Incidence of child marriage among refugees and internally displaced persons in the Middle East and South Asia: evidence from six cross-sectional surveys

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ABSTRACT

Objective To examine incidence of child marriage among displaced and host populations in humanitarian settings.

Design Cross-sectional surveys.

Setting Data were collected in Djibouti, Yemen, Lebanon and Iraq in the Middle East and in Bangladesh and Nepal in South Asia.

Participants Adolescent girls aged 10–19 in the six settings and age cohort comparators.

Outcome measures Cumulative incidence of marriage by age 18.

Results In Bangladesh and Iraq, the hazard of child marriage did not differ between internally displaced populations (IDPs) and hosts (p value=0.25 and 0.081, respectively). In Yemen, IDPs had a higher hazard of child marriage compared with hosts (p value<0.001). In Djibouti, refugees had a lower hazard of child marriage compared with hosts (p value<0.001). In pooled data, the average hazard of child marriage was significantly higher among internally displaced compared with host populations (adjusted HR (aHR) 1.3; 95% CI 1.04 to 1.61).

In age cohort comparisons, there was no significant difference between child marriage hazard across age cohorts in Bangladesh (p value=0.446), while in Lebanon and Nepal, younger cohorts were less likely to transition to child marriage compared with older comparators (p value<0.001). Only in Yemen were younger cohorts more likely to transition to child marriage, indicating an increase in child marriage rates after conflict (p value=0.034).

Pooled data showed a downward trend, where younger age cohorts had, on average, a lower hazard of child marriage compared with older cohorts (aHR 0.36; 95% CI 0.29 to 0.4).

Conclusions We did not find conclusive evidence that humanitarian crises are associated with universal increases in child marriage rates. Our findings indicate that decision-making about investments in child marriage prevention and response must be attuned to the local context and grounded in data on past and current trends in child marriage among communities impacted by crisis.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This study uses robust statistical methods to investigate child marriage rates in humanitarian emergencies.

⇒ The analysis leverages a series of cross-sectional surveys and age cohort comparisons in several humanitarian contexts in the Middle East and South Asia.

⇒ Employing a longitudinal design and using a comparison group comprising girls who were not displaced may have offered a more robust counterfactual.

INTRODUCTION

Child marriage, defined as any marriage or informal union involving two people of whom one or both are under 18 years of age, is widely practiced in all regions of the world but is especially common in low-income and middle-income countries. Over the last decade, the proportion of young women who were married as children has decreased globally; however, it continues to be pervasive in many regions such as South Asia and sub-Saharan Africa and approximately 650 million girls and women were married before turning 18.

Child marriage is associated with a range of adverse health and social outcomes for mothers and their offspring. Child brides are at increased risk of being subjected to domestic violence and abuse. Girls married as children face elevated risk of economic dependence, diminished decision-making power and restricted mobility, which amplifies their vulnerability in the household. Additionally, they are less likely to use modern contraception compared with their older counterparts, and are at increased risk...
of unintended pregnancies, induced and spontaneous abortion and insufficient birth spacing. Early pregnancy, which is associated with child marriage, has been found to predispose girls to pregnancy-related complications such as obstructed or prolonged labour, premature rupture of membrane, antepartum haemorrhage and postpartum haemorrhage as well as obstetrical fistula. The extant literature has documented significant associations between child marriage and several mental health outcomes, including risk of experiencing isolation, depression and higher rates of suicidal ideation and attempts.

There is a dearth of evidence on the impact of displacement on child marriage, but it is widely assumed that humanitarian emergencies cause an increase in child marriage. Although some evidence supports the claim that child marriage rates increase in humanitarian settings and in response to conflict, this is not universally the case. In some cases, conflict has led to a postponement of marriages, implying that conflict may stimulate context and culture-specific responses and coping strategies among affected populations.

Our study aimed to investigate the incidence of child marriage in humanitarian settings. We draw on cross-sectional data collected by Johns Hopkins University in collaboration with Women’s Refugee Commission and in-country counterparts through a series of multistage surveys conducted with displaced and host populations in six countries between 2018 and 2019. The analysis presented here compares (a) the cumulative incidence of child marriage across age cohorts of displaced groups in four of the six settings for which age cohort data was available and (b) the cumulative incidence of child marriage between displaced and host populations in four of the six countries for which data was available for both groups. We then pool data across countries to estimate average effects.

METHODS

Study populations

In South Asia, the study included both displaced and host populations in Bangladesh and Nepal. Study populations in Bangladesh were forcibly displaced Myanmar nationals who arrived after 2016 and who were not granted refugee status by the government (thereafter referred to as FDMNs) and registered refugees who arrived in Bangladesh prior to 1995. While they are not Bangladeshi nationals, they will nevertheless be referred to as hosts because they have been in the country for over two decades and were present in the same areas where the influx of FDMNs occurred. In Nepal, the focus was on earthquake-affected communities in Sindhupalchowk and Dolakha districts, in Bagmati. In the Middle East and North Africa (MENA) region, the study included displaced and host populations in four countries: Djibouti, Lebanon, Iraq and Yemen. In Djibouti, the study focused on Somali and Yemeni refugees in Djibouti City, Obock, Holl and Ali Addeh as well as the Djibouti host community. In Lebanon, the study included Syrian refugees displaced after the 2011 conflict in Syria in three districts in the south of Lebanon: Tyre, Saida and Nabatieh. In Northern Iraq, the study included Iraqi internally displaced populations (IDPs), Syrian refugees and Kurdish host communities in Al-Sulaymaniyah, Erbil and Dohuk. Finally, in Yemen the study included IDPs and host communities in Sana’a, Aden and ‘Ibb. Figure 1 illustrates the six study sites. The nature of the conflict and key characteristics of the displaced populations included in the study are presented in box 1.

Overview of study design

The study leverages quantitative data collected from cross-sectional surveys conducted with female heads of household and 1–2 adolescent household members (aged 10–19). Households were selected based on pre-set criteria that were more or less similar across settings (see online supplemental file 1 for more information). Adolescent women aged 10–19 who resided in the household for at least 1 month in the past year were eligible to complete the adolescent survey. Within each household a maximum of two adolescents were included in the study, one married and one unmarried. The study employed a multistage cluster sample survey design. While it was initially planned for all six studies to use stratified cluster sampling, a purely stratified design with random or in some places full census was undertaken in Djibouti. In Bangladesh, the study employed a cluster stratified design with strata of registered refugees as well as FDMNs. Clusters were selected with probability proportional to size from camps. In Nepal, the sample was stratified evenly between the districts and clusters were selected in each district with probability proportional to size. In Lebanon, the sample was stratified between districts and households were sampled from clusters in each district. In Yemen, the sample was stratified between three governorates and clusters were selected by district in each governorate with probability proportional to size. In Iraq, the sample was stratified into three governorates and three populations—Iraki Kurdish host communities, Iraqi IDPs and Syrian refugees, and clusters were selected in each governorate with probability proportional to size. A detailed overview of study designs implemented in each setting are described elsewhere and compiled in online supplemental file 1 for ease of reference.

Survey questionnaire

Two survey questionnaires incorporating validated questions from the Demographic Health Survey and MICS were developed and adapted to each setting. The questionnaires were piloted to ensure cultural sensitivity and applicability. The household questionnaire collected demographic household information and elicited a roster of
household members, along with their age, gender and age at marriage. After, the interviewer proceeded to interview one or up to two adolescents residing in the household. Questions included marital status and age at first marriage (for a full list of questions, see online supplementary file 2).

The results presented in this study use both the household roster and adolescent survey data, because the latter included data on 10–19 years old while the former collected information on older cohorts of women residing in the same households.

**Statistical analysis**

The outcome of interest was time to first marriage. Survival time was defined as the respondent’s age at first marriage. For those who were unmarried at the time of the survey,
Box 1  Overview of context in Bangladesh, Nepal, Djibouti, Lebanon, Northern Iraq and Yemen

South Asia

Bangladesh

Violence against Rohingya refugees, one of the few Muslim ethnic minorities in Myanmar residing predominantly in northern Rakhine State, has resulted in recent waves of displacement into neighbouring Bangladesh.14 The most recent wave of displacement in 2017 was predated by previous waves, due to a long history of violence from the government-backed Buddhist Burmans. Fleeing violence and rape, around 200,000 Rohingya refugees escaped into Bangladesh in 1978, and while many returned, around 300,000 Rohingya made the journey to Bangladesh again in the early 1990s due to violence and religious persecution.14 In August of 2017, more than 742,000—most of whom are women and children—fled to Bangladesh to seek refuge after systematic violence directed at Rohingya refugees broke out in Rakhine State. The successive waves of forced displacement have since resulted in more than a million refugees (old and new) residing in and around Kutupalong and Nayapara refugee camps which are located in two upazilas or districts, Ukhiya and Teknaf, of Cox’s Bazar. The two districts have seen many refugee camps sprout over a short period of time. As of 2022, a total of 943,529 Rohingya lived in the country and more than half (52%) of these are children and women.25

Nepal

Located at the border of two tectonic plates, Nepal is in a seismically active region and is vulnerable to earthquakes.14 In April of 2015, an earthquake struck Nepal and a few weeks later, aftershocks from the earthquake ensued. The earthquake resulted in the destruction of homes and triggered severe landslides that affected several villages as well as the most densely populated parts of Kathmandu.14 The seismic activity and the landslides that occurred as a result killed almost 9000 people, injured more than 22,000, and has displaced over 2.8 million people for varying lengths of time.14 Out of Nepal’s 75 districts, 31 were impacted. The most affected were largely in Province 3 (Bagmati), where the two study districts are located. Internal displacement of earthquake affected populations peaked in 2015 and then decreased over time, reaching 31,000 by end of 2016, but the effects of the earthquake persisted.25

Middle East and North Africa

Djibouti

Located in the Horn of Africa, Djibouti has a population of close to 1 million people and hosts 30,000 Eritrean, Ethiopian, Yemeni and Somali refugees.27 About 23% of the population live in extreme poverty and 35% of rural communities do not have access to water.27 Since the beginning of the Yemeni conflict in March 2015, 38,000 Yemenis sought asylum in Djibouti.28 Around the time the study was conducted, 4398 Yemeni refugees resided in Djibouti—of whom, 2078 were in the Markazi camp in Obock port city and 2320 were in the capital city, Djibouti. Of those, 48% are 18 and under. Moreover, the country hosts more than 12,000 Somali refugees, most of whom arrived in 1988 and 1990 in the aftermath of the Somalia civil war. At the time of data collection, the Somali population was (and continues to be) largely concentrated in the Ali Addeh camp, which holds 9916 Somali refugees, and the Hll Holl camp, which holds around 2500 refugees.29

Somali and Yemeni refugees continue to live in the country, and as of 2023, the country hosts 14,437 Somalis and 6754 Yemenis.23

Box 1  Continued

Lebanon

Lebanon is a small country with a population of 4 million. The Syria conflict, which broke out in 2011, has resulted in the displacement of over 5 million Syrians, many of whom have fled to Lebanon.30 The country now hosts the highest number of Syrian refugees per capita. As of early 2023, around 814,715 registered refugees are dispersed across the country, mostly renting and sharing facilities as the country does not have an encampment policy for Syrian refugees. The Government of Lebanon, however, estimates that over 1.5 million Syrian reside in the country, many of whom are unregistered. Almost half of refugees in the country are children and adolescents.31 The South of Lebanon, in which this study is carried out, was home to over 100,000 registered Syrian refugees at the time of data collection.31

Northern Iraq

Constitutionally, KRI is recognized as a semiautonomous region in north Iraq. The region has a population of 5.1 million people.32 The war against the Islamic state in Iraq and Syria spurred waves of internal displacement, with the first wave starting in January 2014. At the same time, the Syrian civil war which started in 2011 resulted in the displacement of over 200,000 Syrian refugees to the country.33 Close to 2 million persons have been displaced in Iraq and around the time of data collection, more than 1 million had been displaced to three governors (Dohuk, Erbil and Sulaymaniyah) of the Kurdistan Region of Iraq, both in refugee camps and in out-of-camp settings. In Dohuk, there are 28 camp settlements; in Erbil, there are 8 camps; in Sulaymaniyah there are 4 camps. At the time of data collection, the governorate of Dohuk hosted 349,776 internally displaced populations (IDPs) and 88,898 refugees; Erbil hosted 213,402 IDPs and 128,438 refugees; Sulaimaniyah hosted 347,232 IDPs and 32,303 refugees.34

Northern Iraq continues to host a sizeable number of refugees and IDPs as those displaced have yet to return due to continuing insecurity. The latest data indicates 304,000 IDPs and refugees reside in Dohuk, Erbil hosts the second largest number, 246,000, followed by Sulaimaniyah with about 148,000.35

Yemen

Yemen is currently experiencing conflict which escalated in 2015 after a Saudi-led coalition (SLC), supported by the US and UK, intervened against Houthi forces in the country. Presently, the government in Yemen is bifurcated, with the SLC-supported government based in Aden and the Houthi-led government based in Sana’a.36 Considered one of the world’s worst humanitarian crises, the conflict has resulted in the displacement of 3.65 million persons, as of June 2019. The effects of the crisis have lingered, and an estimated 4.5 million people are presently displaced, of whom approximately are 2 million school-aged children and youth.37 Forty per cent of refugees reside in unofficial camps, whereas the remaining IDPs are interspersed in the host community, living predominantly in urban settings.38

Continued

during their survival time was defined as their age at the time of the survey. A censoring variable was created such that girls who were either not married at the time of the survey, or who reached age 18 without getting married were censored.

Data analysis was performed using Stata V.15.19 Data were analysed separately for each country and then pooled to generate cross-country estimates and associations. To account for right censoring, the analysis employed survival methods, yielding estimates for the cumulative


Therefore, she is assumed to have married before 2011, married respondent who was married before the age of 18 will have ‘pre-crisis’ marriage practices. This is because a 25-year-old girl will have the event of interest—marriage—by age 18. Kaplan-Meier estimates of marriage-free probabilities were calculated for each subgroup. To provide insights about the impact of displacement on child marriage rates, we compared survival functions of host and refugee populations and age cohorts of refugee women (younger vs older age cohorts of refugees) using Cox proportional hazards models. The estimates accounted for the complex survey design and Taylor linearised variance estimates were calculated. Using ‘stcurve’, we plotted survivor functions that accounted for the complex survey design.

While we compared the rates of child marriage between 15 and 19 years old girls and older age cohorts, we chose age cohort comparators based on the timeline of each crisis with the goal of capturing pre-crisis rates of child marriage. For example, in Lebanon, the rate of child marriage among Syrian refugee girls aged 15–19 was assumed to reflect ‘current’ marriage practices while the rate among Syrian refugee women aged 25–29 was assumed to reflect ‘pre-crisis’ marriage practices. This is because a 25-year-old respondent who was married before the age of 18 will have married more than 7 years prior to our data collection. Therefore, she is assumed to have married before 2011, 7 years prior to data collection in 2018, which marks the beginning of the Syria conflict. Age cohorts were assembled using the same logic for each of the six settings.

Not all six countries had data on comparator host communities and not all six countries had age cohort data. Table 1 describes data availability in each country as well as choice of host and age cohort comparator.

### Ethical approval

All six individual studies received Institutional Review Board (IRB) approval from the Johns Hopkins IRB as well as a local IRB in the country where the research was carried out. In Iraq, the research was approved by the University of Sulaimani IRB. In Bangladesh, the research was approved by BRAC University and in Nepal by the National Health Research Council in Kathmandu. In Yemen, the research was approved by the Yemen Ministry of Health. In Djibouti, the research was approved by the Ministry of Women. In Lebanon, the research was approved by Lebanese American University. In all study sites, we obtained verbal consent from adult participants and married girls aged 16–17 who were considered emancipated minors. An oral consent process was used for unmarried children 10–17 and married children under age 16. This was coupled with oral permission from their parents/guardians. Consent and assent scripts were translated into local plain-language to ensure comprehension by study participants. To be part of the study, participants needed to be determined by the interviewer to be competent to be interviewed.

### Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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Table 1  Data available on host populations and age cohorts in each of the six study settings

<table>
<thead>
<tr>
<th>Region</th>
<th>Country</th>
<th>Study sites</th>
<th>Study populations</th>
<th>Host comparator</th>
<th>Age cohort comparator</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Asia</td>
<td>Bangladesh</td>
<td>Ukhia and Teknaf, of Cox’s Bazar.</td>
<td>Rohingya refugees referred to as FDMNs and registered refugees.</td>
<td>☑ Refugees in Bangladesh prior to 1995.ª</td>
<td>20–24</td>
</tr>
<tr>
<td>Nepal</td>
<td></td>
<td>Sindhopalchowk and Dolakha Districts, in Bagmati.</td>
<td>Earthquake-affected populations and host communities.</td>
<td>X</td>
<td>25–29</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>Djibouti</td>
<td>Djibouti City, Obock, Holl Holl and Ali Addeh.</td>
<td>Somali refugees, Yemeni refugees and host communities.</td>
<td>☑ Djiboutian host communities.</td>
<td>X</td>
</tr>
<tr>
<td>Lebanon</td>
<td></td>
<td>Tyre, Saida and Nabatieh.</td>
<td>Syrian refugees.</td>
<td>X</td>
<td>25–29</td>
</tr>
<tr>
<td>Northern Iraq</td>
<td></td>
<td>Al-Sulaymaniyah, Erbil and Dohuk.</td>
<td>Iraqi IDPs, Syrian refugees and Kurdish host communities.</td>
<td>☑ Kurdish host communities.</td>
<td>X</td>
</tr>
<tr>
<td>Yemen</td>
<td></td>
<td>Sana’a, Aden and ‘Ibb.</td>
<td>IDPs and host communities.</td>
<td>☑ Yemeni host communities.</td>
<td>22–24</td>
</tr>
</tbody>
</table>

ªThese are not national hosts but will be considered as the comparator in this setting as they were residing in the country since as far back as 1995 and are intermixed with the FDMNs in the camps. Bangladeshi nationals who would be considered true hosts do not reside in these camps and thus were not chosen as a comparison group. It is important to note that the comparison to registered refugees is imperfect, but it gets us close to the counterfactual because these are a similar group that is not experiencing the immediate impacts of displacement given their protracted state of displacement. They also have legal status and documentation that recognises their status as refugees which FDMNs do not.
RESULTS
Sample description
The overall sample of adolescent girls—aged 10–19—ranged from 1031 in Bangladesh to 1969 in Iraq. Table 2 details sample sizes in each location across host and displaced communities and age cohorts. No data was collected for host comparators in Lebanon and Nepal and thus the two countries were dropped from the refugee versus host comparisons, and no age cohort comparison data was available in Djibouti and Iraq, and thus those two countries were dropped from the age cohort analysis.

CUMULATIVE INCIDENCE OF CHILD MARRIAGE AMONG DISPLACED VERSUS HOST POPULATIONS
Table 3 presents the cumulative incidence of marriage among displaced and host populations in the four study settings based on Kaplan-Meier survivor functions. Figure 2 shows the predicted survival functions from Cox regression models to compare the cumulative survival distribution of time to marriage in each of the four countries (Bangladesh, Djibouti, Iraq and Yemen) for which there is data on displaced populations and host comparators. In Bangladesh, 16.01% (95% CI 7.4% to 19.9%) of the sample of FDMN transitioned to marriage before age 18; compared with 12.24% (95% CI 12.3% to 20.7%) among the host comparators. The Cox regression model however revealed that the difference in survival distributions is not statistically significant (p value=0.25).

In Djibouti, 7.88% of sampled Yemeni refugees transitioned to marriage before age 18 (95% CI 4.6% to 13.2%) compared with 20.26% (95% CI 14.8% to 27.4%) of Somali refugees and 30.4% (95% CI 24.2% to 37.8%) of Djiboutian hosts. Overall, the hazard of child marriage was significantly different across the three groups (p value=0.001), with host communities having higher hazard compared with Somali and Yemeni refugees. Somalis in turn had significantly higher hazards than Yemenis (p value=0.007).

In Iraq, 21% (95% CI 16.95% to 25.9%) of IDPs transitioned to marriage before age 18, compared with 18.95% (95% CI 14.7% to 24.2%) of Syrian refugee girls and 13.8% (95% CI 10.5% to 18.1%) of girls from the host community. Refugees and IDPs did not fare significantly worse than host communities in the Cox model (p value=0.081) and IDPs and refugees were not significantly different from each other (p value=0.60).

As for Yemen, 28.5% of IDPs (95% CI 24.5% to 32.9%) transitioned to marriage before age 18 compared with 17.5% (95% CI 14.2% to 21.5%) of hosts. The difference in hazard was significant (p value<0.001).

In the pooled analysis, 22.74% (95% CI 21.12% to 24.45%) of those displaced transitioned to marriage before age 18 compared with 18.03% (95% CI 15.81% to 20.51%) among host communities. The overall difference in average hazard of child marriage comparing host and displaced populations was significant after adjusting for country context (p value=0.019)(figure 3). Specifically, displaced girls were at 30% increased hazard of child marriage compared with their host counterparts (adjusted HR (aHR) 1.3; 95% CI 1.04 to 1.61).

Cumulative incidence of child marriage across age cohorts of displaced populations
Table 4 outlines the cumulative incidence among age cohorts in the four study settings. Figure 4 uses Cox regression models to compare the cumulative survival distribution of time to marriage in each of the four countries for which there is data on age cohorts. In Bangladesh, 14.89% (11.65%–18.93%) of the sample of 15–19 years old FDMNs transitioned to marriage before age 18; compared with 10% (4.6%–20.9%) among 20–24 years old FDMNs. Cox regression comparing age cohorts reveal that the difference in hazard is not significant (p value=0.45).

In Lebanon, 32.65% of the sample of Syrian refugees transitioned to marriage before age 18 (95% CI 29.05% to 36.57%) compared with 91.36% (95% CI 84.02% to 96.2%) among 25–29years old Syrian women. The difference in hazard of child marriage was statistically significant (p value<0.001).

In Nepal, 10.18% (95% CI 7.28% to 14.14%) of IDP women aged 15–19 transitioned to marriage before age 18, compared with 31.71% (95% CI 22.82% to 42.96%) of 25–29 IDP women. The difference in hazard was statistically significant (p value<0.001).

In Yemen, 24.76% of 15–19years old IDPs (95% CI 21.41% to 28.53%) transitioned to marriage before age 18 compared with 15.66% (95% CI 9.41% to 25.44%) of

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Sample of 10–19years old girls displaced versus host</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Bangladesh</td>
</tr>
<tr>
<td>Type of population</td>
<td>Displaced (N)</td>
</tr>
<tr>
<td>Host (N)</td>
<td>300</td>
</tr>
<tr>
<td>Total</td>
<td>1031</td>
</tr>
<tr>
<td>Age cohort</td>
<td>15–19 (N)</td>
</tr>
<tr>
<td>Cohort comparator (N)</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>620</td>
</tr>
</tbody>
</table>

For country context (p value=0.019)(figure 3). Specifically, displaced girls were at 30% increased hazard of child marriage compared with their host counterparts (adjusted HR (aHR) 1.3; 95% CI 1.04 to 1.61).
the older age cohort. The difference in hazard of child marriage was significant (p value=0.034).

The average difference in hazard between age cohorts was significant in the pooled analysis comparing younger age cohorts with older age cohorts in displaced populations, (p value<0.001) (figure 5). Younger age cohorts were at 63.6% lower hazard of child marriage compared with women belonging to the comparator cohort after adjusting for countries (aHR 0.36; 95% CI 0.29 to 0.46). The only exception was in Yemen where younger age cohorts were at higher hazard of child marriage compared with the older age cohort (HR 1.61 95% CI 1.05 to 2.47). Subgroup analysis in which 18–19 women, who have completed time at risk, were compared with older age cohorts also reveals that younger girls were less likely to get married, although the HR attenuated (aHR 0.46 95% CI 0.37 to 0.56).

**DISCUSSION**

This analysis contributes to an understanding of the incidence of child marriage in humanitarian settings and offers insights into marriage dynamics during displacement. In Bangladesh, child marriage rates among newly displaced Rohingya were lower than expected and they were not higher compared with the comparison group. Although limited, ethnographic research conducted

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**Table 3** Cumulative incidence of child marriage (at age 18) among displaced and host populations in four countries: Bangladesh, Djibouti, Iraq and Yemen

<table>
<thead>
<tr>
<th>Country</th>
<th>Cumulative incidence among displaced populations; P (T&lt;18) (95% CI)</th>
<th>Cumulative incidence among host populations; P (T&lt;18) (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>FDMNs: 16.01% (7.4% to 19.9%)</td>
<td>Registered refugees: 12.24% (12.3% to 20.7%)</td>
</tr>
<tr>
<td>Djibouti</td>
<td>Yemenis: 7.88% (4.6% to 13.2%)</td>
<td>Djiboutian hosts: 30.4% (24.2% to 37.8%)</td>
</tr>
<tr>
<td>Iraq</td>
<td>IDPs: 21% (16.95% to 25.9%)</td>
<td>North Iraq hosts: 13.8% (10.5% to 18.1%)</td>
</tr>
<tr>
<td></td>
<td>Somalis: 20.26% (14.8% to 27.4%)</td>
<td>Yemeni IDPs: 28.5% (24.5% to 32.9%)</td>
</tr>
<tr>
<td>Yemen</td>
<td>Yemeni IDPs: 28.5% (24.5% to 32.9%)</td>
<td>Yemeni hosts: 17.5% (14.2% to 21.5%)</td>
</tr>
<tr>
<td>Pooled</td>
<td>22.74% (21.12% to 24.45%)</td>
<td>18.03% (15.81% to 20.51%)</td>
</tr>
</tbody>
</table>

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**Figure 2** Survival function of time to marriage among 10–19 years old displaced versus host girls in four countries: Bangladesh, Djibouti, Iraq and Yemen—plotted using ‘Stcurve’. IDPs, internally displaced populations.
among the Rohingya suggests that child marriage is a normative practice rooted in their cultural beliefs. While not widely practiced in Myanmar due to restrictions imposed by the government, forced displacement into Bangladesh, which has been marked by a loosening of regulations around age of marriage, is speculated to have allowed the practice to flourish. However, in our study, rates of child marriage were neither exceedingly high in this population, nor were they higher than in the comparison group. While having complete age cohort data would have enriched our understanding of time trends in child marriage, the available data does not lend support to a meaningful increase in child marriage among Rohingya girls due to displacement.

In Djibouti, we found that child marriage incidence was much higher among Somali than Yemeni refugees. However, both Somali and Yemeni refugees were less likely to get married before age 18 than their host counterparts. Understanding the underlying causes warrants further examination. One possible hypothesis proposes that Yemenis who were able to flee the conflict had the resources and a degree of affluence that protected them from the type of vulnerability that drives families to resort to child marriage. Additionally, both Yemenis and Somalis included in the study had been residing in Djibouti for an extended period and may no longer exhibit the acute vulnerability expected of those who are recently displaced, or who are actively fleeing conflict. Whether selection factors and mechanisms—which characterise migration trajectories including forced migration (although to a lesser extent)—are at play in this context merits more careful analysis.

In Yemen, our study provides evidence that an increase in child marriage may be associated with conflict. The spike in child marriage rates was demonstrated by the increase in cumulative incidence of child marriage among IDPs compared with Yemeni host communities, as well as by increases in child marriage among younger age cohorts. The finding is not surprising in light of the acute nature of the Yemeni conflict which has been described by the United Nations in 2019 as the world’s worst humanitarian crisis. Child marriage is pervasive in the country, with rates that are among the highest in the MENA region. The latest DHS indicates that 32% of women aged 20–24 marry before age 18. This situation is reinforced by an absence of a minimum age of marriage law, which failed to be ratified in the past due to religious opposition as well as the eruption of conflict.

In both Iraq and Lebanon, our analysis did not produce compelling evidence of an increase in child marriage due to displacement. In Iraq, we found high rates of child marriage among Syrian refugees and internally displaced persons. Likewise, in Lebanon, we found high rates of child marriage among Syrian refugees residing in the south of the country. Nonetheless, while the relatively high rates of child marriage among young, displaced girls, intercohort comparisons revealed that child marriage was already widely practiced among the older age cohorts. Therefore, our analysis did not support the hypothesis that displacement into Lebanon caused an increase in child marriage in this population. Similarly, in Iraq, while the cumulative incidence of child marriage among IDPs and refugees was higher than the host comparator, the difference was not statistically significant.

In Nepal, we were also unable to find evidence of an increase—in fact, younger girls were less likely to marry before 18 compared with their older counterparts. This was contrary to our assumption that displacement caused by the recent earthquake would drive an increase in child marriage among the target population.

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**Table 4** Cumulative incidence of child marriage among age cohorts of displaced populations in four countries: Bangladesh, Lebanon, Nepal and Yemen

<table>
<thead>
<tr>
<th>Country</th>
<th>Cumulative incidence among younger age cohorts (95% CI)</th>
<th>Cumulative incidence among age cohort reflecting pre-crisis patterns (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>14.89% (11.65% to 18.93%)</td>
<td>10% (4.6% to 20.9%)</td>
</tr>
<tr>
<td>Lebanon</td>
<td>32.65% (29.05% to 36.57%)</td>
<td>91.36% (84.02% to 96.2%)</td>
</tr>
<tr>
<td>Nepal</td>
<td>10.18% (7.28% to 14.14%)</td>
<td>31.71% (22.82% to 42.96%)</td>
</tr>
<tr>
<td>Yemen</td>
<td>24.76% (21.41% to 28.53%)</td>
<td>15.66% (9.41% to 25.44%)</td>
</tr>
<tr>
<td>Pooled</td>
<td>21.71% (20.15 % to 23.37%)</td>
<td>24.36% (21.18% to 27.92%)</td>
</tr>
</tbody>
</table>
marriage among cohorts of younger girls. On the whole, Nepal has experienced a decline in child marriage rates over the past decade, and so reduction in the incidence of child marriage across age cohorts can be interpreted in light of the downward secular trend at the national level.

On pooling the data across countries, we found that on average, displaced populations tended to fare worse than their host comparators. While we are unable to definitively attribute this to conflict or displacement, given that these are populations with distinct cultural beliefs, social contexts and attitudes around marriage, the fact that host comparators in the study shared many characteristics with those displaced—such as common language, religion, history, cultural identity and sometimes ethnicity—it is possible that the difference in rates reflects an impact of displacement on child marriage. Pooling age cohort data however did not support that

Figure 4  Survival function of time to marriage among age cohorts of displaced populations in four countries: Bangladesh, Djibouti, Iraq and Yemen—plotted using ‘Stcurve’.

Figure 5  Survival function of time to marriage among pooled sample of age cohorts—plotted using ‘Stcurve’.
conclusion and failed to show a spike in child marriage rates among younger cohorts. In fact, the data indicated a secular decline in child marriage rates for all study sites, except for Yemen.

Together, the available data does not offer strong support that displacement invariably drives harmful changes in marriage practices. Instead, it indicates that the impact of displacement on child marriage rates is likely context-specific and dependent on the prevailing drivers of child marriage that vary by setting. For example, our inability to detect significant increases in child marriage rates in both South Asian contexts may be explained by the fact that these are dowry cultures, where wealth is transferred from the bride’s family to that of the groom. In times of uncertainty and instability, it is possible that families may opt to delay the age of marriage owing to their inability to provide dowries on behalf of their daughters. By the same token, in Yemen, where bride price is customary, it may be that economic deprivation and financial hardships have pushed families to resort to child marriage as a coping strategy.

Our findings should be considered in light of limitations. For one, the analysis is based on cross-sectional surveys and we were constrained in the choice of comparison groups. While our comparative analysis and use of age cohort data make this a unique study, employing a longitudinal design and using a comparison group comprising girls of the same nationality who were not displaced may have offered a more robust counterfactual. Moreover, because we relied on age cohorts of girls aged 15–19, not all girls had transitioned to marriage. We addressed this shortcoming by using survival analysis methods to account for right censoring. We also conducted subgroup analysis and restricted the analysis to 18-year-old and 19-year-old girls who have completed time at risk, and our conclusions did not differ. Additionally, we cannot rule out the possibility of social desirability bias and general under-reporting of child marriage.

Future research using qualitative research techniques could help elucidate the pathways through which drivers, such as dowry and bride price, operate in these contexts. Further research into what programming would be most appropriate and effective under circumstances where child marriage rates are more likely to increase should also be explored.

In conclusion, our analysis did not offer strong support that displacement and humanitarian crisis necessarily drive increases in child marriage rates. We found evidence for both spikes and declines in child marriage rates, and in some of the study settings we failed to find evidence of either an increase or decrease in the practice. Our findings indicate that the impacts of displacement on child marriage are multifaceted and largely context specific. Investments in child marriage programming, and decisions about whether to prioritise prevention, response, or both, should not be divorced from data and in-country programmatic experiences. Instead, interventions should be attuned to local needs and vulnerabilities and rooted in quantitative and qualitative data routinely collected among affected communities.

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**Contributors**

SE conducted the analysis, wrote the manuscript first draft and incorporated comments and edits of other coauthors. LP and GY provided technical input into the design of the secondary analysis and the data analysis. LP supported interpretation of findings and manuscript revision. BA, RA, GY, LK, HHB and AT contributed to the design and conceptualisation of the country-specific studies and led implementation in each country. CR and JM designed and conceptualised the original studies, provided oversight during implementation and provided feedback on the manuscript. All authors read and approved the final manuscript.

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REFERENCES


