DSPACE

https://dspace.org/

Intimate partner violence and childhood health outcomes in 37 subSaharan African countries an analysis of demographic health survey data from 2011 to 2022

AF Dadi; Y Berhane; HM Bizuayehu; G Antehunegan; Obasanjo Bolarinwa ...

https://hdl.handle.net/10539/43065
WOS

Downloaded from a DSpace repository. https://dspace.org/

Intimate partner violence and childhood health outcomes in 37 sub-Saharan African countries: an analysis of demographic health survey data from 2011 to 2022

Abel F Dadi, Kedir Y Ahmed, Yemane Berhane, Habtamu Mellie Bizuayehu, Getayeneh Antehunegn Tesema, Tahir A Hassen, Getiye Dejenu Kibret, Daniel Bekele Ketema, Meless G Bore, Sewunet Admasu Belachew, Erkihun Amsalu, Sergio Nhassengo, Desalegn Markos Shifti, Abdulbasit Seid, Yonatan M Mesfin, Teketo Kassaw Tegegne, Daniel Bogale Odo, Zemenu Yohannes Kassa, Subash Thapa, Eshetu Girma Kidane, Hanna Demelash Desyibelew, Awoke Misganaw, Berihun M Zeleke, Obasanjo Afolabi Bolarinwa, Allen G Ross

Summary

Background Understanding the contribution of intimate partner violence (IPV) to childhood health outcomes (eg, morbidity and mortality) is crucial for improving child survival in sub-Saharan Africa. This comprehensive study aimed to explore the associations between maternal exposure to physical, sexual, or emotional violence and adverse childhood health outcomes in sub-Saharan Africa.

Methods We analysed Demographic Health Survey datasets from 37 sub-Saharan African countries from 2011 to 2022. A generalised linear mixed model was used to examine the associations between maternal physical violence, sexual violence, or emotional violence, and early childhood health outcomes (eg, acute respiratory infection, diarrhoea, undernutrition, and child mortality). A random effects meta-analysis was used to calculate pooled odds ratios (ORs) for adverse childhood health outcomes. The odds of undernutrition and mortality were 55% and 58% higher among children younger than 5 years born to mothers who were exposed to physical and sexual violence, respectively.

Findings 238 060 children younger than 5 years were included. Children whose mothers experienced physical violence (adjusted OR 1·33, 95% CI 1·29–1·42), sexual violence (1·47, 1·34–1·62), emotional violence (1·39, 1·32–1·47), or a combination of emotional and sexual violence (1·64, 1·20–2·22), or a combination of all the three forms of violence (1·88, 1·62–2·18) were associated with an increased odds of developing diarrhoeal disease. Similarly, children whose mothers experienced physical violence (1·43, 1·28–1·59), sexual violence (1·47, 1·34–1·62), emotional violence (1·39, 1·32–1·47), or a combination of emotional and sexual violence (1·48, 1·16–1·89), or a combination of all three forms of violence (1·66, 1·47–1·88) were positively associated with symptoms of acute respiratory infection.

Interpretation We found a strong link between maternal exposure to IPV and health outcomes for children younger than 5 years in sub-Saharan Africa, with minor variations across countries. To address childhood morbidity and mortality attributed to IPV, interventions need to be tailored for specific countries. Burkina Faso, Burundi, Chad, Comoros, Gabon, Liberia, Nigeria, Sierra Leone, South Africa, and Uganda should be priority nations.

Funding None.

Copyright © 2024 The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY-NC-ND 4.0 license.

Lancet Glob Health 2024; 12: e1785–93

Published Online September 24, 2024 https://doi.org/10.1016/S2214-109X(24)00313-9

See Comment page e1740

Menzies School of Health Research, Charles Darwin University, Casuarina, NT, Australia (A F Dadi PhD); **Addis Continental Institute of Public Health, Addis Ababa, Ethiopia** (A F Dadi, Prof Y Berhane PhD); **Rural Health Research Institute, Charles Sturt University, Orange, NSW, Australia** (K Y Ahmed PhD, S Thapa PhD, Prof A G Ross MD); **First Nations Cancer and Wellbeing Research Program** (H M Bizuayehu PhD), **School of Public Health** (S A Belachew PhD), **and Child Health Research Centre** (D M Shifti PhD), **The University of Queensland, Brisbane, QLD, Australia; School of Public Health and Preventive Medicine, Monash University, Melbourne, VIC, Australia** (G A Tesema MPH, A Seid PhD, B M Zeleke PhD); **Institute of Public Health, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia** (G A Tesema); **Center for Women's Health Research, College of Health, Medicine, and Wellbeing, The University of Newcastle, Callaghan, NSW, Australia** (T A Hassen PhD); **School of Public Health, Faculty of Health** (G D Kibret PhD) **and School of Nursing and Midwifery** (M G Bore MSc, Z Y Kassa MSc), **University of Technology Sydney, Ultimo, NSW, Australia; Centre for Health Systems and Safety Research, Australian Institute of Health Innovation, Faculty of Medicine, Health, and Human Sciences, Macquarie University, Sydney, NSW, Australia** (G D Kibret); **The**

Introduction

Global evidence has shown the inseparable link between the health and wellbeing of mothers and their children.[1,2] This connection goes beyond a simple physiological association, encompassing a complex interplay of various factors that influence maternal and child outcomes.[1,2] Factors such as maternal nutrition, mental health, access to health care, and socioeconomic conditions play pivotal roles in shaping the health trajectories of both mothers and their children.[3,4] Children exposed to various stressors, including domestic and family violence, within their household environment encounter lifelong challenges.[2,5]

Intimate partner violence (IPV) against women encompasses a spectrum of behaviours (eg, physical, psychological, sexual, and economic) by their current or former male partner.[6] Globally 26% of ever-married or partnered women older than 15 years have experienced physical or sexual violence or both in their lifetime, and 10% have experienced IPV in the past 12 months.[7] In sub-Saharan Africa, these rates are even higher, with 45·6% of women experiencing IPV in their lifetime and 20% experiencing IPV in the past 12 months.[8] Limited evidence has highlighted the emotional and social consequences of IPV on infants and young children, along with an increased risk of not reaching crucial developmental milestones.[5,9] These links are potentially attributed to genetic, environmental, and socioeconomic factors, along with their interactions. Genetically, IPV during pregnancy is linked to preterm birth and low birthweight, as well as altered fetal immune system

George Institute for Global Health, University of New South Wales, Sydney, NSW, Australia (D B Ketema MPH); College of Medicine and Health Science, Debre Markos University, Debre Markos, Ethiopia (D B Ketema); School of Nursing (M G Bore), College of Medicine and Health Science (Z Y Kassa), Hawassa University, Hawassa, Ethiopia; Sydney Medical School, Faculty of Medicine and Health, University of Sydney, Camperdown, NSW, Australia (E Amsalu MSc); St Paul Hospital Millennium Medical College, Addis Ababa, Ethiopia (E Amsalu); Department of Global Public Health, Karolinska Institutet, Solna, Sweden (S Nhassengo MPH); Asia–Pacific Health, Infection, Immunity, and Global Health, MCRI, Parkville, VIC, Australia (Y M Mesfin PhD); Institute for Physical Activity and Nutrition, Deakin University, Geelong, VIC, Australia (T K Tegegne PhD); National Centre for Aboriginal and Torres Strait Islander Wellbeing Research, National Centre for Epidemiology and Population Health, Australian National University, Canberra, ACT, Australia (D B Odo PhD); School of Public Health, Addis Ababa University, Addis Ababa, Ethiopia (E G Kidane PhD); Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD, USA (H D Desyibelew MPH); Department of Health Metrics Sciences, School of Medicine, University of Washington, Seattle, WA, USA (A Misganaw PhD); National Data Management Center for Health, Ethiopian Public Health Institute, Addis Ababa, Ethiopia (A Misganaw); Department of Public Health, York St John University, London, UK (O A Bolarinwa MSc); Department of Demography and Population Studies, University of the Witwatersrand, Johannesburgh, South Africa (O A Bolarinwa)

Correspondence to:
Dr Abel Fekadu Dadi, Menzies School of Health Research, Charles Darwin University, Casuarina, NT 0810, Australia
abel.dadi@menzies.edu.au

Research in context

Evidence before this study

On May 12, 2023, we searched PubMed for studies published in English that examined a link between maternal exposure to intimate partner violence (IPV) and adverse child health outcomes—ie, acute respiratory infection, diarrhoea, undernutrition, and mortality of infants and those younger than 5 years. We used key and MeSH terms ("intimate partner violence", OR "violence", OR "domestic violence", OR "physical", OR "social" OR "sexual" OR "emotional" OR "psychological" OR "abuse" OR "neglect" OR "beating") AND ("adverse childhood outcomes" OR "child health outcomes" OR "acute respiratory infection", OR "common childhood illness", OR "fever", OR "cough" OR "diarrhea" OR "acute watery diarrhea" OR "malnutrition" OR "undernutrition") to locate the studies. We found only a handful of studies in Asia and Africa with some inconsistent findings.

Added value of this study

To the best of our knowledge, this is a comprehensive study to explore the association between maternal exposure to IPV and adverse child health outcomes in sub-Saharan Africa. Our findings revealed that children born to mothers with a history of IPV are more likely to have adverse child health outcomes including acute respiratory infection, diarrhoeal disease, stunting, and wasting. Geographical variations across sub-Saharan African countries were also noted.

Implications of all the available evidence

The evidence presented in this study underscores the need for comprehensive, context-specific, and region-specific policy interventions to address the pervasive risk of IPV on adverse child health outcomes in sub-Saharan Africa. Furthermore, the country-level variability in the association between IPV and adverse child health outcomes emphasises the importance of tailoring policies to specific sub-Saharan African countries with unique sociocultural histories and economies.

development, increasing vulnerability to infections, and poor nutritional status.[10–13] Environmental factors include psychological stress leading to maternal mental health issues, which disrupt caregiving and increase child morbidity.[14,15] Direct physical harm to mothers can substantially impair their caregiving abilities by affecting both their physical capacity and mental health, thereby negatively affecting the mother–child bond and the child's wellbeing.[16] Socioeconomically, IPV restricts women's access to health care, limiting prenatal and postnatal care, and exacerbating health issues due to a scarcity of medical intervention and support.[17] Additionally, community and social network influences can either mitigate or worsen the effects of IPV, with stigmatisation and resource scarcity isolating mothers and hindering a healthy environment for children.[18]

Sub-Saharan Africa has the greatest burden of undernutrition, including problems such as stunting, wasting, and underweight, as well as morbidity from respiratory infections and diarrhoea.[19,20] These adverse child health outcomes synergistically contribute to elevated mortality rates among infants and young children, with diarrhoea and acute respiratory infection (ARI) accounting for approximately 16% and 10% of all deaths, respectively.[21] The higher burden of adverse childhood outcomes in sub-Saharan Africa could be attributed to higher rates of domestic and family violence in the region, which remains understudied. Understanding the contribution of IPV to adverse childhood outcomes is imperative for improving child survival in sub-Saharan Africa and achieving Sustainable Development Goal target 3.2.[22]

Previously published studies from Africa have reported increased odds of undernutrition and morbidity in children born to mothers who have experienced IPV[23–25] and a weak association between maternal IPV experience and child mortality.[26] However, some studies have reported no association between maternal IPV and adverse child health outcomes.[27,28] The inconsistent findings and limitations of small-scale studies underscore the importance of conducting a comprehensive study to investigate the effects of both general and specific types of IPV on child health outcomes—providing a clearer and more detailed understanding of IPV.

This study aimed to investigate the associations between maternal exposure to IPV (ie, physical, emotional, or sexual violence) individually, as well as their co-occurrence, and early childhood health outcomes (eg, childhood undernutrition, diarrhoea, ARI, and mortality). Furthermore, there remains a gap in our understanding of whether these associations exhibit clustering patterns across different countries in sub-Saharan Africa. Our study also aimed to address this gap by investigating the clustering patterns of IPV and childhood health outcomes in multiple sub-Saharan African countries. By doing so, we contribute to the literature by providing insights into whether interventions should be tailored to specific contexts or if broader strategies can be effective.

Methods

Data source, study design, and sampling

The Demographic and Health Survey (DHS) programme has been implemented in more than 90 low-income and middle-income countries to collect cross-sectional data on a wide range of health and population indicators.[29] The

DHS follows a two-stage stratified cluster sampling design with the first administrative units as urban and rural strata, a random selection of enumeration areas at the first stage, and a systematic selection of a fixed number of households from each enumeration area in the second stage.[30] Our study included 37 sub-Saharan African countries based on the availability of data on exposure (IPV) and outcomes (eg, ARI, diarrhoea, undernutrition, and child mortality). We accessed the most recent survey data of these countries from the DHS domestic violence module and the Kids Record dataset (KR file). After approval by the DHS data custodian, we accessed the datasets from the MEASURE DHS Program website. Our study included the following sub-Saharan countries with data from the corresponding years: Angola (2016), Benin (2018), Burkina Faso (2021), Burundi (2017), Cameroon (2018), Chad (2015), Comoros (2012), Congo (Brazzaville; 2012), Côte d'Ivoire (2012), DR Congo (2014), Ethiopia (2016), Gabon (2021), Ghana (2014), Guinea (2018), Kenya (2022), Lesotho (2014), Liberia (2020), Madagascar (2021), Malawi (2016), Mali (2018), Mauritania (2021), Mozambique (2015), Namibia (2013), Niger (2012), Nigeria (2018), Rwanda (2020), Senegal (2011), Sierra Leone (2019), South Africa (2016), Tanzania (2016), The Gambia (2020), Togo (2014), Uganda (2016), Zambia (2018), and Zimbabwe (2015). When countries have conducted two surveys within the timeframe of interest, the most recent survey data have been incorporated.

Outcome variables

The main outcome variables included diarrhoea, ARI, undernutrition (ie, stunting, wasting, and underweight), infant mortality, and mortality for those younger than 5 years. Diarrhoea was defined as children having three or more episodes of loose bowel movements 2 weeks before the survey. ARI was measured as the presence of cough along with rapid and shallow breathing reported 2 weeks before the survey. ARI and diarrhoea were recorded based on maternal recall of symptoms. Undernutrition (ie, stunting, wasting, and underweight) was defined using the WHO Child Growth Standards.[31] DHS measures the weight and height of children using standard anthropometric procedures.[32] Undernutrition indices are expressed as SDs from the median of the WHO reference population for the child's age. We classified children as stunted, wasted, or underweight when their height-for-age Z score, their weight-for-height Z score, and their weight-for-age Z score were below –2·0 SD.[33] Infant mortality was measured as the probability of dying before their 1st birthday, and mortality for those younger than 5 years was defined as the probability of dying before their 5th birthday.[29]

Explanatory variables

Our explanatory variables included women's lifetime exposure to IPV, including physical, sexual, and emotional violence, or combinations thereof. The DHS collects IPV data using standardised questions in the domestic violence module from one eligible woman who was selected from every second or third household. The DHS uses the modified version of the Conflict Tactic Scale to assess the emotional, physical, and sexual dimensions of women's exposure to IPV.[34] We categorised a woman with a yes response to one of the questions as having ever experienced physical, emotional, or sexual violence by their intimate partner, or otherwise no. We then classified mothers as having experienced IPV if they had encountered at least one of the forms of violence (full coding can be found in the appendix p 3) since the age of 15 years. Other explanatory variables adjusted in our analysis included: maternal age, child age, women's level of education, marital status, maternal smoking status, birth order, sex of the child, birth interval, place of residence, wealth quantile, household cooking (ie, indoor pollution), water source, toilet facility, mother's media exposure, and mother's autonomy (appendix pp 4–5).

See **Online** for appendix

For the **MEASURE DHS Program** see https://www.dhsprogram.com

Statistical analysis

Initially, we merged the DHS datasets of the 37 sub-Saharan African countries with the domestic violence module and each child's health records. The data were coded for exposures, outcomes, and potential confounders. We denormalised the sampling weight of the combined dataset and generated a new weight by multiplying the standard sampling weights by the target population and dividing by the number of children in the survey to adjust for the unequal population sizes in sub-Saharan African countries.[35] Descriptive analyses included calculating frequencies and percentages of exposures (including physical violence, emotional violence, and sexual violence) and outcomes (ie, diarrhoea, ARI, stunting, wasting, underweight, infant mortality, and mortality among those younger than 5 years). Furthermore, an association between all combinations of violence (ie, physical and emotional, physical and sexual, sexual and emotional, and a combination of all three) and each outcome was tested after adjusting for potential confounders, and only those that were found to be significant are presented in a forest plot for simplicity. All results were computed as both actual and weighted counts, and are presented in the text, tables, and figures.

The prevalence and 95% CIs of all outcomes were estimated for all countries and are presented in the figures. We performed a latent class analysis to examine whether there is an unexplained clustering of adverse child health outcomes across countries in sub-Saharan Africa.[36,37] The latent class analysis is an unsupervised machine learning statistical procedure that is used to qualitatively identify or detect latent (or unobserved) heterogeneity in samples, and different subgroups, referred to as latent groups or classes within populations that share certain outward characteristics.[38] We further explored by plotting the prevalence of IPV against each childhood health outcome (ie, morbidity, undernutrition,

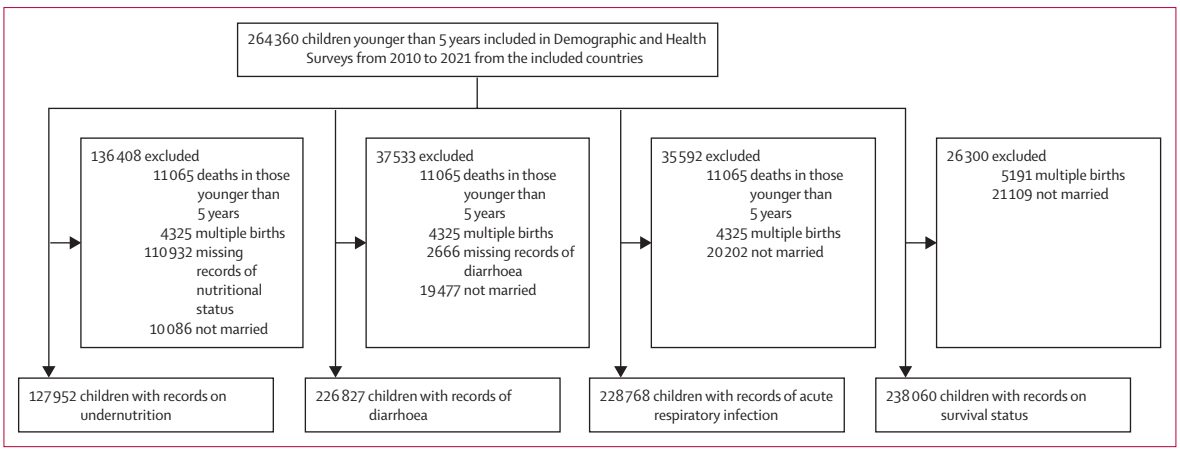


Figure 1: **Number of study participants included in different outcomes of the study**

and mortality) across the countries included in our study to visually identify any potential clustering patterns. We then ran regression models to estimate intracountry and intercountry correlations to assess the extent of clustering of the patterns of association between IPV and childhood health outcomes.

To examine the relationship between maternal IPV exposure individually and in combination with child health outcomes, we fitted two generalised linear mixed models using Bernoulli as the family distribution and logit as the link function. The first model involved an ordinary logistic regression model that accounted for only the sampling weight (Model 1). The second model used the generalised linear mixed model, which accounted for the sampling weight and hierarchical nature of the data (women nested within each cluster; Model 2). Findings from the second model with low Akaike's Information Criterion and Bayesian Information Criterion were reported for this study.[39]

All regression models were checked for multicollinearity of variables using the variance inflation factor and a variance inflation factor of less than five was used to rule out multicollinearity. Missing data were identified for IPV (8·0%), media exposure (0·2%), household cooking (0·1%), and toilet facilities (3·0%). We used a missing category as mothers tend not to disclose information on these conditions likely due to social desirability. The proportion of missing data for variables adjusted in the multivariable models is reported in the appendix (pp 4–7). All analyses were conducted using Stata (version 17).[39]

Role of the funding source

There was no funding for this study.

Results

This study included a total sample of 238 060 children younger than 5 years (figure 1). The mean age of the children was 22·7 months (SD 15·5). 103 866 children (47·0%) were born to mothers aged 25–34 years and 85 938 (38·9%) were born to mothers who did not have a formal education. Nearly half of the children 116 590 (49·0%) were born second to fourth in birth order, and 109 474 (46·0%) were from households with a low wealth index (table). Approximately 149 730 (62·9%) of the children were born to mothers with media exposure, 147 907 (62·1%) mothers were unemployed, and 148 481 (62·4%) were not autonomous in any or all matters (table; appendix pp 4–7).

All tested latent class analysis models with different classes failed to converge, showing that there was no pattern or clustering; rather substantial baseline and within-country variability was observed at the level of all outcomes. The lowest prevalence of diarrheoea was in Burundi (7·4%, 95% CI 6·7–8·1), whereas the highest prevalence was in Sierra Leone (25·6%, 24·6–26·6; appendix p 9). The lowest prevalence of ARI was in Cameroon (1·2%, 0·9–1·6), whereas the highest prevalence was in Uganda (10·9%, 10·3–11·5; appendix p 8). The lowest prevalence of at least one form of undernutrition was recorded in Kenya (22·6%, 21·9–23·4), whereas the highest prevalence was in Nigeria (53·5%, 51·7–55·4; appendix p 10). Rwanda had the lowest infant mortality (16·5, 13·2–22·2, per 1000) and mortality for those younger than 5 years (20·2, 16·6–24·3, per 1000), whereas Eswatini had the highest infant mortality (65·4, 51·2–78·6, per 1000; appendix p 4) and mortality in those younger than 5 years (73·5, 59·9–89·1, per 1000; appendix p 5). There was no meaningful clustering in the effect of IPV on ARI and wasting across countries while there were minor variations observed in the level of association between IPV and other child outcomes such as diarrhoea, stunting, underweight, infant mortality, and mortality for those younger than 5 years (appendix pp 13–19).

Children whose mothers experienced physical violence (adjusted odds ratio [aOR] 1·33, 95% CI 1·29–1·42), sexual violence (1·47, 1·34–1·62), or emotional violence (1·39, 1·32–1·47) were more likely to

	Total sample (n=238 060)	Weighted sample (n=220 923)
Maternal age, years		
15–24	65 020 (27·3%)	60 054 (27·2%)
25–34	110 622 (46·5%)	103 866 (47·0%)
35–49	62 418 (26·2%)	57 003 (25·8%)
Maternal education		
No education	95 368 (40·1%)	85 938 (38·9%)
Primary	79 017 (33·2%)	74 418 (33·7%)
Secondary	63 652 (26·7%)	60 549 (27·4%)
Missing	23 (<0·1%)	18 (<0·1%)
Media exposure		
No	87 860 (36·9%)	80 865 (36·6%)
Yes	149 730 (62·9%)	139 623 (63·2%)
Missing	470 (0·2%)	435 (0·2%)
Mothers smoke cigarettes		
No	115 495/116 430 (99·2%)	108 658/109 481 (99·2%)
Yes	935/116 430 (0·8%)	823/109 481 (0·8%)
Marital status		
Married	218 293 (91·7%)	202 830 (91·8%)
Divorced	8897 (3·7%)	8230 (3·7%)
Separated	10 870 (4·6%)	9863 (4·5%)
Maternal employment		
No	147 907 (62·1%)	139 870 (63·3%)
Yes	90 153 (37·9%)	81 054 (36·7%)
Mothers autonomous		
No	148 481 (62·4%)	136 575 (61·8%)
Yes	89 579 (37·6%)	84 349 (38·2%)
Child age, months	22·7 (15·6)	22·8 (15·6)
Birth order		
1	41 948 (17·6%)	39 640 (17·9%)
2–4	116 590 (49·0%)	108 791 (49·2%)
≥5	79 522 (33·4%)	72 493 (32·8%)
Child's sex		
Male	120 949 (50·8%)	112 212 (50·8%)
Female	117 111 (49·2%)	108 711 (49·2%)
Birth interval		
≤24 months	38 519 (16·2%)	35 359 (16·0%)
>24 months	199 541 (83·8%)	185 565 (84·0%)
Wealth index		
Low	109 474 (46·0%)	94 668 (42·9%)
Middle	46 989 (19·7%)	44 079 (20·0%)
High	81 598 (34·3%)	82 177 (37·2%)
(Table continues in next column)		
(Continued from previous column)		
Household cooking		
Clean	30 021 (12·6%)	29 014 (13·1%)
Not clean	207 677 (87·2%)	191 551 (86·7%)
Missing	362 (0·2%)	358 (0·2%)
Water source		
Protected	133 474 (56·1%)	123 676 (56·0%)
Not protected	104 586 (43·9%)	97 248 (44·0%)
Toilet facility		
Improved	101 906 (42·8%)	99 016 (44·8%)
Unimproved	129 097 (54·2%)	117 838 (53·3%)
Missing	7057 (3·0%)	4070 (1·8%)
Exposure to intimate partner violence		
No	181 480 (76·2%)	166 854 (75·5%)
Yes	36 813 (15·5%)	35 977 (16·3%)
Missing	19 767 (8·3%)	18 093 (8·2%)
Physical violence		
No	191 911 (80·6%)	177 333 (80·3%)
Yes	26 382 (11·1%)	25 497 (11·5%)
Missing	19 767 (8·3%)	18 093 (8·2%)
Sexual violence		
No	208 330 (87·5%)	192 977 (87·3%)
Yes	9963 (4·2%)	9854 (4·5%)
Missing	19 767 (8·3%)	18 093 (8·2%)
Emotional violence		
No	193 205 (81·2%)	178 137 (80·6%)
Yes	25 088 (10·5%)	24 693 (11·2%)
Missing	19 767 (8·3%)	18 093 (8·2%)
Combined violence		
No	181 480 (76·2%)	166 854 (75·5%)
Emotional and physical	10 742 (4·5%)	10 437 (4·7%)
Physical and sexual	1681 (0·7%)	1643 (0·7%)
Emotional and sexual	1143 (0·5%)	1149 (0·5%)
Emotional, physical, and sexual	5527 (2·3%)	5419 (2·5%)
Either of the three types of violence	17 720 (7·4%)	17 328 (7·8%)
Missing	19 767 (8·3%)	19 093 (8·6%)

Data are n (%), n/N (%), or mean (SD).

Table: **Characteristics of the children younger than 5 years in 37 sub-Saharan African countries included in the survey**

have diarrhoea in the past 2 weeks (appendix p 20). The combined experience of emotional and sexual violence and the combination of all three forms of violence increased the odds of childhood diarrhoea by 48% (1·48, 1·16–1·89) and 66% (1·66, 1·47–1·88), respectively. The odds of ARI were 43% (1·43, 1·28–1·59), 53% (1·53, 1·34–1·76), and 44% (1·44, 1·32–1·58) higher among children younger than 5 years whose mothers reported physical, sexual, or emotional violence, respectively. The combined experience of emotional and sexual violence and all three forms of IPV increased the odds of a child having an ARI by 64% (1·64, 1·20–2·22) and 88% (1·88, 1·62–2·18), respectively (figure 2; appendix p 20). These associations also varied across countries, with the aOR between IPV and diarrhoea being highest in Chad (2·39, 95% CI 2·19–2·60) and the aOR between IPV and ARI being highest in Gabon (2·07, 1·55–2·77; appendix p 21).

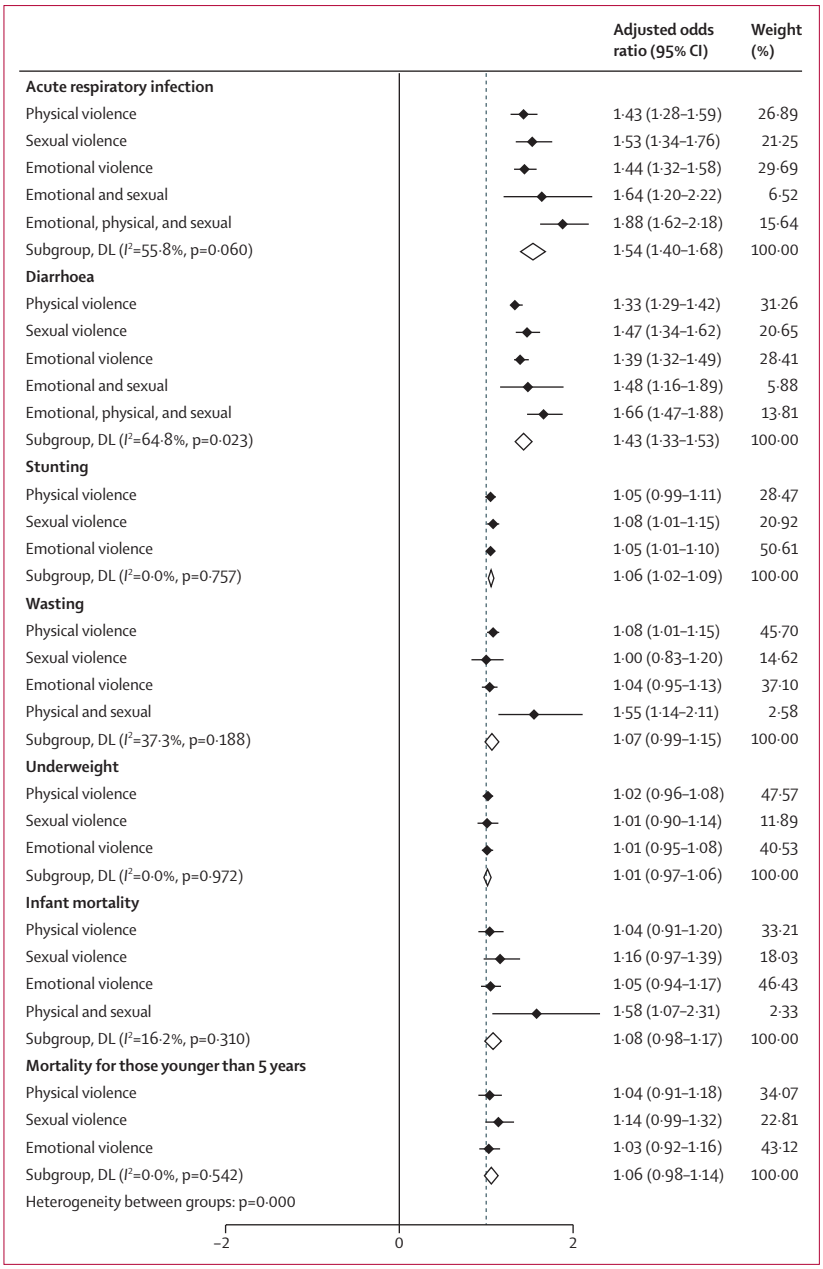


Figure 2: **Association between maternal IPV and adverse child health outcomes in 37 sub-Saharan Africa countries**

Weights and between-subgroup heterogeneity test are from a random-effects model. The models were adjusted for sociodemographic factors, child and maternal factors, and household and community factors. Significant combinations of violence with outcomes have only been shown in the forest plot. DL=DerSimonian and Laird. IPV=intimate partner violence.

The combined experience of physical and sexual violence increased the odds of wasting by 55% (aOR 1·55, 95% CI 1·14–2·11; appendix p 22). The associations between IPV and other nutritional outcomes (stunting and underweight) were marginally significant or not significant (figure 2; appendix p 22). There was variation in the magnitude of the association between IPV and undernutrition across countries in sub-Saharan Africa: the aOR between IPV and wasting was highest in Burkina Faso (4·45, 3·37–5·87); the aOR between IPV and stunting was highest in Burundi (2·10, 1·89–2·34); and the aOR between IPV and underweight was highest in Burkina Faso (2·39, 2·09–2·74; appendix p 23).

Associations between maternal exposure to IPV and child mortality were not significant except for mothers with combined experience of physical and sexual violence. The odds of infant mortality were 58% (aOR 1·58, 95% CI 1·07–2·31) higher in children whose mothers had combined experience with physcical and sexual violence (figure 2; appendix p 24). A strong statistical association between child mortality and IPV was also observed in specific countries in sub-Saharan Africa: the highest aOR between IPV and infant mortality was found in South Africa (5·47, 3·48–8·60), whereas the highest aOR between IPV and mortality for those younger than 5 years was evident in Liberia (4·67, 3·72–5·87; appendix p 25).

Discussion

This study was the first to comprehensively investigate the association between IPV and adverse childhood outcomes using nationally representative surveys from 37 sub-Saharan African countries. Our findings showed that children whose mothers experienced physical, sexual, or emotional violence had a higher risk of developing diarrhoea or contracting an ARI in the 2 weeks before the survey than did children of mothers who did not experience violence. The associations between IPV and childhood undernutrition and mortality outcomes showed marginal statistical significance or no association. Children born to mothers with combined experiences of physical, emotional, and sexual violence had higher odds of having one or more adverse health outcomes than mothers without experience of violence. The association between IPV and health outcomes showed variation across sub-Saharan Africa. The odds ratios for IPV and adverse childhood health outcomes were the highest in Burundi, Burkina Faso, Comoros, Chad, Gabon, Liberia, Senegal, South Africa, and Uganda.

Few studies have highlighted the link between IPV and child morbidity,[23–26] although the evidence linking it to child mortality appears inconclusive. Our findings are in line with previous studies using DHS data from Bangladesh and Afghanistan, which identified a significant association between maternal experiences of IPV and increased risks of childhood morbidity, undernutrition, and mortality.[27,28,40,41] These studies collectively suggest that children born to mothers subjected to IPV face heightened health challenges, thereby affirming the pervasive influence of maternal IPV on child health in these regions. By contrast, two studies using Indian National Family Health Survey data revealed no association between maternal IPV and mortality for those younger than 5 years.[27,28] This discrepancy could be attributed to several observations.

First, different regions have varying cultural norms and attitudes towards IPV, with some regions having high social acceptance and normalisation of IPV, leading to under-reporting and scarce support for survivors, legal frameworks and enforcement, availability of support services, and community engagement and awareness.[42–44] Second, the method or scope of the studies conducted varied, including the study design and sample, IPV measurement, methods of data collection, and geographical scope, such as differences between urban and rural areas.[45] Such variations underscore the necessity for a more nuanced understanding of the contextual factors that mediate the relationship between maternal IPV and child mortality. Furthermore, limited studies from African contexts have reported increased odds of adverse health outcomes such as overweight, diarrhoea, and mortality among children whose mothers have a lifetime experience of IPV.[23–26] This consistency across diverse geographical regions reinforces the imperative to address maternal IPV as a major public health issue, with clear implications for maternal and child health interventions.

Our findings also suggest that, although the effect of IPV on certain health outcomes is relatively consistent across different contexts, there are slight variations in how IPV affects other outcomes, likely influenced by country-specific factors. For instance, the analysis revealed no significant clustering in the effect of IPV on ARIs and wasting across countries. However, minor variations were observed in the association between IPV and diarrhoea, stunting, underweight, infant mortality, and mortality for those younger than 5 years. Broad strategies to address IPV and its impact on these outcomes can be effective but should consider baseline differences in the prevalence of these outcomes across countries. Conversely, interventions targeting the link between IPV, ARI, and wasting need to be tailored to the specific sociocultural and economic contexts of each country.

The observed high odds ratios for IPV and adverse childhood health outcomes in countries such as Burundi, Burkina Faso, Comoros, Chad, Gabon, Liberia, Senegal, South Africa, and Uganda could be attributed to women living in these countries exhibiting a high tendency to justify IPV, with studies showing that those exposed to interparental violence were more likely to justify IPV than those who were not exposed;[46] socioeconomic instability, including ongoing conflict and political unrest in countries such as Chad and Burundi;[47] cultural and societal norms, such as deeply ingrained patriarchal values in South Africa, which perpetuate gender inequality and contribute to high IPV rates, adversely affecting child health outcomes;[48] and inadequate access to education for women and girls in countries such as Burkina Faso and Uganda, which are correlated with high IPV rates and poor child health outcomes.[49]

The DHS collected cross-sectional data; apart from correlation analysis, it was not possible to determine a temporal relationship or to explore the potential mechanisms through which IPV influences adverse child health outcomes given the study design. Furthermore, we were unable to adjust our model for important predictors of adverse child health outcomes such as birth anomalies, maternal mental health, child–mother attachment, vaccination, and structural factors, such as protracted conflict, community violence, and political instability for which our estimation could underestimate or overestimate the association. Despite this limitation, our study highlights the importance of considering both intracountry and intercountry variations in the association between IPV and childhood health outcomes. The significant but minor intracountry correlations indicate that within-country factors crucially mediate this relationship, suggesting that interventions must be tailored to each country's sociocultural and economic context. Meanwhile, the less pronounced inter-country correlations reveal that while IPV universally affects childhood health, the degree of impact varies. Therefore, some strategies can be broadly applied, but others must be specifically designed for unique circumstances. Future research should further explore these patterns to develop more effective, context-specific interventions.

In conclusion, this study underscores the importance of implementing both broad and context-specific strategies that address the unique sociocultural and economic contexts of each country to effectively mitigate the effects of IPV on child health outcomes. Countries in the sub-Saharan Africa region, including Chad, Comoros, Gabon, Uganda, Burkina Faso, Senegal, Burundi, South Africa, and Liberia, merit specific attention due to heightened risks of adverse childhood outcomes associated with IPV. Sub-Saharan African countries need to prioritise the development and implementation of evidence-based strategies that encompass IPV preventive measures and support services for affected families. WHO's Parenting for Lifelong Health,[50] a parenting programme to prevent violence in low-resource settings, needs to be scaled up and tested across sub-Saharan Africa. Furthermore, a multidisciplinary approach that integrates health care, social services, and legal frameworks is paramount for mitigating the wider impact of IPV.

Contributors

AFD and GAT had full access to all the data in the study and took responsibility for the integrity of the data and the accuracy of the data analysis. AFD conceptualised the study idea, obtained and analysed the data, interpreted the results, drafted the original manuscript, and critically revised the manuscript. GAT prepared the data for analysis and critically revised the manuscript for intellectual content. KYA and AGR contributed to the interpretation and analysis of data and critically revised the manuscript. All authors had full access to the data, made a review of the paper, and approved the final submission.

Declaration of interests

We declare no competing interests.

Data sharing

The analysis was based on Demographic Health Survey data. Information on the data and content can be accessed at https://dhsprogram.com/data/available-datasets.cfm.

Acknowledgments

This study received no funding.

References

1 Pronk N, Kleinman DV, Goekler SF, Ochiai E, Blakey C, Brewer KH. Promoting health and well-being in healthy people 2030. *J Public Health Manag Pract* 2021; **27** (suppl 6)**:** S242–48.
2 Clark H, Coll-Seck AM, Banerjee A, et al. A future for the world's children? A WHO–UNICEF–*Lancet* Commission. *Lancet* 2020; **395:** 605–58.
3 Kelly-Irving M, Delpierre C. Framework for understanding health inequalities over the life course: the embodiment dynamic and biological mechanisms of exogenous and endogenous origin. *J Epidemiol Community Health* 2021; **75:** 1181–86.
4 Cullati S, Burton-Jeangros C, Abel T. Vulnerability in health trajectories: life course perspectives. *Schweiz Z Soziol* 2018; **44:** 203–16.
5 Gartland D, Giallo R, Woolhouse H, Mensah F, Brown SJ. Intergenerational impacts of family violence—mothers and children in a large prospective pregnancy cohort study. *EClinicalMedicine* 2019; **15:** 51–61.
6 WHO. Preventing intimate partner and sexual violence against women: taking action and generating evidence. Geneva: World Health Organization, 2010.
7 WHO. Violence against women prevalence estimates, 2018: global, regional and national prevalence estimates for intimate partner violence against women and global and regional prevalence estimates for non-partner sexual violence against women. Executive summary. Geneva: World Health Organization, 2021.
8 García-Moreno C, Pallitto C, Devries K, Stöckl H, Watts C, Abrahams N. Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence. Geneva: World Health Organization, 2013.
9 Syed S, Gilbert R, Feder G, et al. Family adversity and health characteristics associated with intimate partner violence in children and parents presenting to health care: a population-based birth cohort study in England. *Lancet Public Health* 2023; **8:** e520–34.
10 Ferdos J, Rahman MM. Maternal experience of intimate partner violence and low birth weight of children: a hospital-based study in Bangladesh. *PLoS One* 2017; **12:** e0187138.
11 Blackmore ER, Mittal M, Cai X, Moynihan JA, Matthieu MM, O'Connor TG. Lifetime exposure to intimate partner violence and proinflammatory cytokine levels across the perinatal period. *J Womens Health (Larchmt)* 2016; **25:** 1004–13.
12 Stout SA, Espel EV, Sandman CA, Glynn LM, Davis EP. Fetal programming of children's obesity risk. *Psychoneuroendocrinology* 2015; **53:** 29–39.
13 Baskin R, Hill B, Jacka FN, O'Neil A, Skouteris H. The association between diet quality and mental health during the perinatal period. A systematic review. *Appetite* 2015; **91:** 41–47.
14 Dadi AF, He V, Brown K, et al. Association between maternal mental health-related hospitalisation in the 5 years prior to or during pregnancy and adverse birth outcomes: a population-based retrospective cohort data linkage study in the Northern Territory of Australia. *Lancet Reg Health West Pac* 2024; **46:** 101063.
15 Dadi AF, Miller ER, Bisetegn TA, Mwanri L. Global burden of antenatal depression and its association with adverse birth outcomes: an umbrella review. *BMC Public Health* 2020; **20:** 173.
16 Rivara FP, Anderson ML, Fishman P, et al. Healthcare utilization and costs for women with a history of intimate partner violence. *Am J Prev Med* 2007; **32:** 89–96.
17 Ince-Yenilmez M. The role of socioeconomic factors on women's risk of being exposed to intimate partner violence. *J Interpers Violence* 2022; **37:** NP6084–111.
18 Wright EM, Pinchevsky GM, Benson ML, Radatz DL. Intimate partner violence and subsequent depression: examining the roles of neighborhood supportive mechanisms. *Am J Community Psychol* 2015; **56:** 342–56.
19 Ahmed KY, Dadi AF, Ogbo FA, et al. Population-modifiable risk factors associated with childhood stunting in sub-Saharan Africa. *JAMA Netw Open* 2023; **6:** e2338321-e.
20 Tusting LS, Gething PW, Gibson HS, et al. Housing and child health in sub-Saharan Africa: a cross-sectional analysis. *PLoS Med* 2020; **17:** e1003055.
21 UNICEF. One is too many: ending child deaths from pneumonia and diarrhea. New York, NY: United Nations Children's Fund, 2016.
22 Sustainable Development Goals. Goal 10: reduce inequality within and among countries. 2015. https://www.un org/sustainabledevelopment/inequality (accessed Nov 24, 2023).
23 Issah A-N, Yeboah D, Kpordoxah MR, Boah M, Mahama AB. Association between exposure to intimate partner violence and the nutritional status of women and children in Nigeria. *PLoS One* 2022; **17:** e0268462.3W
24 Frade S, De Wet-Billings N. The relationship between women's experience of intimate partner violence and other socio-demographic factors, and under-5 children's health in South Africa. *PLoS One* 2019; **14:** e0225412.
25 Motawi B. Association between maternal experience of intimate partner violence and under-5 child health in Egypt, Jordan, Pakistan, and Afghanistan. 2022. https://archive.hshsl.umaryland.edu/handle/10713/19150 (accessed Sept 15, 2023).
26 McClintock HF, Edmonds SE, Lambert AR. Intimate partner violence and child loss: an evaluation of 7 sub-Saharan African countries. *Afr Health Sci* 2023; **23:** 276–85.
27 Paul P, Mondal D. Maternal experience of intimate partner violence and its association with morbidity and mortality of children: evidence from India. *PLoS One* 2020; **15:** e0232454.
28 Mondal D, Paul P. Association between intimate partner violence and child nutrition in India: findings from recent National Family Health Survey. *Child Youth Serv Rev* 2020; **119:** 105493.
29 Corsi DJ, Neuman M, Finlay JE, Subramanian SV. Demographic and health surveys: a profile. *Int J Epidemiol* 2012; **41:** 1602–13.
30 Croft, Trevor N, Aileen MJ, et al. Guide to DHS statistics DHS-7. Rockville, MD: ICF International, 2018: 645.
31 Assaf S, Kothari MT, Pullum T. An assessment of the Quality of DHS Anthropometric Data. Rockville, MD: ICF International, 2015.
32 ICF International, Demographic and Health Surveys. MEASURE DHS biomarker field manual. Calverton, MD: ICF International, 2012.
33 Mei Z, Grummer-Strawn LM. Standard deviation of anthropometric *Z*-scores as a data quality assessment tool using the 2006 WHO growth standards: a cross country analysis. *Bull World Health Organ* 2007; **85:** 441–48.
34 Kishor S, Johnson K. Profiling domestic violence: a multi-country study. Calverton, MD: MEASURE DHS, 2004.
35 ICF International. Sampling and household listing manual. Calverton, MD: ICF International, 2012.
36 Weller BE, Bowen NK, Faubert SJ. Latent class analysis: a guide to best practice. *J Black Psychol* 2020; **46:** 287–311.
37 Lanza ST, Dziak JJ, Huang L, Wagner AT, Collins LM. LCA Stata plugin users' guide (version 1.2). State College, PA: The Methodology Center, Penn State, 2015.
38 Hagenaars JA, McCutcheon AL. Applied latent class analysis. Cambridge: Cambridge University Press, 2002.
39 StataCorp LLC. Stata survey data reference manual: release 15. College Station, TX: Stata Press, 2017.
40 Hossain MA, Sumi NS, Haque ME, Bari W. Consequences of intimate partner violence against women on under-five child mortality in Bangladesh. *J Interpers Violence* 2014; **29:** 1402–17.
41 Dadras O, Hazratzai M, Dadras F. Intimate partner violence and children under 5 morbidities and mortality in Afghanistan: findings from a National Survey. *J Interpers Violence* 2023; **38:** 10 105–26.
42 Heise LL, Kotsadam A. Cross-national and multilevel correlates of partner violence: an analysis of data from population-based surveys. *Lancet Glob Health* 2015; **3:** e332–40.
43 García-Moreno C, Hegarty K, d'Oliveira AFL, Koziol-McLain J, Colombini M, Feder G. The health-systems response to violence against women. *Lancet* 2015; **385:** 1567–79.

44 Fulu E, Kerr-Wilson A, Lang J, Gibbs A, Jacobson J, Jewkes R. What works to prevent violence against women and girls. Evidence review of interventions to prevent violence against women and girls Pretoria: Medical Research Council, 2014: 1580–89.

45 Walby S, Towers J. Measuring violence to end violence: mainstreaming gender. *J Gend Based Violence* 2017; **1:** 11–31.

46 Aboagye RG, Seidu A-A, Asare BY-A, Peprah P, Addo IY, Ahinkorah BO. Exposure to interparental violence and justification of intimate partner violence among women in sexual unions in sub-Saharan Africa. *Arch Public Health* 2021; **79:** 162.

47 Musizvingoza R, Tirivayi N, Otchere F, Viola F. Risk factors of adolescent exposure to violence in Burkina Faso. *BMC Public Health* 2022; **22:** 2405.

48 Buqa W. Gender-based violence in South Africa: a narrative reflection. *Herv Teol Stud* 2022; **78:** 7754.

49 Nabaggala MS, Reddy T, Manda S. Effects of rural-urban residence and education on intimate partner violence among women in Sub-Saharan Africa: a meta-analysis of health survey data. *BMC Womens Health* 2021; **21:** 149.

50 WHO. INSPIRE: seven strategies for ending violence against children. Oct 26, 2016. https://www.who.int/publications/i/item/9789241565356#:~:text=They%20are%3A%20implementation%20and%20enforcement,and%20education%20and%20life%20skills (accessed Sept 11, 2023).