Aging research in LMICs: context and generalizability

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Context and health research in LMICs



Deaton, A. (2006)

Broad themes from recent evidence

- Functional health across different contexts
- Development and trends in health over time
- Met and unmet need for care
- Moving beyond population-level approaches—social inequalities in LMICs
- Policy changes and health
- Determinants of disability

Functional health across different contexts

• Economic development and health

- In a set of eight LMIC countries, no clear relationship between economic development and DFLE (Prina et al. 2019)
- Absolute number of limited older adults in LMICs will grow massively in next 30 years; disability prevalence not linked to economic development (Weber and Scherbov 2020)
- DFLE not substantially different between US and a set of LAC countries, despite wide economic differences (Payne 2018)

Development and trends in health over time

- How does life-course exposure to rapid social, contextual, and policy changes shape health among older adults in LMICs?
 - Disconnect between early- and later-life conditions may lead to successive cohorts at higher risk of obesity, diabetes and mortality (Palloni and Beltrán-Sánchez 2017, Beltrán-Sánchez et al 2022)
- Empirical work finds an expansion of morbidity occurring over cohorts in Mexico (Payne and Wong 2019), and among less advantaged groups in the US (Payne 2022)
- Investigation of life-course SES and DFLE in China found that adult SES plays a substantial role in shaping healthy longevity (Payne and Xu 2022)



Met and unmet needs for care

- How do needs for functional health support among older adults in LMICs match up with available care?
- Unmet needs are determined by complex factors connected to development, family structure, and institutional supports
- Both who cares for older adults, and the quality of this care, matter for meeting care needs (Zhu 2015)
- Some indications that unmet need may be higher among younger-old individuals with physical limitations (Harling et al. 2020, Brinkmann et al 2021)

Social inequalities in health in LMICs

• How unequal is health in LMICs?

- Inequality in disability by income is much greater in high-income countries than in low-income countries (Li et al. 2023)
- Comparing across countries in the Asia-Pacific, mortality gradients by education, wealth, and occupation were lower in middle-income countries as compared to high-income ones (Xu et al. 2023)
- Effective healthcare systems may limit inequalities in LMICs (Rosero-Bixby and Dow 2016)



Policy changes and health in LMICs

- How has the introduction of public health insurance impacted health in LMICs?
- Lots of heterogeneity in how national health insurance reforms are designed, making direct comparisons difficult (Lagomarsino et al 2012)
- Health insurance expansion in Mexico increased healthcare utilization and diagnostic testing, but limited impacts on treatment (Parker et al 2018, Rivera-Hernandez 2016)
- Increased care utilization for those with subsidized insurance in Indonesia and Thailand (Erlangga et al 2019, Limwattananon et al 2015)



Determinants of disability in LMICs

- What health conditions and health behaviours contribute most to disability in LMICs?
- Cross sectional analysis in 11 countries found dementia to be a major factor, 2/3rds of disability associated with chronic diseases (Sousa et al 2009)
- Diabetes seems to be a major contributor in MICs studies in Mexico and South Africa found large shortfalls in LE and DFLE among those with diabetes (Andrade 2009, Payne et al. 2023)
 - » Especially pertinent given rising rates of diabetes and the poor state of diabetes care in many LMICs (Flood et al. 2021)



What else needs to be done?

- Measurement and comparability
- The role of policy in shaping later life health
- NCDs and NCD care as a determinant of population health in LMICs
- Life-course exposures at micro and macro level
- Translating findings to other contexts



Measurement and comparability

- Do measures developed in HICs serve the needs of LMICs?
- Subjective and objective measures of health may not align closely in LMICs (Capistrant et al. 2014, Payne et al. 2018)
- Accounting for physical performance leads OADR measures to increase in LMICs and decline in HICs (Kämpfen et al 2020)
- Simple vs complex measures—would we be better off using more data reduction techniques (IRT, factor analysis, etc) to more comprehensively measure health?
- Approaching "health" from multiple angles rather than each facet in isolation

Policy contexts

- Limited research tying micro-level wellbeing in later life to macro-level policy changes in LMICs
 - Literature on health/insurance policy changes focuses largely on utilization, not effectiveness
 - » Are we building systems that meet the complex needs of older adults?
- Drawing cross-national conclusions is extremely difficult given complexity of policies
- Need for something like the Social Policy Archive for SHARE (SPLASH) database for HRS sister studies in LMICs?

NCDs and NCD care

- NCDs are a major determinant of health in aging in LMICs, but are we asking the right questions to inform policy?
- Comparability of NCD questions and biomarkers in longitudinal studies in LMICs is pretty poor, especially on NCD care/risk factor control
- NCDs are currently, and increasingly, a major determinant of late-life well being in LMICs—so we need to be able to measure & compare how health systems are (or are not) keeping up with these challenges
 - And do this in a way that we can compare across contexts



Life-course exposures

- Focus on both contemporary changes (environmental/policy) and life-course history.
 - » E.g. changing food systems and diet in LMICs as a potential driver of adverse trends in disability via obesity?
 - Life-course processes in contexts where rapid development has occurred—expand life history surveys into more HRS sister studies in LMICs
 - » Allows for retroactive investigation of how policies impact long term health
- We need better theories of how social inequalities emerge and change alongside economic and political development



Translating findings on healthy aging in LMICs

- How can research on health in aging in LMICs inform our knowledge of other contexts?
 - Improving understanding of what relationships are contextual, and what relationships are causal
 - » E.g. social inequalities in health in many LMICs don't align with those in HICs
- We know that many established relationships in HICs don't translate to LMICs
 - » But still a ways to go to understand whether/how results from LMICs are generalizable across geographies, social contexts, and levels of development



THANK YOU

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References

Andrade, F. C. D. (2010). Measuring the impact of diabetes on life expectancy and disability-free life expectancy among older adults in Mexico. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 65B*(3), 381–389. https://doi.org/10.1093/geronb/gbp119

Beltrán-Sánchez, H., Palloni, A., Huangfu, Y., & McEniry, M. (2021). Population-level impact of adverse early life conditions on adult healthy life expectancy in low- and middle-income countries. *Population Studies*, *0*(0), 1–18. https://doi.org/10.1080/00324728.2021.1933149

Brinkmann, B., Davies, J. I., Witham, M. D., Harling, G., Bärnighausen, T., Bountogo, M., Siedner, M. J., Ouermi, L., Junghanns, J., Boubacar, C., Sié, A., Payne, C. F., & Kohler, I. V. (2021). Impairment in Activities of Daily Living and unmet need for care among older adults: A population-based study from Burkina Faso. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*. https://doi.org/10.1093/geronb/gbab041

Capistrant, B. D., Glymour, M. M., & Berkman, L. F. (2014). Assessing mobility difficulties for cross-national comparisons: Results from the World Health Organization Study on Global AGEing and Adult Health. *Journal of the American Geriatrics Society*, 62(2), 329–335. https://doi.org/10.1111/jgs.12633

Deaton, A. (2006). *Global Patterns of Income and Health: Facts, Interpretations, and Policies* (Working Paper 12735). National Bureau of Economic Research. https://doi.org/10.3386/w12735 Erlangga, D., Ali, S., & Bloor, K. (2019). The impact of public health insurance on healthcare utilisation in Indonesia: Evidence from panel data. *International Journal of Public Health, 64*(4), 603–613. https://doi.org/10.1007/s00038-019-01215-2

Flood, D., Seiglie, J. A., Dunn, M., Tschida, S., Theilmann, M., Marcus, M. E., Brian, G., Norov, B., Mayige, M. T., Gurung, M. S., Aryal, K. K., Labadarios, D., Dorobantu, M., Silver, B. K., Bovet, P., Jorgensen, J. M. A., Guwatudde, D., Houehanou, C., Andall-Brereton, G., ... Manne-Goehler, J. (2021). The state of diabetes treatment coverage in 55 low-income and middle-income countries: A crosssectional study of nationally representative, individual-level data in 680 102 adults. *The Lancet Healthy Longevity*, *2*(6), e340–e351. https://doi.org/10.1016/S2666-7568(21)00089-1 Harling, G., Payne, C. F., Davies, J. I., Gomez-Olive, F. X., Kahn, K., Manderson, L., Mateen, F. J., Tollman, S. M., & Witham, M. D. (2019). Impairment in Activities of Daily Living, Care Receipt, and Unmet Needs in a Middle-Aged and Older Rural South African Population: Findings From the HAALSI Study. *Journal of Aging and Health*, 0898264318821220. https://doi.org/10.1177/0898264318821220 Kämpfen, F., Kohler, I. V., Bountogo, M., Mwera, J., Kohler, H.-P., & Maurer, J. (2020). Using grip strength to compute physical health-adjusted old age dependency ratios. *SSM - Population Health*, *11*, 100579. https://doi.org/10.1016/j.ssmph.2020.100579

Lagomarsino, G., Garabrant, A., Adyas, A., Muga, R., & Otoo, N. (2012). Moving towards universal health coverage: Health insurance reforms in nine developing countries in Africa and Asia. *The Lancet*, 380(9845), 933–943. https://doi.org/10.1016/S0140-6736(12)61147-7

Li, J., Lin, S., Yan, X., Wei, Y., Yang, F., & Pei, L. (2023). Cross-country comparison of income-related inequality in physical functional disability among middle-aged and older adults: Evidence from 33 countries. *Journal of Global Health*, *13*, 04053. https://doi.org/10.7189/jogh.13.04053

Limwattananon, S., Neelsen, S., O'Donnell, O., Prakongsai, P., Tangcharoensathien, V., van Doorslaer, E., & Vongmongkol, V. (2015). Universal coverage with supply-side reform: The impact on medical expenditure risk and utilization in Thailand. Journal of Public Economics, 121, 79–94. https://doi.org/10.1016/j.jpubeco.2014.11.012

Palloni, A., & Beltrán-Sánchez, H. (2017). Discrete Barker Frailty and Warped Mortality Dynamics at Older Ages. Demography, 54(2), 655–671. https://doi.org/10.1007/s13524-017-0548-4



References

Parker, S. W., Saenz, J., & Wong, R. (2018). Health Insurance and the Aging: Evidence From the Seguro Popular Program in Mexico. *Demography*, 55(1), 361–386. https://doi.org/10.1007/s13524-017-0645-4

Payne, C. F. (2018). Aging in the Americas: Disability-free Life Expectancy Among Adults Aged 65 and Older in the United States, Costa Rica, Mexico, and Puerto Rico. *The Journals of Gerontology: Series B*, 73(2), 337–348. https://doi.org/10.1093/geronb/gbv076

Payne, C. F. (2022). Expansion, Compression, Neither, Both? Divergent Patterns in Healthy, Disability-Free, and Morbidity-Free Life Expectancy Across U.S. Birth Cohorts, 1998–2016. *Demography*, 9938662. https://doi.org/10.1215/00703370-9938662

Payne, C. F., Gómez-Olivé, F. X., Kahn, K., & Berkman, L. (2017). Physical Function in an Aging Population in Rural South Africa: Findings From HAALSI and Cross-National Comparisons With HRS Sister Studies. *The Journals of Gerontology: Series B.* https://doi.org/10.1093/geronb/gbx030

Payne, C. F., Liwin, L. K., Wade, A. N., Houle, B., Du Toit, J. D., Flood, D., & Manne-Goehler, J. (2023). Impact of diabetes on longevity and disability-free life expectancy among older South African adults: A prospective longitudinal analysis. *Diabetes Research and Clinical Practice*, 197, 110577. https://doi.org/10.1016/j.diabres.2023.110577

Payne, C. F., & Wong, R. (2019). Expansion of disability across successive Mexican birth cohorts: A longitudinal modelling analysis of birth cohorts born 10 years apart. *Journal of Epidemiology and Community Health*, 73(10), 900–905. https://doi.org/10.1136/jech-2019-212245

Payne, C. F., & Xu, K. Q. (2022). Life Course Socioeconomic Status and Healthy Longevity in China. Demography, 59(2), 629–652. https://doi.org/10.1215/00703370-9830687

Prina, A. M., Wu, Y.-T., Kralj, C., Acosta, D., Acosta, I., Guerra, M., Huang, Y., Jotheeswaran, A. T., Jimenez-Velazquez, I. Z., Liu, Z., Llibre Rodriguez, J. J., Salas, A., Sosa, A. L., & Prince, M. (2020). Dependence- and Disability-Free Life Expectancy Across Eight Low- and Middle-Income Countries: A 10/66 Study. *Journal of Aging and Health*, *32*(5–6), 401–409. https://doi.org/10.1177/0898264319825767

Rivera-Hernandez, M., Rahman, M., Mor, V., & Galarraga, O. (2016). The Impact of Social Health Insurance on Diabetes and Hypertension Process Indicators among Older Adults in Mexico. *Health Services Research*, *51*(4), 1323–1346. https://doi.org/10.1111/1475-6773.12404

Rosero-Bixby, L., & Dow, W. H. (2016). Exploring why Costa Rica outperforms the United States in life expectancy: A tale of two inequality gradients. *Proceedings of the National Academy of Sciences*, 113(5), 1130–1137. https://doi.org/10.1073/pnas.1521917112

Sousa, R. M., Ferri, C. P., Acosta, D., Albanese, E., Guerra, M., Huang, Y., Jacob, K. S., Jotheeswaran, A. T., Rodriguez, J. J. L., Pichardo, G. R., Rodriguez, M. C., Salas, A., Sosa, A. L., Williams, J., Zuniga, T., & Prince, M. (2009). Contribution of chronic diseases to disability in elderly people in countries with low and middle incomes: A 10/66 Dementia Research Group population-based survey. *Lancet* (*London, England*), 374(9704), 1821–1830. https://doi.org/10.1016/S0140-6736(09)61829-8

Sudharsanan, N., Zhang, Y., Payne, C. F., Dow, W., & Crimmins, E. (2020). Education and adult mortality in middle-income countries: Surprising gradients in six nationally-representative longitudinal surveys. SSM - Population Health, 12, 100649. https://doi.org/10.1016/j.ssmph.2020.100649

Weber, D., & Scherbov, S. (2020). Prospects of activity limitations among older adults in 23 low and middle income countries. *Scientific Reports*, *10*(1), Article 1. https://doi.org/10.1038/s41598-020-67166-4

Zhu, H. (2015). Unmet needs in long-term care and their associated factors among the oldest old in China. BMC Geriatrics, 15(1), 46. https://doi.org/10.1186/s12877-015-0045-9