

Sexual behaviour in the face of risk: preliminary results from first AIDS- related surveys*



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Abstract

Preliminary results are presented from nationally representative surveys of the adult populations of five African countries, conducted in 1989 and 1990. General awareness of AIDS was high, as was knowledge of sexual transmission. In four of the five surveys, large proportions, from 25 to 64 per cent, of both men and women perceived themselves to have a high or moderate risk of HIV infection. High proportions also reported that they had modified their behaviour typically by more care in selecting partners or greater faithfulness. Greater use of condoms was mentioned rarely. The results, particularly on behavioural change, should not be interpreted literally. But the fact that so many report modification of behaviour at least suggests a willingness to contemplate the need for change. The prognosis would have been much worse, had these surveys indicated widespread denial of risk and unwillingness to consider changes in behaviour.

Introduction

It is widely accepted that, pending the development of an effective vaccine or therapy for HIV/AIDS, behavioural change is the only means of averting the continued spread of the disease. The statement could go further. The advent of effective biomedical prevention or treatment is unlikely to bring a complete solution to the problem, unless accompanied by changes in sexual behaviour. After all, penicillin did not eradicate syphilis or gonorrhoea.

The central theme of this paper is the behavioural response to the advent of the HIV pandemic as reported in representative surveys of the general population of five African countries. Single cross-sectional surveys have severe limitations for analysing change as well as surveys of the general population. Evaluation of specific interventions among specific target groups would perhaps give a more accurate picture. Repeated surveys, or better still prospective studies, are required for any confident assessment of behavioural change. Nevertheless, some insights can be gained from single surveys that enquire into knowledge of HIV transmission, sexual behaviour, perceived risk and intended or reported change.

* The survey data used in this paper were processed by WHO/GPA Social and Behavioural Research Unit which coordinated these surveys. The Principal Investigators should be acknowledged for authorizing the use of these data in a comparative approach: Central African Republic: Dr Pierre Somse, Chief of the National AIDS Programme; C^ote d'Ivoire: Professor Seri Dedy, Universit^e d'Abidjan and Professor Goz^e Tape, Ecole Normale Sup^erieure d'Abidjan; Lesotho: Dr Agatha Lawson, WHO Consultant for the Ministry of Health National AIDS Control Programme; Mauritius: Dr Clement Chan Kam, National AIDS Coordinator; Togo: Dr Genevieve Awissi, National AIDS Programme.

The surveys are part of a collaborative research program, conducted under the auspices of the Global Programme on AIDS (GPA) at the World Health Organization. Field work was done in 1989 and 1990, during the first year of attempts to check the spread of HIV. It is likely that the situation has changed in recent years and thus it would be inappropriate to assume that these results portray the current situation.

The choice of geographical focus for this paper is partly pragmatic. There is more relevant information from this region than for other developing regions. The epidemiology of the disease is also quite different in sub-Saharan Africa from its epidemiology in Europe or North America. Moreover, the demographic impact of AIDS is likely to be most severe in Africa first. We consider briefly this issue of impact before proceeding to the main topic of response.

Demographic impact of AIDS in Africa

A vivid illustration of the uncertainties associated with attempts to project the spread of AIDS and its demographic consequences is provided by a recent report of a modelling workshop, held in December 1989 under the auspices of the United Nations Population Division and the World Health Organization (UN, WHO 1991). In essence the UN provided standard input values and asked a number of mathematical modellers to project trends in HIV infections, AIDS mortality and standard demographic indicators over a 25-year period from an initial infection level of 3.5 per cent. The fixed values included the age distribution, life tables (in the absence of AIDS), marriage and fertility rates, probabilities of progression from infection to AIDS and to death, the proportions of the adult population in specified sexual-behaviour strata, and the probability of vertical transmission (0.4). Heterosexual infectivity (the probability of transmission of the disease per sexual contact) was allowed to vary to yield best, worst and intermediate scenarios, as was the proportion of sexual contacts with condom use (2%–20%).

Key results from six models are shown in Table 1. Intermediate scenarios have been taken, which assume a male-to-female infectivity of 0.03 and a female-to-male value of 0.01 per sexual contact. These probabilities are thought to be realistic though much uncertainty about infectivity remains. The huge diversity of predictions is immediately apparent: the projected level of HIV infection ranges from three to 40 per cent; life expectancy from 26 to 58 years; and the rate of natural increase from 0.5 to 2.8 per cent. Moreover, there is no apparent consistency between the level of infection at the end of the 25-year period and demographic consequences. For instance, the Bulatao model shows an HIV prevalence of nearly 40 per cent but a higher life expectancy than the Palloni model, which projects a level of HIV infection of only 2.8 per cent.

No attempt was made by the workshop participants to reconcile these differences though there was general agreement that, apart from the assumed value for infectivity, the handling of sexual behaviour in the models was the major source of divergence in results. The work of Anderson and colleagues is particularly relevant here (e.g. Anderson et al. 1989). They have shown convincingly that the degree of sexual contact between different sexual-behaviour strata has important implications for the spread of HIV. To the extent that individuals with high-risk behaviours seek similar partners, the initial spread of the infection will be rapid but it will stabilize at a relatively low level. Conversely, less polarized patterns of sexual behaviour imply a slower rate of diffusion but a higher eventual prevalence. Age segregation of sexual partnerships is a further consideration. The greater the sexual contact between older men (among whom HIV infection is likely to be high) and younger women, the greater is the potential demographic impact of AIDS, because of enhanced probabilities of vertical transmission from mothers to children.

Table 1
Model estimates of HIV prevalence, life expectancy and rate of natural increase at end of 25-year projection period

Author of model	HIV prevalence (%)	Life expectancy (eo)	Annual natural increase
Auvert	31.0	26	0.5
Brouard	15.0	NA	2.4
Bulatao	39.5	47	2.5
Dietz	21.2	36	1.5
IAG	3.5	58	2.6
Palloni	2.8	42	2.8

Though subsequent and perhaps more realistic models, such as IWGAIDS and SIMULAIDS, have been developed, the intermediate scenario of the Bulatao-World Bank model received wide endorsement from international agencies for a number of years (e.g. Chin 1991). It is therefore worth examining both the results and the behavioural inputs to this model and comparing them to the admittedly sparse and fragile empirical evidence.

Detailed projections are shown in Table 2. In the absence of AIDS, very large, and indeed optimistic, falls in mortality were expected over the 25-year period. These gains are eliminated and even slightly reversed by AIDS. Thus life expectancy, instead of rising by ten years, falls by four years. However, the rate of natural increase remains strongly positive at an annual rate of 2.4 per cent compared to a projected 3.0 per cent in the absence of AIDS.

Behavioural inputs to the model were based on a handful of small-scale studies and are shown in Table 3. The adult male population is composed of three main groups: single (13%); married monogamous (26%) and married non-monogamous (61%). Among the latter group, 26% are assumed to have contact with prostitutes (with 24 partners on average per annum) while the remainder experience 'casual' sex and have eight partners on average per year. The females are more likely than males to be classified as monogamously married (50%) but over one third (36%) are assumed to be married but non-monogamous (with 12.6 partners per year on average). Nearly five per cent of females (all single) are defined as prostitutes. Summing across all strata, these model values imply about 12 partners per year for an average adult person.

How do these model values relate to more recent empirical evidence? The only body of data based on nationally representative samples in Africa comes from the surveys sponsored by the Global Programme on AIDS (GPA) at WHO. Key results from the earlier surveys may be found in Cara'1 et al. (1990). A few indicators reveal the huge gulf between model assumptions and self-reported behaviour. The model assumes that three-quarters of adult men will experience commercial or casual sex in a 12-month period. The average value from four surveys (Central African Republic, CTMte d'Ivoire, Lesotho and Togo) is only 30 per cent. As mentioned earlier, the model takes an overall average of 12 non-marital partners per year. The results from the GPA surveys vary between 0.6 and 2.6 partners per annum for men. And finally, the model assumes that 39 per cent of men have commercial sex in a year, whereas the results of four GPA surveys give a range of eight to 13 per cent.

Table 2
Results of the Bulatao-World Bank model (intermediate scenario)

	Period 1985–1990	Period 2005–2010	
		Without AIDS	With AIDS
Rate of natural increase	3.4	3.0	2.4
Crude death rate	14.8	8.4	16.4
Infant mortality	101.2	61.3	104.7
Childhood mortality ($5q_0$)	180.0	90.0	215.0
Life expectancy	51.5	61.4	47.0

Table 3
Behavioural values used in the Bulatao-World Bank model (intermediate scenario)

	Male		Female	
	% of adult population	Mean partners p.a. (excl. spouse)	% of adult population	Mean partners p.a. (excl. spouse)
Single	13.0	24.0	14.0	52.6
(prostitute)	(-)	(-)	(4.3)	(143.0)
(other)	(13.0)	(24.0)	(9.7)	(12.6)
Married monogamous	26.0	0	50.0	0
(with monogamous spouse)	(15.0)	(0)	(15.0)	(0)
(with non-monogamous spouse)	(11.0)	(0)	(35.0)	(0)
Married non-monogamous	61.0	14.8	36.0	12.6
(contact with prostitutes)	(26.0)	(24.0)	(-)	(-)
(other)	(35.0)	(8.0)	(36.0)	(12.6)

It is quite possible that surveys of sexual behaviour in Africa suffer from severe underreporting. Nevertheless, it is difficult to accept that this factor alone accounts for the discrepancies noted above. It seems likely that the initial modelling of the disease and its impact was based on exaggerated assumptions of sexual mobility in Africa. The advent of more empirical data on sexual behaviour has already led to important modifications but it remains true that the sophistication of mathematical models of HIV transmission has far outstripped their empirical foundations. The medium to long-term prospects for the spread of HIV infection still remain essentially unknown.

This opinion is not intended to engender complacency about the future. Highly infected areas face a devastating prospect in the short term, and, even in modestly infected countries, the harsh consequences of the disease for already meagre health services can hardly be exaggerated.

The response of AIDS: introduction

Any comprehensive account of the response to AIDS, in Africa or elsewhere, would have to take into account international, national, institutional, community and individual responses. We cannot attempt such an ambitious task in this paper but will confine ourselves to a few observations.

The international response to AIDS has been orchestrated to a large extent by the Global Programme on AIDS (GPA) at WHO. The GPA has made two highly significant contributions. First it has encouraged governments to recognize officially the threats, or potential threats, of the disease. All African countries now have a National AIDS Program with the mandate of planning and coordinating priority activities. The latter are usually formalized in five-year strategic plans.

The proposed budgets for the five countries that have conducted surveys and published results (to be discussed in the next section) are shown in Table 4.¹ The pattern of proposed expenditure differs considerably between countries. Large budget items may include management and administration, blood-transfusion services, laboratory equipment, training of medical and paramedical staff, counselling, and epidemiological surveillance. Most important for the purpose of preventing the spread of infection is the amount allocated directly to public information and education campaigns. In Mauritius and Togo, about one-third of the total proposed budget is devoted directly to IEC. In the Central African Republic, the proportion is higher (56%) but in Lesotho it is much lower.

Table 4
Proposed budgets for anti-HIV/AIDS programs, in selected African countries

Country	Plan period	Sum proposed per head population (US\$)	Percentage allocated to IEC
Central African Republic	1987-92	1.9	56
C ^T Mte d'Ivoire	1989-93	0.3	39
Lesotho	1989-93	0.7	17
Mauritius	1988-92	1.0	32
Togo	1990-92	0.7	37

Source: National AIDS medium-term plans

It is never possible to gauge from government plans and associated budgets the extent of real commitment and effort; thus the substantial sums shown in Table 4 are no guarantee of concerted or effective action. What is needed in the longer term is an equivalent for AIDS of the well known index of family-planning program strength, developed by Berelson, Mauldin and Lapham (Lapham and Mauldin 1972). Some such development is surely essential for the evaluation of anti-AIDS activities, which is certain to become a high priority in the future.

The second significant achievement of GPA has been to avert, or at least diminish, coercive and punitive responses to the HIV pandemic. Brandt (1988) reminds us that the hysteria over syphilis during the First World War led to compulsory testing, and incarceration of infected prostitutes, though neither of these coercive measures proved effective. The possibility of similar reactions to AIDS were foreseen early and appropriate countermeasures taken.

Indeed, it could be argued that concern for the welfare of HIV-positive persons has gone too far when it takes the form of not informing those at high risk of infecting others of their status when this information is available from screening. This brings us to one of the central policy and moral dilemmas. The following scenario is an increasingly common one in the larger African cities. There are, say, 10,000 prostitutes: women who identify themselves as such and have sex with anonymous clients for money. As a group they have perhaps several hundred clients per year. The level of HIV infection among clients, as indicated by male patients attending STD clinics, may be 25 per cent, while 70 per cent of prostitutes themselves are infected. Some ten per cent of the general adult population of the city is HIV positive (as measured by testing of pregnant women). Condom use is rare in commercial sex encounters and even less common between spouses.

¹ Of course, it would be preferable to have information on actual expenditure but this is not yet available.

One policy option would be to inform HIV-positive prostitutes, counsel them and find alternative employment. But job opportunities for women are likely to be scarce and it is not feasible politically to give positive discrimination to former prostitutes in the job market. Moreover, new entrants to the profession would soon become infected by clients. It seems that all options are foreclosed except vigorous promotion of condoms, both by intensive education of prostitutes themselves and public information campaigns to influence clients and potential clients. There is some evidence that educational interventions for prostitutes can be effective, not least perhaps because they are relatively accessible and have a group identity. For instance, use of condoms rose among Nairobi prostitutes from ten to 70 per cent over a relatively short period of time, though they were used only in one-quarter to one-third of all sexual encounters (Ngugi et al. 1988).

If the relative success of interventions among prostitutes rests to some extent on the group dimension with mutual reinforcement of behavioural change, the importance of the response to AIDS at community and institutional level is underscored. Groupings based on common activity (e.g. the army, police force, large private companies, institutions of secondary and higher education), on a common religious or political belief, and on gender may prove to be the key mediators of change.

It is thus unfortunate that the dominant theories of risk behaviour come from social psychology and emphasize the individual. As Weinstein (1987) puts it, the central image of most theories is of an individual weighing the costs of taking some precaution against the perceived benefits. The key concepts are typically: knowledge, or beliefs, about cause and prevention, and about the likelihood and severity of harm; perceived effectiveness of possible preventive measures and the costs or barriers associated with them. These ingredients are most apparent in Becker's Health Belief Model (Becker 1974). A more sociological dimension is apparent in Fishbein and Ajzen's theory of reasoned action, in the form of the concept of subjective norms: the expectations by significant others and the strength of the motivation to conform to them (Fishbein and Ajzen 1975). A final important element of many risk-behaviour theories derives from Rotter's work on perceived behavioural control, that is the individual sense of ability to determine or influence outcome (Rotter 1966, Ajzen and Madden 1986). One feature that is consciously absent from most theories is values related to risk itself. Such values are typically ambivalent. Thus risk taking in some spheres of life is strongly endorsed while in others it is regarded as irresponsible.

These and other related models have been used to predict, with varying degrees of success, the propensity of individuals to initiate and sustain a range of risk-reduction behaviours. They have also been used, particularly in the USA, to examine sexual risk behaviour in relation to HIV. (For a major review see Becker and Joseph, 1988.) While they have often discriminated powerfully between individuals who modify their behaviour in response to an intervention and those who do not, it is doubtful whether they can predict or explain the broad societal change in sexual-behaviour norms that is required to avert the continued spread of the HIV virus in Africa. Moreover sexual risk behaviour differs from many other forms of risk behaviour. Unlike smoking for instance, there is less diffuse social pressure to change because it is a private activity. Unlike smoking also, change may involve very delicate negotiation between partners. Nevertheless, the theories and models of social psychologists may continue to dominate research, partly because of lack of alternatives from the disciplines of sociology or social anthropology, and partly because they are amenable to quantification in social surveys. It is to the contribution of surveys in the elucidation of the behavioural response to AIDS that we now turn.

Behavioural response to AIDS: evidence from surveys

The Social and Behavioural Research Unit (SBR) within the GPA designed three main questionnaires for use among the general population (GPA 1988; Carballo et al. 1989). The most commonly used

instrument, the KABP questionnaire, concentrates on knowledge, attitudes and beliefs about HIV/AIDS but also contains a limited number of questions on sexual behaviour as an optional module. The second instrument, the Partner Relations (PR) questionnaire, is focused more explicitly on sexual behaviour, though it also includes sections on knowledge and beliefs about AIDS. A third instrument was designed, a combined KABP-PR questionnaire, in response to the demand for a survey that would encompass both sexual behaviour and knowledge and beliefs about HIV/AIDS.

This central material on AIDS-related variables is supplemented by background information on education, literacy, media exposure, ethnicity, religion, occupation and characteristics of the community. There are also sections on condoms (knowledge, perceived access and attitudes) and on symptoms of sexually-transmitted diseases (STD) in the last 12 months. The rationale for these contents is descriptive rather than theoretical, and epidemiological rather than sociological. They are intended primarily to document the climate of opinion regarding AIDS and incidence of sexual behaviours that carry a risk of HIV infection, namely intercourse with casual or commercial partners without regular use of condoms. Though some insight into the indirect determinants of these behaviours, and changes thereof, may be gained by examining variations in relation to social, economic, marital and community characteristics, there is little attempt to measure underlying values and subjective meanings and thereby provide a more comprehensive understanding. An overriding need is to provide simple descriptions of knowledge, perceived risk, and sexual behaviours, and to monitor changes over time. Surveys have the potential to meet this need. Conversely they have limited potential to elucidate the cultural context of sexual behaviour (Abramson and Herdt 1990). For this, complementary anthropological and other forms of more intensive study are required (GPA 1989).

Shown below are the countries in Africa that have participated in the three types of survey under the guidance and coordination of GPA.

KABP	PR	Combined
Burundi Central African Republic Guinea-Bissau Kenya Mauritius Rwanda Tanzania Togo	C TM te d'Ivoire Tanzania	Lesotho Nigeria S.W. Nigeria (2 states) Uganda Zambia

Not all these surveys have been completed. There are however a large number of additional surveys, some funded by GPA, that were not part of the collaborative program. The quality of these surveys varies widely and few are based on representative samples. Their results are not considered in this paper.

KABP and PR surveys faced many problems of definition and measurement. Overshadowing these concerns is the question of validity. There are many who doubt that standardized surveys can yield data of reasonable quality on such a topic as sexual behaviour (Muhondwa 1988; Ankrah 1989). Similar doubts were raised about family-planning surveys 30 years ago but were later shown to be largely unfounded. Whether a similar verdict on sexual-behaviour surveys will be eventually reached remains uncertain. Detailed analysis of the internal consistency of data will provide some indications but assessments of reliability and validity by means of special field studies are a high priority. At this

early juncture, a degree of scepticism is appropriate and the results to be presented in this paper should be interpreted very cautiously.

This paper summarizes preliminary survey findings on the reported behavioural response to AIDS based on nationally representative samples of the general population in CTMte d'Ivoire, Lesotho, Togo, Central African Republic and Mauritius. These countries are those in which social researchers were willing and able to participate. Sample sizes range from 1600 to 2500 and the age range covered varies from 15 years and over to 15–44. All these surveys have been conducted by teams of national investigators in 1988–90 in collaboration with SBR/GPA.

These five countries are not among the worst affected by AIDS in Africa. Recently published data derived from the US Bureau of the Census HIV/AIDS surveillance data base indicate that the prevalence of HIV-1 among the general sexually-active urban population is about seven per cent in the Central African Republic, about five per cent in CTMte d'Ivoire but only 0.1 per cent in Lesotho (Anderson et al. 1991). No parallel data are available for Togo or Mauritius, though the level of infection is thought to be very low. In Togo, the prevalence of HIV in 1987 among the general population was found to be 0.1 per cent, though higher among blood donors in the capital (R^Zpublique du Togo 1989). In Mauritius, a few cases of infection have been detected. All five countries have national AIDS program and public information campaigns.

One undoubted ability of mass-media campaigns is to disseminate rapidly increased awareness of a topic. This ability is reflected in the relatively high proportion of all adults who have heard of AIDS and who are aware of sexual transmission (Table 5). The results suggest that awareness is almost synonymous with knowledge of sexual transmission. However, knowledge of sexual transmission coexists with beliefs or uncertainties about casual transmission. Even in highly-educated countries, it has proved difficult to dispel fears of infection from superficial contact with public facilities such as toilets (Becker and Joseph 1980).

Table 5
Knowledge of AIDS

	C.A.R.	C TM te d'Ivoire	Lesotho	Mauritius	Togo
Percentage aware of AIDS	84	83	94	92	64
Of those aware, percentage who know about sexual transmission	96	90	97	94	95
Among those aware of AIDS and sexually active, percentage who know someone with AIDS	21	7	10	4	5

Personal knowledge of someone with AIDS, a potential predictor of behavioural change, is understandably much lower, ranging from 21 per cent in the Central African Republic to four per cent in Mauritius (Table 5).

Details of reported sexual behaviour are given in Table 6 and summarized in Figure 1. Classification of sexual relationships, particularly in Africa, is extremely complex and any standardized survey has to use a vastly oversimplified approach. The system adopted in the GPA surveys was to classify all sexual relationships that had lasted a year or more, or were expected to continue for at least one year, as regular partnerships. Marriages fall into this category. At the other extreme, sexual

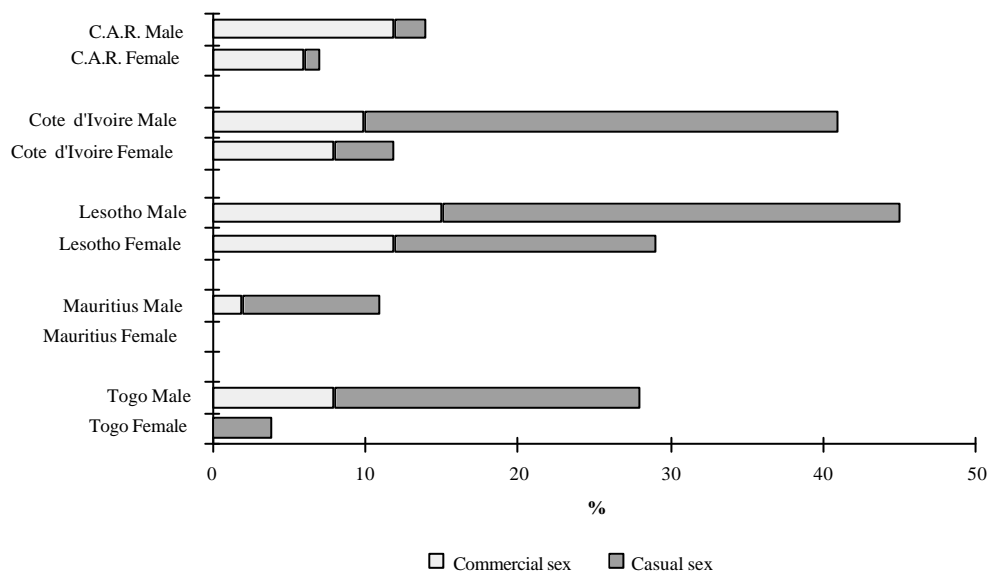
encounters involving the giving or receipt of money or gifts were defined as commercial sex. The intermediate category was termed 'casual sex' and included all sexual encounters or relationships that were neither commercial nor regular, in the senses described above.

We do not know exactly how respondents interpreted the questions that underlay this classification and it is easy to imagine confusion, particularly between commercial and casual sex. There is nevertheless a certain consistency in the proportions of males reporting commercial sex in the preceding 12 months, which range from eight to 15 per cent in four of the five surveys. It is perhaps not surprising that culturally distinct Mauritius is the outlier in this regard, with only two per cent of men reporting commercial sex. Table 6 indicates that regular use of condoms was rare in these commercial encounters.

The reporting by men of casual, but not commercial, sex is much more variable between countries. At face value, the results imply that casual sex is much more common than commercial sex in CTMte d'Ivoire, Lesotho and Togo but less common in the Central African Republic.

The testimony of women regarding their sexual behaviour is usually regarded with greater scepticism than that of men. Figure 1 shows clearly the now familiar difference, with higher reporting of non-marital sex by men than by women. Indeed in Mauritius, no female respondent reported sexual contact outside of a regular partnership while in Togo only four per cent did so.

Figure 1
Per cent reporting commercial and casual sex in the last 12 months, among those who have heard of AIDS



A large difference between men and women in the period prevalence of commercial sex is to be expected, because of the unbalanced ratio of prostitutes to clients. For casual sex, a greater equality might be anticipated. However, the opposite tendency is apparent in both CTMte d'Ivoire and Lesotho; in these surveys, the disparity between men and women is much greater for casual than for commercial

sex. This imbalance suggests that male and female respondents may interpret questions differently and that women may underreport casual sex.

Perceived personal risk of harm is a central element of risk-behaviour theories. The standard question on this topic reads: 'What are the chances that you yourself might get AIDS?' When interpreted literally, answers define the segment of the population that may be prepared to modify behaviour. It is thus analogous to stated desire to limit or postpone children in family-planning research. It is of interest, therefore, to assess the general population in terms of perceived risk of HIV/AIDS and to examine how these perceptions relate to reported behaviour.

The distribution of the population in terms of perceived risk shows substantial proportions stating that they have a moderate or high risk, in all countries except Mauritius (Table 7 and Figure 2). Little difference is apparent between the sexes except in CTMte d'Ivoire. There is no evidence here of widespread denial. Indeed, perception of risk is high in relation to self-reported non-marital sex, particularly in the Central African Republic. In addition, sizeable minorities of both men and women were not prepared to label themselves, giving a 'don't know' response.

Table 6
Per cent distribution according to reported sexual behaviour in last 12 months, among sexually experienced reported respondents who have heard of AIDS

	Commercial sex		Casual sex	No casual sex	No sex	Total
	without condoms	always with condoms				
C.A.R.						
Males	10	2	2	79	6	100
Females	5	1	1	85	9	100
C TM te d'Ivoire						
Males	9	1	31	52	7	100
Females	8	0	4	81	6	100
Lesotho						
Males	13	2	30	33	22	100
Females	11	1	17	49	22	100
Mauritius						
Males		2	9	63	26	100
Females		0	0	71	28	100
Togo						
Males	7	1	20	57	16	100
Females	0	0	4	81	15	100

Do feelings of susceptibility relate in the expected manner to reported behaviour at the individual level? The relationship between behaviour and risk perception is explored in Table 8 and Figure 3 for

male respondents only.² As may be seen there is only a modest relationship between 'objective' and perceived risk.

Except in Mauritius, appreciable proportions of men who reported no sex at all in the last 12 months, or no casual sex, nevertheless perceive themselves to have a moderate or high risk of getting AIDS. The proportions are somewhat higher among those reporting commercial or casual sex (particularly in Lesotho) but the relationship with behaviour is modest.

² The numbers of women reporting commercial or casual sexual are too small in several surveys to sustain further analysis. Moreover, it is probable that women perceive risk from their husbands' behaviour rather than their own.

Table 7
Per cent distribution according to perceived personal risk of getting AIDS among sexually experienced respondents who are aware of AIDS

	Not likely	Low	Don't know	Perceived risk Moderate	High	Total
C.A.R.						
Males	22	21	NA	NA	56	100
Females	20	15	NA	NA	64	100
C^Mte d'Ivoire						
Males	22	20	23	39	6	100
Females	36	8	27	21	8	100
Lesotho						
Males	34	19	20	18	9	100
Females	43	13	22	14	9	100
Mauritius						
Males	70	20	7	NA	3	100
Females	62	17	17	NA	4	100
Togo						
Males	37	26	11	NA	27	100
Females	26	26	17	NA	31	100

Figure 2
Per cent reporting high (moderate) risk of getting AIDS, among those who have heard of AIDS

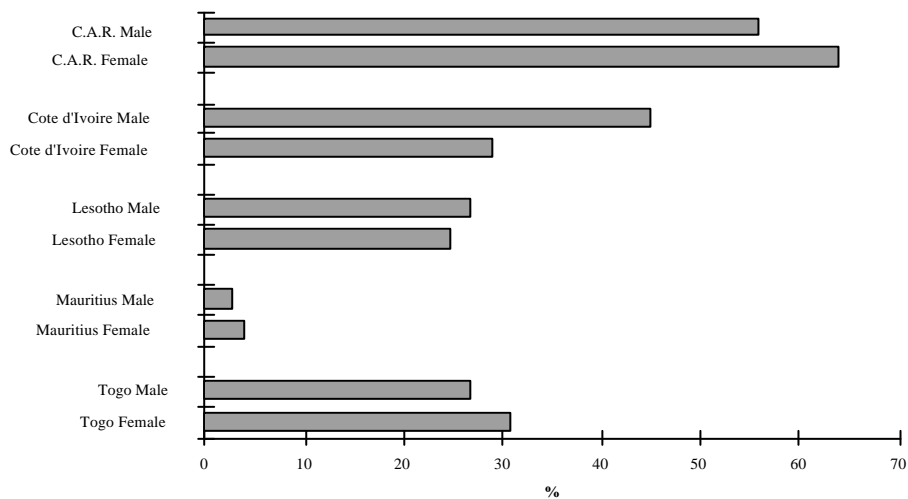


Table 8
Per cent distribution according to perceived risk of HIV infection, by sexual behaviour in last 12 months, among sexually experienced men aware of AIDS

	Commercial sex without condoms (%)	Casual sex (%)	No casual sex (%)	No sex (%)
Central African Republic				
High	57	73	56	47
Don't know	NA	NA	NA	NA
Low	28	8	20	30
Not likely (n)	15 (108)	19 (26)	24 (852)	23 (70)
Côte d'Ivoire				
High	44	52	40	25
Don't know	19	20	26	25
Low	12	11	10	11
Not likely (n)	25 (122)	17 (435)	24 (743)	39 (94)
Lesotho				
High	44	29	14	16
Don't know	13	23	24	16
Low	27	14	18	15
Not likely (n)	16 (70)	34 (160)	44 (180)	53 (118)
Mauritius				
High	0	5	2	3
Don't know	8	5	8	11
Low	31	30	18	19
Not likely (n)	61 (26)	60 (110)	72 (744)	67 (306)
Togo				
High	42	33	36	18
Don't know	6	5	13	17
Low	30	23	28	17
Not likely (n)	22 (50)	39 (143)	23 (409)	48 (114)

The same impression is given when perceived risk is classified by the number of casual or commercial partners in the last 12 months (Table 9). In the three surveys for which this information is available, risk rises according to number of partners but not as steeply as might be expected.

There are a number of possible explanations for the weak relationship between reported behaviour and risk perception among men: underreporting of high-risk sexual behaviour; beliefs in casual or non-sexual transmission; changes in behaviour by those who perceive risk; or incomprehension of the question on perceived risk. Clearly, any interpretation of these survey data must be tentative, but it does appear that perception of risk is widespread and is not concentrated among those men whose behaviour puts them at higher than average risk.

Figure 3
Perceived risk of HIV infection by sexual behaviour in the last 12 months among those who have heard of AIDS

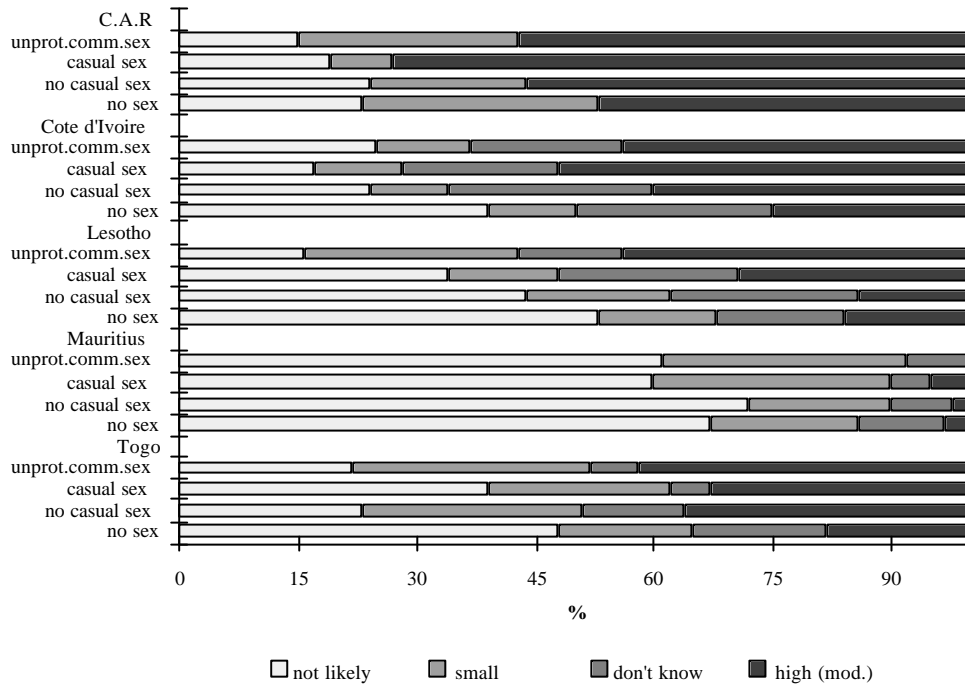


Table 9
Percentage who reported that they have a high (or moderate) risk of getting AIDS, by number of sexual partners, among sexually experienced men who are aware of AIDS

	Number of casual/commercial partners			
	0	1	2-4	5+
C TM te d'Ivoire	38	45	53	56
Mauritius	3	3	4	5
Togo	23	23	46	47

We come now to the most important issue of all: behavioural change. Respondents were asked whether they had changed their behaviour in response to the threat of AIDS, what changes they had made, and (for those reporting no change) whether they intended to change. Perhaps the wording or location of the question in the interview invites a positive response, because the proportions reporting change are surprisingly large (Figure 4). Over 60 per cent claim to have changed, or modified, their behaviour, except in Mauritius and among females in CTMte d'Ivoire and Togo. The dominant change reported (except in Mauritius) implies sexual behaviour (Table 10). Typical answers included in this category are 'greater faithfulness' and 'more care in selecting partners'. Use of condoms, however, is mentioned very rarely. The relationship between reported behavioural change and actual behaviour is complex, because no information was gathered on the timing of change. Thus the extent to which reported sexual behaviour in the last 12 months reflects changes or not is unclear. Nevertheless, Figure

5 reveals a consistent pattern in all surveys but the Mauritian one. The period prevalence of reported risk behaviour is highest among men who intend to modify behaviour but have not yet done so (admittedly a small group). This result enhances the credibility of data. The incidence of casual or commercial sex tends to be much higher (except in Lesotho) among those who report change than among those who report no change; this is consistent with the common finding in risk-behaviour research that change in response to a threat is more typically partial than absolute.

Figure 4

Per cent who report, or intend, behavioural change among those who have heard of AIDS

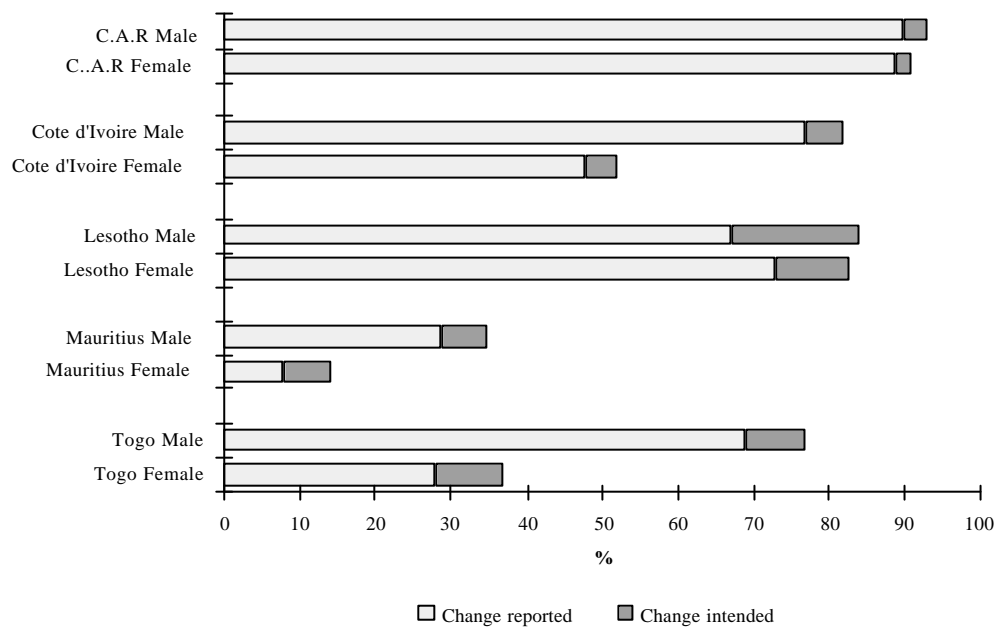


Table 10
Percentages mentioning specified changes, among those who report behavioural change

	Less casual/commercial sex	Greater use of condoms	Change Ineffective change implying beliefs in casual transmission	Other/ambiguous
C.A.R.				
Males	92	4	0	4
Females	98	0	0	2
C ^T Mte d'Ivoire				
Males	59	6	1	33
Females	56	3	5	34
Lesotho				
Males	60	7	1	32
Females	60	2	1	36
Mauritius				
Males	47	1	14	38
Females	14	0	32	53
Togo				
Males	84	0	6	6
Females	73	1	11	15

Finally, Table 11 shows demographic and socioeconomic differentials in reported behavioural change. These are summarized in the form of relative risks: ratios of proportions. For instance, the top left figure of 0.97 is the proportion reporting change among men under 25 years of age, divided by the proportion among older men. Younger, more educated respondents and those reporting high exposure to mass media are more likely to report change in most countries, but the relative risks are not strikingly large. Perhaps the most important, and disturbing, feature is the lack of an appreciable urban-rural difference. In view of the greater concentration of HIV infection in urban areas, it is surprising that reported modification of behaviour is not more common among the urban than the rural population.

Figure 5
Per cent males reporting commercial and casual sex in the last twelve months, by behavioural change

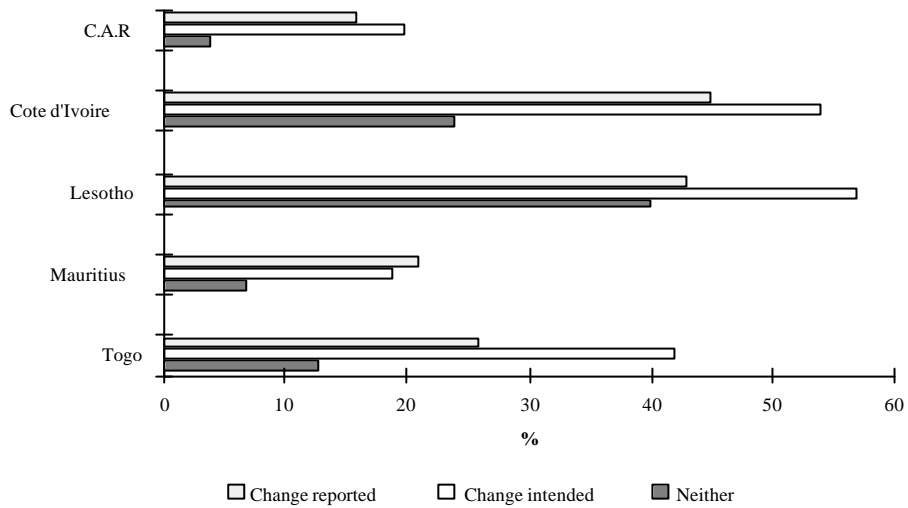


Table 11
Relative risks of reported behavioural change, among sexually-experienced respondents aware of AIDS

	Age less than 25 vs 25+	Never married vs married	Urban vs rural	Higher vs lower media exposure	Secondary school + vs primary/none
C.A.R.					
Males	0.97	0.94	0.99	0.99	1.01
Females	1.08	1.10	1.04	1.02	1.06
CTMe d'Ivoire					
Males	1.10	0.97	1.01	1.22	1.31
Females	1.39	1.11	0.97	1.27	1.42
Lesotho					
Males	1.13	0.90	0.84	1.14	1.06
Females	0.96	0.89	0.98	1.06	1.04
Mauritius					
Males	1.32	1.68	0.86	1.30	0.99
Females	0.91	1.32	0.98	0.52	0.82
Togo					
Males	1.03	1.08	1.07	1.29	1.22
Females	1.79	1.58	1.26	1.40	1.16

Discussion

The results presented in this paper raise both methodological and substantive issues. The central methodological issue is whether or not surveys of the general populations in Africa can provide trustworthy descriptions of risk behaviour, behavioural change and associated beliefs and attitudes. The verdict is of great practical importance, because it will greatly influence the design of an appropriate research strategy to measure progress towards curbing the spread of HIV. Once again an analogy from family planning is appropriate. Over the last 20 years, surveys have emerged as the predominant method of evaluating birth-control programs. Their role has been crucial in convincing government officials and politicians, both in developing countries and even more so in donor countries, that investment in family planning is worthwhile, and, to some extent at least, successful. The pressure will inevitably increase on WHO and donor agencies involved in AIDS-related activities to demonstrate some impact from the considerable sums that are being spent. Surveys of the general population have a crucially important potential role here. If survey data prove to be of low reliability, the prospects for useful evaluation of AIDS programs are severely diminished.

It is premature to reach a verdict on the credibility of survey data based on this preliminary analysis of the first five GPA-sponsored surveys in Africa. Both rigorous checks of internal consistency and field tests of response reliability are under way and GPA intends to sponsor several field tests in 1992. Meanwhile results from other major surveys will become available. Thus by the end of 1992 we should be in a much stronger position to assess the contribution and limitations of general population surveys to AIDS evaluation.

The substantive messages carried by these surveys, of course, depend on their credibility. Taken at face value the main results can be summarized as follows: high general awareness of HIV/AIDS (except in Togo); among those aware, almost universal knowledge of sexual transmission; a widespread perception of personal risk (except Mauritius); a weak relationship between risk perception and reported risk behaviour; a very high level of reported behavioural change in response to AIDS; the main reported change implying fewer, or more circumspect, sexual contacts; little mention of condoms in terms of either actual or intended use.

The evidence of widespread behavioural change should be regarded sceptically, because of the absence of corroboration. While there is supporting evidence of behavioural change in Kigali (Cara'l and Piot 1988; Linden et al. 1991), the more general impression is of the absence of change despite wide knowledge (e.g. Konde-Lule, Berkley and Downing 1989; Adamchak, Mbizvo and Tawanda 1990). Similarly there are reports of highly successful condom marketing schemes (Liskin, Wheston and Blackburn 1990), but these achievements have to be balanced by the major body of survey evidence, from both Demographic and Health Surveys and from GPA surveys, that use of condoms remains at a very low level. Moreover, HIV infection continues to rise and there is no evidence of a decline in other sexually-transmitted diseases.

We should also be sceptical of the impression given in surveys that the major behavioural response will take the form of a reduction in sexual partners rather than greater use of condoms. It may be difficult to make sex unpopular and the huge efforts, now under way, to promote condoms in Africa are likely to improve familiarity with, and decrease hostility towards, this device. A closer coordination between family-planning and AIDS programs may further facilitate these efforts. Particularly for single persons in high prevalence areas, barrier methods should receive top priority at family-planning clinics, rather than the lowest priority to which they are more typically assigned.

Several commentators have warned that African marriage systems may present particular obstacles to the acceptance of condoms (Bledsoe 1989; Larson 1989). As Bledsoe puts it, marriage is a process

that involves the testing of relationships. Condoms not only obstruct fertility but, in more subtle ways, introduce an element of distance and suspicion into the delicate process of marriage formation.

Despite this warning, the general message of the GPA surveys provides some grounds for optimism. Of course, survey respondents, as any other group, do not always do what they say. But the fact that so many report behavioural modification does at least suggest a readiness to do so. The prognosis would have been much worse, had these surveys shown widespread denial of risk and unwillingness to contemplate the need for change.

In another regard, these preliminary results have already proved useful. They suggest that model projections of the AIDS pandemic are based on very weak behavioural assumptions. It is to be hoped that those involved in the modelling of the disease will take account of this new evidence and thereby provide more credible insights into what the future might hold and what the likely effects of interventions will be.

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