

## Depends who's asking: interviewer effect on abortion data in sub-Saharan African Demographic and Health Surveys (DHS)

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### Extended abstract:

#### Background

Relatively little work examines the impact of the interviewer on nationally-representative survey data in LMICs, and none deals with abortion-specific survey data. Weinreb and Sana (2009) used the 1998 Kenya DHS to analyse the effect of the interviewer's translation of the questionnaire and included random effects for the interviewer (level 2) and district (level 3). They show a clear interviewer effect in clustering on answers related to HIV and pregnancies (Weinreb and Sana 2009). A study of a US large-scale surveys showed that respondents questioned by more experienced interviewers were more likely to agree or strongly agree with attitude questions, regardless of the question (Olson and Bilgen 2011). Various other studies showed a similar interviewer effect both in HICs and LIMCs (Couper 1992, Becker, Feyisetan et al. 1995, Bignami-Van Assche, Reniers et al. 2003, Flores-Macias 2008, Davis, Couper et al. 2010, Randall, Coast et al. 2013). Bignami-Van Assche et al. (2003) conclude for example that questionnaire translation is less important than "the selection, training, and supervision of interviewers", underlining the importance of this human resource for surveys (Bignami-Van Assche, Reniers et al. 2003).

Sensitive topics in particular such as abortion might be expected to be particularly affected by interviewer effects. To date, however, this has not been tested on DHS abortion questions. Furthermore most studies have not accounted for other factors in the multilevel approach such as community factors which, although not nested, are bound to be interrelated with availability of abortion-related services as well as local attitudes which might indirectly influence interviewees' attitude on the response.

The aim of this study is to assess the validity of the abortion-specific questions and to test the impact of the interviewer on the probability of reporting having ever had an abortion. Here, we present preliminary analyses for one country – Malawi – as a precursor to running analyses for 16 sub-Saharan African countries with appropriate DHS questions on abortion.

In Malawi, abortion is only legally permitted to save a woman's life (Malawi Government 1930). The morbidity and mortality burden of unsafe abortion remains high. The 2015 Malawi Demographic and Health Survey (DHS) included a set of induced abortion-specific questions, one of the most complete set of abortion questions asked in a DHS in particular for Malawi and to date it has not been explored in depth. The long set of questions should allow the woman to ease into the question of whether she has ever had an abortion making the quality of the response theoretically higher. Previous DHS evidence on abortion has often been disregarded due to low quality and insufficient data leaving a long term gap in the availability of information on abortion in LMICs (Polis, Mhango et al. 2017). The low quality has been attributed to the legally restricted nature of abortion in many settings, combined with high levels of abortion-related stigma, leading to low levels of disclosure about ever having an abortion. What has not been investigated is the potential role of the

survey interviewer – reflecting their skill in eliciting sensitive information, their own perceptions and attitudes towards abortion, and whether they are perceived as trustworthy by the respondent as a virtue of their personal characteristics - in the quality of abortion survey information reported.

## **Methods**

Using the Malawi 2015 DHS survey as the first application of our hypothesis we have applied multilevel multivariate logistic regression to test the impact of the interviewer on women's reporting ever having had an induced abortion. There are 24,562 women of reproductive age (15-49) in the sample, of which 339 (1.38%) reported ever having had an abortion. These data were collected by 149 interviewers, spread across 850 sampling clusters and grouped into 37 field teams. Each team was responsible for a certain number of clusters. There were 2-5 interviewers working within each sampling cluster (median of 4), and each interviewer worked with 2-28 sampling clusters in total (median: 22 clusters).

The multilevel approach had cross-classified random intercepts at the level of the sampling cluster and the level of the interviewer. This allows us to consider simultaneously the amount of variance in the outcome (ever had an abortion) associated with different interviewers, and the variance associated with different communities, while controlling for relevant individual-level demographic characteristics. Cross-classified random effects are used because interviewers and clusters are not nested within one another.

This allowed us to check whether there was any clustering of the responses around interviewers while at the same time controlling for community factors. Community factors could be culture, religion, stigma and perceptions of how a woman having an abortion might be perceived. But also it is an indication of where services whether safe or unsafe, might be available or where knowledge of where to access services might be more concentrated.

We first included standard demographic characteristics in a logistic regression of reporting ever having an abortion: age, marital status, rural-urban residence, geographic region, education and wealth. Rural-urban residence and education were not statistically significant, so these variables were excluded from the model. A likelihood ratio test comparing the full random effects model with all six demographic characteristics compared to a model with just four indicated that the more concise model was a better fit for the data.

## **Results: Malawi**

Between 15 and 45 years, an extra year of age increases the odds of reporting an abortion by nearly 3%, controlling for other determinants. Women who were living with a partner but were not married had 4 times the odds of reporting having had an abortion compared to women who had never been in union, keeping other characteristics constant. All other marital categories had odds more than 3 times higher than women who had never been in union. Women in Central and Southern regions had around 2.5 higher odds of reporting an abortion compared to women in the Northern region, controlling for other determinants (Table 1).

The odds of reporting an abortion were also structured by wealth, whereby more wealthy women had higher odds of reporting having had an abortion (the richest had more

than 1.5 times higher odds compared to the poorest), and all wealth quintiles had much higher odds of reporting an abortion compared to the poorest quintile.

**Table 1. Multilevel logistic model, Malawi, 2015-16**

<b>Variables</b>	<b>Coefficients</b>
<b>Age</b>	0.026***
<b>Region of residence (ref=Northern)</b>	
Central region	0.968**
Southern region	0.837**
<b>Wealth quintile (ref=poorest)</b>	
Poorer	0.352*
Average	0.388*
Rich	0.391*
Richest	0.461**
<b>Marital status (ref=never in a union)</b>	
Married	1.212***
Living with partner	1.368***
Widowed	1.309***
Divorced	1.321***
No longer living together/separated	1.234***
Interviewer variance	28%
Community variance	5%

### Results – interviewer effects

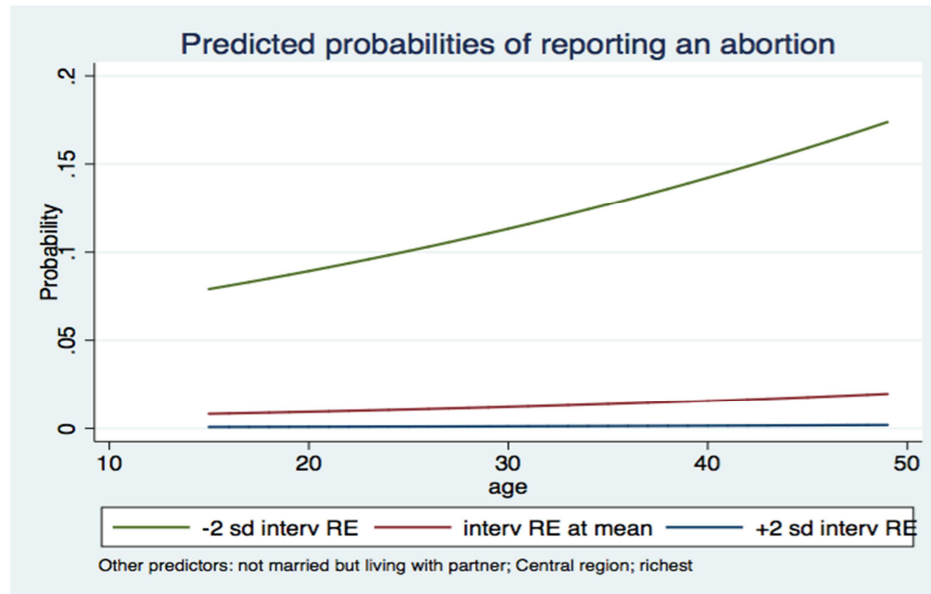
The variance of the interviewer effects was very large: 1.37, much larger than the variance for the sampling clusters, 0.28. The interviewers, controlling for women’s own demographic characteristics, accounted for nearly 28% of the variance in the odds of reporting an abortion. In contrast, the sampling cluster where women were interviewed (their community), accounted for only 5% of the variance.

The graph below (figure 1) shows predicted probabilities of women in the highest wealth quintile, living in union but unmarried, and living in Central region (i.e. the categories with the highest likelihood of reporting an abortion), reporting an abortion by age, with the different lines representing interviewers with different levels of ability in eliciting abortion reports.

The distribution of random effects is centred by assumption at mean zero. With an average interviewer (red line), the probability of reporting an abortion increases with age but remains very low (0.8% - 1.9%). Among interviewers who elicited the fewest positive responses (2 standard deviations below the mean), the likelihood of reporting an abortion was low across all ages, and did not exceed 0.2%. Among interviewers who reported a woman having an abortion (2 standard deviations above the mean), the predicted

probabilities of reporting ever had an abortion were much more sensitive to age and ranged between 8% and 17%.

**Figure 1 Predicted probabilities of reporting an abortion by interviewer effect. Malawi, 2015 DHS**



### Individual interviewers or field teams?

While we have no information on the characteristics of individual interviewers, we do know they worked in 37 field teams. This allows us to examine whether field managers had any effect on the likelihood of reporting an abortion, or whether there were any peer effects between interviewers who worked in teams.

*“Data collection was completed by 37 field teams, with each including one team leader, one field editor, three female interviewers, one male interviewer, two biomarker technicians, and one driver.” P.6 DHS*

Using a model with nested random intercepts at the level of the sampling cluster (level 2) and the field team (level 3), shows there was much less variation between field teams compared to between individual interviewers. The variance of the field team random intercepts is 0.39, accounting for just 10% of the total variance in reporting. This means that the majority of the effect is at interviewer level rather than at team (i.e. training) level.

### Discussion and preliminary conclusions

The results of this preliminary case study of Malawi show a clear interviewer effect on responses to abortion questions. This effect on data has not been previously identified, and if ignored could bias the results of analyses of responses to abortions questions in household surveys. In our subsequent analyses we will also include 16 more DHS studies collected in Sub-Saharan African countries which included comparable questions on abortion. The analysis will differentiate by level of restrictions in the abortion legislation and by type of question. This study calls for more attentive analysis of abortion data, including controls for interviewers’ effects. This paper highlights the need for a wider awareness of the impact of interviewers on data outcomes, in particular - but not only - when questions are on sensitive and/or stigmatised topics.

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