

Young children affected by forced displacement in Burkina Faso face excess mortality despite good coverage of perinatal care interventions

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Abstract

The ongoing complex emergency in Burkina Faso has led to a surge in internally displaced persons (IDPs), surpassing two million individuals seeking refuge in camps or with host families. Leveraging data from Burkina Faso’s latest 2021 *Demographic and Health Survey*, this study investigates whether children born to women who underwent forced displacement face elevated mortality risks. Additionally, we assess the coverage of essential health interventions during early childhood. Distinguishing between children born before and after forced migration, we detect significant excess mortality before the first birthday of children born *after the migration*, compared with children of non-migrant women (adjusted rate ratio: 2.18 [90% CI: 1.12—4.26]). Surprisingly, this excess mortality is not attributable to gaps in the continuum of care. Antenatal care, skilled attendance at birth, and vaccinations for children of women who experienced forced migration do not significantly differ from those of non-migrant counterparts. Forcibly displaced children also tend to be hosted in households that are generally better equipped, and better connected to improved water sources and good sanitation, compared to households without IDPs. More research is therefore needed to make sense of the excess mortality of infants who have experienced forced displacement in Burkina Faso.

1 Introduction

Burkina Faso is currently in the grip of an unprecedented security crisis, characterized as a complex humanitarian emergency (CHE). According to the United Nations High Commissioner for Refugees (UNHCR), over 2 million people, approximately 10% of the national population, have fled their homes in search of safety, marking this crisis as ‘one of the fastest-growing displacement and protection crises globally’¹. Monitoring changes in the health status of displaced populations proves challenging due to the absence of a comprehensive health information system and an efficient death registration system in the country. The few studies conducted on the displaced population in Burkina Faso reveal some worrying trends: the internally displaced populations (IDPs) are reportedly more susceptible to unfavorable health conditions [Pham et al., 2023] and exhibit higher rates of chronic malnutrition compared to non-displaced populations [Bougma et al., 2022]. Moreover, the socio-economic and humanitarian conditions of IDPs in Burkina Faso are believed to have worsened in the wake of the COVID-19 pandemic [Ozer et al., 2022].

In the midst of this crisis, national health indicators present a paradoxical picture of accelerated progress. The 2021 Demographic and Health Survey (DHS) indicates a rapid decline in under-five mortality, dropping from 129 per thousand live births in the five years preceding the 2010 survey to a rate of 48 for the equivalent period before the 2021 survey [INSD and The DHS Program, 2023]. Additionally, the probability of dying in adulthood (35q15) is estimated to have decreased by nearly half for women and a third for men over the same period. However, there could be selection biases in the 2021 DHS sample, due to the challenges of conducting a national survey in a highly insecure

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¹<https://www.unhcr.org/countries/burkina-faso>

environment. Certain regions, notably the Sahel and Eastern regions, experienced partial coverage, with only 13 out of 41 initially surveyed clusters in the Sahel and 27 out of 41 in the East. To address these concerns, evaluating the health of displaced populations from these affected areas, interviewed in less insecure regions, is essential to assess potential biases in mortality levels. Shedding light on the health of displaced populations residing in regular households is also important in itself. Existing studies predominantly focus on internally displaced persons (IDPs) in camps, overlooking those seeking security within host families. This study aims to fill this gap.

In the 2021 DHS, women who had migrated less than 5 years before the survey were asked additional questions about the reasons for their migration. Among these recent female migrants, 3.3% reported that their migration had been forced, primarily due to attacks by armed groups. Notably, forced displacement plays a substantial role in migration flows from rural to urban areas, accounting for 20.9% of such movements.

In this context, our study seeks to evaluate the impact of forced migration on infants born to women hosted in regular households, a perspective often overlooked in the available literature, which predominantly focuses on those in camps. While there is existing research on mortality among displaced populations, very few studies have attempted to differentiate between individuals who remain in their place of residence, those who leave for safety reasons, and those who leave for other motivations [Singh et al., 2005, Avogo and Agadjanian, 2010]. Here we estimate under-five and infant mortality, distinguishing between children of non-migrant mothers, children of mothers who migrated for reasons other than forced displacement, children born before forced displacement, and children born afterwards. We then examine a series of health indicators around the time of birth to try to explain the observed excess mortality and analyze the characteristics of households hosting forcibly displaced people. For the full paper, we will also estimate adult and pregnancy-related mortality from reports of internally displaced respondents, and compare them with the general population.

2 Data and methods

2.1 Poisson regression

To estimate infant and under-five mortality, we used the reported dates of birth and ages at death to split the life course of each child into different spells; a new spell was created at every birthday, every time the individual survives to a new calendar year and every time the number of completed years prior to the survey changes. These spells were then aggregated to form a new dataset in which each row corresponds to a unique combination of a given age, sex, calendar year and time prior to the survey. The follow-up time and number of deaths were computed for each of these *person-periods* and weighted according to the sample weights. Poisson regressions were employed to assess whether mortality was associated with the experience of forced migration. The number of deaths was assumed to follow an over-dispersed Poisson distribution, with the log of exposure time as an offset parameter. Deaths and exposure time that referred to a period more than 5 years before the survey were discarded. We used two sets of models, one without any control variables except for age, to obtain unadjusted estimates, and one with controls for educational attainment of the mother, type of residence at the time of the interview, and living standards (based on the wealth index in DHS, distinguishing between the first two poorest quintiles, and the other households).

2.2 Coverage of perinatal interventions

We followed the DHS procedures to calculate the classic indicators of the continuum of care around birth, calculating six indicators: (a) the percentage of women who had a live birth in the three years preceding the survey who received antenatal care during the pregnancy for the most recent live birth from a skilled provider, (b) the percentage of women who had a live birth in the three years preceding the survey who had 4+ antenatal care visits, (c) the percentage of mothers with a last live birth in the three years preceding the survey who received two doses or more of tetanus toxoid injections during pregnancy, (d) the percentage of mothers with a last live birth in the three years preceding the survey who were assisted by a skilled provider for their last delivery, (e) the percentage of children aged 12-23 months who were fully immunized, and (f) the percentage of children aged less than 5 years who were stunted. We compared these percentages between the non-migrant population, those who migrated for

other reasons than security, and the forcibly displaced populations distinguishing births that occurred before and after the migration. We used the `survey` package in R to account for the complex survey design of the DHS and compute 95% confidence intervals.

3 Preliminary results

Table 1 presents the Poisson regression coefficients for the three age groups (0-4, 0-1 and 1-4), taking into account only age and migratory status. Only infant mortality appears to be significantly associated with children’s migratory status. There is a significant excess of deaths among children born after migration. The unadjusted rate ratio is $\exp(0.705)$, or 2.02 (90% CI: 1.04–3.93). The width of confidence intervals should be interpreted in light of the small size of the populations concerned. Forced migrants in the DHS sample account for only 1.7% of person-years lived under five years of age in the five years preceding the survey, and 2.4% of under-five deaths. The excess infant mortality cannot be explained by the level of education of displaced mothers, their place of residence or the material well-being of their host households. Indeed, as shown in Table 2, even after controlling for these variables, the excess mortality is maintained (adjusted rate ratio: 2.18 [90% CI: 1.12–4.26]).

Since the excess mortality seems to be concentrated in the first year, and is characteristic of children born *after* forced migration, we suspected that it was attributable to a breakdown in the management of pregnancy and childbirth. However, when we looked at prenatal care coverage, the quality of this care (via the profile of providers), tetanus protection before birth, assistance at delivery by qualified health personnel and the frequency of chronic malnutrition, we found no significant differences between children according to their migration status. Children who have undergone forced migration could be less systematically immunized, but again, the differences are not significant.

4 Discussion

This study aims to shed light on the impact of forced migration on child health in complex emergencies, with a specific focus on children hosted in the community rather than in camps—a category of IPDs receiving less attention from relief agencies. Our preliminary analysis, based on the 2021 Demographic and Health Survey (DHS) in Burkina Faso, suggests that infants born to forcibly displaced women face an elevated risk of mortality compared to those born to non-migrant women, particularly *those born after the displacement*. No significant effects were observed for child mortality (1-4), however. Explaining this excess mortality is challenging, as there are no significant differences in coverage indicators related to the continuum of care between children of women who underwent forced migration and those of non-migrants.

Our results do not align with observations made in Uganda, where under-five mortality was higher among children in the year of migration or just before, while excess mortality after migration was not significant after the introduction of control variables [Avogo and Agadjanian, 2010]. In contrast, Singh et al. [2005] found no significant effect of the migration status on child mortality in an area close to the border between Southern Sudan and North Western Uganda, hypothesizing generalized poverty in the study area and excess mortality among forced migrants before the migration event. In Burkina Faso, the observation that children of forcibly displaced women are hosted in more affluent households likely accounts for the absence of a negative effect of forced migration on under-five mortality. However, our results concerning infants warrant further investigation. For the conference, we will expand the scope of the analysis to include other indicators of health for young children (identifying IDP children in the household roster to consider their nutritional status) and compare households that host IDPs with those that do not.

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Table 1: Poisson regressions on under-five, infant and child mortality, unadjusted coefficients

	<i>Age group:</i>		
	Under-five mortality	Infant mortality	Child mortality
<i>Age</i>	−0.063*** (0.005)	−2.754*** (0.117)	−0.017*** (0.006)
<i>Migration status</i> (ref: non-migrant)			
Forced migrant (born after the move)	0.525 (0.395)	0.705* (0.404)	−1.159 (1.015)
Forced migrant (born before the move)	−0.153 (0.442)	0.308 (0.527)	−0.906 (0.860)
Other migrant	−0.121 (0.105)	−0.147 (0.126)	−0.075 (0.161)
Constant	−3.577*** (0.092)	−1.492*** (0.100)	−4.894*** (0.180)
Observations	54,936	16,478	38,458

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 2: Poisson regressions on under-five, infant and child mortality, adjusted coefficients

	<i>Age group:</i>		
	Under-five mortality	Infant mortality	Child mortality
Age	-0.063*** (0.005)	-2.755*** (0.117)	-0.018*** (0.006)
<i>Migration status</i> (ref: non-migrant)			
Forced migrant (born after)	0.637 (0.398)	0.781* (0.407)	-1.015 (1.023)
Forced migrant (born before)	-0.010 (0.457)	0.432 (0.535)	-0.721 (0.828)
Other migrant	-0.063 (0.103)	-0.110 (0.124)	0.018 (0.158)
<i>Education</i> (ref: no education)			
Primary	0.114 (0.137)	0.240 (0.166)	-0.216 (0.255)
Secondary/higher	-0.292* (0.167)	-0.216 (0.183)	-0.611* (0.353)
<i>Type of residence</i> (ref: urban)			
Rural	0.302** (0.147)	0.215 (0.170)	0.486* (0.282)
<i>Living standards</i> (ref: non poor)			
Poor	0.217* (0.113)	0.150 (0.134)	0.317* (0.189)
Constant	-4.228*** (0.273)	-1.967*** (0.321)	-5.893*** (0.518)
Observations	98,957	27,756	71,201

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3: Coverage of interventions along the continuum of care for pregnant women and young children

<i>(a) Percentage of women who had a live birth in the three years preceding the survey who received antenatal care during the pregnancy for the most recent live birth from a skilled provider</i>			
	%	Lower bound	Upper bound
Non-migrant	0.98	0.97	0.99
Forced migrant (last child born after)	0.96	0.92	1.00
Forced migrant (last child born before)	0.98	0.94	1.02
Other migrant	0.99	0.98	0.99
<i>(b) Percentage of women who had a live birth in the three years preceding the survey who had 4+ antenatal care visits</i>			
	%	Lower bound	Upper bound
Non-migrant	0.69	0.67	0.71
Forced migrant (last child born after)	0.61	0.50	0.71
Forced migrant (last child born before)	0.56	0.37	0.76
Other migrant	0.72	0.70	0.74
<i>(c) Percentage of mothers with a last live birth in the three years preceding the survey who received two doses or more of tetanus toxoid injections during pregnancy</i>			
	%	Lower bound	Upper bound
Non-migrant	0.46	0.43	0.48
Forced migrant (last child born after)	0.44	0.33	0.56
Forced migrant (last child born before)	0.58	0.35	0.81
Other migrant	0.53	0.50	0.56
<i>(d) Percentage of mothers with a last live birth in the three years preceding the survey who were assisted by a skilled provider for their last delivery</i>			
	%	Lower bound	Upper bound
Non-migrant	0.97	0.96	0.97
Forced migrant (born after)	0.99	0.97	1.00
Forced migrant (born before)	0.97	0.90	1.03
Other migrant	0.95	0.94	0.96
<i>(e) Percentage of children fully immunized (12-23 months)</i>			
	%	Lower bound	Upper bound
Non-migrant	0.71	0.67	0.74
Forced migrant (born after)	0.61	0.39	0.83
Forced migrant (born before)	0.76	0.47	1.06
Other migrant	0.73	0.70	0.77
<i>(f) Stunting in children aged less than 5 years</i>			
	%	Lower bound	Upper bound
In households without IDP women	0.22	0.21	0.24
In households with IDP women	0.29	0.21	0.37