

SURVEYS ON SEXUAL BEHAVIOUR IN RELATION TO AIDS PROBLEMS OF METHODOLOGY

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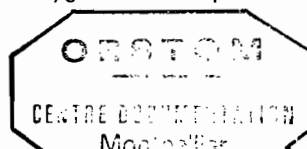
Until recently, the interest of most social scientists in sexual behaviour has been restricted to the context of marriage. For instance, MALINOWSKI (1929) and MEAD (1949) are among the relatively few anthropologists who have regarded sexuality and social control of sexual expression as a legitimate domains of study. Similarly demographers have had a longstanding interest in sexual behaviour, but mainly as a determinant of fertility. Questions on post-natal abstinence, and to a lesser extent on terminal abstinence, have been a standard feature of demographic enquiries in Africa since the World Fertility Survey (WFS) in the 1970s. Pierre CANTRELLE made a major contribution to the design of WFS enquiries in Africa and insisted on a full recognition of the importance of factors, other than contraception, that determine fertility. Indeed, this information has proved crucial in attempts to understand reproductive regimes in that region (e.g. LESTHEAGHE, 1989).

Frequency of coitus between marriage partners has also been studied by demographers. The interest here has been on fecundability, one of the proximate determinants of fertility about which we know least. In family planning research, also, coital frequency within marriage has proved relevant to the assessment of the effectiveness of different methods (e.g. WESTOFF, 1974).

The advent of the HIV pandemic has transformed research priorities. In the developing countries, the main route of infection is heterosexual intercourse and the strongest individual risk factor is the number of sexual partners. Thus the focus of attention has to shift away from sexual behaviour within marriage

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(though this aspect remains important) to sexual partnerships before and outside of marriage, if we are to understand the spread of the disease, inform public information campaigns and evaluate interventions to check the pandemic.

We start from a position of very limited information. While there have been a few studies of non-marital sexual behaviour in the west, little systematic work has been conducted in developing countries. The main exception has been surveys of teenage sexual behaviour and contraceptive use, focused particularly on Latin American cities (e.g. MORRIS, 1990). For Africa, there are plenty of anecdotal accounts about non-marital sex, but almost no serious study.

This paper concerns the potential contribution that survey statisticians and demographers can make to the study of sexual behaviour, in the era of HIV/AIDS. It draws upon detailed recommendations commissioned from the present authors by the WHO's Global Programme on AIDS. An analogy with fertility and family planning surveys is appropriate. In the 1960s and early 1970s, study of the topic was dominated by knowledge, attitude and practice (KAP) surveys, that varied in quality, coverage and content. Their results were greeted with considerable and justified scepticism. Partly in response, the WFS was created in 1972 to conduct mutually comparable high quality surveys in developing countries. The WFS restored the credibility of the survey method and much of our knowledge about fertility, childhood mortality and their determinants comes from this programme and its successor, the Demographic and Health Surveys (DHS) project. Over 25 developing countries have now conducted at least two high quality, representative surveys, thus permitting analysis of trends in vital rates in addition to cross-sectional differentials. Surveys have proved indispensable in monitoring progress towards policy goals concerning child survival and reproductive control.

We are now faced with a new disease that represents a major threat to the improvements of life expectancy that have been achieved in recent decades. Very large sums of money are already being spent in the endeavour to check the spread of HIV and to mitigate its consequences. Pending the discovery of an effective vaccine or therapy, the only preventive option is behavioural

change towards safer sex practices. Sample surveys have a unique potential to measure these behaviours and thus to monitor progress and evaluate the impact of public information campaigns, just as they have done in the fields of fertility and child mortality.

At this juncture, we should acknowledge a prevailing scepticism that large scale surveys can generate worthwhile information on a topic that is sensitive and sometimes embarrassing. Individuals, it is argued, will not be prepared to give truthful answers to interviewers whom they do not know and perhaps do not trust. Exactly the same reservations were expressed about surveys on contraception 30 years ago. The subsequent record has allayed these fears, but it would be rash to assume that the same favourable verdict will be reached in the case of sexual behaviour surveys.

The question of underlying importance is this : can large scale surveys make the same contribution to programmes of HIV control as they have made to family planning programmes ? It is premature to answer this question with any great confidence. Instead, in this paper, we discuss some of the specific problems of survey design and measurement that have to be faced and overcome.

SURVEY METHODOLOGY

A survey of sexual behaviour poses a number of special methodological problems. In the context of research on the spread of HIV the main objective of such a survey must be to monitor changes in sexual behaviour over time. A secondary but important interest will be to study current differentials between populations defined geographically or ethnically, and among these the urban-rural differential will be of primary concern. In this section we examine the major methodological problems which arise in the design of such a survey, with particular reference to developing countries.

Should one interview men, women or both ?

The emphasis on developing countries implies a primary interest in the spread of HIV infection through heterosexual intercourse. Numerous studies have found that men report a much higher incidence of heterosexual extra-marital sexual acts than women, as well as a much larger number of heterosexual extra-marital partners. In reality, provided definitions are standardized and the

population is approximately closed, men and women should report approximately equal figures on both of these variables. The observed difference implies either (1) over-reporting by men, or (2) under-reporting by women, or (3) a failure of sampling, such as under-coverage of prostitutes. Factor (3), though likely to be real, is most unlikely to explain a difference as large as that observed. The choice between the interpretations (1) and (2) is still a matter of controversy, whether in developed or developing countries. Thus in the present state of our knowledge it would not be justifiable to limit the survey to one sex on grounds of greater validity of responses given by members of that sex.

Moreover, HIV infection occurs in both sexes (in most developing countries, about equally) and its spread depends on factors which are influenced by sexual behaviour of both sexes. Thus there is good reason to include men and women in the same survey.

Clearly, interviews should always be conducted in private. It seems desirable also that the sex of the interviewer and respondent be matched. This suggests that interviewers should work in two-person man-woman teams who visit the same households together. This does not exclude grouping these into larger teams, for example two men and two women, for the requirements of supervision and transport.

A practical question then arises : should on interview (1) men and women in the same household, or (2) men in some households, women in others, or (3) one adult selected at random in each household ? Since the male and female populations will be analyzed separately the existence of an intra-household correlation presents no problem should option (1) be selected. This option, moreover, is simpler than (3) in terms of the instructions needed and cheaper than both (2) and (3) in terms of the number of households needing to be interviewed. It might be supposed, perhaps, that option (1) could present problems at the interview : for example, husbands in some cultures might demand that they be present at their wife's interview. The method is currently being tested in three African countries : so far no problems of this kind have been reported. Provisionally, then, option (1) seems preferable.

Distinguishing marital, casual, and commercial sexual relations

Sexual partnerships take a multitude of forms. While the extreme polar opposites – legally sanctioned cohabiting marriage and anonymous commercial sex encounters – are relatively easy to define, the range of possible intermediate relationships defies any simple typology. These relationships may vary in terms of duration, expected future duration, frequency of sexual contact, degree of economic and social dependency, social visibility and legitimacy, and so on. Each dimension offers a possible principle for classification.

Within the limits of a simple standardized survey, a blunt approach will be needed to force a distinction between regular and casual partnerships and between commercial and other forms of casual sex. The approach adopted by the WHO's Global Programme on AIDS (GPA) has been to define regular partnerships solely in terms of duration : any sexual relationship that has lasted for at least 12 months, or was expected to last for at least 12 months has been classified as regular. All other relationships have been classified as non-regular, or casual. There is no pretence that this dichotomy is entirely satisfactory : indeed it is easy to imagine situations which vitiate its interpretive value. However, in a standardized survey a simple method is needed. Our recommended approach would be to ask first about marital status, then to inquire about any other regular partnerships in line with the above definition. Casual sex is then defined as any sexual contacts that are not already classified as marital or regular.

The distinction between contacts with sex workers and other casual contacts is also problematic, because many relationship can involve the exchange of gifts and favours for sexual access. In a short standardized questionnaire, it is not possible to identify the many subtle forms of commercial sex. However it should be feasible to define contacts with professional sex workers by asking two questions, one on exchange of money and the other on prior acquaintance with the partner. The underlying assumption here is that such anonymous encounters involving cash payment nearly always denote prostitution.

Choice of monitoring variables

The behaviours of primary concern for the spread of HIV are the frequency of

casual or commercial sex, the use of condoms, and the number of sexual partners per respondent. It seems reasonable to fix sample size in terms of the need to detect changes of specified magnitude over a specified time in all three of these variables.

A fourth key variable among determinants of AIDS is the presence of other sexually transmitted diseases (STDs). Clearly, questions are required in the questionnaire to determine whether symptoms of STDs are present. But it is difficult to recommend use of this factor as a determinant of sample size in the present state of knowledge. Data on prevalence of such symptoms in developing countries are rare, and where they exist prevalence appears to vary markedly not only between countries but between small areas within countries.

Sample size

Assuming, then, that sample size is to be fixed in terms of the first three monitoring variables mentioned above, the first step must be to define the variables more precisely. For example, one might proceed as follows :

- A. Percent of males reporting one or more incidents of casual or commercial sex during the last 12 months.
- B. Among positive respondents to A, percent reporting use of a condom in the latest such incident.
- C. Among positive respondents to A, the mean number of extra-marital sexual partners reported over the last 12 months.

Sample size may then be computed on the basis of a need to detect, at 95 % confidence, any existing differences exceeding certain defined thresholds, for example : an absolute decrease of 5 in variable A ; an absolute increase of 10 in variable B ; a relative decrease of 20 % in the mean C.

Calculation shows that in a typical third world environment this would require a minimum sample of approximately 1 000 adults of each sex for each domain. A minimal survey will have at least 2 domains, urban and rural, implying a total sample of 2 000 adults of each sex.

Survey periodicity

It would be unrealistic to expect large changes in behaviour to occur rapidly, especially in developing countries where the media reach fewer people. The thresholds suggested in the last paragraph for detecting of change are based on an assumed time lapse of a few years.

It is suggested that the survey be repeated at intervals of approximately 4 years. Any shorter interval would run an unacceptably large risk of failing to detect a trend that exists. If it were desired to counter this, one would need to reduce the thresholds by using a larger sample. But narrower thresholds require also stricter field controls in order to maintain constant standards and this is a very serious constraint in a third world context. It appears more prudent to accept rather broad thresholds of error even though they imply an uncomfortably long interval between surveys.

Recall duration

As in all surveys based on recall one has to face the choice between recall error and sampling error. A longer recall period increases the recall error, but it also increases the number of positive reports and hence reduces the sampling error. There is little firm scientific evidence on which to base decisions. A twelve-month reference period is typically chosen to obtain information on number of sexual partners. In view of the fact that most respondents report numbers in the range of zero to three, this reference period appears reasonable. If information on coital frequency is required, of course, a much shorter recall period is essential. Seven days appears preferable to four weeks.

RELIABILITY AND VALIDITY OF DATA

Overshadowing all other issues of study design and method is uncertainty whether respondents will be willing to answer intimate and perhaps embarrassing questions about their sex lives and, if so, whether they will be prepared to tell the truth. Regarding the first concern about willingness to participate, the answer is already clear. In North America, in Europe and in developing countries, response rates to surveys on sexual behaviour have been no different from those obtained in other types of survey (e.g. WADSWORTH et al., 1993).

The question of reliability and validity is not so simple to answer. It is of vital importance for obvious reasons. Differential underreporting of sexual risk behaviours might lead to misallocation of resources. Similarly, changes in data quality might mask trends and thus totally mislead those responsible for the management and execution of AIDS control programmes.

There are few ways by which self-reported sexual behaviour data can be validated by objective, independent methods. Thus, the classic study by UDRY and MORRIS (1967) that validated interview data on recency of last sexual intercourse by testing urine samples for the presence of sperm will remain an exception. Comparisons of HIV status with reported numbers of sexual partners are increasingly possible but do not constitute direct validation because multiplicity of partners, of course, is not a necessary precondition for infection.

Tests of reliability are much more feasible. A recent review identified seventeen studies in which test – re-test consistency of responses to questions on sexual behaviour had been assessed (MILLER *et al.*, 1990). Typically, the level of reliability was acceptably high but, not surprisingly, it declined as the length of the recall period increased (e.g. COATES *et al.*, 1988). Nearly all studies, however, were based on North American samples and the relevance of results to other cultures is uncertain.

A further common form of assessing data quality is to compare responses of sexual partners on such topics as coital frequency or types of sexual practices. The same review by MILLER *et al.* (1990) cited seven published studies. Again, levels of inter-partner consistency were generally high, but, as with reliability studies, nearly all were conducted in North America and their results should not be generalized to other regions.

There is a growing interest in the relative advantages of different data capture procedures and means by which the quality of data can be maximized (CATANIA *et al.*, 1990). In highly literate societies, the major alternatives are face-to-face interviewing, self-completed questionnaires, telephone surveys or some combination of the above. It is interesting to note that the two major European surveys on sexual behaviour used totally different procedures but yielded closely similar results (ACSF, 1992 ; JOHNSON *et al.*, 1992). The French survey was based on telephone interviews while the British survey used a

face-to-face interview, with a self-completion section for the most sensitive items. There is as yet no clear-cut evidence on the relative quality of data obtained by these.

In developing countries, there is in effect no alternative to direct face-to-face interviewing. The priority is thus to assess the reliability of this mode of enquiry. In 1992, the Global Programme on AIDS commissioned six field studies on this topic, mainly in Africa. A variety of methods was employed : test-retest reliability ; comparison of repeated weekly interviews with the results of single-sound surveys ; and comparison of in-depth or intensive interviews with standardized structured questionnaire – based enquiries. When these results are available, we shall be in a much better position to assess the limitations, and strengths, of the survey approach in developing countries.

A MODEL SURVEY FOR DEVELOPING COUNTRIES

By way of a practical summary of the foregoing discussion, we describe in this section a model interview survey of sexual behaviour which has been recommended (by the authors) for use in developing countries.

Respondents

Males and females age 15-49, de facto population found in households.

Questionnaire content

The questionnaire covers the following topics :

- Background information on respondent,
- Marriage and regular partnerships,
- Casual and commercial sex,
- Condom use and knowledge,
- Symptoms of sexually transmitted diseases,
- Knowledge of AIDS, risk perception, change.

About 10 questions are asked on each topic. The average interview duration is about 20 minutes. This leaves enough time for the addition of other questionnaire modules of interest to specific countries, such as :

Homosexuality, bisexuality,
Drug injecting practices,
Sources of information on AIDS,
Attitudes to condoms,
Opinions on care and treatment of AIDS sufferers.

Sample

A 2-stage sample is recommended, with census enumeration areas as the first stage and households as the second. Households should be selected from a special enumeration conducted in each sample area shortly before the survey. In each selected household all persons aged 15-49 of either sex will be interviewed.

First stage units will be stratified by urban/rural and any other available geographic classification.

The first stage of about 50 area units per domain of study will be selected with probability proportional to census population (or households). Households will be selected with probability proportional to the inverse of these probabilities, yielding a self-weighting sample within domains. A mean sample "take" of 18 households per area unit is recommended. This implies selection of approximately 900 households per domain with 2000 persons of each sex.

The interview

Interviews should always be conducted in private. The sex of the interviewer and respondent should be matched. Thus interviewers need to work in two-person man-woman teams.

Non-response

In the event of non-contact, interviewers are instructed to make a minimum of 3 callbacks, at different times of day.

Periodicity

For monitoring change in sexual behaviours it is proposed to repeat the survey at intervals of 4 years. In the interests of simplicity it is not recommended to repeat the sample but to select an independent sample at every replication.

Cost

The survey plan described, assuming a national level survey with only two study domains (normally urban and rural), has been costed at approximately \$90,000 for a typical African country, excluding technical assistance.

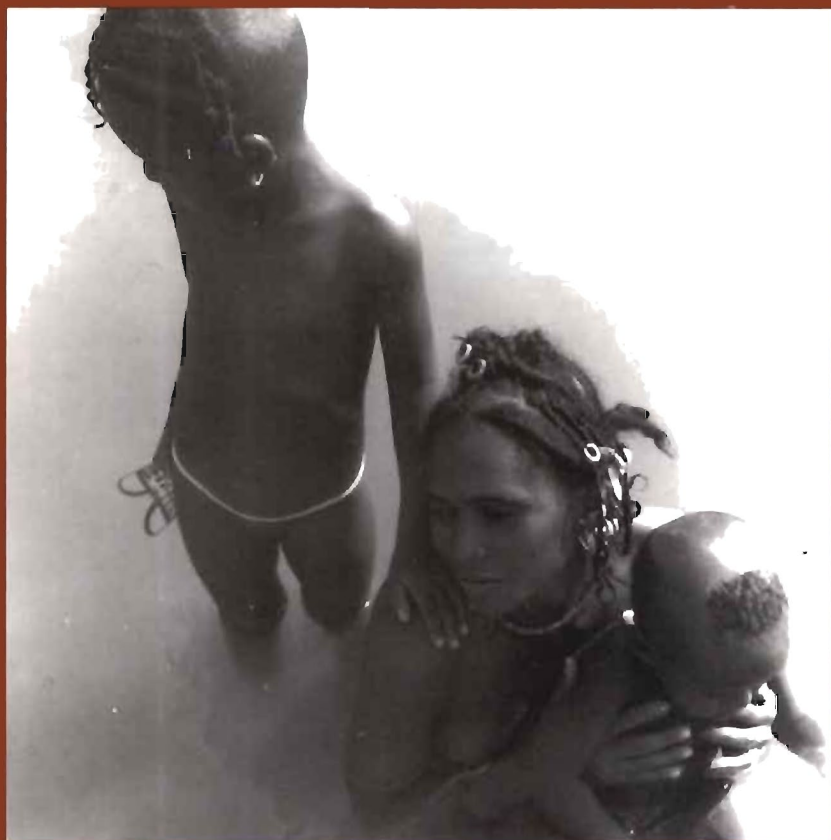
Economy

Costs can sometimes be reduced by borrowing the household enumeration from another survey or master sample, but only if the list has been made within a year of the survey data collection : an outdated list will contain too many errors to be useful. In nearly all developing countries the census will not provide a satisfactory household list for sampling but a few countries do maintain adequate household registers which are available for this purpose.

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