Authors' reply

We wholeheartedly agree with Karen Ballard and colleagues that self-reports of vaginal fistula symptoms do not have the accuracy of the gold standard of pelvic examinations. For this reason, we corrected our prevalence estimates for the imperfect sensitivity and specificity of the survey questionnaires. As noted in our paper,[1] the difference between the uncorrected and corrected estimates suggests that, indeed, an important proportion of self-reports could be false positives due to confusion with incontinence symptoms. Ballard and colleagues used information about the age and parity of women reporting fistula symptoms to conclude that there was "an obvious error" in our data. It was not possible to correct these characteristics for misclassification using the Bayesian latent class model employed to obtain the prevalence estimates. As such, it would be misguided to judge the validity of our prevalence estimates on the basis of these unadjusted data. Besides, these characteristics are not entirely unexpected since they refer to lifetime prevalence and not incidence.

Tunçalp and colleagues[2] assessed the validity of the Demographic and Health Survey fistula module among a subpopulation of Nigerian women with perceived fistula-like symptoms. Comparing self-reports to the gold standard of medical examinations among women reporting symptoms, this study estimated the sensitivity and specificity of the module at 92% and 83%, respectively. This finding should reassure our critics that we are in fact not merely estimating "urinary incontinence symptoms", since the inclusion of women without perceived fistula-like symptoms would have considerably improved specificity.

As for the Ethiopian findings, we cannot comment on them based on the scarce information provided by Ballard and colleagues. We will point out, however, that national-level estimates of prevalence are expected to diverge from regional-level or district-level estimates depending on levels of within-country heterogeneity and the studies' design. In addition, the Ethiopian survey on which our inferences are based was conducted in 2005. It would have been surprising if prevalence had not decreased after close to a decade of maternal health improvements in sub-Saharan Africa.

The number of studies of vaginal fistula prevalence that used diagnostic confirmation in sub-Saharan Africa is extremely small, with only two published community-based surveys,[3] and this situation is unlikely to change in the short term. Self-reports of vaginal fistula symptoms from nationally representative surveys can provide better representation and have been conducted in multiple countries.[4] Adjusting for the imperfect sensitivity and specificity, as we have done in our analyses, directly addressed the concern raised by Ballard and colleagues and provided similar results to those of a meta-analysis that only considered studies with diagnostic confirmation for vaginal fistula.[3]

We declare no competing interests.

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1 Maheu-Giroux M, Filippi V, Samadoulougou S, et al. Prevalence of symptoms of vaginal fistula in 19 sub-Saharan Africa countries: a meta-analysis of national household survey data. *Lancet Glob Health* 2015; **3:** e271–78.

2 Tunçalp Ö, Isah A, Landry E, Stanton CK. Community-based screening for obstetric fistula in Nigeria: a novel approach. *BMC Pregnancy Childbirth* 2014; **14:** 44.

3 Adler AJ, Ronsmans C, Calvert C, Filippi V. Estimating the prevalence of obstetric fistula: a systematic review and meta-analysis. *BMC Pregnancy Childbirth* 2013; **13:** 246.

4 Tunçalp Ö, Tripathi V, Landry E, Stanton CK, Ahmed S. Measuring the incidence and prevalence of obstetric fistula: approaches, needs and recommendations. *Bull World Health Organ* 2015; **93:** 60–62.