

An Assessment of the Sealed Envelope Method to Measure Reports of Sensitive Behaviours among Women and Men in Nigeria and Zambia

Ann Biddlecom¹, Akinrinola Bankole², Joshua Odun Akinyemi³, Kumbutso Dzekedzeke⁴, Allison Grossman², Isaac F. Adewole³ and Adesina Oladokun³

¹Population Division, United Nations, New York, NY United States (email: biddlecom@un.org) ²Guttmacher Institute, New York, NY United States ³College of Medicine, University of Ibadan, Ibadan, Nigeria and ⁴Independent consultant, Lusaka, Zambia. Funding for this research was provided by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) (R01 HD 058359). The views expressed herein are those of the authors and do not necessarily reflect the views of the United Nations, the Guttmacher Institute, the University of Ibadan or NICHD.

Abstract

Accurate self-reports of sensitive behaviours are critical for measuring levels and trends in reproductive health, evaluating interventions and implementing effective policies and programmes. This study draws on household-based survey data collected in 2009-2010 in Nigeria and Zambia to compare reproductive-age women's and men's reports of induced abortion, multiple sex partners and perceptions of HIV status from questions in a face-to-face (FTF) interview versus a sealed envelope method (SEM) that was administered at the end of the survey interview. The levels and consistency of self-reports across the two approaches, associated respondent characteristics and patterns by sex and country are examined. Preliminary results show small increases in reports of abortion, multiple sex partners and being HIV-positive in Nigeria, but not in Zambia, when using the more confidential SEM approach compared to FTF. The results raise questions about the suitability and implementation of the SEM method for reducing bias in self-reported sensitive behaviours.

Introduction

Accurate self-reports of sensitive behaviours are critical for measuring levels and trends in reproductive health, evaluating interventions and implementing effective policies and programmes. This analysis examines the degree to which women and men report sensitive and often socially-stigmatized reproductive health behaviours in face-to-face interviews compared with a low-technology, confidential sealed envelope method. The consistency of responses in the two formats and associations with socio-demographic characteristics of respondents are also examined.

Other confidential methods of survey data collection have been used and tested, although to a limited extent in developing countries, such as the random response technique and audio-computer assisted interviewing (A-CASI) (Langhaug et al. 2010; Mensch et al. 2008). The secret envelope approach has also been used (Juarez et al. 2010), though also in the format of a ballot box instead of an envelope (Gregson et al. 2002), and offers two potential benefits over the other two methods: data from the approach can be linked to information about respondents (as compared to the random response technique) and it requires little technology, just paper and pen (as compared to A-CASI). In other studies questions via the SEM approach have been self-administered such that respondents are required to have basic literacy to be able to read the questions and write their responses. The SEM approach examined in this study did not depend on respondents being literate, which was especially important in the study settings when dealing with older adult women and men.

The study was fielded in two countries in sub-Saharan Africa, where HIV prevalence and the unsafe abortion rate are the highest in the world (UNAIDS 2010; Shah and Ahman 2010). An estimated five per cent of adults aged 15 to 49 years in 2009 were living with HIV in sub-Saharan Africa, and the region included about 68 per cent of all people in the world living with HIV (UNAIDS 2010). In 2008 an estimated 31 unsafe abortions per 1000 women aged 15 to 44 years occurred in sub-Saharan Africa compared to 16 unsafe abortions per 1000 women in all less developed regions (Shah and Ahman 2010). Thus, the region is a relevant area to test a confidential method to gather data on sexual and reproductive-related behaviours.

This paper tests the secret envelope method in Nigeria and Zambia because these two countries represent contrasting cases in HIV prevalence, fertility and the legal conditions of abortion. In Nigeria, HIV prevalence was 3.6 per cent in 2009 among adults 15 to 49 years of age (UNAIDS 2010), the total fertility rate was 5.7 children per woman and the wanted fertility rate was 5.3 children per woman (National Population Commission and ICF Macro 2009) and abortion is very restricted legally, but commonly available from a range of providers. In Zambia, HIV prevalence among adults was much higher in 2009 at 13.5 per cent (UNAIDS 2010), the total fertility rate was 6.2 children per woman and the wanted fertility rate was much lower at 4.6 children per woman (Central Statistical Office 2009) and abortion is legally permitted under moderately broad grounds though the law is not widely implemented.

Data and methods

Data for this study come from 2009-2010 household-based surveys conducted in Nigeria and Zambia that were part of a larger study examining women's and men's fertility decision-making in the context of HIV. The surveys were conducted in three provinces in Zambia (Lusaka, Northern and Southern) and four states in Nigeria (Kaduna, Benue, Lagos and Enugu) to ensure that data were gathered from different ethnic groups and from regions with varying HIV prevalence and fertility levels. The study protocols were approved by the Institutional Review Board (IRB) of the Guttmacher Institute, the IRB of the

University of Ibadan/University College Hospital in Nigeria and the University of Zambia Biomedical Research Ethics Committee.

The Zambia survey sample was based on the sample frame from the 2007 Zambia Demographic and Health Survey (DHS). The number of households selected was determined by the ratio of households to completed interviews of the population 15 years and older observed in the 2007 DHS. In order to yield the target sample size, 60 Enumeration Areas were selected by equal probability systematic sampling, including 38 rural ones and 22 urban ones. The total sample was allocated to the provinces proportional to its projected population of 2009 distributed by urban and rural areas, which was obtained from the Central Statistical Office.

In Nigeria, one rural and one urban Local Government Area (LGA) were randomly selected from each of the four selected states. The target sample size was proportionately allocated to the LGAs based on the 2006 Nigeria population census figures. The number of Enumeration Areas (EAs) sampled in each LGA was based on the sample allocated to the LGA. Ten and 20 EAs were then systematically selected from the rural and urban LGAs respectively. In the selected EA, 10 per cent of households were systematically selected for interview.

All eligible adults (women aged 18-49 and men aged 18-59) in selected households were interviewed by trained interviewers from the same region or state as the respondents. Over 2,300 reproductive-age adults were interviewed in each survey. Data collection lasted from October 2009 to February 2010 in Zambia and from November 2009 to May 2010 in Nigeria.

The sealed envelope module was to be administered to every survey respondent in the following manner. Following the individual face-to-face interview, a sealed envelope paper was given to each survey respondent. The interviewer asked the respondent five questions that could be answered “yes” or “no” about abortion, having multiple sex partners and HIV status. This paper is based on information from three of the five questions. Appendix 1 shows the secret envelope module and questions used in the survey (for the English version of the women’s questionnaire). The first question examined is about whether the female respondent ever had a pregnancy that she ended for any reason (or, for men, if a female partner had ever been pregnant and he, his partner or someone else ended it for any reason). The second question used is about having two or more sex partners (the question phrasing was different depending on the respondent’s marital status). The last question was whether the respondent thought she or he had the AIDS virus.

Respondents were instructed to circle a picture that represented their answer (a picture of a sun for “yes” or an X for “no”) and to fold the paper and put it in an envelope, seal it and place it inside a larger envelope for the interviewer to take. The interviewer turned his or her back while reading out each question and until the respondent finished sealing the envelope so that the respondent’s actions were not observed.

The data were analyzed using Stata 11.0. Using descriptive analytical techniques, we examine, at the aggregate level, the difference between the proportions of all women and men of reproductive age who reported having experienced each of the three sensitive reproductive health outcomes in the face-to-face interview and the sealed envelope method, and then for the sub-sets of survey respondents who were filtered through in the FTF interview up to the point of the relevant question (ever having had an abortion, having multiple sex partners or living with HIV). We also explore, at the individual level, the consistency of reporting across both approaches, by determining whether and the extent to which reporting is higher in one method than the other. We use the multiple regression to examine the correlates of consistent reporting of each of the three sensitive outcomes.

Preliminary results

Table 1 shows the levels of each reported behaviour by interview format (face-to-face and secret envelope method) by sex and country.

Table 2 shows, for the sub-set of respondents who were filtered through to the relevant question in the face-to-face interview, the differences in levels of reporting each behavior by interview format, sex and country.

References

Central Statistical Office, Ministry of Health, Tropical Diseases Research Centre, University of Zambia, Macro International Inc. *Zambia Demographic and Health Survey 2007*. 2009. Calverton, MD, USA, CSO and Macro International Inc.

Gregson S, Zhuwau T, Ndlovu J and Nyamukapa C. 2002. Methods to reduce social desirability bias in sex surveys in low-development settings: Experience in Zimbabwe. *Sexually Transmitted Diseases* 29(10): 568-575.

Juarez F, Cabigon J and Singh S. 2010. "The sealed envelope method of estimating induced abortion: How much of an improvement?" Pp.107-124 in Singh S, Remez L and Tartaglione A, eds., *Methodologies for Estimating Abortion Incidence and Abortion-Related Morbidity: A Review*, New York: Guttmacher Institute; and Paris: International Union for the Scientific Study of Population.

Langhaug LF, Sherr L and Cowan FM. 2010. How to improve the validity of sexual behaviour reporting: Systematic review of questionnaire delivery modes in developing countries. *Tropical Medicine and International Health* 15(3): 362-381.

Mensch BS, Hewett PC, Gregory R and Helleringer S. 2008. Sexual behavior and STI/HIV status among adolescents in rural Malawi: an evaluation of the effect of interview mode on reporting. *Stud Fam Plann* 39:321-334.

National Population Commission (NPC) [Nigeria] and ICF Macro. 2009. *Nigeria Demographic and Health Survey 2008*. Abuja, Nigeria: National Population Commission and ICF Macro.

Shah I and Ahman E. 2010. Unsafe abortion in 2008: Global and regional levels and trends. *Reproductive Health Matters* 18(36):90–101.

Joint United Nations Programme on HIV/AIDS (UNAIDS). 2010. *Global report: UNAIDS report on the global AIDS epidemic 2010*. Geneva: UNAIDS.













Table 1. Percentage of women aged 18-49 and men aged 18-59 reporting an abortion, multiple sex partners and perceived HIV status, according to country, sex and interview format (face-to-face (FTF) and secret envelope method (SEM))

Percentage	Nigeria				Zambia			
	Female		Male		Female		Male	
	FTF	SEM	FTF	SEM	FTF	SEM	FTF	SEM
Ever ended a (partner's) pregnancy	4.6	5.9	5.7	8.2	3.6	1.4	1.9	2.6
Nonresponse	1.9	3.9	2.7	2.6	1.2	0.8	0.5	1.0
In the last 12 months had sex with two or more people	2.5	4.3	11.4	11.5	1.9	2.2	14.8	8.3
Nonresponse	1.9	3.9	36.8	2.6	1.3	0.8	0.7	1.0
Have the AIDS virus	0.8	1.1	0.7	1.3	5.2	2.9	3.0	2.0
Nonresponse	11.4	3.9	10.6	2.8	1.9	0.9	3.7	0.9
N (unweighted)	1,256		1,198		1,282		1,123	

Table 2. Differences by interview format in reports of abortion, multiple sex partners and perceived HIV status, among respondents eligible to report the information in the face-to-face (FTF) interview, according to country and sex

Percentage	Nigeria				Zambia			
	Female		Male		Female		Male	
	FTF	SEM	FTF	SEM	FTF	SEM	FTF	SEM
Among respondents who reported in the FTF interview having an unwanted pregnancy:								
Ever ended a (partner's) pregnancy	31.8	29.1	54.0	49.7	4.0	1.4	11.3	7.9
Nonresponse	2.8	1.5	4.5	5.4	2.2	0.0	0.4	0.2
N (unweighted)	175		118		363		162	
Among respondents who reported in the FTF interview having had sex in the last 12 months:								
In the last 12 months had sex with two or more people	3.7	5.0	18.5	15.7	2.4	2.4	18.5	9.2
Nonresponse	2.2	4.0	1.4	2.7	1.2	0.5	0.1	0.6
N (unweighted)	804		729		1,025		893	
Among respondents who reported in the FTF interview having been tested for HIV and received the results:								
Have the AIDS virus	3.0	3.8	3.2	2.8	8.6	4.5	7.2	3.8
Nonresponse	8.5	0.2	10.3	0.2	2.8	0.4	6.7	0.0
N (unweighted)	324		266		787		442	

Appendix 1. Questions in the sealed envelope module (women's questionnaire, English version), 2009-2010, Nigeria and Zambia

SECTION 11. SEALED ENVELOPE INSTRUCTIONS				
NO.	QUESTIONS AND FILTERS			
1101	<p>INTERVIEWER: FILL IN THE NUMBER OF THE QUESTIONNAIRE IN THE UPPER RIGHT HAND CORNER OF THE SEALED ENVELOPE FORM.</p> <p>TEAR OFF THE FORM AND GIVE IT TO THE RESPONDENT WITH YOUR PENCIL AND AN EMPTY ENVELOPE.</p>			
1102	<p>READ TO ALL RESPONDENTS:</p> <p>Now I am going to ask you five questions but I do not want to know your answers. Instead, I will give you this paper and ask that you circle the picture that is your answer. The sun means "yes" and the X means "No."</p> <p>We are doing this because sometimes people feel more comfortable saying they did something if they can do so in total privacy.</p> <p>I will turn my back, and ask you the first question. In this first row, just circle the picture that is your answer (circle the sun if yes; circle the X if no).</p> <p>Then I will ask you the second question. In this second row, just circle your answer. We will go this way through the last question.</p> <p>When you are done, fold the paper and put it in this envelope and seal it. I will turn around after you have finished so that I do not see the answers. Do you have any questions?</p>			
1103	<p>INTERVIEWER: TURN AROUND & FACE AWAY FROM THE RESPONDENT. ASK EACH QUESTION SLOWLY AND IN A CLEAR VOICE.</p> <p>Have you ever had a pregnancy that you ended for any reason? If yes, please circle the sun in the first row. If no, then circle the X in the first row.</p>			
1104	<p>Are you ready for the next question? In the last 12 months, have you had a pregnancy that you ended for any reason? If yes, please circle the sun in the second row. If no, then circle the X in the second row.</p>			
1105	<p>Are you ready for the next question?</p> <p>CHECK 501.</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; width: 50%;"> <p>MARRIED/ LIVING WITH A MAN </p> </td> <td style="text-align: center; width: 50%;"> <p>NOT MARRIED OR LIVING WITH A MAN </p> </td> </tr> </table> <p>Have you had sex with someone who is <u>not</u> married to you in the last 12 months? Have you had sex with two or more different people in the last 12 months?</p> <p>If yes, please circle the sun in the third row. If yes, please circle the sun in the third row. If no, circle the X. If no, circle the X.</p>		<p>MARRIED/ LIVING WITH A MAN </p>	<p>NOT MARRIED OR LIVING WITH A MAN </p>
<p>MARRIED/ LIVING WITH A MAN </p>	<p>NOT MARRIED OR LIVING WITH A MAN </p>			
1106	<p>Are you ready for the next question? Do you think (your partner/ any of your partners) has/had the AIDS virus? If yes, please circle the sun in the fourth row. If no, then circle the X in the fourth row.</p>			
1107	<p>TICK APPROPRIATE BOX IF INTERVIEW IS IN THE COMMUNITY OR AT A HEALTH FACILITY.</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; width: 50%;"> <p>COMMUNITY SURVEY </p> </td> <td style="text-align: center; width: 50%;"> <p>FACILITY SURVEY </p> </td> </tr> </table> <p>This is the last question. TELL RESPONDENT "Please leave the last line blank." Do you have the AIDS virus? GO TO 1108. If yes, please circle the sun in the last row. If no, then circle the X in the last row.</p>		<p>COMMUNITY SURVEY </p>	<p>FACILITY SURVEY </p>
<p>COMMUNITY SURVEY </p>	<p>FACILITY SURVEY </p>			
1108	<p>When you are done, please fold the paper and put it in the envelope and seal it. Just let me know when you are done and I will turn around then.</p>			