Measuring Perceived Prevalence of Defecation Behavior in Bihar, India

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Background

People often form perceptions about how prevalent a behavior is in a social group. However, these perceptions can be inaccurate and biased(**Baer, Stacy, & Larimer, 1991**). While persistent undesirable practices in lower-income countries have drawn global attention, evidence regarding people's perception of how prevalent these practices are is scarce. Among those harmful practices, open defecation in India remains a significant public health concern, where it perpetuates the vicious cycle of disease and poverty(**United Nations Children's Fund (UNICEF) and World Health Organization, 2019**). In this study, we focus on measuring the perceived prevalence of open defecation among respondents in Bihar, India. We examined the bias in perceived prevalence, which is defined as a pattern of deviation from the actual prevalence of open defecation.

Data collection

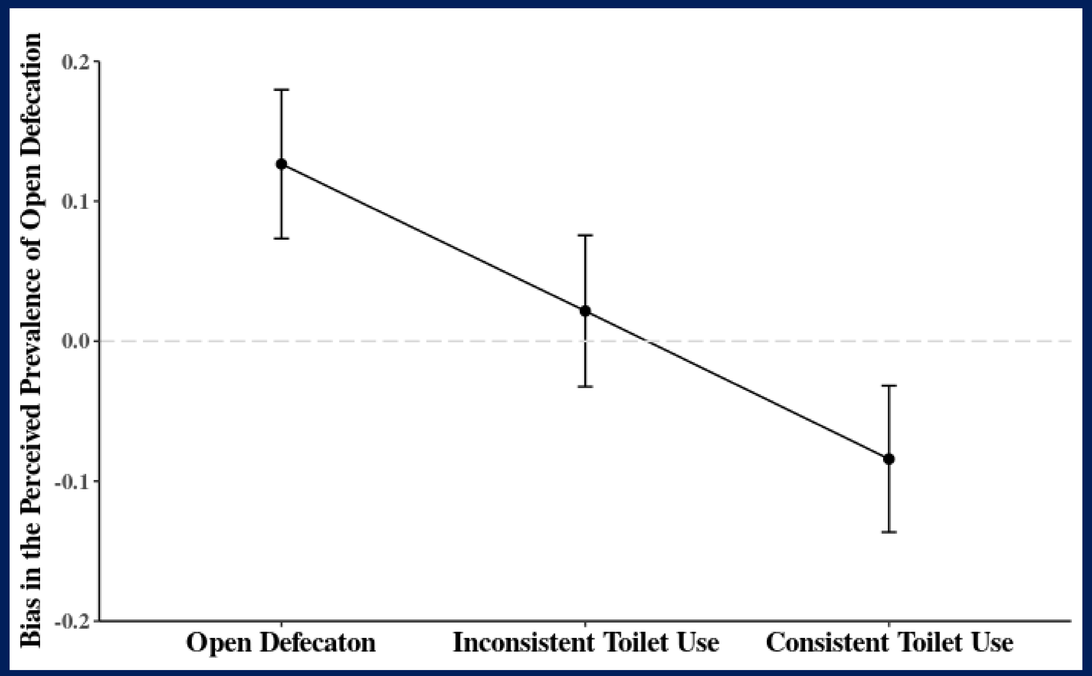
We drew data for our analyses from the Longitudinal Evaluation of Networks and Norms Study (LENNS) carried out in 2017 to 2018 in Bihar, India. Trained fieldworkers administered a cross-sectional survey in Hindi among respondents aged 16 to 65 years in thirty sampling units in Bihar, India (**Bicchieri et al., 2018**). The study sample (n=2413, female=53%) was drawn from three types of geographic regions, rural communities (n=790), peri-urban communities (n=811), and urban slum communities (n=812). We qualitatively tested the framing of survey items to assess numeric comprehension among similar respondents.

Measurement

- `Community level open defecation rate` We first asked respondents "Where did you defecate the last time you had to? Defecate in the open or use a toilet?", then calculated the proportion of individual answered defecate in the open for each sampled community
- `Individual-level perceived prevalence of open defecation` we asked respondents "Out of ten members in your community, how many do you think defecate in the open the last time they needed to defecate?" The answers ranged from 0 to 10 where 0 represented the lowest prevalence and 10 represented the highest prevalence.
- `Individual-level bias in the perceived prevalence of open defecation` We linearly transformed the prevalence perception measure and calculated the discrepancy between the perceived and actual prevalence of open defecation. Positive values indicated overestimations and negative values indicated underestimations.
- `Individual-level toilet use consistency` We asked respondents "In the past week, how often have you used a latrine to defecate? Never, occasionally, frequently, or every time?" We categorized the answer as open defecation, inconsistent toilet use, and consistent toilet use.

False consensus bias of perceived prevalence of defecation behavior in India:

those who defecate in the open think most others do too.



Analysis

- We used a multivariable regression model to evaluate the association between individual-level bias and their reported defecation behavior, adjusting for gender, age, education, socio-religion and socio-economic status, and community of residence.

$$Y(bias) = \beta(behavior) + \beta(gender) + \beta(age) + \beta(education)$$
$$\beta(caste) + \beta(religion) + \beta(SES) + \beta(community)$$

Results

- `Accuracy`: respondents' perceived prevalence of open defecation was deviated from the actual prevalence of open defecation by 17% on average (SD=0.15).
- `Bias`: Those who defecated in the open in the week prior to survey administration perceived that more people defecated in the open than was reported within their communities, those who use a toilet perceived that fewer people defecated in the open than was reported within their community.

Discussion

- Our findings suggest a false consensus bias in which people tend to perceive their own defecation practice is more common in their communities (**Ross, Greene, & House, 1977**).
- Scholars, policy-makers, and program implementers who seek to correct misperceptions about open defecation prevalence should consider measuring the bias to avoid unintended consequences such as the boomerang effects (e.g., those who occasionally a toilet stop using it after knowing that toilet use is less prevalence than they thought)(**Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007**).
- We suggest identifying individuals who are more likely to overestimate the prevalence of undesirable behaviors and correct misperceptions through the use of personalized feedbacks (e.g., household counseling, mobile phone reminders)(**Neighbors et al., 2019**).

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