

SPRINGER NATURE Reference

**LIVING
EDITION**



Zoonoses: Infections
Affecting Humans
and Animals

 Springer

1. [Home](#)
2. [Zoonoses: Infections Affecting Humans and Animals](#)
3. Living reference work entry

The Multiple Burdens of Zoonoses in Low- and Middle-Income Countries; Why Zoonoses Are Worse for the Poor

- [Delia Grace &](#)
- [Elizabeth Cook](#)
- Living reference work entry
- [First Online: 05 May 2023](#)
- **13** Accesses

Abstract

Poor people have greater exposure to zoonoses through livestock keeping; living in agricultural communities; greater exposure to peri-domestic and wild animals; and less access to clean water and sanitation. Although their consumption of animal source products is low, the quality of these products is poor.

In addition to human health burdens, zoonoses reduce livestock productivity and are important barriers to trade in livestock products, as well as causing more difficulty to quantify harms such as spillover to wildlife populations. These additional impacts also contribute to poverty in developing countries. However, the relation between poverty and zoonoses is complicated.

Assessing the impacts of zoonoses helps prioritize management. Among the most important zoonoses in developing countries are leptospirosis, cysticercosis, brucellosis, tuberculosis, and rabies and zoonoses causing foodborne disease. The COVID-19 pandemic also showed how lack of resilience leads to greater vulnerability of poor people to emerging zoonoses of high economic impact.

Investment and innovation are urgently needed to tackle zoonoses in developing countries where they currently impose massive burdens on human, animal, and ecosystem health.

Keywords

- **Zoonoses**
- **Low- and middle-income countries**
- **Poverty**

This is a preview of subscription content, [access via your institution](#).

References

- Asale A, Duchateau L, Devleesschauwer B, Huisman G, Yewhalaw D (2017) Zooprophylaxis as a control strategy for malaria caused by the vector *Anopheles arabiensis* (Diptera: Culicidae): a systematic review. *Infect Dis Poverty* 6(1):160
-

[CrossRef](#) [PubMed](#) [PubMed Central](#) [Google Scholar](#)

- di Bari C, Venkateswaran N, Pigott D, Flastl C, Devleesschauwer B (2022) The global burden of neglected zoonotic diseases: current state of evidence. *Eur J Public Health* 32(Suppl 3):ckac129.757
-

[CrossRef](#) [PubMed](#) [PubMed Central](#) [Google Scholar](#)

- Fan CY, Fann JC, Yang MC, Lin TY, Chen HH, Liu JT, Yang KC (2021) Estimating global burden of COVID-19 with disability-adjusted life years and value of statistical life metrics. *J Formosan Med Assoc = Taiwan yi zhi* 120(Suppl 1):S106–S117
-

[CrossRef](#) [CAS](#) [PubMed](#) [Google Scholar](#)

- Gagnon A, Miller MS, Hallman SA, Bourbeau R, Herring DA, Earn DJ, Madrenas J (2013) Age-specific mortality during the 1918 influenza pandemic: unravelling the mystery of high young adult mortality. *PLoS One* 8(8):e69586
-

[CrossRef](#) [CAS](#) [PubMed](#) [PubMed Central](#) [Google Scholar](#)

- GBD 2019 Diseases and Injuries Collaborators (2020) Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet* 396(10258):1204–1222. [https://doi.org/10.1016/S0140-6736\(20\)30925-9](https://doi.org/10.1016/S0140-6736(20)30925-9)
 - Grace D (2015) Food safety in low- and middle-income countries. *Int J Environ Res Public Health* 12(9):10490–10507
-

[CrossRef](#) [CAS](#) [PubMed](#) [PubMed Central](#) [Google Scholar](#)

- Grace D, Gilbert J, Randolph T, Kang’ethe E (2012a) The multiple burdens of zoonotic disease and an ecohealth approach to their assessment. *Trop Anim Health Prod* 44(S1):67–73
-

[CrossRef](#) [Google Scholar](#)

- Grace D, Mutua F, Ochungo P, Kruska R, Jones K, Brierley L, Lapar L, Said M, Herrero M, Phuc PM, Thao NB, Akuku I, Ogutu F (2012b) Mapping of poverty and likely zoonoses hotspots. Zoonoses Project 4. Report to the UK Department for International Development. ILRI, Nairobi
-

[Google Scholar](#)

- Grace D, Songe M, Knight-Jones T (2015) Impact of neglected diseases on animal productivity and public health in Africa. Paper written for 21st conference of the World Organisation for Animal Health (OIE) regional commission for Africa, Rabat, Morocco, 16–20 February 2015. ILRI, Nairobi
-

[Google Scholar](#)

- Grace D, Lindahl J, Wanyoike F, Bett B, Randolph T, Rich KM (2017) Poor livestock keepers: ecosystem-poverty-health interactions. *Philos Trans R Soc Lond Ser B Biol Sci* 372(1725):20160166
-

[CrossRef Google Scholar](#)

- Havelaar AH, Kirk MD, Torgerson PR, Gibb HJ, Hald T, Lake RJ et al (2015) World Health Organization global estimates and regional comparisons of the burden of foodborne disease in 2010. *PLoS Med* 12(12):e1001923
-

[CrossRef PubMed PubMed Central Google Scholar](#)

- Kharas H, Dooley M (2022) The evolution of global poverty, 1990–2030, Brookings Global working paper 166. Brookings Institution, Washington, DC
-

[Google Scholar](#)

- McDermott J, Grace D, Zinsstag J (2013) Economics of brucellosis impact and control in low-income countries. *Sci Tech Rev* 32(1):249–261
-

[CrossRef CAS Google Scholar](#)

- Müller B, Dürr S, Alonso S, Hattendorf J, Laisse CJM, Parsons SDC, van Helden PD, Zinsstag J (2013) Zoonotic mycobacterium bovis–induced tuberculosis in humans. *Emerg Infect Dis* 19(6):899–908
-

[CrossRef PubMed PubMed Central Google Scholar](#)

- Murray CJL (2022) The Global Burden of disease study at 30 years. *Nat Med* 28:2019–2026
-

[CrossRef CAS PubMed Google Scholar](#)

- Okonji EF, Okonji OC, Mukumbang FC, Van Wyk B (2021) Understanding varying COVID-19 mortality rates reported in Africa compared to Europe, Americas and Asia. *Trop Med Int Health: TM & IH* 26(7):716–719
-

[CrossRef](#) [CAS](#) [Google Scholar](#)

- Pedersen J, Koumakpayi IH, Babuadze G et al (2022) Cross-reactive immunity against SARS-CoV-2 N protein in Central and West Africa precedes the COVID-19 pandemic. *Sci Rep* 12:12962
-

[CrossRef](#) [CAS](#) [PubMed](#) [PubMed Central](#) [Google Scholar](#)

- Perry B, Grace D (2009) The impacts of livestock diseases and their control on growth and development processes that are pro-poor. *Philos Trans R Soc B* 2009(364):2643–2655
-

[CrossRef](#) [Google Scholar](#)

- Pica-Ciamarra U, Tasciotti L, Otte J, Zizza A (2011) Livestock assets, livestock income and rural households. FAO, Rome
-

[Google Scholar](#)

- Schelling E, Grace D, Willingham AL, Randolph TF (2007) Which research approaches for pro-poor control of zoonoses? *Food Nutr Bull* 2 Suppl:S345–S356
-

[CrossRef](#) [Google Scholar](#)

- UNAIDS (2023). <https://www.unaids.org/en/resources/fact-sheet>
 - Van Kerkhove MD, Ryan MJ, Ghebreyesus TA (2021) Preparing for “Disease X”. *Science* 374(6566):377
-

[CrossRef](#) [PubMed](#) [Google Scholar](#)

- Woolhouse MEJ et al (2005) Emerging pathogens: the epidemiology and evolution of species jumps. *TRENDS Ecol Evol* 20(5):238–244
-

[CrossRef](#) [PubMed](#) [PubMed Central](#) [Google Scholar](#)

- Wu J, Tianwen L, Han H, Wang S, Lyu J (2021) Global, regional and national disability-adjusted life years due to HIV from 1990 to 2019: findings from the Global Burden of Disease Study 2019. *Trop Med Int Health*
-

[Google Scholar](#)

[Download references](#)

Author information

Authors and Affiliations

1. **Natural Resources Institute, Chatham Maritime, UK**
Delia Grace
2. **International Livestock Research Institute, Nairobi, Kenya**
Delia Grace & Elizabeth Cook

Corresponding author

Correspondence to [Delia Grace](#).

Editor information

Editors and Affiliations

1. **Dept. of Infectiology, Bavarian Health and Food Safety Authority, Oberschleißheim, Bayern, Germany**
Andreas Sing

Rights and permissions

[Reprints and Permissions](#)

Copyright information

© 2023 Springer Nature Switzerland AG

About this entry

Cite this entry

Grace, D., Cook, E. (2023). The Multiple Burdens of Zoonoses in Low- and Middle-Income Countries; Why Zoonoses Are Worse for the Poor. In: Sing, A. (eds) Zoonoses: Infections Affecting Humans and Animals. Springer, Cham.
https://doi.org/10.1007/978-3-030-85877-3_46-1

Download citation

- [.RIS](#)
- [.ENW](#)
- [.BIB](#)

- DOI https://doi.org/10.1007/978-3-030-85877-3_46-1
- Received 10 February 2023
- Accepted 13 February 2023
- Published 05 May 2023
- Publisher Name Springer, Cham
- Print ISBN 978-3-030-85877-3
- Online ISBN 978-3-030-85877-3
- eBook Packages Springer Reference Medicine Reference Module Medicine