Kent Academic Repository

Makino, Momoe, Shonchoy, Abu S. and Wahhaj, Zaki (2023) *Early effects of the COVID-19 lockdown on children in north-western Bangladesh.* **Oxford Development Studies, 52 (1). pp. 34-53. ISSN 1360-0818.**

Early effects of the COVID-19 lockdown on children in north-western Bangladesh

Momoe Makino[a]*, Abu S. Shonchoy[b], and Zaki Wahhaj[c]

[a]*Institute of Developing Economies, IDE-JETRO, Nihon Boeki Shinko Kiko Asia Keizai Kenkyujo, Chiba, Japan;* [b]*Department of Economics, Florida International University, Miami, USA;* [c]*School of Economics, Kennedy Building, University of Kent, Kent, UK*

Using data collected through a structured telephone-based survey in north-western Bangladesh during the height of the pandemic, we present evidence on the effects of household specific shocks induced by COVID-19-led lockdown on rural children. We focus 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. We find that respiratory illness and job loss experienced in the household lowered expectations of a child's future school continuation and increased the probability of marriage-related discussions for girls. The return of a male migrant led to a reduction of children's time spent doing paid work, while the return of a female migrant led to a reduction in their time spent caring for others and doing household chores. Our findings offer a cautionary tale regarding the potential long-term effects of the pandemic and school closure on girls in developing countries.

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

JEL classification: I25; J12; O53

*corresponding author: Momoe Makino at Institute of Developing Economies, 3-2-2 Wakaba Mihama-ku Chiba 261-8545, Japan. Tel.: 81-43-299-9687, E-mail address: momoe_makino@ide.go.jp

Introduction

With the outbreak of the COVID-19 pandemic 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 (Chowdhury & Jomo, 2020; Gerard et al., 2020).

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 (Amirapu et al., 2022b; Asadullah & Bhattacharjee, 2022; Seagar et al., 2022). Understanding the socio-economic consequences of the early policy responses to the coronavirus outbreak can help inform the design of future policy (Engzell et al., 2021; World Bank, 2020), not only with regard to the COVID-19 pandemic but other future epidemics and pandemics as well.

In this paper, we present evidence on the early 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 of 2020 and, a week later, ordered the closure of all non-essential businesses and advised people to stay at home and practice social distancing (Daily Star, 2020). The lockdown on businesses was lifted on May 30, 2020 but schools remained closed for one and a half years, till September 12, 2021 (Dhaka Tribune, 2021).

In addition to the direct impact of school closures on learning (see Moscoviz and Evans (2021) for a review of the literature on the effect of COVID-19 school closures

pandemic on learning loss), 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 to school drop-out and early motherhood (Asadullah & Wahhaj, 2019; Field & Ambrus, 2008). 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. (2020a) 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 common characteristics for 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 (Amin, 2020).

Based on this reasoning, our study focuses on three child-related outcomes: time use of children during the lockdown and school closure, parents' 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, 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 of 2020. The telephone-based survey covers 3,760 rural households in Gaibandha, a district in north-western Bangladesh with a high incidence of female child marriage and seasonal migration to major urban centres.

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 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 on children's time use at home, expectations about returning to school, and marriages or marriage-related steps. For example, respiratory illness and job loss 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

4

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. These gendered effects of various COVID-19 related shocks on household's children are a noteworthy contribution and not being documented by other similar studies in this space.

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 Brodeur et al. (2021) for a review). This includes a large and growing number of studies looking at the effects of the pandemic on learning loss, learning support, and time allocation of school-aged children for Bangladesh as well as other developing countries (Amin et al., 2021; Amirapu et al., 2022b; Asadullah & Bhattacharjee, 2022; Baird et al., 2020; Radhakrishnan et al., 2021; Seagar et al., 2022; Wolf et al., 2021) although few of the existing studies attempt to link economic shocks reported by households to child-related outcomes (Wolf et al. (2021) is an exception). 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 on 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 et al. (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 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, restrictions on economic activity and related shocks,

particularly on adolescent children. The objective of the current paper is to contribute towards filling this evidence gap.

Background

Bangladesh identified its first COVID-19 case on March 8, 2020. As a precautionary measure, the government imposed school closures on March 17. In order to contain the rapid spread of the virus, a countrywide lockdown was imposed on March 26. Although the lockdown was lifted on May 30, schools remained closed for 18 months (until September 12, 2021) (Daily Star, 2020; UNICEF, 2021a).

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 north-western 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 north-western region suffers from periodic floods and river erosion during the monsoon season, and seasonal deprivation before the harvesting season. Another unique feature of north-western Bangladesh is the sizable internal rural-urban migrant population. For instance, according to the national Household Income and Expenditure Survey (BBS, 2018), 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, given that the lower and upper secondary school completion rates in Bangladesh is 65 and 29, respectively (UNICEF, 2021b). School closures during an entire academic year can exacerbate these completion rate for upper schooling grades, especially for girls.

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), 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 and ICF, 2019).[1] Unlike the case of women, marriage below the age of 18 is rare among men (Amirapu et al., 2020b). In the vast majority of cases, marriages are arranged by parents or relatives (Asadullah & Wahhaj, 2016). Our study division, Rangpur, has the highest rate of female early marriage with 35.4% of women marrying by the age of 15 (Malé & Wodon, 2016), demonstrating the severity of the problem in this region.

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 June 21 to July 9, 2020. The CorGaB household survey questionnaire is available in the Appendix.

The CorGaB survey respondents previously participated in baseline surveys targeted the households with unmarried girls aged 13–29 in two different research projects in Gaibandha (hereafter we call these two projects as survey A and survey B, respectively). Both baseline surveys were initiated and completed before the COVID-19 induced lockdowns. All the respondents in the baseline surveys were targeted for interviews in the CorGaB survey. 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. The attrition rates were 7.8% in the survey A and 8.6% in the survey B. Note that both baseline surveys do not represent the rural population in Bangladesh, given that they targeted households with unmarried adolescent girls or women, and thus, the CorGab survey sample includes disproportionally more girls than boys. However, in both surveys, there is no selection among eligible households. The baseline surveys, their summary statistics (Table B1), and the attrition protocol are detailed in the Appendix.

As for the households in the survey A, we conducted the second telephone-based survey in mid-February to March 2021, specifically to examine how discussion about daughter's marriage leads to the actual marriage. The reason we conducted the second telephone-based survey for only those in the survey A was purely financial.

In Tables 1 and 2, 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 1. About 40% of households report job loss by at least one household member. About 87% of households reported having experienced a

decrease in wages. Among households with male labour migrants prior to the lockdown, 44% reported return of a male migrant; among households with female labour migrants, 12% reported return of such a migrant since the start of the lockdown. It is worth noting that the period of the return overlaps with the harvest period of *Boro* rice, a major crop in the region. Therefore, it is likely that a portion of the male migrants who have returned are seasonal migrants who would have returned home to help with the rice harvest even in the absence of a COVID-19 lockdown. In the case of women, seasonal migrants are unlikely (Amirapu et al., 2022a; Jones 2020). Among households that were receiving remittances before the lockdown, 61% experienced 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.

The sample households had experienced food shortage for an average period of 55 days, and 79% and 92% of households reported reducing food consumption and overall expenditures, respectively. About 18% of households reported an increase in intra-household disputes. 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, while 3% received local community support.

Table 2 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, 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). Note that the school closure started on March 17 in Bangladesh, while our cut-off date in the questionnaire is

always the lockdown date on March 26. Our primary interest is the impact of household specific COVID-19 induced health and economic shocks on children's outcome, and we consider that the lockdown cut-off date on March 26 is more relevant to these shocks. However, there is a concern that parents answered all the questions considering that children did not go to school before the lockdown because they did not go to school after March 17. We examined this possibility by checking the baseline enrolment rate and the parental response rate to the question which was only answered by parents who consider that their children went to school before the lockdown, March 26. Both enrolment and response rates were the same at 96% for the survey A sample, which consists of two-thirds of our full sample. And the response rate was actually *higher* than the baseline enrolment rate for the survey B sample. For robustness, we further check the estimation results by dropping the survey B sample, and found no substantial difference from the results using the full sample. And thus, we assume that parents answered all the questions as a difference before and after the lockdown. We recognize that some recent studies on children's learning in Bangladesh explicitly used the cut-off date March 17 (Asadullah & Bhattacharjee, 2022; Seager et al., 2022), which is precise in term of school closure. However, for the purpose of our study asking whether children regularly went to school before the lockdown, we assume that the difference in the cut-off date, March 17 or 26, does not make a difference in their answers.

Another potential concern related with this question asking parents about their children's likelihood going back to school is that we did not consider an alternative learning option, i.e., online schooling, and this question did not capture the probability that children continue their schooling without physically going back to school. Parents may decide not to send their children to in-person school when school reopens if they fear children's infection probability especially when they have an effective online

schooling option. However, we consider that children's continuation of schooling without physically going back to school is very unlikely, given reported ineffectiveness of digital learning in rural Bangladesh during the pandemic (Amirapu et al., 2022b; Asadullah & Bhattacharjee, 2022; Baird et al., 2020; Fujii et al., 2022; Seager et al., 2022) and lower frequency of infection, only 22% of total Bangladeshi cases reported in rural area (UN-Habitat, 2020).

Among our girl sample, 7% are already engaged or married. For unmarried girls, we asked 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 1, 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. One may wonder whether marriage discussions reflect the real risk of marriage, as marriage discussions could occur without any imminent marriage. To address this possibility, we conducted the second telephone-based survey concerning the survey A sample and collected information on actual marriage after one year of the lockdown.

Table 2 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, and 0 if 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.

Estimation and findings

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:

$$Y_{ijk} = \beta_0 + \beta_1 AgeDummy_{ijk} + \beta_2 Girl_{ijk} + X_{jk}\gamma + \varepsilon_{ijk} \tag{1}$$

where Y_{ijk} is one of three binary outcome variables, namely whether child i in household j in village k is likely to return to school when schools reopen, whether the child was married or engaged after March 26, 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 et al., 2020b). The variable $AgeDummy_{ijk}$ takes the value of 1 if child i is at the respective ages of 14–18 and 0 otherwise (the reference age is 13); $Girl_{ijk}$ takes the value of 1 if child i is female, and 0 if male; X_{jk} 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 survey A or B sample. Standard errors are clustered at the village level.

To investigate how the household 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 are added as explanatory variables to equation (1) as follows:

$$
\begin{aligned}
Y_{ijk} = \beta_0 &+ \beta_1 AgeDummy_{ijk} + \beta_2 Girl_{ijk} + \beta_3 Sickness_{jk} + \beta_4 JobLoss_{jk} \\
&+ \beta_5 MaleReturnMigrant_{jk} + \beta_6 FemaleReturnMigrant_{jk} \\
&+ \beta_7 EarningLoss_{jk} + \beta_8 DecreaseInRemittances_{jk} + X_{jk}\gamma + \varepsilon_{ijk}
\end{aligned} \tag{2}
$$

where $Sickness_{jk}$, $JobLoss_{jk}$, $MaleReturnMigrant_{jk}$, $FemaleReturnMigrant_{jk}$, $EarningLoss_{jk}$ and $DecreaseInRemittances_{jk}$ 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 $MaleReturnMigrant_{jk}$, $FemaleReturnMigrant_{jk}$, and $DecreaseInRemittances_{jk}$ may capture not only economic shocks but also the presence of labour migrants in the household, which may reflect household's wealth level as households with labour migrants are usually poorer and largely dependent on remittances for their day-to-day living. Therefore, we control for the presence of labour migrants in the household prior to the lockdown. The other control variables are identical to those in equation (1).

14

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 (Appendix Table B4).

Schooling and marriage outcomes

Table 3 columns 1, 9, and 10 show the estimates using equation (1) for three outcome variables of interest. The corresponding estimates using equation (2) are shown in columns 1, 9 and 10 of Table 5. Note that, because of space limitations, we do not report the control variables included in the estimations, but are stated in the table footnote.

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 and 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. As noted in the previous section, female return migrant is likely due to the COVID-19 induced lockdown and is unlikely to reflect seasonal migrants irrespective of the lockdown. 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 (Appendix Table B4).

In columns 9 and 10 of Table 3, 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.

To address the concern that marriage discussions may not reflect the risk of actual marriage, we collected information concerning actual marriage between mid-February and end of March 2021. In Table 4, we regress a binary variable indicating actual marriages occurred within one year after the lockdown on marriage discussions within three months of the lockdown and the same control variables as those used in Table 3. These estimates show a strong association between marriage discussions and actual marriage outcomes.

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 hand, we find that respiratory illness and job loss increased the probability of marriage-related discussions by 4.8% points and 5% points respectively (Table 5 column 10). As noted above, female return migrant is unlikely confounding with a seasonal migrant, the impact can be considered that of the COVID-19 induced lockdown. 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 'Description of surveys and data') 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 pause 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.

We also examine the impact of COVID-related shocks by girls' ages, and the results are presented in Appendix Table B2. Due to many interaction terms, most coefficient estimates are insignificant. However, some interesting impacts are observed. In particular, older girls are less likely to marry when the household had a health shock. Though some coefficient estimates are not significant, older girls are also less likely to marry when the household had a female return migrant and experienced decrease in remittances. Because older girls are more likely to marry irrespective of shocks, these differential impacts can be considered the real impact of the health and economic shock related to COVID-19. The findings of Corno et al. (2020) show that economic shocks delay girls' marriage in dowry observing society, and our findings suggest that health shocks may have the similar impact. Alternatively, our findings are consistent with postponing of wedding ceremonies under the lockdown.

Time use

Table 3 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. We report estimates for our base specification, without the health and economic shock variables, in Table 3, columns 2–8.[2] 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 decline for boys, a pattern which accounts for the estimated positive coefficient of the gender dummy.

Because change in one's time spent on household-related work may affect other household members' time spent on the same activity, we also check the time-use patterns within the household. The regression with household fixed effects is feasible as we collected information on time-use patterns of all children aged 13–18 in the household; some households have more than one child in this age range. The estimation results are presented in Appendix Table B3. Overall, the results are similar to those presented in Table 3, columns 2–8, in terms of both signs and magnitudes of the coefficients. In particular, only girls increased time spent on caring for others and household chores, and decreased time spent on studying as compared with their brothers.

In Table 5, we present estimates for the specification with health and economic shocks, i.e. the equivalent of equation (2). We extend the specification by interacting the gender dummy with the shock variables (Appendix Table B4). 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

18

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 may be partly due to the possibility that male return migrants may include some of the seasonal migrants irrespective of COVID-19 induced lockdown. However, these differences may also 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 B4 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 though the return may include a reason which is irrelevant to the COVID-19 induced lockdown.

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, are likely to be part of, or be affected by households' coping strategies.

We collected information on the households under study 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. These patterns echo—to some extent—the findings in other studies on the effects of the pandemic on school-aged children in Bangladesh. For example, Baird et al. (2020) also report increase in household chores among both boys and girls. Amin et al. (2021) report a sharp decline in study time among adolescent girls (from 7–8 hours prior to the pandemic to just 2 hours during COVID-19 school closures. Seager et al. (2022) find a larger reduction in study time for girls compared to boys. However, Asadullah and Bhattacharjee (2022) and Amirapu et al. (2022b) find a similar reduction in self-study time for boys and girls during the 2020 lockdown. Additionally, the latter study finds that boys suffered a *bigger* decline in study time during the second lockdown in Bangladesh in 2021.

We also find important evidence that the marriage timing of girls forms a 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 half of the women in Bangladesh marry before reaching the age of 18 (UNICEF, 2020), and there are

20

substantial transfers and expenses associated with marriage (Amin & 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 practiced, droughts lead to a decline in early marriages; as well as with Amirapu et al. (2020a) 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. Though the absolute number of actual marriages was small, the marriage-related discussions within three months after the lockdown was, in fact, significantly associated with the actual marriage occurred within one year after the lockdown. Longer-term trajectories such as the timing of actual marriage for girls by household specific shocks are left for future research.

Thus, our findings offer a cautionary tale regarding the potential long-term effects of the pandemic for girls in developing countries like Bangladesh. It 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.

Declaration of Interest

The authors declare no conflict of interest associated with this manuscript. There is no financial, personal, or other interests to report.

Funding

---

[1] The proportion of women aged 20–24 years married or in a union before age 15 and 18 is

16%, and 51%, respectively (UNICEF, 2020).

[2] 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.

References

Amin, S. (2020, April 9). *Bangladeshi women play crucial role in fight against COVID-19*. Netra News. https://netra.news/2020/ bangladeshi-women-play-crucial-role-in-fight-against-covid-19-981

Amin, S., & Bajracharya, A. (2011). Costs of marriage—marriage transactions in the developing world. *Promoting healthy, safe and productive transitions to adulthood*. Population Council Brief no. 35, March 2011. https://www.popcouncil.org/uploads/ pdfs/TABriefs/35_MarriageCosts.pdf

Amin, S., Hossain, M.I., & Ainul, S. (2021). Learning loss among adolescent girls during the COVID-19 pandemic in rural Bangladesh. New York. Population Council. https://knowledgecommons.popcouncil.org/departments_sbsr-pgy/1501/

Amirapu, A., Asadullah, M.N., & Wahhaj, Z. (2020a). The threat to female adolescent development from COVID-19. *EDI COVID-19 Essay Series*. https://edi.opml.co.uk/wpcms/wp-content/uploads/2020/09/AAW-Covid-19-Policy-Final-14.09.2020.pdf

Amirapu, A., Asadullah, M.N., & Wahhaj, Z. (2020b). Can child marriage law change attitudes and behaviour? Experimental evidence from an information intervention in Bangladesh. *EDI Working Paper Series*. https://www.kent.ac.uk/economics/repec/2001.pdf

Amirapu, A., Asadullah, M.N., & Wahhaj, Z. (2022a). Social barriers to female migration: Theory and evidence from Bangladesh. *Journal of Development Economics 158*. https://doi.org/10.1016/j.jdeveco.2022.102891

Amirapu, A., Asadullah, M.N., & Wahhaj, Z. (2022b). The threat to adolescent development from COVID-19 in rural Bangladesh. *EDI COVID-19 Essay Series*. https://edi.opml.co.uk/wpcms/wp-content/uploads/2022/03/The-Threat-to-Adolescent-Development-from-Covid-19-in-rural-Bangladesh.pdf

Archibong, B., & Annan, F. (2020). Schooling in sickness and in health: The effects of epidemic disease on gender inequality. http://dx.doi.org/10.2139/ssrn.3102625

Asadullah, M.N., & Bhattacharjee, A. (2022). Digital Divide or Digital Provide? Technology, Time Use, and Learning Loss during COVID-19. *The Journal of*

Development Studies, *58*(10), 1934–1957.
https://doi.org/10.1080/00220388.2022.2094253

Asadullah, M.N., & Wahhaj, Z. (2016). Child marriage law and freedom of choice in
Bangladesh. *Economic Political Weekly 51*(3), 24–26.
https://www.jstor.org/stable/44004199

Asadullah, M.N., & Wahhaj, Z. (2019). Early marriage, social networks and the trans-
mission of norms. *Economica 86*, 801–831. https://doi.org/10.1111/ecca.12291

Baird, S.J., Seager, J., Sabarwal, S., Guglielmi, S., & Sultan, M. (2020). Adolescence in
the Time of COVID-19: Evidence from Bangladesh. GAGE Policy Brief,
November 2020.
https://documents1.worldbank.org/curated/en/976951605244702116/pdf/Adolesce
nce-in-the-Time-of-COVID-19-Evidence-from-Bangladesh.pdf

Bandiera, O., Buehren, N., Goldstein, M.P., Rasul, I., & Smurra, A. (2019). *The
economic lives of young women in the time of Ebola: Lessons from an
empowerment pro- gram*. The World Bank. http://hdl.handle.net/10986/31219

Bangladesh Bureau of Statistics (BBS). (2018). *Household Income and Expenditure
Survey 2016–2017*. https://catalog.ihsn.org/index.php/catalog/7399

Brodeur, A., Gray, D., Islam, A., & Bhuiyan, S. (2021). A literature review of the
economics of COVID-19. *Journal of Economic Survey*s, *35*(4), 1007-1044.
https://doi.org/10.1111/joes.12423

Chowdhury, A.Z., & Jomo, K.S. (2020). Responding to the COVID-19 pandemic in
developing countries: lessons from selected countries of the global
south. *Development*, *63*(2), 162–171.
https://link.springer.com/article/10.1057/s41301-020-00256-y

Corno, L., Hildebrandt, N., & Voena, A. (2020). Age of marriage, weather shocks, and
the direction of marriage payments. *Econometrica 88*, 879–915.
https://doi.org/10.3982/ECTA15505

Daily Star (2020, March 23) "Coronavirus outbreak: Govt orders closure of public,
private offices from March 26 to April 4". *The Daily Star*, March 23.
https://www.thedailystar.net/coronavirus-deadly-new-threat/news/govt-offices-
closed-march-26-april-4-cabinet-secretary-1884730

Dhaka Tribune (2021, July 29) "Schools Colleges to remain closed until August 31". *The Dhaka Tribune*, July 29. https://www.dhakatribune.com/bangladesh/education/2021/7/29/schools-colleges-to-remain-closed-until-august-31

Dercon, S. (2002). Income risk, coping strategies, and safety nets. *The World Bank Research Observer 17*, 141–166. https://www.jstor.org/stable/3986329

Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature 50*, 1051–1079. https://www.aeaweb.org/articles?id=10.1257/jel.50.4.1051

Engzell, P., Frey, A., & Verhagen, M.D. (2021). Learning loss due to school closures during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences*, *118*(17), p.e2022376118. https://www.pnas.org/doi/full/10.1073/pnas.2022376118

Field, E., & Ambrus, A. (2008). Early marriage, age of menarche, and female schooling attainment in Bangladesh. *Journal of Political Economy 116*, 881–930. https://doi.org/10.1086/593333

Fujii, T, Ho, C., Ray, R., & Shonchoy, A. (2022). Can information nudges prevent learning decay during COVID-19? Evidence from a randomized field experiment in Bangladesh. AEA RCT Registry. August 18. https://doi.org/10.1257/rct.7674-1.1

Gerard, F., Imbert, C., & Orkin, K. (2020). Social protection response to the COVID-19 crisis: options for developing countries. *Oxford Review of Economic Policy*, *36*(Supplement_1), S281–S296. https://doi.org/10.1093/oxrep/graa026

Jacoby, H.G., & Skoufias, E. (1997). Risk, financial markets, and human capital in a developing country. *The Review of Economic Studies 64*, 311–335. https://www.jstor.org/stable/2971716

Jones, G.W. (2020). New patterns of female migration in South Asia. *Asian Population Studies 16*, 1–4. https://doi.org/10.1080/17441730.2019.1701802

Lee, J.N., Morduch, J., Ravindran, S., Shonchoy, A., & Zaman, H. (2021). Poverty and migration in the digital age: Experimental evidence on mobile banking in

Bangladesh. *American Economic Journal: Applied Economics 13*(1), 38–71. https://www.aeaweb.org/articles?id=10.1257/app.20190067

Malé, C., & Wodon, Q. (2016). *Basic profile of child marriage in Bangladesh. Health, nutrition and population knowledge brief*. World Bank, Washington, DC. https://openknowledge.worldbank.org/handle/10986/25472

Moscoviz, L., & Evans, D.K. (2022). Learning loss and student dropouts during the covid-19 pandemic: A review of the evidence two years after schools shut down. *Center for Global Development, Working Paper, 609*. https://www.cgdev.org/sites/default/files/learning-loss-and-student-dropouts-during-covid-19-pandemic-review-evidence-two-years.pdf

National Institute of Population Research and Training (NIPORT), & ICF. (2019). *Bangladesh Demographic and Health Survey 2017-18: Key indicators*. Dhaka, Bangladesh, and Rockville, Maryland, USA: NIPORT, and ICF.

Radhakrishnan, K., Angrist, N., Bergman, P., Cullen, C., Matsheng, M., Ramakrishnan, A., Sabarwal, S., & Sharma, U. (2021). Learning in the time of COVID-19: Insights from Nepal. World Bank, Washington, DC. https://openknowledge.worldbank.org/handle/10986/35384

Rahman, H.Z., Das, N., Matin, I., Wazed, M. A., Ahmed, S., Jahan, N., & Zillur, U. (2020). *Livelihoods, coping and support during COVID-19 crisis*. BRAC Institute of Governance Development (BIGD), BRAC University. https://bigd.bracu.ac.bd/wp-content/uploads/2020/06/PPRC-BIGD-Final-April-Survey-Report.pdf

Seager, J., Asaduzzaman, T.M., Baird, S., Sabarwal, S., & Tauseef, S. (2022). Gender, Growth Mindset, and Covid-19: A Cluster Randomized Controlled Trial in Bangladesh. *Review of Economic Analysis*is, 14(2), 183–219. https://openjournals.uwaterloo.ca/index.php/rofea/article/view/4963/5537

UNFPA (2020). *State of the world population 2020: Against my will*. https://asiapacific.unfpa.org/en/news/ state-world-population-report-2020-against-my-will

UN-Habitat (2020). *The Value of Sustainable Urbanization, World Cities Report 2020*, UN-Habitat, Nairobi https://unhabitat.org/sites/default/files/2020/10/wcr_2020_report.pdf

UNICEF. (2020, March 11). *Bangladesh MICS 2019 report: Key findings*. https://mics.unicef.org/news_entries/152/BANGLADESH-MICS-2019-REPORT:-KEY-FINDINGS

UNICEF. (2021a, October 19). *The future of 37 million children in Bangladesh is at risk with their education severely affected by the COVID-19 pandemic*. Press Release. https://www.unicef.org/bangladesh/en/press-releases/future-37-million-children-bangladesh-risk-their-education-severely-affected-covid

UNICEF. (2021b). *Bangladesh: Education fact sheets 2020: Analysis for learning and equity using Bangladesh MICS 2019*. https://data.unicef.org/wp-content/uploads/2021/05/Bangladesh-Education-Fact-Sheets_V7.pdf

Wolf, S., Aurino, E., Suntheimer, N., Avornyo, E., Tsinigo, E., Jordan, J., Samanhyia, S., Lawrence, A.J., & Behrman, J.R. (2021). Learning in the time of a pandemic and implications for returning to school: Effects of COVID-19 in Ghana. *CPRE Working Papers.* https://repository.upenn.edu/cpre_workingpapers/28

World Bank. (2019). *Bangladesh poverty assessment: Facing old and new frontiers in poverty reduction*. World Bank, Washington, DC. https://openknowledge.worldbank.org/handle/10986/32754

World Bank (2020). *The COVID-19 pandemic: Shocks to education and policy responses*. World Bank. https://openknowledge.worldbank.org/entities/publication/ebc53312-9629-55f9-9309-a5ec13532a15

Table 1: Summary statistics of household-level impacts of COVID-19

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

Note: All variables are binary, except for "Days of food shortage."

Table 2: 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	0.07	0.26		
Among unmarried:				
On-going marriage discussion	0.1	0.3		
Change in time on:				
sleep	0.37	0.63	0.36	0.63
care for others	0.51	0.59	0.28	0.55
household chores	0.51	0.61	0.2	0.62
unpaid work	0.18	0.49	0.21	0.54
paid work	-0.01	0.16	-0.14	0.42
study	-0.47	0.79	-0.41	0.75
leisure	0.64	0.68	0.63	0.69

Note: Time-use variables take the value of 1 if increase, -1 if decrease, and 0 if no change. Others are binary.

Table 3: Lockdown impacts 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 school	**Change in time since COVID-led lockdown (comparing with normal time)**							**Girl only:**	
		Sleep	Care for others	Household chores	Unpaid work	Paid work	Study	Leisure	Engaged/ married	Marriage discussion
Child's age (years old):										
14	0.0196	-0.0327	-0.0353	0.0792**	0.0213	-0.0300***	0.0069	0.0476	0.0032	0.0120
	(0.0270)	(0.0359)	(0.0365)	(0.0356)	(0.0274)	(0.0102)	(0.0422)	(0.0429)	(0.0021)	(0.0134)
15	0.0174	-0.0264	-0.0064	0.0892**	0.0040	-0.0477***	0.0666	-0.0029	0.0097***	0.0587***
	(0.0271)	(0.0384)	(0.0392)	(0.0366)	(0.0296)	(0.0117)	(0.0481)	(0.0431)	(0.0034)	(0.0144)
16	-0.0075	-0.0042	-0.0088	0.0791**	0.0054	-0.0528***	0.0201	-0.0158	0.0164***	0.0926***
	(0.0259)	(0.0367)	(0.0361)	(0.0401)	(0.0304)	(0.0108)	(0.0489)	(0.0393)	(0.0046)	(0.0173)
17	-0.0563*	-0.0491	0.0263	0.0864**	0.0324	-0.0637***	0.0273	-0.0177	0.0302***	0.115***
	(0.0306)	(0.0370)	(0.0331)	(0.0406)	(0.0329)	(0.0161)	(0.0529)	(0.0388)	(0.0078)	(0.0188)
18	-0.0708**	-0.0446	0.0562	0.132***	0.0987***	-0.0719***	0.0944*	-0.0595	0.0191**	0.154***
	(0.0322)	(0.0431)	(0.0418)	(0.0466)	(0.0354)	(0.0201)	(0.0543)	(0.0492)	(0.0075)	(0.0272)
Girl	-0.0058	-0.0060	0.248***	0.315***	-0.0188	0.124***	-0.0931***	-0.0076		
	(0.0188)	(0.0286)	(0.0220)	(0.0265)	(0.0199)	(0.0164)	(0.0300)	(0.0258)		
Observations	3,993	4,131	4,131	4,131	4,131	4,131	4,131	4,131	3,553	3,229
R-squared	0.015	0.007	0.035	0.048	0.007	0.058	0.024	0.007	0.009	0.033

Note: Cluster(village)-robust standard errors are in parentheses. All regressions control age, gender, marital status and education of the household head, household's wealth and productive asset indices (quintiles), and sample type (survey A or B). *, **, *** indicate significance levels at 10%, 5%, 1%, respectively.

Table 4: Association between marriage discussions 3-month after the lockdown and actual marriage of girls during 1-year after the lockdown

	(1)	(2)
	Married after Mar 26, 2020	Attrited
Discussion (Jun-Jul, 2020)	0.104***	0.0073
	(0.0328)	(0.0253)
Observations	1,339	3,229
R-squared	0.036	0.0053

Note: Cluster(village)-robust standard errors are in parentheses. Other controls used in the regression are the same as those in columns 9 and 10 in Table 3.
 *, **, *** 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 school	**Change in time since COVID-led lockdown (comparing with normal time)**							**Girl only:**	
		Sleep	Care for others	Household chores	Unpaid work	Paid work	Study	Leisure	Engaged/ married	Marriage discussion
Girl	-0.0105	-0.0098	0.249***	0.322***	-0.0188	0.123***	-0.0905***	-0.0064		
	(0.0195)	(0.0288)	(0.0220)	(0.0255)	(0.0194)	(0.0156)	(0.0308)	(0.0253)		
Sickness	-0.135***	0.0438	-0.0512	-0.0849*	-0.0048	0.0180	-0.0142	-0.0558	-0.0092	0.0485*
	(0.0423)	(0.0528)	(0.0491)	(0.0480)	(0.0435)	(0.0274)	(0.0687)	(0.0542)	(0.0060)	(0.0281)
Job loss	-0.0468**	0.0500**	-0.0122	-0.0004	0.0562***	0.0113	-0.0152	0.103***	-0.0009	0.0498***
	(0.0206)	(0.0251)	(0.0256)	(0.0246)	(0.0216)	(0.0099)	(0.0292)	(0.0266)	(0.0044)	(0.0112)
Male return migrant	0.0432	-0.0783**	0.0086	0.0297	-0.0105	-0.0504***	0.0277	-0.0134	0.0041	0.0033
	(0.0306)	(0.0395)	(0.0403)	(0.0344)	(0.0320)	(0.0146)	(0.0507)	(0.0373)	(0.0079)	(0.0218)
Female return migrant	0.113***	0.0571	-0.173**	-0.205***	0.0278	-0.0213	-0.137**	-0.0720	-0.0208***	0.0507
	(0.0429)	(0.0550)	(0.0695)	(0.0644)	(0.0544)	(0.0331)	(0.0664)	(0.0721)	(0.0065)	(0.0423)
Earnings loss	0.0299	-0.0062	0.0216	-0.0296	-0.0171	-0.0199*	-0.100**	0.276***	-0.0075	-0.0183
	(0.0251)	(0.0315)	(0.0387)	(0.0354)	(0.0305)	(0.0101)	(0.0414)	(0.0539)	(0.0076)	(0.0128)
Decrease in remittances	0.0033	0.0347	0.0094	-0.0909***	-0.0399	-0.0189*	-0.0993***	-0.0346	-0.0158***	-0.0219
	(0.0233)	(0.0274)	(0.0295)	(0.0315)	(0.0259)	(0.0111)	(0.0344)	(0.0344)	(0.0048)	(0.0141)
Observations	3,916	4,046	4,046	4,046	4,046	4,046	4,046	4,046	3,486	3,164
R-squared	0.032	0.010	0.040	0.063	0.015	0.066	0.035	0.037	0.015	0.043

Note: Cluster(village)-robust standard errors are in parentheses. All regressions control age, gender, marital status and education of the household head, household's wealth and productive asset indices, existence male and female migrants in the household, children's age dummies, and sample type (survey A or B). *, **, *** indicate significance levels at 10%, 5%, 1%, respectively.

Appendix

A1. The baseline surveys

The CorGab survey respondents are the participants in two different baseline surveys that 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, it is called survey A in the main text), 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, it is called survey B in the main text), and its primary objective is to enhance the labour force participation of young women. The FLFP households are selected from all eligible households in 164 targeted communities. Eligibility requires that the household having at least one unmarried female at the time of survey aged between 15–29 years. The baseline FLFP survey was conducted from October 3 to November 30, 2019, and its sample size is 1,524 households.

Summary statistics from the baseline GCC and FLFP surveys are presented in Table B1. 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 reflects that the survey area, i.e., Gaibandha district, is one of the most impoverished 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 à la Anderson (2008), based on the binary variables indicating the ownership of productive assets. 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. 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. 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.

Table B1 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 baseline sample households, i.e., those with at least one unmarried girl/woman aged 13−29, 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).

References

Anderson, M. L. (2008). Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and early training projects. *Journal of the American Statistical Association 103*, 1481–1495.

A2. The attrition protocol

The protocol was predetermined prior to the telephone-based interview 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'.

B. Tables

Table B1: 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.

Table B2: Impacts of health and economic shocks on girls' marriage by their age

	(1)	(2)
	Engaged/married after March 26, 2020	Marriage discussion
Child's age: 14 yrs old	-0.0004	0.0128
	(0.0022)	(0.0108)
Child's age: 15 yrs old	0.0176	0.126***
	(0.0114)	(0.0344)
Child's age: 16 yrs old	0.0315*	0.125***
	(0.0173)	(0.0345)
Child's age: 17 yrs old	0.0484	0.134***
	(0.0334)	(0.0477)
Child's age: 18 yrs old	0.0173	0.209***
	(0.0189)	(0.0769)
Sickness	-0.0029	0.0377
	(0.0021)	(0.0748)
Child's age: 14 yrs old × Sickness	0.0007	-0.0490
	(0.0037)	(0.0808)
Child's age: 15 yrs old × Sickness	0.0151	-0.0145
	(0.0226)	(0.0959)
Child's age: 16 yrs old × Sickness	-0.0116**	0.100
	(0.0053)	(0.108)
Child's age: 17 yrs old × Sickness	-0.0326***	0.0094
	(0.0082)	(0.116)
Child's age: 18 yrs old × Sickness	-0.0170**	0.0042
	(0.0083)	(0.137)
Job loss	0.0035**	0.0169
	(0.0017)	(0.0264)
Child's age: 14 yrs old × Job loss	-0.0017	-0.0037
	(0.0034)	(0.0307)
Child's age: 15 yrs old × Job loss	0.0022	0.0419
	(0.0072)	(0.0336)
Child's age: 16 yrs old × Job loss	-0.0149*	0.0429
	(0.0082)	(0.0356)
Child's age: 17 yrs old × Job loss	-0.0227	0.0653
	(0.0154)	(0.0467)
Child's age: 18 yrs old × Job loss	0.0217	0.0439
	(0.0197)	(0.0600)
Male return migrant	-0.0075*	-0.0133
	(0.0045)	(0.0466)
Child's age: 14 yrs old × Male return migrant	0.0035	0.0048
	(0.0036)	(0.0463)

Child's age: 15 yrs old × Male return migrant	0.0185	0.101*
	(0.0132)	(0.0603)
Child's age: 16 yrs old × Male return migrant	-0.0035	-0.0218
	(0.0059)	(0.0549)
Child's age: 17 yrs old × Male return migrant	0.0205	-0.0191
	(0.0228)	(0.0503)
Child's age: 18 yrs old × Male return migrant	0.0301	-0.0183
	(0.0316)	(0.0941)
Female return migrant	-0.0065	-0.0381
	(0.0052)	(0.0365)
Child's age: 14 yrs old × Female return migrant	-0.0067	0.101
	(0.0062)	(0.0868)
Child's age: 15 yrs old × Female return migrant	-0.0137**	0.0830
	(0.0065)	(0.0843)
Child's age: 16 yrs old × Female return migrant	-0.0078	0.209
	(0.0092)	(0.132)
Child's age: 17 yrs old × Female return migrant	-0.0065	0.131
	(0.0095)	(0.131)
Child's age: 18 yrs old × Female return migrant	-0.0417**	-0.140**
	(0.0183)	(0.0558)
Earnings loss	-0.0025	0.0267**
	(0.0019)	(0.0129)
Child's age: 14 yrs old × Earnings loss	0.0035	0.0032
	(0.0036)	(0.0163)
Child's age: 15 yrs old × Earnings loss	-0.0119	-0.0994**
	(0.0140)	(0.0382)
Child's age: 16 yrs old × Earnings loss	-0.0064	-0.0547
	(0.0167)	(0.0424)
Child's age: 17 yrs old × Earnings loss	-0.0051	-0.0259
	(0.0297)	(0.0430)
Child's age: 18 yrs old × Earnings loss	-0.0061	-0.0511
	(0.0230)	(0.0823)
Decrease in remittances	-0.0006	0.0409
	(0.0019)	(0.0453)
Child's age: 14 yrs old × Decrease in remittances	0.0034	-0.0265
	(0.0060)	(0.0503)
Child's age: 15 yrs old × Decrease in remittances	-0.0196**	-0.104*
	(0.0079)	(0.0570)
Child's age: 16 yrs old × Decrease in remittances	-0.0094	-0.0299
	(0.0081)	(0.0514)
Child's age: 17 yrs old × Decrease in remittances	-0.0414***	-0.121**
	(0.0124)	(0.0610)
Child's age: 18 yrs old × Decrease in remittances	-0.0272	-0.117
	(0.0209)	(0.0741)
Observations	3,486	3,164
R-squared	0.023	0.057

Note: Cluster(village)-robust standard errors are in parentheses. Other controls used in the regression are the same as those in columns 9 and 10 in Table 3. *, **, *** indicate significance levels at 10%, 5%, 1%, respectively.

Table B3: Lockdown impacts on children's schooling and time-use patterns within the household

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Likely to go back school	**Change in time since COVID-led lockdown (comparing with normal time)**						
		Sleep	Care for others	Household chores	Unpaid work	Paid work	Study	Leisure
Child's age: 14 yrs old	0.0350	0.0698	0.0290	0.0750	0.0144	-0.0683**	0.0532	0.0349
	(0.0431)	(0.0691)	(0.0580)	(0.0538)	(0.0395)	(0.0269)	(0.0710)	(0.0552)
Child's age: 15 yrs old	0.00321	0.00392	0.0827	0.0558	0.0479	-0.0924***	0.0401	0.0283
	(0.0392)	(0.0646)	(0.0583)	(0.0498)	(0.0411)	(0.0261)	(0.0747)	(0.0562)
Child's age: 16 yrs old	-0.0239	0.0719	0.0684	0.0450	-0.0125	-0.118***	0.129*	-0.0164
	(0.0427)	(0.0576)	(0.0567)	(0.0612)	(0.0420)	(0.0306)	(0.0680)	(0.0493)
Child's age: 17 yrs old	-0.0610	-0.0439	0.106*	0.161***	0.0698	-0.135***	-0.0583	-0.0309
	(0.0387)	(0.0630)	(0.0619)	(0.0438)	(0.0482)	(0.0302)	(0.0693)	(0.0493)
Child's age: 18 yrs old	-0.0769*	-0.0235	0.119**	0.175***	0.158***	-0.135***	0.121	-0.107*
	(0.0430)	(0.0625)	(0.0557)	(0.0567)	(0.0431)	(0.0291)	(0.0743)	(0.0586)
Girl	-0.0320	-0.0289	0.211***	0.357***	-0.0027	0.114***	-0.116***	-0.0306
	(0.0227)	(0.0371)	(0.0279)	(0.0290)	(0.0242)	(0.0184)	(0.0316)	(0.0265)
Constant	0.779***	0.373***	0.229***	0.0759*	0.144***	-0.0303	-0.414***	0.667***
	(0.0357)	(0.0639)	(0.0464)	(0.0446)	(0.0359)	(0.0236)	(0.0599)	(0.0409)
Observations	4,061	4,196	4,196	4,196	4,196	4,196	4,196	4,196
R-squared	0.021	0.007	0.063	0.145	0.025	0.082	0.023	0.011
Number of households	3,149	3,169	3,169	3,169	3,169	3,169	3,169	3,169

Note: Cluster(village)-robust standard errors are in parentheses. Household fixed effects are included. *, **, *** indicate significance levels at 10%, 5%, 1%, respectively.

Table B4: Impacts of health and economic shocks on children's schooling and time-use patterns by gender of children

	(1)	(1)	(3)	(4)	(5)	(6)	(7)	(8)
	Likely to go back school	**Change in time since COVID-led lockdown (comparing with normal time)**						
		Sleep	Care for others	Household chores	Unpaid work	Paid work	Study	Leisure
Girl	-0.0402	-0.0338	0.363***	0.399***	-0.0227	0.0508	-0.116	0.0717
	(0.0524)	(0.0659)	(0.0637)	(0.0660)	(0.0749)	(0.0370)	(0.0829)	(0.0901)
Sickness	-0.132	0.0466	-0.0462	-0.121	-0.110	0.0796	-0.0189	-0.172
	(0.0845)	(0.0975)	(0.0879)	(0.105)	(0.108)	(0.0572)	(0.156)	(0.119)
Girl × Sickness	-0.0033	-0.0040	-0.0061	0.0439	0.128	-0.0745	0.0025	0.141
	(0.0856)	(0.104)	(0.0984)	(0.117)	(0.115)	(0.0497)	(0.136)	(0.123)
Job loss	-0.0213	0.154***	0.133***	0.0397	0.0320	0.0576*	0.0406	0.0938*
	(0.0383)	(0.0517)	(0.0459)	(0.0522)	(0.0408)	(0.0302)	(0.0602)	(0.0517)
Girl × Job loss	-0.0311	-0.132**	-0.184***	-0.0506	0.0311	-0.0585*	-0.0695	0.0114
	(0.0390)	(0.0572)	(0.0487)	(0.0530)	(0.0378)	(0.0300)	(0.0632)	(0.0496)
Male return migrant	-0.0438	-0.131**	-0.0362	0.0684	0.0661	-0.164***	0.0582	0.0205
	(0.0566)	(0.0635)	(0.0752)	(0.0593)	(0.0582)	(0.0441)	(0.0758)	(0.0601)
Girl × Male return migrant	0.106*	0.0674	0.0551	-0.0502	-0.0971*	0.145***	-0.0407	-0.0411
	(0.0591)	(0.0687)	(0.0683)	(0.0641)	(0.0551)	(0.0445)	(0.0758)	(0.0552)
Female return migrant	0.0840	0.265*	-0.125	-0.162	0.0950	-0.0012	-0.362**	-0.107
	(0.118)	(0.140)	(0.108)	(0.130)	(0.140)	(0.119)	(0.156)	(0.156)
Girl × Female return migrant	0.0318	-0.255	-0.0545	-0.0503	-0.0808	-0.0266	0.274*	0.0394
	(0.121)	(0.160)	(0.123)	(0.146)	(0.155)	(0.125)	(0.159)	(0.151)
Earnings loss	0.0079	-0.0513	0.0435	0.00125	-0.0281	-0.0781*	-0.153	0.358***
	(0.0485)	(0.0637)	(0.0743)	(0.0720)	(0.0771)	(0.0408)	(0.0959)	(0.0960)
Girl × Earnings loss	0.0275	0.0567	-0.0312	-0.0411	0.0134	0.0747*	0.0667	-0.106
	(0.0551)	(0.0691)	(0.0666)	(0.0740)	(0.0804)	(0.0420)	(0.0941)	(0.0971)
Decrease in remittances	0.0155	-0.0339	0.0923*	-0.0485	-0.0281	-0.0333	-0.0872	-0.0725
	(0.0422)	(0.0615)	(0.0531)	(0.0445)	(0.0518)	(0.0383)	(0.0697)	(0.0674)
Girl × Decrease in remittances	-0.0144	0.0896	-0.111**	-0.0574	-0.0166	0.0201	-0.0163	0.0491
	(0.0487)	(0.0682)	(0.0562)	(0.0518)	(0.0559)	(0.0406)	(0.0755)	(0.0639)
Observations	3,916	4,046	4,046	4,046	4,046	4,046	4,046	4,046
R-squared	0.033	0.013	0.046	0.064	0.016	0.079	0.036	0.038

Note: Cluster(village)-robust standard errors are in parentheses. Other controls used in the regression are the same as those in Table 5. The marriage-related outcomes are not provided as these were collected for girls only. *, **, *** indicate significance levels at 10%, 5%, 1%, respectively.

COVID-19 Phone Survey in Bangladesh

**Household
Questionnaire (June
2020)
MoMoDa Foundation, IDE-JETRO, Florida International University and**

Kent University

Thank you very much for giving time to us. We are conducting a survey of households by phone on behalf of the Institute of Developing Economies (IDE), Japan, Florida International University, USA, and the University of Kent, UK. The purpose of this household survey is to academically understand the people's perception about the impact of COVID-19 in Gaibandha, Bangladesh. All information gathered from you will be treated as strictly confidential and will be used only in an aggregate form. No individual name will be used in any document prepared based on this survey. We are very grateful for your participation. May we begin?

Identification: File name: Household.xls

01. **(Survey number)**

02. **(Original survey source)**   1. ☐FLFP;   2.☐GCC

03. **(VR_Name)**

04. **(Location)**...

05. **(Village)**.. ☐☐

06. **(Union)**... ☐☐

07. **(Upazila)**..

08. **(VR_CELL NO)**

Household Questionnaire: Check who answers by phone (Q0) Member ID from the household roster. ☐

Q1. Do you observe any change in your household (other than children being at home) after lockdown (March 26)?	
Q11. Lost a job (any household member)	1. ☐Yes 2.☐No
Q12. Find a job (any household member)	1. ☐Yes 2.☐No
Q13. Decrease in earnings (any household member)	1. ☐Yes 2.☐No
Q14. Increase in earnings (any household member)	1. ☐Yes 2.☐No
Q15. Return of male member working in the city	1. ☐Yes 2.☐No 9. ☐Not applicable
Q16. Return of female member working in the city	1. ☐Yes 2.☐No 9. ☐Not applicable
Q17. Decrease in remittances	1. ☐Yes 2.☐No 9. ☐Not applicable
Q18. Member suffering from respiratory sickness	1. ☐Yes 2.☐No
Only if Q18 is Yes, Q19. Member being hospitalized due to respiratory sickness	1. ☐Yes 2.☐No
Q10. Member suffering from non-respiratory sickness	1. ☐Yes 2.☐No
Q111. Postponement of wedding	1. ☐Yes 2.☐No
Q112a. Any female member of the household recently became pregnant or currently expecting?	1. ☐Yes 2.☐No
Q112b. If yes for Q112a, how many months of pregnancy?	………… months.
Q113. Food Insecurity	At this moment how many days of food stored in your home?
Q114. During this lockdown did you reduce food consumption?	1. ☐Yes 2.☐No
Q115. Decrease in Expenditure	1. ☐Yes 2.☐No
Q116. Coping with Lockdown (Multiple answer possible, tick all that applies)	1. ☐Savings 2. ☐Borrowing 3. ☐Regular Income 4. ☐Cutting consumption 5. ☐Government Support (relief, cash support, etc.) 6. ☐Local Community Support 7. ☐Others
Q117. Other changes (specify Q117a)	1. ☐Yes 2.☐No
Q117a. (Describe other answer)	For example: "increase in tension/disputes among household members", etc.

Questions Q2-Q4 should be asked for each female household member aged between 13 and 18 years including those who were married (and technically not in the household any more). Populate [name] and [member id] from the baseline survey household roster. If not listed on the roster, provide the name. Q4 is only for those who currently live with you.	

Q2. Was [name] in school before the lockdown? 1. ☐Yes 2.☐No [Skip this if the child was not attending school at the baseline]

If the answer to above Q2 is 1= Yes,
Q21. How likely do you think it is for [name] to go back to school when schools reopen?
0. ☐Not know 1. ☐Very unlikely 2.☐Unlikely 3.☐Neutral 4. ☐Likely 5. ☐Very likely

If the answer to above Q2 is 2= No, or to above Q21 is 1= Very unlikely, or 2= Unlikely, what plans do you/her parents have for [name] when the lockdown ends?

Q22. Answer	1= Do family work/business 2= Help with household chores 3= Work for pay 4= Marriage 97= Other (specify Q22a)
Q22a. (Describe the answer)	For example: "No specific plan", etc.

If the answer is 4= Marriage in Q22 above, what was the main reason?

Q23. Answer	1= Drop-out of school due to the pandemic 2= Become financially difficult 3= Discouraged to join in work for pay 4= A good offer of marriage (*biyer bhalo prostab*) 5= She has reached a marriageable age 97= Other (specify Q23a)
Q23a. (Describe the answer)	For example: "Increase in community pressure", etc.

Q3. Is [name] engaged/married? 1. ☐Yes 2.☐No

If the answer to Q3 is 1= Yes,
Q31. When did the engagement (*akht*) and/or wedding take place? Year   , Month

If the answer to Q3 is 2= No,
Q32. Is there any on-going discussion within the household/family to marry off [name] (*biyer alap*) now or immediately after the lockdown is over?
1. ☐Yes 2.☐No

Time allocation	
Q4. Do you observe any change in [name]'s typical time allocation in a day since the lockdown began (March 26?)?	
Q41. Sleep	1. ☐Increase 2.☐Decrease 3.☐No change
Q42. Care for other household/family members	1. ☐Increase 2.☐Decrease 3.☐No change
Q43. Household chores	1. ☐Increase 2.☐Decrease 3.☐No change
Q44. Unpaid work (own farm, livestock)	1. ☐Increase 2.☐Decrease 3.☐No change
Q45. Paid work	1. ☐Increase 2.☐Decrease 3.☐No change
Q46. Study at home	1. ☐Increase 2.☐Decrease 3.☐No change
Q47. Leisure	1. ☐Increase 2.☐Decrease 3.☐No change

Questions Q5-Q6 should be asked of each male household member aged 13-18 years. Populate the [name] and [member id] using the baseline household survey. If not listed on the roster, provide the name. Q6 is only for those who currently live with you.

Q5. Was [name] in school before the lockdown? 1. ☐Yes 2.☐No
If the answer to above Q5 is 1= Yes, Q51. How likely do you think it is for [name] to go back to school when schools reopen? 0. ☐Not know 1. ☐Very unlikely 2.☐Unlikely 3.☐Neutral 4. ☐Likely 5. ☐Very likely

If the answer to above Q5 is 2= No, or to above Q51 is 1= Very unlikely, or 2= Unlikely, what plans do you have for [name] when the lockdown ends?	
Q52. Answer	1= Do family work/business 2= Help with household chores 3= Work for pay 4= Marriage 97= Other (specify Q52a)
Q52a. (Describe the answer)	For example: "No specific plan", etc.
Time allocation	
Q6. Do you observe any change in [name]'s typical time allocation in a day since the lockdown began (March 26?)?	
Q61. Sleep	1. ☐Increase 2.☐Decrease 3.☐No change
Q62. Care for others	1. ☐Increase 2.☐Decrease 3.☐No change
Q63. Household chores	1. ☐Increase 2.☐Decrease 3.☐No change

Q64. Unpaid work (own farm, livestock)	1. ☐ Increase 2. ☐ Decrease 3. ☐ No change
Q65. Paid work	1. ☐ Increase 2. ☐ Decrease 3. ☐ No change
Q66. Study at home	1. ☐ Increase 2. ☐ Decrease 3. ☐ No change
Q67. Leisure	1. ☐ Increase 2. ☐ Decrease 3. ☐ No change