesh

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Abstract

Using data collected through a telephone-based survey in rural Bangladesh during the height of the pandemic, we present evidence on the effects of COVID-19-led lockdown and school closures on children, focusing on three child-related outcomes: time use of children during the school closure, plans regarding children's schooling continuation, and the incidence of child marriages. Our analysis reveals heterogeneity in the effects of lockdown and school closure in terms of the child's gender and the type of shocks. We find a decrease in children's study time and an increase in time spent on household chores during the school closure, and these changes were significantly larger for girls than for boys. Within the household, respiratory illness lowered expectations that a child would return to school and increased the probability of marriage-related discussions for girls. Our findings offer a cautionary tale regarding the potential long-term effects of pandemic for girls in developing countries.

Keywords: COVID-19; school closure; child marriage; children's time allocation; Bangladesh

JEL Classification: I25; J12; O53

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Declaration

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1 Introduction

As the infectious and lethal nature of the novel coronavirus SARS-CoV-2 (the virus that causes the COVID-19 disease) became apparent in the early months of 2020, governments around the world took drastic policy action to slow down contagion and save lives. Many developing countries closely followed the policy response adopted in more advanced economies, shutting down large parts of the economy, including factories and educational institutions, imposing restrictions on travel and movement outside of the home, and introducing rules on social distancing.

Yet, in developing countries, the long-term consequences of the same policies, in human terms, may be significantly different because of weaker state capacity to provide social protection to vulnerable segments of the population against the effects of lockdowns. Understanding the socio-economic consequences of the early policy responses to the coronavirus outbreak can help inform the design of future policy, not only with regard to the COVID-19 pandemic but other epidemics and pandemics as well.

In this paper, we present evidence on the effects of the COVID-19 lockdown and school closure in Bangladesh on rural children, with a focus on adolescent girls. The Bangladesh government announced school closures in mid-March and, a week later, ordered the closure of all non-essential businesses and advised people to stay at home and practise social distancing.[1] The lockdown on businesses was lifted on 30 May but schools remained closed through December 2020.[2]

In addition to the direct impact of school closures on learning, the lockdown in Bangladesh potentially affected children through a number of pathways that are specific to developing countries. First, adolescent girls in Bangladesh face a high risk of being coaxed or forced into marriage before the legal minimum age of 18, which leads, almost invariably, to school

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[1]The Daily Star, 23rd March, 2020. https://www.thedailystar.net/coronavirus-deadly-new-threat/news/govt-offices-closed-march-26-april-4-cabinet-secretary-1884730

[2]The Dhaka Tribune, 29th October, 2020. https://www.dhakatribune.com/bangladesh/education/2020/10/29/dipu-moni-govt-to-extend-closure-of-educational-institutions

drop-out and early motherhood (Field and Ambrus 2008, Asadullah and Wahhaj 2019). The phenomenon is shared across the developing world where about one in four women marry before the age of 18 (UNFPA 2020). In this context, the social network support provided by teachers and classmates can play a critical role in preventing early marriages. Therefore, during school closures, adolescent girls are likely to face heightened marriage pressures (see Amirapu et al. 2020 and the references within).

Second, rural households in Bangladesh are often dependent on remittances from urban migrants, including casual day labourers and workers in the ready-made garments sector (Lee et al. 2021). The COVID-19 lockdown cut off this revenue source and, potentially, increased the risk of children being pushed into alternative income generation activities in rural areas. Both elements – the importance of remittances from urban migrants, and the pervasiveness of child labour – are characteristic of a large number of developing countries. Third, in traditional rural settings, with inadequate health infrastructure, the responsibility of providing care for the sick and elderly may fall disproportionately on adolescent girls and young women. If the pandemic increased the demand for such services within the household, girls may be taken out of school to provide care within the home.[3]

Based on this reasoning, our study focuses on three child-related outcomes: time use of children during the lock and school closure, future plans regarding children's schooling, and the incidence of child marriages (including marriage-related discussions and plans, as a large number of rural marriages are arranged by parents). We utilized baseline household surveys from two ongoing projects in rural Bangladesh conducted prior to the lockdown, with a focus on adolescent girls and young women, combined with a follow-up rapid telephone-based survey of the same households conducted during the height of the COVID-19 pandemic in Bangladesh — late June and early July 2020. The telephone-based survey covers 3,760 rural households in Gaibandha, a district in northern Bangladesh with a high incidence of female child marriage and seasonal migration to major urban centres.

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[3]Sajeda Amin elaborates on this potential mechanism in an opinion piece in Netra News on 9th April, 2020, titled "Bangladeshi women play crucial role in fight against COVID-19".

Our analysis reveals heterogeneity in the effects of the COVID-19 lockdown along two important dimensions. First, there was a decrease in study time, and an increase in time spent on household activities such as caring for others and chores during the lockdown among both boys and girls; but the magnitudes of these changes were significantly larger for girls than for boys.

Second, we find that children were affected differently depending on the precise nature of the shock experienced by the household. Based on responses to the survey questions, we constructed six household-level binary shock measures related to COVID-19: whether any household member experienced (i) symptoms of respiratory illness, (ii) job loss, (iii) decrease in wages; and whether the household experienced (iv) decrease in remittances; (v) return of a male migrant household member; (vi) return of a female migrant member since the beginning of the lockdown. We find that these shock elements – all closely linked to the pandemic – had differential effects children's time use at home, expectations about returning to school, and marriages or marriage-related steps. For example, respiratory illness within the household lowered expectations that a child would return to school and increased the probability of marriage-related discussions for female children; while the return of a female migrant (but not a male migrant) raised expectations of a school return and decreased the probability of a marriage or engagement during the lockdown. The return of a male migrant led to a reduction of time spent sleeping and doing paid work among children, while the return of a female migrant led to a reduction in time spent caring for others and doing household chores.

Our findings contribute to three emerging or existing literature on (i) the socio-economic consequences of government lockdown policies aimed at tackling epidemics and pandemics; (ii) household responses to aggregate shocks in developing countries; (iii) the interplay between economic shocks and gender inequality.

Since the onset of the COVID-19 pandemic, there has been, literally, an explosion of studies on the first topic (see Broder et al., 2020 for a review). Yet, although international

development organizations have repeatedly warned of the serious threat that the pandemic poses for the future prospects of adolescent girls in developing countries, to our knowledge there have been few studies that have focused specifically on this issue.[4] A small number of studies have addressed the question using past epidemics. Bandiera et al. (2019) find that temporary school closures in Sierra Leone during the 2014-15 Ebola epidemic led to a sharp rise in teenage pregnancies and school dropout by young girls. Archibong and Annan (2020) find that the 1986 meningitis epidemic in Niger increased the gender gap in education between school-aged girls and boys, and attribute the effect to an increased incidence of female early marriage during the epidemic.

There is a wider literature on household coping strategies in the face of aggregate shocks, such as droughts, in developing countries. This literature shows that besides sales of assets and cut-back in consumption (see Dercon 2002 for a review of this literature), the schooling of children and the marriage timing of daughters are important coping strategies. For example, Jacoby and Skoufias (1997) show that agrarian households in India cope with idiosyncratic income shocks by taking children out of school. Corno, Hildebrandt and Voena (2020) examined the effects of droughts on marriage timing in sub-Saharan Africa and India and found that droughts increased the risk of early marriage in bride-price regions but decreased it in regions where dowry was prevalent.

A related literature has focused on gender inequality in intra-household allocation in developing countries and the extent to which household coping strategies during times of economic shocks contribute to long-term gender inequality. Although there is limited evidence of gender inequality within the household during normal times, women and girls bear the brunt of severe economic shocks (see Duflo 2012 for an extensive review of this literature).

We contribute to these three strands in the existing literature by providing evidence on the early effects of the COVID-19 shock on children in a developing country, with particular attention to any gendered patterns in household responses. Given the rarity of pandemics of

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[4]See, for example, Save the Children (2020), The Global Girlhood Report, and Girls Not Brides (2020), "COVID-19 and Child, Early and Forced Marriage: An Agenda for Action"

this scale, the COVID-19 shock is arguably unique and distinct from the types of shocks that have previously been studied in the literature. In addition to the heightened risk of adverse health shocks, it led to economic losses due to government-imposed lockdowns. There is also a high level of uncertainty regarding the duration and long-term severity of the shock. As such, the existing evidence is insufficient for predicting how poor households in developing countries would respond to the ongoing pandemic and restrictions on economic activity. The objective of the current paper is to contribute towards filling in this evidence gap.

The rest of the paper is organized as follows. In Section 2, we present the context of our study. In Section 3, we describe the surveys and the data used in our analysis. We present the estimated effects of economic and health shocks stemming from the COVID-19 pandemic in Section 4. We conclude in Section 5.

2   Background

Bangladesh identified its first COVID-19 case on 8th March, 2020. As a precautionary measure, the government imposed school closures on 17th March. In order to contain the rapid spread of the virus, a countrywide lockdown was imposed on 26th March. Although the lockdown was lifted on 30th May, schools remained closed for the rest of the academic year.

Factories and businesses in urban centres were shut during the lockdown, forcing many migrant workers to return to their villages. The loss of jobs and livelihoods constituted a severe economic shock for low-income workers. In an early study, Rahman et al. (2020) reported a 62-75% drop in income and a 28% drop in consumption expenditures within the first two months of the onset of the disease in Bangladesh. This was particularly devastating for households in areas that are highly dependent on remittances and income from migrants, such as northern Bangladesh.

For our study, we chose Gaibandha district in Rangpur division in northern Bangladesh.

This is one of the most poverty-stricken regions of the country, with a poverty rate 22% points higher than the rest of the country (World Bank 2019). The northern region suffers from periodic floods and river erosion during the monsoon season, and seasonal deprivation before the harvesting season. Another unique feature of north Bangladesh is the sizable internal rural-urban migrant population. For example, according to the national Household Income and Expenditure Survey (HIES 2016/17), Gaibandha is one of the top ten domestic out-migration districts in Bangladesh. This high dependency on remittance and migration income meant that the district's population was especially vulnerable during the COVID-19 lockdown.

Other than economic and health shocks induced by COVID-19, school closures in the region potentially affected children through multiple pathways. One possible consequence is school discontinuation and dropout, especially among secondary school students. In our study district, primary and secondary completion rates in education are 24% and 11% respecively compared to the national average rates of 33% and 13%, respectively. School closures during an entire academic year can exacerbate these existing regional gaps in educational outcomes.

Another potential consequence of school closures in the region is to increase the rate of female early marriage. Although the law prohibits marriage below the age of 18 for women and 21 for men (Child Marriage Restraint Act of 2017, which replaced the Child Marriage Restraint Act of 1929), in practice the minimum age threshold is frequently ignored and rarely enforced. Bangladesh has one of the highest rates of female early marriages globally, as well as high rates of female school drop-out and early pregnancy (NIPORT 2013).[5] Unlike the case of women, marriage below the age of 18 is rare among men (Amirapu, Asadullah and Wahhaj 2020). In the vast majority of cases, marriages are arranged by parents or relatives (Asadullah and Wahhaj 2016). Our study division, Rangpur, has the highest rates of female early marriage with 35.4% of women marrying by the age of 15 (Malé and Wodon

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[5]The proportion of women aged 20-24 years married or in a union before age 15 is 23.8% (MICS 2012-13). The proportion married or in a union before age 18 is 58.6% (BDHS 2014).

2016). This last figure demonstrates the severity of the problem in this region.

3 Description of Surveys and Data

To explore the impact of the COVID-19 lockdown and school closures on rural families and their children, we conducted a structured telephone-based survey called "COVID-19 Rural Household Survey in Gaibandha, Bangladesh" (referred to as the "CorGaB" survey hereafter) in late June and early July 2020. The CorGaB household survey questionnaire is available in the Appendix.

The CorGaB survey respondents previously participated in baseline surveys in two different research projects in Gaibandha. Both baseline surveys were initiated and completed before the COVID-19 induced lockdown. The first project is called "Enhancing the Enforcement of Child Marriage Laws through Improved Birth Registration, Surveillance and Reporting" (hereafter called the "GCC" project, according to the acronym of the grant authority; Grand Challenges Canada), and its primary objective is to prevent the marriage of girls below the age of 18. The GCC sample includes all households in 240 targeted communities with unmarried girls aged 13–17. The baseline GCC survey was conducted from February 10 to March 20, 2020, and its sample size is 2,568 households.

The second project is called "Female Labor Force Participation in Bangladesh" (hereafter called the "FLFP" project), and its primary objective is to enhance the labor force participation of young women. The FLFP households were randomly chosen from all eligible households in 164 targeted communities. Eligibility required that the household included at least one unmarried female member aged 15–29. The baseline FLFP survey was conducted from October 3 to November 30, 2019, and its sample size is 1,524 households. Note that neither the GCC nor the FLFP surveys represent the rural population in Bangladesh, given that they targeted households with unmarried adolescent girls or women. However, in both surveys, the households were randomly chosen (or covered the population in the targeted

area) and, thus, there is no selection among eligible households.

All the respondents in the baseline GCC and FLFP surveys were targeted for interviews in the CorGaB survey. The phone-based CorGaB survey was conducted during the period June 21 to July 9, 2020. Interviewers attempted to contact the respondents via telephone according to an established protocol with clear rules regarding when the household being contacted should be considered attritted.[6] The attrition rates were 7.8% in the GCC survey and 8.6% in the FLFP survey.

Table 1: **Summary statistics households of children aged 13-18**

	N	mean	std.dev	min	max
Head's age	3243	45.01	8.99	14	95
Head's sex (male)	3243	0.902	0.297	0	1
Head's marital status	3243	0.942	0.233	0	1
Head's education	3243	3.518	4.389	0	15
Child's age	4536	15.63	1.52	13	18
Child's sex (male)	4536	0.203	0.403	0	1
Child's marital status	4536	0.040	0.197	0	1
Child's education	4536	7.900	2.509	0	14

Note: Education is a discrete variable: 1-10= class1-10 years, 11=
SSC, 12= collage, 13=HSC, 14= BA/BSC/Fazil, 15= MA/MSC,
and 0 otherwise.

Summary statistics from the baseline GCC and FLFP surveys are presented in Table 1. The average age of the household head is 45 years. About 90% of households are headed by males, and 94% of heads are married. On average, the head has 3.5 years of education, which reflect that the survey area, i.e. Gaibandha district, is one of the most impoverished

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[6]The protocol was as follows: (i) Before the respondent has answered any call, the interviewer should attempt to contact the respondent three times per day. Each phone call should be at least three hours apart. The interviewer should continue calling the number for three days while there is no response. If there is no response at the end of three days, the interviewer should classify the household as "no response" (ii) If the respondent picks up a call but asks the interviewer to call back later, the interviewer should call back at a time that is convenient for the respondent. If the respondent does not respond to the follow-up call, the interviewer should follow procedure (i). (iii) If the respondent answers the follow-up call but asks the interviewer to call back later, the interviewer should call again at a time convenient for the respondent, and follow the procedure (i). (iv) If the interviewer has three such exchanges with the respondent (i.e., respondent answers the call but requests a call back at a later time), the interviewer should classify the household as "no response.'

rural areas in Bangladesh. Different variables were used to construct the productive asset index for the GCC and FLFP samples. In the GCC sample, the productive asset index is a standardized measure of household landholdings. in the FLFP sample, the productive asset index is a z-score a la Anderson (2008),[7] constructed based on the binary variables indicating the ownership of productive assets.[8] The variables used to construct the wealth index also differ slightly between the GCC and FLFP samples. However, both z-scores are constructed based on binary variables indicating ownership or access to valuable household items.[9] Table 1 also reports the characteristics of children aged 13–18. The average age of children in our sample is 15.6 years. Because of the selection criteria used for the sample households,[10] only 20% of the sample children are male, and only 4% are married. The sample children have, on average, 7.9 years of education (note that this is not the completed level of education, as many were still enrolled at school at the time of the baseline survey).

In Tables 2 and 3, we present descriptive statistics from the telephone-based CorGaB survey. Variables relating to the household-level impact of the COVID-19 lockdown are reported in Table 2. About 40% of households report job loss by one or more household members, while only 5% found a new job during the lockdown. About 87% of households reported having experienced a decrease in wages; while 3% experienced an increase in wages. Among households with male labor migrants prior to the lockdown, 44% reported return of a male migrant; while, among households with female labor migrants, 12% reported return of such a migrant since the start of the lockdown. Among households that were receiving remittances

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[7]The z-score is constructed by standardizing each outcome and summing the standardized outcomes, weighing each item by the inverse of the covariance matrix of the standardized outcomes.

[8]These productive assets are, namely, thresher, deep and shallow tube-well, treddle pump, done/swing basket, plow and yoke, spray, husking machine, ginning machine, fishing net, cage incubator, brooder, bees, box, weeder, ladder, sickle grain storage, saw, dheki, jata, sewing machine, agricultural land, and fallow/submerged land.

[9]In the GCC sample, these household items are access to electricity, pressure cooker, stove, chair, table, electric fan, TV, sewing machine, telephone, access to the internet, refrigerator, air conditioner, VCR, bicycle, motorcycle, and wardrobe. In the FLFP sample, this index is based on ownership of residential land, stove/gas burner/metal cooking pots, radio, TV, cassette player, bicycle, motorcycle/scooter, electric fan, wardrobe, VCR/VCP, sewing machine, tube well for drinking, wristwatch, wall clock, mobile phone, and jewelry.

[10]Recall that, in both the GCC and FLFP baseline surveys, the targeted households had at least one unmarried girl/woman within a specific age group

Table 2: **Summary statistics of household-level impacts of COVID-19**

	N	Mean	Std.dev	Min	Max
Lost job	3760	0.407	0.491	0	1
Find job	3760	0.050	0.217	0	1
Wage decrease	3698	0.872	0.334	0	1
Wage increase	3698	0.030	0.171	0	1
Return of male migrant	1699	0.443	0.497	0	1
Return of female migrant	1100	0.120	0.325	0	1
Decrease in remittances	1159	0.612	0.488	0	1
Respiratory sickness	3760	0.049	0.217	0	1
Hospitalized	245	0.073	0.261	0	1
Non-respiratory sickness	3760	0.271	0.445	0	1
Postponement of wedding	3760	0.055	0.228	0	1
Recent pregnant	3760	0.062	0.242	0	1
Days of food storage	3752	55	67	0	365
Reduce food consumption	3760	0.790	0.407	0	1
Reduce expenditure	3760	0.916	0.278	0	1
Increased disputes	3760	0.175	0.380	0	1
Coping strategy: savings	3760	0.352	0.478	0	1
Coping strategy: borrowing	3760	0.642	0.479	0	1
Coping strategy: regular income	3760	0.532	0.499	0	1
Coping strategy: cutting consumption	3760	0.794	0.405	0	1
Coping strategy: temporary work	3760	0.044	0.205	0	1
Received government support	3760	0.099	0.299	0	1
Received local community support	3760	0.030	0.171	0	1

before the lockdown, 61% experience a decrease in remittances. Compared with economic shocks, relatively few households reported health shocks during the lockdown. About 5% of households reported that a household member had suffered from respiratory illness since the start of the lockdown; among these cases, 7% of households reported hospitalization of a household member due to a respiratory illness. On the other hand, about 27% of households reported a new non-respiratory illness among household members since the start of the lockdown.

The sample households had stored food to cover consumption for an average period of 55 days. However, 79% of households reported reducing food consumption since the start of the lockdown, while 92% of them reduced overall expenditures. About 18% of households reported an increase in intra-household disputes since the start of the lockdown. The households reported using a variety of measures to cope with the lockdown: savings (35%), borrowings (64%), cutting consumption (79%) and temporary work (4%). Only 10% of respondents reported receiving government support during the lockdown, while 3% received local community support. We find negative associations between household wealth and decrease in consumption and expenditures, suggesting that poorer households are more likely to cope with economic shocks by cutting back consumption and expenditures.

Table 3: **Summary statistics of impacts of COVID-19 on children aged 13-18**

	Girl		Boy	
	Mean	Std.dev	Mean	Std.dev
Likely to be back to school after reopening	0.74	0.44	0.73	0.44
Engaged or married (dummy)	0.07	0.26		
Engagement/married: How many years ago?	1.21	1.44		
On-going marriage discussion (among unmarried)	0.10	0.30		
Change in sleep time (among unmarried)	0.37	0.63	0.36	0.63
Change in time on care for others (among unmarried)	0.51	0.59	0.28	0.55
Change in time on household chores (among unmarried)	0.51	0.61	0.20	0.62
Change in time on unpaid work (among unmarried)	0.18	0.49	0.21	0.54
Change in time on paid work (among unmarried)	-0.01	0.16	-0.14	0.42
Change in time on study (among unmarried)	-0.47	0.79	-0.41	0.75
Change in time on leisure (among unmarried)	0.64	0.68	0.63	0.69

Table 3 reports the summary statistics on the effects of the COVID-19 lockdown and school closures on children aged 13–18 years. Among children enrolled in school before the lockdown and unmarried, about three in four are, according to the respondent, very likely to return to school when the school closure ends, with no significant difference in probability between girls and boys (74% and 73% respectively). Among girls, 7% are already engaged or married and, on average, this engagement/marriage took place 1.2 years before the survey. For unmarried girls, the survey included a question on whether there were any ongoing discussions within the household or family about her marriage during or immediately after the end of the lockdown. Such discussions were reported for 10% of the unmarried girls in the sample. The lockdown made it difficult to have large gatherings that are common to wedding celebrations in the South Asian region. As shown in Tables 2, 5.5% of the sample households reported postponing a wedding during the lockdown. In this context, marriage intentions – as captured by the question on marriage discussions – may serve as a better measure of child marriage risk than the incidence of actual marriages during the lockdown.

Table 3 also includes summary statistics on change in children's time allocation in different activities since the beginning of the lockdown and school closure: sleep, caring for other household/family members, household chores, unpaid work, paid work, study at home, and leisure activities. The corresponding variables are coded as 1 if there has been an increase in time use, -1 if there has been a decrease in time use and 0 if there has been no change. We find a strong pattern of decreased study time and increased leisure and sleeping time among both boys and girls. We also observe increased time in unpaid work (both boys and girls) and a decreased time in paid work (boys only). There is a pattern of increased time on household chores and caring provided for other household/family members among both genders, but these effects are much stronger for girls than for boys.

4 Estimation and Findings

4.1 Model Specifications

To investigate the consequences of the COVID-19 lockdown and school closures on children's schooling and marriage, we first estimate the following linear probability model:

$$Y_{i,j,k} = \beta_0 + \beta_1 \text{AgeDummy}_{i,j,k} + \beta_2 \text{Girl}_{i,j,k} + X_{j,k}\gamma + \varepsilon_{i,j,k}, \tag{1}$$

where $Y_{i,j,k}$ is one of three binary outcome variables, namely whether child i is likely to return to school when schools reopen, whether the child was married or engaged after 26th March, 2020 when the lockdown began, and whether there had been discussions within the household about the child's marriage during the same time period. For the two latter outcomes, we use the female subsample only as marriage below 18 is rare among males (Amirapu, Asadullah and Wahhaj 2020). The variable $AgeDummy_{i,j,k}$ takes the value of 1 if child i in household j in village k is at the respective ages of 14–18 and 0 otherwise (the reference age is 13); $Girl_{i,j,k}$ takes the value of 1 if child i is female, and 0 if male; $X_{j,k}$ is a vector of household j's socioeconomic characteristics, consisting of household head's age, gender, marital status, and education level, the household's wealth quintile, and productive assets quintile. We also introduce a dummy variable indicating whether the household was originally in the GCC or FLFP sample. Standard errors are clustered at the village level.

To investigate how the specific health and economic shocks relating to COVID-19 and the lockdown affected children's schooling and marriage, we use a second specification where six binary variables indicating different types of shocks as explanatory variables to eq 1 as follows:

$$
\begin{aligned}
\mathrm{Y}_{i,j,k} \;=\;& \beta_0 + \beta_1 \mathrm{AgeDummy}_{i,j,k} + \beta_2 \mathrm{Girl}_{i,j,k} \\
+\;& \beta_3 \mathrm{Sickness}_{j,k} + \beta_4 \mathrm{JobLoss}_{j,k} \\
+\;& \beta_5 \mathrm{MaleReturnMigrant}_{j,k} + \beta_6 \mathrm{FemaleReturnMigrant}_{j,k} \\
+\;& \beta_7 \mathrm{EarningsLoss}_{j,k} + \beta_8 \mathrm{DecreaseInRemittances}_{j,k} \\
+\;& \mathrm{X}_{j,k}\gamma + \varepsilon_{i,j,k},
\end{aligned}
\tag{2}
$$

where $Sickness_{j,k}$, $JobLoss_{j,k}$, $MaleReturnMigrant_{j,k}$, $FemaleReturnMigrant_{j,k}$, $EarningsLoss_{j,k}$ and $DecreaseInRemittances_{j,k}$ are binary variables indicating, respectively, whether any member of household j in village k had a respiratory illness, any household member had lost a job, a male migrant member had returned home, a female migrant member had returned home, the household had experienced a decrease in earnings, or the household had experienced a decrease in remittances since the start of the lockdown. Note that $MaleReturnMigrant_{j,k}$, $FemaleReturnMigrant_{j,k}$, and $DecreaseInRemittances_{j,k}$ may capture not only economic shocks but also the presence of labor migrants in the household, which may reflect household's wealth level as households with labor migrants are usually poorer and largely dependent on remittances for their day-to-day living. Therefore, we control for the presence of labor migrants in the household prior to the lockdown. The other control variables are identical to those in eq 1.

To understand the heterogeneous impacts of COVID-led health and economic shocks by gender of children, we use a third specification where we interact binary variable indicating whether or not the child is female with each of the shock variables. Formally, we estimate the following equation:

$$
\begin{aligned}
\mathrm{Y}_{i,j,k} \;=\;& \beta_0 + \beta_1\mathrm{AgeDummy}_{i,j,k} + \beta_2\mathrm{Girl}_{i,j,k} \\[4pt]
+\;& \beta_3\mathrm{Sickness}_{j,k} + \beta_4\mathrm{Sickness}_{j,k} \times \mathrm{Girl}_{i,j,k} \\[4pt]
+\;& \beta_5\mathrm{JobLoss}_{j,k} + \beta_6\mathrm{JobLoss}_{j,k} \times \mathrm{Girl}_{i,j,k} \\[4pt]
+\;& \beta_7\mathrm{MaleReturnMigrant}_{j,k} + \beta_8\mathrm{MaleReturnMigrant}_{j,k} \times \mathrm{Girl}_{i,j,k} \\[4pt]
+\;& \beta_9\mathrm{FemaleReturnMigrant}_{j,k} + \beta_{10}\mathrm{FemaleReturnMigrant}_{j,k} \times \mathrm{Girl}_{i,j,k} \\[4pt]
+\;& \beta_{11}\mathrm{EarningsLoss}_{j,k} + \beta_{12}\mathrm{EarningsLoss}_{j,k} \times \mathrm{Girl}_{i,j,k} \\[4pt]
+\;& \beta_{13}\mathrm{DecreaseInRemittances}_{j,k} + \beta_{14}\mathrm{DecreaseInRemittances}_{j,k} \times \mathrm{Girl}_{i,j,k} \\[4pt]
+\;& \mathrm{X}_{j,k}\gamma + \varepsilon_{i,j,k},
\end{aligned}
\tag{3}
$$

4.2   Schooling and Marriage Outcomes

Table 4 columns 1, 9, and 10 show the estimates using equation 1 for three outcome variables of interest. The corresponding estimates using equations 2 and 3 are shown in columns 1, 9 and 10 of Table 5 and column 1 in Table 6 respectively. Note that, in Tables 5 and 6, we do not report the control variables shown in Table 4 but they are included in the estimations. Also note that we do not provide estimates using the gender-shock interaction terms for the marriage-related outcomes as these were collected for girls only.

The estimates in column 1 of Table 4 indicate that children in households with more educated heads or more wealth, as measured by ownership of valuable goods, had a higher likelihood (according to the respondent) of returning to school when schools reopen. The positive association between children's expected return to school and wealth is consistent with the view that children in poor household are most vulnerable to school drop-out during extended school closures. The productive asset index was negatively associated with expectation of children's school continuation. It is important to note that the productive assets index is composed primarily of assets used in agricultural production. Therefore, non-

agricultural households typically have lower index values. As we control for wealth in the estimation, the estimates for the productive asset index arguably captures differences due to wealth differentials among farming households. The negative association between school continuation and productive asset index may reflect the fact that in farming households with large landholdings, there is greater pressure on children to leave school and provide agricultural labour, as found in Ito and Shonchoy (2020).

The age-specific dummies indicate that the expectation of a return to school is lower for older children (negative and statistically significant effects children aged 17 and 18). The estimate for the gender dummy is negative but close to zero and statistically insignificant, implying that there is no difference in the expectation of a return to school between boys and girls.

Our estimates in column 1 of Table 5 show that respiratory sickness or job loss within the household during the lockdown decreased the likelihood of a child returning to school. On the other hand, the return of a female migrant increased the likelihood of a child returning to school. The estimates in Table 6 column 1 indicate that the effects of these health and economic shocks on the likelihood of the child returning to school do not vary by the gender of the child.

In columns 9 and 10 of Table 4, we report estimates for, respectively, marriages and engagements since the lockdown and school closure began, and marriage-related discussions within the household during the same period. As expected, we find that the likelihood of marriage/engagement and marriage-related discussions is higher for older girls. In particular, we find that the estimated probability of marriage-related discussions during the lockdown increases steadily with the age of the girl. All estimated coefficients for girls aged 15 and older are highly significant.

Turning to our measures of COVID-related shocks, we find that a female return migrant or a decrease in remittances decreased the probability of marriage/engagement during the lockdown by about 2% points and 1.6% points respectively (Table 5 column 9). On the other

Table 4: **Lockdown impacts on children's schooling and time-use patterns and girls' marriage (with focus on gender of children)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Likely to go back to school	Change in Time (comparing normal time with COVID-led school closure)							Girl only:	
		Sleep	Care for others	Household chores	Unpaid work	Paid work	Study	Leisure	Engaged/ married	Marriage discussion
Head's education	0.00459***	0.00490**	0.000556	-0.00245	-0.00180	-0.000167	-0.00386	0.00766**	-0.000298	-0.00193
	(0.00174)	(0.00209)	(0.00223)	(0.00235)	(0.00206)	(0.000850)	(0.00325)	(0.00312)	(0.000459)	(0.00120)
Productive asset index (quintile)	-0.0105*	0.0118*	0.0209***	0.0258***	0.0117*	0.00820***	0.0106	0.00165	-0.00241	-0.00778*
	(0.00633)	(0.00658)	(0.00686)	(0.00693)	(0.00681)	(0.00261)	(0.0104)	(0.00924)	(0.00152)	(0.00408)
Wealth index (quintile)	0.0164***	0.00996	-0.00422	0.00407	-0.00545	0.00553*	-0.00476	0.00272	0.000529	-0.00235
	(0.00598)	(0.00746)	(0.00741)	(0.00785)	(0.00554)	(0.00308)	(0.00729)	(0.00833)	(0.00150)	(0.00355)
Child's age: 14 yrs old	0.0206	-0.0311	-0.0339	0.0784**	0.0208	-0.0297***	0.00473	0.0481	0.00320	0.0120
	(0.0270)	(0.0361)	(0.0363)	(0.0358)	(0.0275)	(0.0102)	(0.0422)	(0.0429)	(0.00205)	(0.0134)
Child's age: 15 yrs old	0.0183	-0.0242	-0.00470	0.0887**	0.00368	-0.0464***	0.0639	-0.00269	0.00964***	0.0587***
	(0.0271)	(0.0384)	(0.0389)	(0.0367)	(0.0297)	(0.0116)	(0.0481)	(0.0432)	(0.00343)	(0.0144)
Child's age: 16 yrs old	-0.00622	-0.00105	-0.00854	0.0784*	0.00572	-0.0528***	0.0142	-0.0156	0.0165***	0.0928***
	(0.0261)	(0.0370)	(0.0361)	(0.0406)	(0.0305)	(0.0108)	(0.0484)	(0.0394)	(0.00461)	(0.0173)
Child's age: 17 yrs old	-0.0555*	-0.0473	0.0281	0.0860**	0.0320	-0.0635***	0.0250	-0.0168	0.0302***	0.115***
	(0.0306)	(0.0373)	(0.0330)	(0.0407)	(0.0330)	(0.0161)	(0.0530)	(0.0390)	(0.00775)	(0.0187)
Child's age: 18 yrs old	-0.0718**	-0.0414	0.0612	0.135***	0.0995***	-0.0720***	0.0910*	-0.0558	0.0192**	0.156***
	(0.0322)	(0.0435)	(0.0416)	(0.0460)	(0.0355)	(0.0202)	(0.0540)	(0.0491)	(0.00758)	(0.0270)
Girl	-0.00674	-0.00664	0.251***	0.316***	-0.0194	0.123***	-0.0902***	-0.00487		
	(0.0188)	(0.0287)	(0.0220)	(0.0264)	(0.0200)	(0.0163)	(0.0295)	(0.0258)		
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,987	4,124	4,124	4,124	4,124	4,124	4,124	4,124	3,550	3,226
R-squared	0.015	0.007	0.035	0.048	0.007	0.058	0.023	0.007	0.010	0.033

Note: Wealth index and productive asset index are quintiles (1-5). Cluster(village)-robust standard errors are in parentheses. Other controls used in the regression are the following: Age, gender and marital status of the household head, and sample type (GCC). ∗, ∗∗, ∗∗∗ indicate significance levels at 10%, 5%, 1%, respectively.

Table 5: **Impacts of health and economic shocks on children's schooling and time-use patterns and girls' marriage**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Likely to go back to school	Change in Time (comparing normal time with COVID-led school closure)							Girl only:	
		Sleep	Care for others	Household chores	Unpaid work	Paid work	Study	Leisure	Engaged/ married	Marriage discussion
Girl	-0.0113	-0.0105	0.253***	0.323***	-0.0193	0.122***	-0.0874***	-0.00411		
	(0.0195)	(0.0289)	(0.0220)	(0.0255)	(0.0195)	(0.0155)	(0.0304)	(0.0253)		
Sickness	-0.135***	0.0435	-0.0510	-0.0851*	-0.00517	0.0179	-0.0134	-0.0557	-0.00924	0.0484*
	(0.0423)	(0.0528)	(0.0491)	(0.0480)	(0.0436)	(0.0275)	(0.0687)	(0.0542)	(0.00594)	(0.0281)
Job loss	-0.0459**	0.0499**	-0.0141	-0.00114	0.0561**	0.0107	-0.0162	0.102***	-0.000944	0.0496***
	(0.0207)	(0.0252)	(0.0255)	(0.0246)	(0.0217)	(0.00984)	(0.0289)	(0.0267)	(0.00440)	(0.0112)
Male return migrant	0.0421	-0.0783**	0.00901	0.0294	-0.0102	-0.0505***	0.0278	-0.0129	0.00411	0.00351
	(0.0304)	(0.0395)	(0.0405)	(0.0344)	(0.0320)	(0.0146)	(0.0504)	(0.0372)	(0.00786)	(0.0218)
Female return migrant	0.113***	0.0569	-0.172**	-0.205***	0.0276	-0.0209	-0.136**	-0.0720	-0.0208***	0.0506
	(0.0429)	(0.0549)	(0.0695)	(0.0645)	(0.0544)	(0.0331)	(0.0665)	(0.0720)	(0.00652)	(0.0423)
Earnings loss	0.0297	-0.00558	0.0220	-0.0290	-0.0167	-0.0195*	-0.101**	0.276***	-0.00750	-0.0181
	(0.0251)	(0.0316)	(0.0387)	(0.0353)	(0.0305)	(0.0100)	(0.0414)	(0.0540)	(0.00757)	(0.0128)
Decrease in remittances	0.00243	0.0346	0.00845	-0.0918***	-0.0396	-0.0192*	-0.0997***	-0.0347	-0.0158***	-0.0219
	(0.0233)	(0.0274)	(0.0293)	(0.0316)	(0.0258)	(0.0111)	(0.0341)	(0.0344)	(0.00479)	(0.0141)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,910	4,039	4,039	4,039	4,039	4,039	4,039	4,039	3,483	3,161
R-squared	0.032	0.010	0.041	0.063	0.015	0.066	0.035	0.037	0.015	0.043

Note: Cluster(village)-robust standard errors are in parentheses. Other controls used in the regression are the following: Age, gender, marital status, and education of the household head, wealth and productive asset indices of the household, existence male and female migrants in the household, children's age dummies, and sample type (GCC). ∗, ∗∗, ∗∗∗ indicate significance levels at 10%, 5%, 1%, respectively.

hand, we find that respiratory illness or job loss increased the probability of marriage-related discussions by 4.8% points and 5% points respectively (Table 5 column 10). These results relating to marriage/engagement are consistent with the findings of Corno et al. (2020) who show that, in societies that practice dowry, parents cope with adverse economic shocks by postponing the marriage of their daughters, and thus the associated dowry payments. However, this explanation cannot account for the fact that we do not see a similar effect on marriage/engagement from job loss, earnings loss or return of a male migrant. It is worth noting a significant fraction of households report wedding postponements due to the COVID-19 lockdown (see the discussion in Section 3) potentially because of restrictions on mobility and social gatherings during the lockdown, and our shock measures may be proxying for such restrictions. In any case, the finding that certain types of adverse shocks tend to increase marriage-related discussions suggests that any lull in early marriages during the lockdown period may be temporary, and that a relaxation of lockdown rules or improvement in the households' economic situation may lead to a rise in early marriages.

4.3 Time Use

Table 4 columns 2–8 report estimates of equation 1 using a number of outcome variables representing change in children's time allocation during the lockdown and school closure. These variables are coded as follows: -1 if there was a decrease in time spent on the activities in question during the lockdown, 0 if there was no change, and 1 if there was an increase. We report estimates for our base specification, without the health and economic shock variables, in Table 4, columns 2–8.[11] We find that, due to lockdown and school closure, relative to boys, girls increase time spent caring for others, on paid work and on household chores, but decrease time spent studying at home. In the case of time allocated to paid work, the descriptive data shows that there was almost no change for girls but there is a substantial

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[11]The estimated coefficients should be interpret as follows. A positive coefficient means that the variable in question increases the proportion who experienced an increase relative to those who experienced a decrease in time allocation. A negative coefficient means the opposite

decline for boys, a pattern which accounts for the estimated positive coefficient of the gender dummy.

In Table 5, we present estimates for the specification with health and economic shocks, i.e. the equivalent of equation 3. In Table 6, we extend the specification by interacting the gender dummy with the shock variables, i.e. the equivalent of equation 3. As we may expect, job loss within the household is associated with increased time in unpaid work (Table 5 column 2) as well as increased sleep and leisure time (columns 2 and 8). Loss of earnings is associated with a decrease in study time and increase in leisure time (columns 7 and 8). Interestingly, the effects of the return of a male migrant on children's time allocation is quite different from that of a female return migrant: the return of a male migrant led to a reduction of time spent sleeping and doing paid work (columns 2 and 6), while the return of a female migrant led to a reduction in time spent caring for others and doing household chores (columns 3 and 4). These differences suggest that children's time allocation were affected not just by the loss of remittances that may result from a migrant returning home, but the individual characteristics of the additional household member.

Table 6 reveals some important differences in how the health and economic shocks affect the time allocation of male and female children. For example, job loss within the household affects time allocation by male children primarily (increase in sleep and leisure time, and increase in time spent caring for others and in paid work) with the overall effect on female children being close to zero (with the exception of leisure time which increases). Similarly, there is some suggestive evidence that the return of a male return migrant affects male children to a greater extent than female children.

Table 6: **Impacts of health and economic shocks on children's schooling and time-use patterns by gender of children**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Likely to go back to school	Change in Time (comparing normal time with COVID-led school closure)						
		Sleep	Care for others	Household chores	Unpaid work	Paid work	Study	Leisure
Girl	-0.0408	-0.0343	0.362***	0.399***	-0.0225	0.0499	-0.116	0.0718
	(0.0524)	(0.0659)	(0.0637)	(0.0660)	(0.0750)	(0.0370)	(0.0830)	(0.0901)
Sickness	-0.133	0.0460	-0.0426	-0.120	-0.111	0.0794	-0.0156	-0.170
	(0.0845)	(0.0975)	(0.0876)	(0.105)	(0.109)	(0.0573)	(0.156)	(0.119)
Girl × Sickness	-0.00261	-0.00374	-0.0101	0.0424	0.129	-0.0742	-0.000568	0.139
	(0.0855)	(0.104)	(0.0983)	(0.117)	(0.116)	(0.0498)	(0.136)	(0.123)
Job loss	-0.0189	0.155***	0.128***	0.0390	0.0330	0.0549*	0.0355	0.0925*
	(0.0380)	(0.0514)	(0.0455)	(0.0520)	(0.0409)	(0.0299)	(0.0592)	(0.0520)
Girl × Job loss	-0.0330	-0.133**	-0.180***	-0.0507	0.0297	-0.0560*	-0.0642	0.0123
	(0.0390)	(0.0569)	(0.0485)	(0.0529)	(0.0379)	(0.0298)	(0.0624)	(0.0499)
Male return migrant	-0.0485	-0.134**	-0.0388	0.0651	0.0672	-0.165***	0.0590	0.0194
	(0.0564)	(0.0631)	(0.0759)	(0.0596)	(0.0582)	(0.0442)	(0.0751)	(0.0599)
Girl × Male return migrant	0.110*	0.0702	0.0590	-0.0463	-0.0981*	0.147***	-0.0415	-0.0390
	(0.0593)	(0.0682)	(0.0689)	(0.0644)	(0.0551)	(0.0446)	(0.0758)	(0.0548)
Female return migrant	0.0851	0.266*	-0.118	-0.158	0.0933	0.000461	-0.358**	-0.104
	(0.119)	(0.141)	(0.107)	(0.130)	(0.140)	(0.119)	(0.156)	(0.156)
Girl × Female return migrant	0.0303	-0.257	-0.0620	-0.0545	-0.0790	-0.0282	0.271*	0.0352
	(0.122)	(0.161)	(0.122)	(0.146)	(0.155)	(0.125)	(0.159)	(0.152)
Earnings loss	0.00847	-0.0499	0.0436	0.00165	-0.0277	-0.0761*	-0.155	0.357***
	(0.0486)	(0.0637)	(0.0744)	(0.0721)	(0.0771)	(0.0406)	(0.0960)	(0.0961)
Girl × Earnings loss	0.0266	0.0557	-0.0307	-0.0408	0.0134	0.0728*	0.0680	-0.104
	(0.0552)	(0.0691)	(0.0667)	(0.0742)	(0.0805)	(0.0419)	(0.0942)	(0.0973)
Decrease in remittances	0.0120	-0.0360	0.0881*	-0.0522	-0.0268	-0.0355	-0.0879	-0.0743
	(0.0422)	(0.0619)	(0.0521)	(0.0442)	(0.0520)	(0.0384)	(0.0691)	(0.0677)
Girl × Decrease in remittances	-0.0111	0.0920	-0.107*	-0.0537	-0.0178	0.0226	-0.0159	0.0513
	(0.0485)	(0.0685)	(0.0555)	(0.0512)	(0.0563)	(0.0406)	(0.0753)	(0.0643)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,910	4,039	4,039	4,039	4,039	4,039	4,039	4,039
R-squared	0.033	0.013	0.046	0.064	0.017	0.079	0.036	0.038

Note: Cluster(village)-robust standard errors are in parentheses. Other controls used in the regression are the following: Age, gender, marital status, and education of the household head, wealth and productive asset indices of the household, existence male and female migrants in the household, children's age dummies, and sample type (GCC). *, **, *** indicate significance levels at 10%, 5%, 1%, respectively.

5 Conclusion

In this paper, we examined the effects of a severe, aggregate shock, in the form of the COVID-19 pandemic, on adolescent boys and girls in rural households in one of the poorest regions of Bangladesh. We focus on three types of outcomes – school dropout, early marriage and time use within the home – that, based on the existing literature, we hypothesize are likely to be part of – or be affected by – households' coping strategies.

We collected information on the study-households using a rapid telephone-based survey conducted in June-July 2020, roughly three months after the government introduced a nationwide lockdown. Given the timing of the survey, the evidence we uncover is necessarily limited to the early response of households to the pandemic. Nevertheless, the evidence may be important for formulating future policy responses to epidemics and pandemics in similar settings.

Most children were expected to return to school when schools reopen. But there was strong pattern of decreased study time at home and increased time on household chores and caring provided to other household members since the beginning of the lockdown. Furthermore, the magnitudes of these changes were significantly larger for girls than for boys. We also find important evidence that the marriage timing of girls form part of the households' coping strategy during the pandemic. Specifically, loss of remittances decreased the probability of marriage while a job loss increased the probability of marriage-related discussions within the household, albeit with no effect on actual marriages and engagements. The effects on marriage timing of adolescent girls and related behaviour are, arguably, unsurprising given that nearly 3 in 5 women in Bangladesh marry before reaching the age of 18 (NIPORT and ICF 2019), and there are substantial transfers and expenses associated with marriage (Amin and Bajracharya 2011). The absence of a spike in early marriages during the early stages of the pandemic is consistent with the findings of Corno et al. (2020) who find that, in regions where dowry is practised, droughts lead to a decline in early marriages; as well as with Amirapu et al. (2020) who find a sharp decline in the incidence of marriage, for

girls and women aged 15-24 years, during the first two months of the COVID-19 lockdown in Bangladesh.

Nevertheless, the increase in marriage-related discussions within households that have experienced an adverse economic shock during the pandemic provides an early warning that, in the absence of effective policy responses, the incidence of early marriage may well increase at later stages of the pandemic.

Thus, our findings offer a cautionary tale regarding the potential long-term effects of the pandemic for girls in developing countries like Bangladesh, that highlights the urgent need for policymakers to take appropriate counter measures to preserve recent achievements in education and child rights, including gender parity in education and increase in the age at marriage.

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