Family Matters

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Orphanhood and Caregiver Loss Among Children Based on New Global Excess COVID-19 Death Estimates

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The availability of new excess mortality data enables us to update global minimum estimates of COVID-19 orphanhood and caregiver death among children (The Economist, 2021; Unwin et al., 2022; Wang, 2021; World Health Organization [WHO], 2022). Consequences for children can be devastating, including institutionalization, abuse, traumatic grief, mental health problems, adolescent pregnancy, poor educational outcomes, and chronic and infectious diseases (Thomas et al., 2020; Unwin et al., 2022). Global totals and country comparisons were previously hampered by inconsistencies in COVID-19 testing and incomplete death reporting. The new orphanhood estimates derived here based on excess deaths provide a comprehensive measure of the long-term impact of COVID-19 on orphanhood and caregiver loss.

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Methods

Using previous methodology for combining age-specific death and fertility rates (Unwin et al., 2022), we use Guidelines for Accurate and Transparent Health Estimates Reporting guidelines for this epidemiologic modeling study to update COVID-19 estimates of parent and caregiver loss. We computed excess mortality-derived estimates for bereft children in every country, using data from the WHO, *The Economist*, and the Institute for Health Metrics and Evaluation (IHME) (The Economist, 2021; Imperial College London, 2022; Wang, 2021; WHO, 2022). We replaced COVID-19 deaths in previous logistic models with excess deaths (except when excess deaths were negative) to generate composite deaths for January 1, 2020 through December 31, 2021 and for January 1, 2020 through May 1, 2022 (see Table 1). We used bootstrapping to calculate uncertainty around estimates from fertility and death data. We present regional and national estimates using WHO-based mortality methods.

The **Family Matters** series focuses on issues, information, and strategies relevant to working with families of pediatric patients. To suggest topics, obtain author guidelines, or to submit queries or manuscripts, contact Co-Editors Elizabeth Ahmann, ScD, RN, PCC; or Deborah Dokken, MPA, via email at pnjrnl@ajj.com.

Table 1.
Estimates of Orphanhood and Caregiver Loss Using Adjusted Excess Deaths[a]

Data Source	No. (95% Credible Interval)							
	Composite Deaths		Orphanhood		Orphanhood and Primary Caregiver Loss		Orphanhood and Primary and/or Secondary Caregiver Loss	
December 31, 2021								
The Economist	18.0	(14.4-21.5)	9.2	(7.5-10.9)	9.7	(8.0-11.5)	12.3	(9.8-14.8)
IHME	18.3	(17.7-18.8)	9.7	(9.1-10.3)	10.3	(9.7-10.9)	12.9	(12.2-13.5)
WHO	15.6	(13.9-17.3)	6.9	(5.8-8.0)	7.2	(6.1-8.4)	9.5	(8.1-11.0)
April 1, 2022								
The Economist	21.3	(17.2-25.4)	11.0	(9.1-12.9)	11.6	(9.7-13.6)	14.8	(11.9-17.6)
IHME	20.5	(19.9-21.1)	10.6	(10.0-11.2)	11.2	(10.6-11.9)	14.1	(13.4-14.8)
WHO	17.5	(15.7-19.3)	7.5	(6.4-8.7)	7.9	(6.7-9.2)	10.5	(8.9-12.0)

Notes: IHME = Institute for Health Metrics and Evaluation, WHO = World Health Organization.
[a] Estimates are reported in millions and used *The Economist*, IHME, and WHO excess data through 2021 (end of reporting period for IHME and WHO data sets) and adjusted using Johns Hopkins University data through May 1, 2022. Composite death data are calculated as the maximum COVID-19 and excess deaths at the country level. We used excess deaths for most countries because excess deaths tend to be greater than reported COVID-19 deaths; in those countries where excess deaths are negative or lower than COVID-19 deaths (for example, because of lockdown-associated reductions in motor vehicle fatalities and other types of injuries), we derived pandemic orphanhood and caregiver loss estimates from reported COVID-19 deaths.

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Results

Using WHO excess mortality (more conservative findings than IHME and *The Economist*), we estimated 10.5 million children lost parents or caregivers (see Table 1), and 7.5 million children experienced COVID-19-associated orphanhood through May 1, 2022. Greater numbers affected by orphanhood by primary and/or secondary caregiver loss were found in the Africa (24.3% [95% credible interval {CI}, 19.3% to 27.6%]) and Southeast Asia (40.6% [95% CI, 35.3% to 46.2%]) WHO regions, compared with the Americas (14% [95% CI, 12.6% to 15.8%]), Eastern Mediterranean (14.6% [95% CI, 12.9% to 16.2%]), European (4.7% [95% CI, 4.4% to 5.3%]) and Western Pacific (1.8% [95% CI, 1.7% to 1.9%]) regions through May 1, 2022 (see Figure 1). Similarly, variation in estimates arises at national levels, with India (3.49 million [95% CI, 2.43 million to 4.73 million]), Indonesia (660,000 [95% CI, 390,000 to 1.02 million]), Egypt (450,000 [95% CI, 360,000 to 540,000]), Nigeria (430,000 [95% CI, 40,000 to 900,000]), and Pakistan (410,000 [95% CI, 80,000 to 770,000]) worst affected through May 1, 2022 (see Figure 2). Among the WHO regions most affected, countries with the highest numbers of bereaved children in Southeast Asia included Bangladesh, India, Indonesia, Myanmar, and Nepal and in Africa included Democratic Republic of Congo, Ethiopia, Kenya, Nigeria, and South Africa. Our updated Orphanhood Calculator (Imperial College London, 2022) provides these new numbers for every country.

Discussion

COVID-19-associated orphanhood and caregiver death has left an estimated 10.5 million children bereaved of their parents and caregivers. While billions of dollars are invested in preventing COVID-19-associated deaths, little is being done to care for children left behind. However, billions of dollars invested in supporting AIDS-orphaned children showcase successful solutions ready for replication (Unwin et al., 2022). Only two countries, Peru and the United States, have made national commitments to address COVID-19-associated orphanhood. At the 2nd Global COVID-19 Summit on May 12, 2022, President Joe Biden emphasized the urgency of caring for the millions of children orphaned. Urgently needed pandemic responses can combine equitable vaccination with life-changing programs for bereaved children. An important limitation is that modeling estimates cannot measure actual numbers of children affected by caregiver death; future pandemic surveillance should include such children.

Conclusion

Given the magnitude and lifelong consequences of orphanhood, integration into every national pandemic response plan of timely care for these children will help mitigate lasting adverse consequences. Evidence highlights three essential components: 1) prevent death of caregivers by accelerating vaccines, containment, and treatment; 2) prepare families to provide safe and nurturing alternative care; and 3) protect orphaned children through economic support, violence prevention, parenting support, and ensuring school access. Effective, caring action to protect children from immediate and long-term harms of COVID-19 is an investment in the future and a public health imperative.

Figure 1.
World Health Organization Regional Estimates of Orphanhood and Primary and/or Secondary Caregiver Loss from January 1, 2020 through May 1, 2022

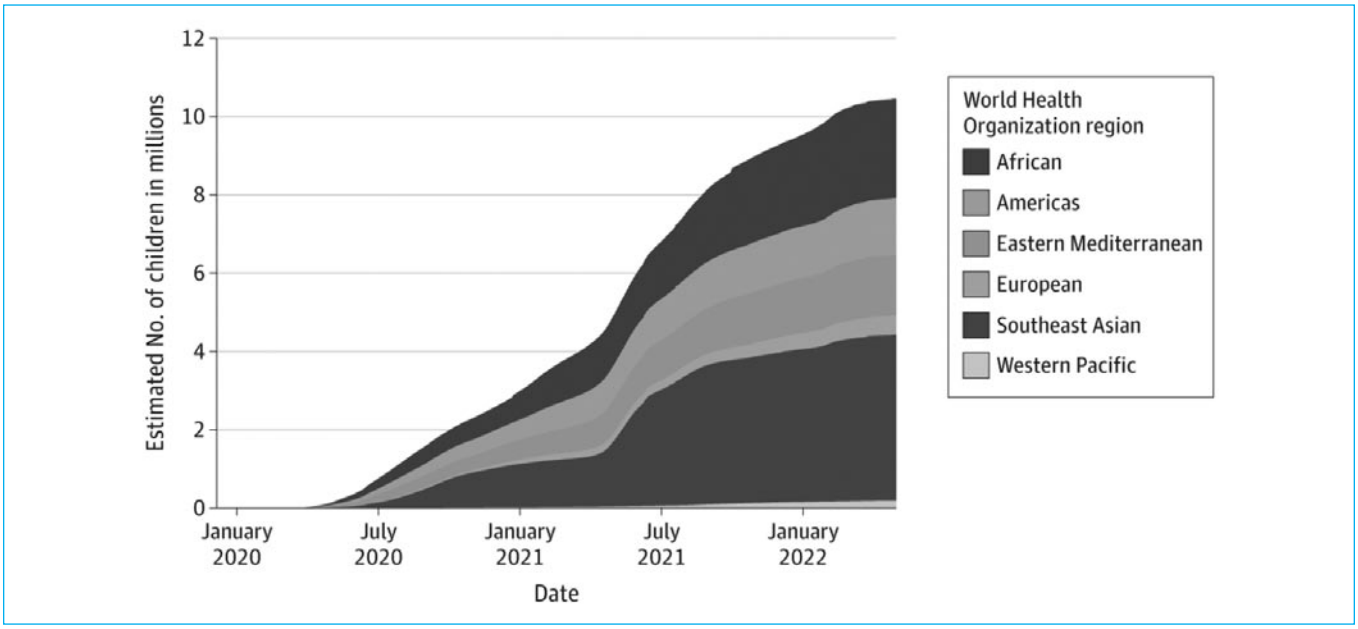
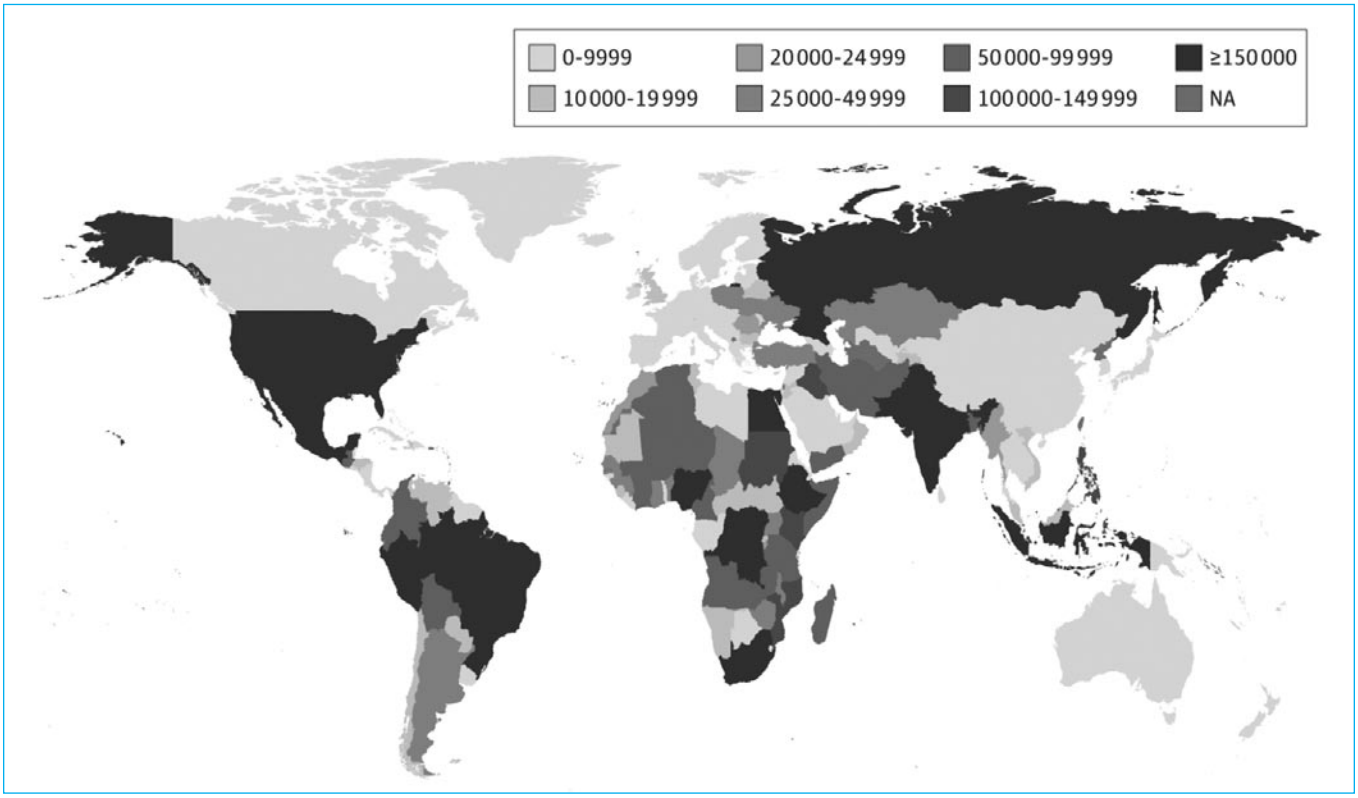


Figure 2.
World Health Organization National Estimates of Orphanhood and Primary and/or Secondary Caregiver Loss from January 1, 2020 through May 1, 2022



Note: We use excess death derived using WHO estimates through 2021 (end of reporting period). For January 1, 2022 to May 1, 2022, we extrapolated estimated excess deaths for WHO and the IHME by adjusting Johns Hopkins University data (classification of countries by WHO region as previously reported). NA indicates not applicable.

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