The global burden of sexual violence

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Agenda

1. Premise of the GBD Study
2. Measuring global burden of sexual violence
3. Results
4. Future directions
Global Burden of Disease Study

• Comprehensive assessment of health loss globally

• A burden of disease study…
  o Captures all forms of health loss (death, sickness, injury)
  o Covers all potential diseases, injuries, impairments, and risk factors
  o Facilitates comparisons between different types of health loss

• Creating comprehensive and comparable estimates (rather than focusing on segment of population or a specific disease/outcome)

• Sexual violence is one of the 350 causes of health loss that are estimated in GBD
GBD is a global public good
GBD is a global effort and is rapidly growing

3,824 collaborators
143 countries
2 territories
Study goal

Estimate the yearly prevalence of sexual violence, meaning the proportion of population that experienced at least one episode of sexual violence in the past year.
Case definition

We defined sexual violence as any sexual assault including penetrative sexual violence (rape) and non-penetrative sexual violence (other forms of unwanted sexual touching).
Data

• We conducted a systematic review for data sources in PubMed and in the Global Health Data Exchange (GHDx, ghdx.healthdata.org).

• Out of 195 countries in the GBD 2017 study, we identified 93 countries which had data that could be used for our case definition with 263 total site-years of data.

• Among these 93 countries, 19 out of 21 global regions had data.

• The majority of available data used in the subsequent modeling strategy were from health and demographic surveys such as Demographic and Health Surveys (DHS) and Reproductive Health Surveys (RHS).
Modeling and imputation

• We used DisMod-MR 2.1, which is a Bayesian meta-regression tool for statistical epidemiology, to model the yearly prevalence of sexual violence.

• DisMod adjusted for types of survey questions and study design to account for potential biases in each source.

• Alcohol consumption was used as a country-level covariate to help inform geographical patterns.
DisMod MR-2.1

• DisMod is a Bayesian meta-regression modeling tool
• Fitting models steps through geographical cascade
  o First fit all global data to form super-region prior
  o Fit super-region data to form regional prior
  o Fit regional data to form country-level prior
  o Fit country data to form subnational prior
• Analytical steps conducted across 1,000 draws to calculate uncertainty for final model results (“posterior”)
Model fits

• Example, global, females, 2010
Model fits

- Example, United States, females, 2010
Model fits

• Example, Virginia, females, 2010
Global age pattern of prevalence, females, 2017
Prevalence by region, females, 2017
Prevalence by region, females, 1990 to 2017
Further results

• Sexual violence estimates by age, sex, year, location are all available online

  https://vizhub.healthdata.org/gbd-compare/

• Model fits and data can be reviewed online

  https://vizhub.healthdata.org/epi
Future directions

• Why the high estimates in East Asia?
  o High estimates in China are driven by women’s health survey where respondents were interviewed in private, confidential setting
  o Not all survey modules specify confidentiality
  o Further investigation is needed to improve future data collection

• Measuring long-term disability
  o Sexual violence associated with increased risk of major depression, anxiety, self-harm, and substance use disorders
  o Incorporating long-term follow-up studies that measure relative risk can be used to estimate burden of these conditions attributable to sexual violence
Get involved

• The GBD Study welcomes new collaborators to join our research network to contribute to manuscripts, improving research methods, and adding data

http://www.healthdata.org/gbd/call-for-collaborators
Thank you

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