Sexual Behavior and STI/HIV status among Adolescents in Rural Malawi: An Evaluation of the effect of Interview Mode on Reporting

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Introduction

Our understanding of the dynamics of HIV transmission in developing countries is seriously compromised by unreliable data on sexual behavior. Epidemiological studies in Africa have observed little association between self-reported risky sexual behavior and HIV status. A large multi-site study of factors determining HIV prevalence in four African cities revealed considerable numbers of women who were HIV positive yet reported themselves to be virgins or reported having only one sexual partner and few episodes of sexual intercourse (Buve et al. 2001 S117; Glynn et al. 2001).

The inconsistency between reported sexual behavior and HIV incidence has prompted some epidemiologists to question the conventional explanation for the African AIDS epidemic. Arguing that pre-conceived notions of African sexuality have unduly influenced researchers, several epidemiologists suggest that it is not risky sexual behavior but rather parenteral transmission resulting from medical injections with contaminated needles that has played a substantial role in the spread of HIV (Brewer et al. 2003; Gisselquist et al. 2003; Gisselquist and Potterat 2003). While these scientists have closely examined the data on heterosexual transmission, they are less thorough in their assessment of survey data on sexual behavior data. Gisselquist and Potterat (2003:171) assert: "[T]he care with which these [surveys] … have been performed, the familiarity of investigators with local conditions, their experience in the conduct of such studies, and the consistency of response makes summary dismissal of such results untenable." The willingness of these and other researchers to accept survey data of questionable validity has serious implications for interpretations of the etiology of HIV transmission.

The goal of the proposed paper is to assess whether in a rural district of Southern Malawi audio computer assisted self-interviewing (ACASI), a technique designed in the United States to collect data on sensitive behaviors, produces more accurate data on sexual behavior than face-to-face interviews, the traditional method used in surveys. This paper builds on our earlier research in two districts in Kenya where we first investigated whether ACASI is feasible to use in developing countries and whether it is superior form of data collection to interviewer and self administered questionnaires (Mensch, Hewett and Erulkar 2003; Hewett, Erulkar and Mensch 2004; Hewett, Mensch and Erulkar 2004). Although the software and hardware performed well and ACASI was found to elicit higher reporting for many questions on sensitive behavior, some anomalies emerged raising questions about the effectiveness of computerized interviewing in reducing measurement error in developing country surveys.

One of the limitations of our Kenya study is that we could only determine if reporting in one interview mode statistically differed from another, not which of the methods yields more accurate responses. In Malawi we will use biomarkers of STIs and HIV to

investigate the strength of the association between STI/HIV status and risky sexual behavior by interview mode. While we are aware of the limitations and difficulties of using biomarkers to assess reporting of sexual behavior, we believe that collected in tandem with an experimental assignment to interview mode, they can provide important supplementary evidence for evaluating interviewer mode effects.

Data Collection

For this study approximately 500 unmarried female adolescents aged 15-21 were interviewed between May and July of 2004 in rural areas of Balaka, a district in Southern Malawi. Respondents were randomized to either a face-to-face or ACASI interview for the questions on sexual behavior and HIV/AIDS. To minimize the effect of interviewer characteristics by mode on the responses, all interviewers were trained in ACASI and face-to-face interviewing and respondents were randomized to an interviewer as well as an interview mode. Numerous questions were asked about sexual behavior including: age at first sex, sex with different types of partners (friend, acquaintance, relative, teacher, employer, stranger), sex in the last 12 months, number of lifetime sexual partners and condom use at last sex. Respondents provided urine samples for testing of gonorrhea, and chlamydia. HIV status of study participants was determined by use of the OraSure® HIV ELISA test on oral samples obtained by using the Orasure collection device. Positive samples were retested using the OraSure® Western Blot test. In addition, prior to collection of the samples, respondents were interviewed by the nurses and re-asked a series of questions about sexual behavior including age at first sex, type of sexual partner, number of lifetime sexual partners, sex in the last 12 months, and condom use at last sex, allowing for test-retest comparisons of the consistency of responses by interview mode.

Data Analysis

To statistically evaluate differentials in reporting of sexual behavior by interview mode differences of proportions and differences in means tests will be conducted. Given the sample size, we will be able to detect a 7-12% difference in reporting by interview mode depending on prevalence of the particular behavior. Because randomization may not eliminate all heterogeneity, and because interview mode effects may differ according to respondents' characteristics, multivariate models will also be estimated. Most of the outcome variables of interest will be measured as binary outcomes, taking the form of yes/no responses, for instance “have you ever had sexual intercourse?” However, some outcome variables will be in the form of counts, for instance the number of lifetime sexual partners.

Not only will we investigate whether reporting of sexual behaviors is higher with ACASI we will also explore the nature of sexual relations revealed by each interview mode differs. For example, in the one district of Kenya where we were able to explore this issue we found that a much wider array of sexual partners was observed with ACASI. Whereas nearly 60% of sexually active girls in the interview-administered mode indicated that they had only had sex with a boyfriend, with ACASI, this dropped to 10%. The question is whether this same pattern of sexual reporting by mode is observed in Malawi.

In addition we will assess consistency of responses between the main interview and the subsequent nurses interview that was conducted prior to the collection of biomarkers. For ACASI, this analysis provides an evaluation of responses in both the computerized and face to face interview settings. If our expectations about the reporting of premarital sex are accurate, we would expect lower levels of reported sexual activity in the face to face exit interview for ACASI respondents, a finding that was not supported by the Kenya analysis.

Because censoring of sexual experience is expected, given the age of the sample, hazard-rate models will be implemented. Covariates in the model will include mode of interview I, exogenous demographic variables x_j , which may differ by the outcome being analyzed, and interaction terms to capture differential effects of interview mode by respondent characteristics, e.g., education. Procedures will be also implemented to adjust for the sampling design of the study, including probability weighting, stratification and cluster heterogeneity.

Our approach for linking self-reporting of risky sexual behavior and biomarkers of STIs is to measure the association between STIs and individual risk factors by interview mode. If, as is hypothesized, respondents are less likely to admit to risky sexual behavior in face-to-face interviewer-administered surveys, the association between STI status and self-reported behaviors should be lower than that observed with ACASI, other things being equal. Note that while the goal was to collect biomarkers from each respondent, only 404 of the 503 respondents were ultimately tested for STIs and HIV. Prior to conducting any analysis of the biomarker data, we will determine whether those who were tested for STIs and HIV were selective for any characteristics that will alter our conclusions about the effect of interview mode on reporting of sexual behavior.