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The Effect of Forced Migration on Child Mortality in South Sudan

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Abstract: **This study sought to examine the effect of forced migration on child mortality in South Sudan. Using primary data collected from 500 women aged 15-49 years in Juba in 2020, just 2 years after signing Revitalized Peace Agreement in 2018 to end the civil war. The Cox Regression findings showed - that children of war migrant mothers, children of mothers aged 15-19 years and children of high intensity of hostilities were positively significant effect on child mortality. Children of mothers aged 30-34 years and children of working mothers were negatively significant effect on child mortality. The study recommends that the government should bring maintainable peace and provide health services to the children in South Sudan.**

Keywords: **The Effect of Forced Migration, Child Mortality, Cox Regression, South Sudan.**

1. INTRODUCATION

Forced migration is inhabitants that have been displaced for reasons other than environmental disaster or economic crisis. A forced migrant as person who is forced to leave his or her home due to war or violence. Despite the fact that more than sixty five million people were forcibly displaced global in 2015[1], slight is known about the effects of forced migration on child mortality. Worldwide, nearly seventeen million children were forcibly displaced within their own nation by war and conflict [2].

Many of the globe's children nowadays, live in nations influenced by conflict and political instability. In the aftershock of 2013 civil war in South Sudan, more than four million persons have been displaced, with around 1.8 million of those internally displaced, and around 2.5 million having escaped to neighboring countries [3]. This huge eviction is one of the largest population movements in history of South Sudan. In August 2015, a compromise peace agreement signed provisionally led to shared government, but broke out in July 2016, with conflict gaining intensity [4]. In August 2018, renewed attempt to end civil war leads to a power-sharing agreement between the warring parties, after five years of civil war [5].

Although war ended, no literature exists on the effects of forced migration on child mortality, solely it exists in rare cases in some countries [6], [7].

Moreover, no specific study has been carried out focusses on the effect of forced migration on child mortality in South Sudan. Therefore, this study sought to fill this gap by examining the effect of forced migration on child mortality in South Sudan.

2. REVIEW OF EMPIRICAL STUDIES

Bauer et al [7] carried out a study to investigate mortality results across the whole life cycle. Using social security registers that certificate the precise date of decease. The results show a significantly higher mortality risk amongst forced migrants compared with non-migrants West-Germans.

Kavita et al [8] conducted a study to compare Refugees and Hosts in North-western Uganda and Southern Sudan. Utilizing data from north-western Uganda and southern Sudan to comprehend if and how forced migration influence

under-five fatality for migrated and matching host inhabitants. The results reveal that forced migration did not significantly influence under-five fatality. Also, the study revealed that children of mothers aged 25-29 years was positively associated with fatality compared to children of mothers aged 10-19 years.

Achola et al [9] carried out a study to examine the effects of mother's migration status on under-five mortality in Kenya. Using the 2008-09 Kenya Demographic Health Survey with concentration on children under five years. The results show that children of migrant mothers higher hazard of fatality compared to those of non-migrant mothers. Mother's marital status, mother's education were found to influence the migrants. Conversely, mother's age was found to influence non-migrants.

Onyango et al [10] conducted a study to examine the effect of mothers' migration status on under two fatality in Kenya. Using Data drawn from 2003 Kenya Demographic Health Survey with concentration on children under two years. The results reveal that children of migrant mothers face a higher fatality hazard compared to those of non-migrant mothers.

Avogo and Agadjanian [11] carried out a study to examine the influences of forced migration on child survival in Angola. Using data collected in Luanda in 2004. The results show that hazard of child fatality was higher among children of war-linked migration.

O' Hare and Southhall [12] and Guha-Sapir and Gijsbert [13] found that the risk of child mortality was higher amongst children of migrated populations compared to the children of non-migrated populations in Su-Saharan Africa and former Mozambican refugees and their host in rural South Africa, respectively.

Adama et al [14] conducted a study to assess the influence of mother's migration on childhood mortality in the Unofficial Camps of Nairobi. Using longitudinal data gathered between 2002 and 2004. The results show that childhood mortality is very high in the Nairobi unofficial camps, particularly amongst new migrants.

Verwimp and Van Bavel [15] conducted a study to discover the cumulated fertility of Rwandan migrant women and the existence of their children. Using a national survey between 1999 and 2001. The study reveals that lower survival probabilities among children of migrant women compared to non-migrant families. Female children suffered more than male children, proposing that the normal sex disparity in children existence detected in most inhabitants alterations beneath risky living conditions.

3. MATERIALS AND METHODS

The data for this study came from a 2020 survey conducted in Juba, South Sudan using questionnaires, just 2 years after signing Revitalized Peace Agreement in 2018 to end the civil war. Juba is the capital of South Sudan and the largest city, stayed one of the safe places that magnetized displaced people from the urban and rural areas of the nation that were influenced by concentrated conflicts. Numerous migrants, though, came to Juba for purposes straight unconnected to war-to join families and to look for better educational and economic opportunities. This mixture of Juba-bound war migration and non-war migration factors makes the city an ideal site for this study. The survey gathered data on birth histories (the month and year of birth and death if the child died, sex of child) and migration status (war migration, non-war migration, and non-migration). Intensity of hostilities (low intensity, high intensity). Regions of previous residence (Greater Upper Nile, Greater Al Bhar Gazal, and Greater Equatoria). Mother 's age at birth (15-19 years, 20-24 years, 25-29 years, 30-34 years and 35+ years), current marital status of the mother (married, unmarried). Family Size (≥ 4 persons, 5-6 persons, 7 persons or more). Maternal education (educated, uneducated). Cross-tabulations was utilized to calculate child mortality rate and Cox regression model to examine the effect of forced migration on child mortality at 95% confidence intervals.

4. DATA ANALYSIS AND RESULTS

4.1 Results of Child mortality Rates by Study Variables

Table 1 showed that mortality rate for children of war migrant mothers 170 per 1,000 live births was greatly higher than non-war migrant mothers and non-migrant mothers 73 and 73 per 1,000 live births, respectively. Similarly, children lived in high intensity of hostilities experienced higher mortality 196 deaths per 1,000 live births compared to those lived in low intensity of hostilities 22 deaths per 1,000 live births. Besides, children migrated from Greater Upper Nile Region experienced higher mortality rate 153 deaths per 1,000 live births than those in Greater Equatoria region and those

migrated from Greater Al Bhar Gazal Region 73 to 86 deaths per 1,000 live births, respectively. Moreover, male children higher mortality rate compared to female children 109 deaths per 1,000 live births and 91 deaths per 1,000 live births, respectively. The mortality rates for children of mothers aged 20-24 years, 25-29 years, 30-34 years, and 35+ years were 182, 53, 53 and 102 deaths per 1,000 live births, respectively lower than those of mothers aged 15-19 years 368 deaths per 1,000 live births. Children of married mothers experienced higher mortality rate 101 deaths per 1,000 live births compared to those of unmarried mothers 69 deaths per 1,000 live births. Very great variations of mortality were detected between children born to working mothers and non-working mothers. Without a doubt, the mortality rate for children born to working mothers 40 deaths per 1,000 live births was slightly less than those of non-working mothers 159 deaths per 1,000 live births. Similarly, children born to uneducated mothers experienced higher mortality rate 143 deaths per 1,000 live births than those of educated mothers 48 deaths per 1,000 live births.

Table 1: Results of Child Mortality Rates by Study Variables

Variables	Child Mortality			N
	Alive%	Dead%	CMR (1,000)	
Mother's migration Status				
War migration	244 (83.0)	50 (17.0)	170	294
Non-war migration	292 (92.7)	23 (7.3)	73	315
Non-migration	422 (92.7)	33 (7.3)	73	455
Intensity of Hostilities				
Low intensity	576 (97.8)	13 (2.2)	22	589
High intensity	382 (80.4)	93 (19.6)	196	475
Region of origin				
Greater Upper Nile	261 (84.7)	47 (15.3)	153	308
Greater Al Bhar Gazal	275 (91.4)	26 (8.6)	86	301
Greater Equatoria	422 (92.7)	33 (7.3)	73	455
Child's sex				
Male	448 (89.1)	55 (10.9)	109	503
Female	510 (90.9)	51 (9.1)	91	561
Mother's age at birth				
15-19 years	24 (63.2)	14 (36.8)	368	38
20-24 years	108 (81.8)	24 (18.2)	182	132
25-29 years	215 (94.7)	12 (5.3)	53	227
30-34 years	232 (94.7)	13 (5.3)	53	245
35-49 years	379 (89.8)	43 (10.2)	102	422
Mother's marital status				
Married	904 (89.9)	102 (10.1)	101	1006
Unmarried	54 (93.1)	4 (6.9)	69	58
Mother's work status				
Working	508 (96.0)	21 (4.0)	40	529
Not working	450 (84.1)	85 (15.9)	159	535
Mother's education				
Educated	461 (95.2)	23 (4.8)	48	484
Uneducated	497 (85.7)	83 (14.3)	143	580

Notes: CMR = Child Mortality Rate

4.2 Results of Cox Regression for the Effects of Forced Migration on Child Mortality

Results of Cox Regression Model are presented in Table 2. War-migrant mothers have positive significant effects on child mortality. Children of war-migrant mothers were 2.374 times (95% CI 1.337-4.212) higher chances to die compared to those of non-migrant mothers or native long term residents. Non-war migrant mothers have not significant effects on child mortality. Children of non-war migrant mothers were 1.452 times (95% CI 0.817-2.581) higher mortality risk compared to those of non-migrant mothers or native long term residents.

Intensity of hostilities have significant effects on child mortality. Children of high intensity of hostilities were 12.066 times (95% CI 5.820-25.017) higher probability to die than those in low intensity of hostilities.

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Children of Greater Upper Nile region higher a risk of mortality by 1.022 times (95% CI 0.623-1.677) compared to those of Greater Equatoria region. Children of Greater Al Bhar Gazal Region were about 0.652 times (95% CI 0.368-1.154) lower a risk of mortality than those of Greater Equatoria region, these results were found to be insignificantly associated with child mortality.

Child's sex was found to be insignificantly associated with child mortality. The risk of mortality was 1.477 times (95% CI 0.995-2.192) higher for male children compared to female children.

Mothers aged (30-34 year) were negatively and significantly associated with child mortality. Children of mothers aged 30-34 years experienced better survival chances 0.422 times (95% CI: 0.213-0.835) compared to those of mothers aged 35-49 years. Mothers aged 15-19 years were positively and significantly associated with child mortality compared to mothers aged 35-49 years. Children of mothers aged 15-19 years have 2.859 times (95% CI: 1.374-5.948) higher mortality compared to those born to mothers aged 45-49 years.

Mother's marital status was positively and not significantly associated with child mortality. Children of married mothers higher a risk of mortality of 1.657 times (95% CI 0.572-4.805) compared to those of unmarried mothers.

Children of working mothers lower a risk of dying 0.371 times (95% CI 0.221-0.623) compared to those born to non-working mothers, and have negative significant effects on child mortality.

Mother's education was positively and not significantly associated with child mortality. Children of uneducated mothers were 1.726 times (95% CI 0.966-3.086) more expected to die compared to those of educated mothers.

Table 2: Results of Cox Regression for the Effects of Child Mortality

Variables	B	Sig.	Exp(B)	95.0% CI for Exp(B)	
				Lower	Upper
Migration status					
(RC = Non-migration)					
War migration	0.864	0.003	2.374	1.337	4.212
Non-war Migration	0.373	0.204	1.452	0.817	2.581
Intensity of Hostilities					
(RC = Low intensity)					
High intensity	2.490	0.000	12.066	5.820	25.017
Region of origin					
(RC= Greater Equatoria)					
Greater Upper Nile	0.022	0.932	1.022	0.623	1.677
Greater Al Bhar Gazal	-0.428	0.142	0.652	0.368	1.154
Child's Sex					
(RC= Female)					
Male	0.390	0.053	1.477	0.995	2.192
Mother 's age at birth					
(RC = 35-49 years)					
15-19 years	1.050	0.005	2.859	1.374	5.948
20-24 years	0.267	0.394	1.306	0.706	2.416
25-29 years	-0.554	0.131	0.575	0.280	1.180
30-34 years	-0.863	0.013	0.422	0.213	0.835
Mother's marital status					
(RC = Unmarried)					
Married	0.505	0.352	1.657	0.572	4.805
Mother's working Status					
(RC = Non-working)					
working	-0.990	0.000	0.371	0.221	0.623
Mother's education					
(RC = educated)					
Uneducated	0.546	0.065	1.726	0.966	3.086

Notes: RC = Reference category; Sig. = Significant; CI = Confidence Interval

5. FINDINGS AND DISCUSSION

This article found that children of war migrant mothers, children of mothers aged 15-19 years and children of high intensity of hostilities have positive significant effects on child mortality. Also the article found that children of mothers aged 30-34 years and children of working mothers have negative significant effects on child mortality.

Children of war-migrant mothers were significantly higher risks of child mortality compared to children of non-migrant mothers. This finding is concurred with previous several studies by Thomas et al [7], Achola et al [9], Onyango et al [10], Avogo and Agadjanian [11], O' Hare and Southhall [12], Adama et al [14], Guha-Sapir and Gijsbert [13], Verwimp and Van Bavel [15] who found that risks of child mortality were higher among children that experienced war-linked migration and contradicted with study by Kavita et al [8] who reveal that forced migration is not significantly influence child mortality.

Children of high intensity of hostilities have positive significant effects on child mortality than children in low intensity of hostilities. This finding is inconsistent with previous study by Avogo and Agadjanian [11] who disclose that high intensity of hostilities have no significant effects on child mortality.

Children of mothers aged 30-34 years have negative significant effects on child mortality. This finding is not in line with earlier study by Kavita et al [8] who reveal that children of mothers aged 25-29 were positively associated with child mortality.

Children of working mothers were significantly lower a risk of mortality compared to children of non-working mothers. This finding is consistent with study by Onyango et al [10] that children of working mothers were significantly lower a risk of childhood mortality.

6. CONCLUSION AND RECOMMENDATION

The study sought to examine the effect of forced migration on child mortality in South Sudan, Juba. The findings of hazard regression model analysis found that war-migrant mothers, high intensity of hostilities, mothers aged 15-19 years and non-working mothers have positive significant effects on child mortality. In addition, mothers aged 30-34 years have negative significant effects on child mortality.

Children of war-migrant mothers, mothers aged 15-19 years, non-working mothers and high intensity of hostilities are expected to experience higher risk of child mortality than those of non-migrant mothers, mothers aged 35-49 years, working mothers and low intensity of hostilities, respectively. Also the risk of child mortality was lower amongst children of mothers aged 30-34 years than those of mothers aged 35-49 years.

The study recommends that the government should bring sustainable peace and increase efforts to protect and fetch hope to the children. Also should struggle to provide health services to children and create work opportunities to migrant mothers

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