Sexual Behavior and Vulnerability to HIV among Brazilian Heterosexual Population*

Júnia Quiroga
Ministério do Desenvolvimento Social e Combate à Fome
(Ministry of Social Development and Fight against Hunger)
Brasília, DF - Brazil

Neuma Aguiar
Faculdade de Filosofia e Ciências Humanas / Universidade Federal de Minas Gerais
(School of Philosophy and Human Sciences / Federal University of Minas Gerais)
Belo Horizonte, MG - Brazil

Diana Sawyer
CEDEPLAR / Universidade Federal de Minas Gerais
(Center for Development and Regional Planning / Federal University of Minas Gerais)
Belo Horizonte, MG - Brazil

Prepared for presentation at the 2007 PAA Annual Meeting, New York, March 29-31
Session 104: Making Sense of Sex, Risk, and STDs/AIDS

Preliminary version. Please do not cite.

* Please address all correspondence to the first author (junia.quiroga@gmail.com). Júnia Quiroga thanks the Brazilian Office of Ford Foundation for the funding provided to the "IX Programa Regionalizado Sul/Sudeste/Centro-Oeste de Introdução à Metodologia de Pesquisa em Gênero, Sexualidade e Saúde Reprodutiva" that made possible the collection of qualitative data analysed in this paper. The authors thank the PAA for the travel grant awarded to Júnia Quiroga, an award made possible by a grant from The William and Flora Hewlett Foundation.

Abstract

This paper investigates sexual behavior among Brazilian heterosexual population and how it defines men and women's degree of vulnerability to HIV. Vulnerability is defined by the association of the pattern of exposure to risk of HIV infection and the ability to answer (which includes both the individual skills to prevent infection and the change of behavior). Methodologically, the study inter-relates quantitative and qualitative approaches. Grade of Membership (GoM) analysis was used to build a vulnerability typology for a sample of 3068 self-identified heterosexual individuals aged 16 to 65 years. Types of more interest were: "circumstantially not exposed individuals", "highly exposed individuals with high ability to answer", and "exposed individuals with low ability to answer". The latest group exhibited the highest degree of vulnerability and was further investigated by using in-depth interviews. Findings are useful to comprehend the interplay among gender patterns, sexual behavior, and vulnerability to HIV infection.

INTRODUCTION

This paper focuses on how heterosexual population vulnerability to HIV infection is shaped by sexual behavior and gender patterns. Topic's choice is justified by epidemiological Brazilian data indications that heterosexual transmission is currently the main mode of HIV transmission for both Brazilian women and men. HIV heterosexualization started around 1990 and was parallel to homo and bisexual transmission decline, and to the increase in incidence rates among women, a process named feminization of the epidemic (BRASIL, 2006).

Obviously, if heterosexual transmission mode is being investigated, both sexual behavior and gender relations are keys to understand vulnerability to HIV infection; however, prevention policies tend not to consider those dimensions when developing intervention measures. In Brazil, some examples of dimensions not often considered are:

a) The fact that condom use is not part of Brazilian's contraceptive culture. For decades, hegemonic methods in Brazil have been sterilization and hormonal pills;
b) Since male condoms are the most effective to prevent HIV infection, it is necessary to bring men to the sphere of preventive/reproductive decisions. Again, culturally, reproductive decisions are exclusively taken by women;
c) Integrating condom use to the repertoire of preventive practices brings the epidemic to the intimate sphere and, according to previous studies, threats couples putting on risk their notions of trust, love and partnership.

Besides this introduction, this paper brings a section about the development of HIV epidemic in Brazil, second, it exposes its theoretical focus, third, it explains data and methodological options, forth, it summarizes the findings, and finally, it presents some conclusions and recommendations.

TENDENCIES OF HIV INFECTION EPIDEMIC IN BRAZIL

An estimated 600,000 people are currently living with HIV in Brazil. From 1980 to June of 2006, 433,067 cases of AIDS were reported and around 183 thousand people died

of AIDS. Men are the most affected by infection, representing approximately 70% of cases. The age interval of 20 to 49 years old holds the largest proportion of male and female cases. With regard to the male population, considering the category of exposure, from 1980 to 1994, 39.8% of cases resulted from homo and bisexual transmission, 26.7% were of intravenous drug users (IVDU) and heterosexual transmission was responsible for 14.4% of cases. In the same period, 70% of HIV positive women had been infected through heterosexual contact, and 24% through the use of IVD.

Brazilian HIV pandemic figures changed sharply in the last decade. The decrease of incidence among men was observed among homo and bisexuals (27.5% in 2005) and there was an increase among heterosexuals (44.2% in the same year). For women, HIV infection is growing even more heterosexual (94.5% of cases reported in 2005). As of 2005, infections caused by the use of IV drugs had decreased to 9.4% among men, and 3.8% among women.

Data also show a progressive increase in the incidence of HIV among women and the consistent decline in the sex ratio of infected people. In 1983, this proportion was 18 cases in men to every 1 case in women, and since 2003 it has been stable at 1:1.4.

Such changes in data are due to several reasons such as the initiative of activist groups in preventing infection among men who have sex with men and the governmental incentive to condom use in this group and to sterile syringes among IVDU. However, when it comes to heterosexual population, as observed in the introductory section of this paper, preventive measures focused on condom use tend to fail.

On one hand, heterosexual population tends not to consider itself as being at risk of becoming infected with HIV. This is particularly true when it comes to stable relationships on which the proposition of a condom might imply that one of the partners is being unfaithful. On the other hand, there is evidence that stable relationships might consider the use of condom aiming for contraception but not for STIs or HIV prevention.

An important constrain to the use of condoms as contraceptives is that condom use is lastly decided by men in a country where female methods are the most prevalent. According to the last Brazilian DHS carried out in 1996, from all interviewed women of reproductive age, 40% were sterilized and nearly 21% were in use of oral contraceptive pills. Condoms were the contraceptive choice of 4.4% of sampled women.

Simultaneous to the difficulty of bringing men into the reproductive decision-making process is the fact that Brazilian gender patterns still tend to promote the idea of male sexual aggressiveness and female's passivity which increases both women's and men's vulnerability. Also, many Brazilian women are still in disadvantaged position as compared to men both in the public and in the intimate sphere what may imply in female's disempowerment in sexual relations and inability to negotiate safer intercourses.

Adding to the panorama described above, Brazilian AIDS epidemic has also had an increasing effect for the poor. Indicators for epidemic povertization process are the incidence increase among the African descendants and among those with lower levels of education.

THEORETICAL FOCUS

As observed in the contextualization presented in the previous section, tendencies of HIV epidemic in course in Brazil evidence that heterosexual contact is the most prevalent mode of infection and that less empowered individuals tend to be more affected by infection.

In the aim of identifying characteristics of individuals who are more susceptible to HIV infection we considered not only individual aspects but also those from the context and the community. Therefore, we prefer to make use of the notion of vulnerability than of those centered in the notion of risk.

We developed our vulnerability framework by joining two previous frameworks: that of vulnerability to HIV developed by MANN and colleagues (1992), and that of sociodemographic vulnerability elaborated by CELADE (CEPAL, 2002). Figure 1 (in the back) presents our framework.

We assume that one's grade of vulnerability to HIV infection through sexual exposure results from the balance between one's exposure to the risk of infection and the ability to respond to exposure (which includes both the individual skills to prevent infection and the effective change of behavior). According to our framework, an individual slightly exposed to the risk of infection but with poor ability to respond

presents a higher degree of vulnerability than that of a person whose both risk and response are high.

Sexual behavior and gender relations are some of the key aspects that determine individual's vulnerability to HIV and this paper focus its attention on them. The main objective of this paper is to answer the following questions:

1) Are women, in fact, a more vulnerable group? If so, which women exhibit this characteristic in a strongest fashion?

2) What about men? What distinguish them according to their vulnerability degrees?

3) How sexual behavior and gender patterns determine one's degree of vulnerability to HIV infection?

DATA AND RESEARCH METHODS

Methodologically, our study inter-relates quantitative and qualitative approaches. First, we built a vulnerability typology using Grade of Membership (GoM) analysis which is based on a fuzzy set approach. According to GoM, individual's membership to vulnerability sets is not exclusive, but may be simultaneous to more than one set and graded by the intensity of their participation to each one.

GoM simultaneously groups individuals *(i)* into sub-sets or pure-types *(κ)* of the main set *(K)* according to the characteristics of individuals and the degrees of membership *(g_{ik})* each person has to the different sub-sets.

The grade of membership of an individual to a certain vulnerability pure-type varies from zero to one. A degree of membership equal to one means that an individual belongs completely to one pure-type. On the other hand, a degree equal to zero implies that this individual does not belong to this pure-type. Any other degree of membership reveals that this individual is a simultaneous member to more than one pure-type, and its membership will be considered to be predominantly that of the pure-type with the highest score.

Membership of *i* to any pure-type κ must be equal or higher to zero and the sum of g_{ik} for each *i* inside K must be equal to one:

$$g_{ik} \geq 0 \text{ for each } i \text{ and } \kappa, \sum_{k=1}^{K} g_{ik} = 1 \text{ for each } i$$

Typology was shaped by using a representative sample of 3068 individuals of urban residence in any of the five Brazilian regions, aged 16 to 65 years, self-identified heterosexuals, and racially identified as *negros*[1] or whites. Data were collected in 1998 as part of the survey "Sexual Brazilian Population Sexual Behavior and Perceptions on HIV/AIDS"[2].

We chose fourteen variables to represent the dimension "pattern of exposure to risk of HIV infection": sex of the interviewee; church attendance; number of sexual partners; condom use; sterilization; previous/current STI; practice of anal sex; AIDS stigmatization (measured by six variables).

Ability to answer was represented by ten variables: race; educational level; individual income; family income; economical level; information on HIV/AIDS; risk perception; HIV testing; change of behavior because of AIDS; condom use negotiation. Table 1 (in the back) summarizes sample distribution according to the selected characteristics.

Findings summarized in the next section motivated the utilization of in-depth interviews in order to further clarify some characteristics of one of the pure-types. The interviews were carried out for a previous research[3] from January to July 2004 with forty women (n=20) and men (n=20) who live in marital union in Vila Barreirinhas[4], a small urban shantytown in Belo Horizonte, Brazil.

Interviewees had similar characteristics to those of the pure-type they further explain. They were women and men who had none or low information about STIs and AIDS, low educational and economical level, and precarious insertion on job market. Their sexual behavior was predominantly monogamous and with no practice of anal sex or condom use (Table 2, in the back, for further information on interviewees).

---

[1] There are five racial categories mainly used in Brazilian surveys and censuses: *branco* (white), *preto* (black), *pardo* (mixed/brown), *amarelo* (Asian), and *indígena* (native). For purposes of analysis, IBGE, the Brazilian Census Bureau, aggregates *pretos* (blacks) and *pardos* (mixed/brown) into the category *negros*. This category is better accepted by Brazilian black activists than its constituent parts *preto* and *pardo* and we chose to make use of it in our analysis.

[2] *"Comportamento Sexual da População Brasileira e Percepções do HIV/AIDS"*

[3] Race, gender and vulnerability among heterosexual couples: sexual negotiation and STI/AIDS prevention in shantytowns of Belo Horizonte, MG (*"Raça, gênero e vulnerabilidade entre casais: negociação sexual e prevenção de DST's/AIDS em uniões heterossexuais em comunidades faveladas de Belo Horizonte – MG")*

[4] For ethical reasons, the community and interviewees names mentioned in this draft do not correspond to the real ones. In some cases the pseudonyms were chosen by the informants themselves.

FINDIGNS

Typology was defined with three pure-types. By using software GoM3 we estimated the probability of each category of selected variables of describing the pure-types.

Characteristics of the pure-types defined can be summarized as follows: 1) "not exposed individuals with low ability to answer"; 2) "exposed individuals with low ability to answer"; 3) "highly exposed individuals with high ability to answer". A total of 35.6% of sample belonged totally to one of the pure-types whereas 64.4% were simultaneous members of more than one type. Table 3 (in the back) presents further information about the characteristics that described the three pure-types.

We used booleans expressions to comprehend how those types mixed to each other and which characteristics would force individuals into another. As a result, the three pure-types described were expanded to ten.

Of those, we selected the more representative both numerically and theoretically to a deeper analysis:

1) **"Circumstantially not exposed individuals"**

This group is formed by those "not exposed individuals with low ability to answer" aged 16 to 19 years. Main concern on this group is that they still haven't had their first intercourse and exhibit low ability to answer to an eventual materialization of risk through sexual contact. Although not being exposed to sexual contact reduces this group's vulnerability, it seems reasonable to consider that they will be highly vulnerable when their sexual life begins. This group lacks ability to answer to infection risk (among other characteristics they exhibit low levels of information about the epidemics and of socioeconomic conditions and high levels of stigmatization).

2) **"Highly exposed individuals with high ability to answer"**

We consider this one to be the group with the lowest vulnerability degree to HIV infection through sexual contact. Formed by women and men aged 24 to 39 years, compared to the others types defined, this group adheres to riskier practices such as anal sex and higher number of sexual partners. However, these highly exposed individuals

also make frequent use of condom, are well informed about the epidemic, and do not stigmatize HIV pandemic or HIV positive persons. Also, this group was the only one that intensively affirmed having been tested for HIV, to have changed their behavior because of AIDS, and to negotiate condom use.

About women who are in this group, its worth noting that despite they are the least vulnerable when compared to other women in the sample, they are more vulnerable than men who integrate this group.

3) "Exposed individuals with low ability to answer"

This group is that of a slight exposure to the risk of infection (predominantly they have sex with one regular partner, and do not adhere to anal sex) and few skills to prevent it (insufficient knowledge about HIV, strong stigmatization of HIV and people living with it, low educational and economical level). Also, they affirmed not to have changed their behavior because of HIV.

Predominantly formed by women and those of low socioeconomic level, "exposed individuals with low ability to answer" are the most vulnerable from the sample. For this reason, we used in-depth interviews to further analyze information found through GoM analysis.

Contributions from the integration of methodological approaches are further described in the following session. In general, findings from both approaches point that, in this group, adaptation to a risk scenario doesn't not result from change of behavior but from acquaintance with it. Mostly, not changing behavior due to the existence of AIDS results from the perception of these women and men that they are not in risk of infection. Having a stable partner, know him/her and trust him/her are the most adopted "prevention strategies" of this group.

DISCUSSION

As commented in the previous session, the three types described have different patterns of exposure to HIV risk of infection. On one hand, there is a group of adolescents with no sexual activity, and therefore not exposed to the risk of infection through sex. On the other hand, the other two groups differ from each other in their

degree of exposure that ranges from a slight fashion (exposed individuals with low ability to answer) to a much higher one (highly exposed individuals with high ability to answer).

When we consider the ability to respond to the risk, both in the skills to prevent infection and in the effective change of behavior, we observe that "circumstantially not exposed individuals" are not prepared to respond effectively to risk of infection as soon as they are exposed to it.

"Circumstantially not exposed individuals"

Female adolescents are the majority in this group and in comparison to the boys they are in increased risk because:

a) Sex ratios of HIV infection indicate that AIDS feminization process in Brazil has been more intense for those of 16 to 19 years old.

(Figure 2, in the back)

b) Vulnerability to HIV overlays vulnerability to teenage pregnancy.

Arguments that may explain sex ratios for this group are: the decrease of sexual initiation age and the tendency to abandon condom use when relationship is considerable stable; adolescents immature reproductive tracts which make them more susceptible than adults to HIV/STIs infections; the cultural tendency of women to engage to older men who, consequently, have a longer exposition to STIs and with whom girls are more likely to be, or to feel, less empowered.

Besides relating to the decrease of sexual initiation ages, teenage pregnancy relates to adolescents' lack of knowledge about their own body and reproductive system. Also, it is plausible to assume that sexual negotiation practices both preventive and reproductive may be particularly difficult in this age.

It is important to point that circumstantially not exposed girls are getting into their initiation debut in a moment of coexistence of very different patterns of sexuality. On one hand, sexual intercourse seems to be independent from the need of marriage making it

possible for youngster to choose separately having sex than having a family. On the other hand, a double morality for women and men is still strong in certain Brazilian regions and for certain socioeconomic strata. According to this double morality pattern, women are induced to a traditional control of sexuality by family whereas men are stimulated to take all sorts of health and sexual risks.

"Highly exposed individuals with high ability to answer"

The good knowledge about epidemics might be the main determinant for the selfperception of a higher risk to be infected by HIV among this group. Most integrants of this group are men who had their sexual debut at the same time or after AIDS epidemic. This might be determinant to the higher adherence to condom use among this group and, therefore, to the reduction of vulnerability in the group. Other factors associated with the low vulnerability of the group are HIV testing, and condom use negotiation.

"Exposed individuals with low ability to answer"

<u>The use of condoms</u>

In the survey we made use, in this group, the reasons more frequently mentioned for not using condoms were: a) they know the partner or the partner does not have other sexual relationships (more frequently reported by men), b) they use other contraceptive method, c) condom is physically unpleasant to men (b and c reported by both sexes).

On a general manner, in-depth interviews reflected the same point of view of the group.

> *"I do not know, is something like, I can not explain. It's not like having skin with skin. It turns to be plastic with skin. It is different, and you can feel it. It is different, and it is not good"* [i] *(Érica, 34 years old).*

> *"In my opinion, particularly I don't like condoms. I know it is something good, but as I trust my partner I don't get worried.* [What do you dislike in condoms?] *I don't know how to explain* [laughs] *I think they are weird, too weird. I don't feel good with it"*[ii] *(Chico, 26 years old).*

Trust and the construction of risk perception

Besides reporting something inexplicable and weird related with the use of condoms, Chico also reports the argument of trust in the partner that permeates the perception of the majority of interviewees, particularly men. In the words of André:

> *"(...) I put my hand on fire for her; I put my both hands on fire for her"*[iii] *(André, 25 years old).*

What Chico and André are expressing in their sayings, avoiding completely the possibility of female infidelity, might be better understood with the epidemiological concept of unique invulnerability. According to this concept, in face of any negative threat, individuals tend to believe they will not be the ones in risk.

Among women, trust is also a prevalent argument. However, women tend to combine aspects of trust and doubt in their sayings about partners behavior and their own evaluation of risk.

> *"We never now about tomorrow, but now I do not have any* [risk]. *Not on my side, I'm talking about me, right? On his side I do not know. I'm 90% sure about him, but there's still 10% where something can happen, right?"* [iv] *(Melissa, 26 years old)*

Some doubt about partner's behavior was referred by several women. However, Melissa's statement calls attention for her tentative to quantify a proportion of trust, as if trust was actually a divisible resource.

According to Houaiss, trust means "to believe in other's affective sincerity, what makes it incompatible to imagine any slip up or betray from the other part". Also, trust means "the feeling of respect, harmony, and mutual security".

Interviewed women seem to be reinventing the term trust. By this resignification the belief in other's affective sincerity and in the feeling of mutual security turns to be relative.

On one hand, this might not be a new process, but a reflex of naturalization of male infidelity. While considering trust a divisible resource or assuming male infidelity as a probability, women ought to consider both their own and their partners' responsibility

when self perceiving risk of STIs/AIDS infection. This twofold construction of risk is expressive in their sayings.

> *"I tell him: 'open your eyes, if you are doing something out open your eyes because you are married, you have a wife and a child' I tell, I talk to him a lot about all this.* [What do you tell him? What does this 'open your eyes means'?] It means to have other women, because men are not very trustable. [Do you consider you prevent yourself against aids?] *See…I do not have sex with condoms, he does not use them. At least he does not use them home. I think that, depending on me, I do not have any risk of getting a disease. But I do not know about him, you see?"* [v] *(Ana, 31 years old)*

An additional point of view is that by this twofold way of self-evaluating their risk of infection, women are putting into practice the information they have about epidemic.

> *"(...) we, married women, can't really trust. But, still…I trust that my husband does not have anyone else… we talk a lot about that stuff you know? Nowadays, the only preventive measure I take is the confidence I have in my tubal ligation. I won't have any more children…only that. So, sometimes I feel that is wrong because one never knows… most women who have AIDS caught it by trusting their husbands, but it shouldn't be like that. I don't know if is a mistake of mine (...)* [Do you consider to have any risk of getting AIDS?] *Yes, I consider I have because, as I told you, I don't take any prevention, I rely only in my tubal ligation and sometimes in my husband so, I am in risk"* [vi] *(Carla, 28 years old)*

Men and women differ in the variety of dimensions they emphasize when self-evaluating their risk of HIV infection. Among interviewees, men adhered to trust as the central dimension, sometimes the only one whereas women considered wider categories (trust; syringes surgical instruments either in manicures, physicians or dentists). In a lower degree, IV drug use, blood transfusion, and religion were referred by both men and women.

CONCLUSIONS AND RECOMMENDATIONS

According to the typology we built and data we analyzed, we identified some groups of individuals with different degrees of vulnerability to HIV infection through sexual contact. Also, we could perceive how gender aspects are among those that shape individuals vulnerability to the infection.

Our findings about the interplay of gender and vulnerability may be summarized in three: a) female adolescents who didn't started their sexual life might be very susceptible to infection when they have their sexual debut; b) men who initiated their sexual life after AIDS epidemic might present low susceptibility to infection, due to a good knowledge about epidemic and adequate attitudes toward prevention; c) men and women who are committed into a regular relationship tend not to adhere to condom as a preventive measure, and trust in partner appears as a popular "preventive measure", particularly among men.

Our understanding is that those findings reveal the persistency of a traditional gender pattern in Brazilian society, which compromises the adherence to attitudes that prevent HIV infection, particularly among women. Also, it is worth noting the value of GoM methodology to respond to our questions. Finally, information gathered through qualitative methodology made possible to identify aspects anticipated by the typology what reinforces the importance of integrating methodologies.

Some recommendations might be given in order to promote the effective change of behavior among the different groups we identified, specially regarding to the gender contrasts we found. First we suggest that campaigns focused in preventing pregnancy among adolescents should also offer information about STIs and HIV. We believe that sexual negotiation skills must be particularly stimulated in those campaigns. Second, thinking about the format of such campaigns, we recommend that school and local community environment should be instruments to spread information about prevention. When asked about how they get information about STIs and HIV, surveyed adolescents mentioned that friends and television are their main sources of information. Also, they considered that teachers would be the most appropriated persons to offer such information. Finally, regarding the most vulnerable group we identified, we suggest the remodeling of the already existent family planning meetings in public health centers in order to include specific information on HIV and in order to build skills for a correct evaluation of risk and of the need of prevention.

PARTIAL REFERENCES

CEPAL. **Vulnerabilidad Sociodemográfica**: Viejos y nuevos riesgos para comunidades, hogares y personas (Síntesis y conclusiones). Brasília: CEPAL, 2002. Available online: < http://www.eclac.cl/cgi-bin/getprod.asp?xml=/publicaciones/xml/4/10264/P10264.xml&xsl=/celade/tpl/p9f.xsl&base=/celade/tpl/top-bottom.xsl >

DEW, A. F., HENLEY, T.B. Reconsidering unique invulnerability in the context of sexual behavior. **Journal of Gender, Culture, and Health**, v.4, n.4, p.307-313, 1999.

HOUAISS, A. Houaiss Dictionary of the Portuguese Language (electronic version). Entry: Trust.

MANN, J. TARANTOLA, D. J. M. NETTER, T. W. (eds) **AIDS in the world**. Cambridge, Massachusetts e London, England: Harvard University Press, 1992.

MANTON, K.G.; WOODBURY, M.A.; TOLLEY, H.D. **Statistical Applications Using Fuzzy Sets.** New York, Chichenster, Brisbane, Toronto, Singapore: John Wiley & Sons, 1994.

FIGURE 1: Individual vulnerability to HIV infection through sexual transmission

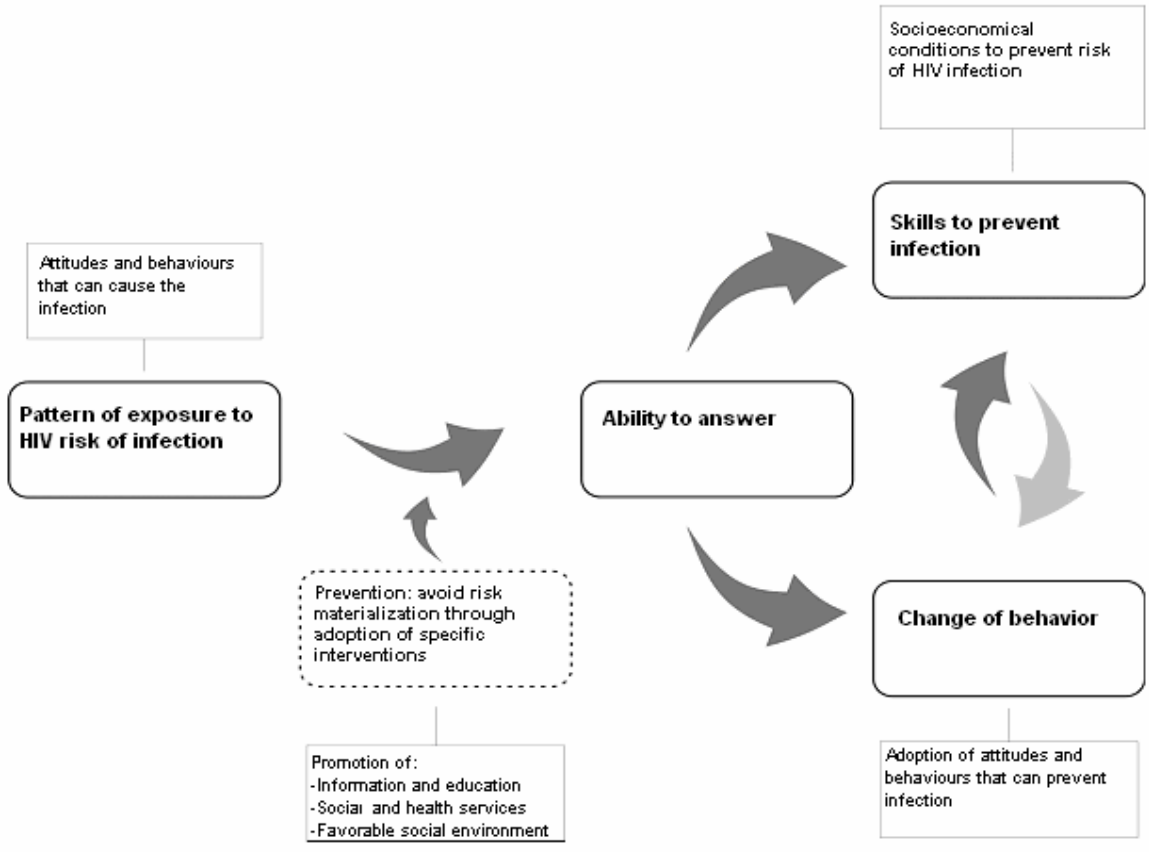

FIGURE 2: Sex-ratio patterns of reported AIDS cases - Brazil, 1995-2004

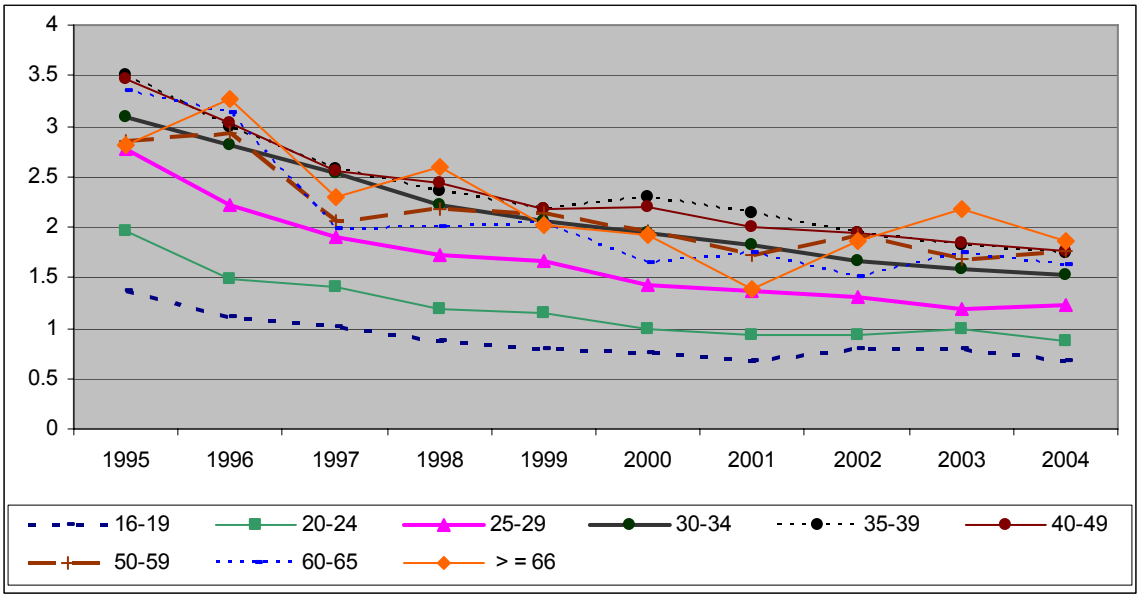

TABLE 1: Characteristics of the sample according to the variables selected for the typology of individual vulnerability to HIV infection through sexual contact

(continues)

Variable	Decription	Category	Frequencies	
			absolute	relative
	PATTERN OF EXPOSURE TO THE RISK OF HIV INFECTION			
sexo	Sex	1. Male	1395	45.50%
		2. Female	1673	54.50%
idade	Age range	1. 16 - 19	378	12.30%
		2. 20 - 24	385	12.50%
		3. 25 - 29	404	13.20%
		4. 30 - 34	424	13.80%
		5. 35 - 39	362	11.80%
		6. 40 - 49	562	18.30%
		7. 50 - 59	358	11.70%
		8. 60 and +	195	6.40%
religs	Religiosity	1. Not religious	1850	60.30%
		2. Religious	1218	39.70%
num_parc	Number of sexual partners in the last 12 month	0. NS/NR	30	1.00%
		1. None	624	20.30%
		1. One	2031	66.20%
		2. More than one	383	12.50%
condom	Condom use	0. Didn't have sexual intercourse in the last 12 months	624	20.30%
		1. Yes	666	21.70%
		2. No	1778	58.00%
esteril	Interviewee or partner is sterilized	0. Doesn't apply (interviewees are 50 years old or more)	150	4.90%
		1.Didn't have sexual intercourse in the last 12 months	624	20.30%
		2. Neither interviewee or the partner are sterilized	1750	57.00%
		3. One of both is sterilized	544	17.70%
dst	Has or had any STI	0. NS/NR	32	1.00%
		1. Yes	389	12.70%
		2. No	2647	86.30%
sx_anal	Anal sex practice with stable partner or last eventual partner	0. Didn't have sexual intercourse in the last 12 months	624	20.30%
		1. No	2114	68.90%
		2. Yes, with regular partner	228	7.40%
		3. Yes, with last non-regular partner in the last 12 months	53	1.70%
		4. Yes, with both partners	49	1.60%
estig1	Children living with HIV should not be allowed to go to school	0. NS/NR	48	1.60%
		1. Strongly agree	323	10.50%
		2. Agree	140	4.60%
		3. Disagree	196	6.40%
		4. Strongly disagree	2361	77.00%
estig2	Condom publicity in TV are a good idea	0. NS/NR	40	1.30%
		1. Strongly agree	2620	85.40%
		2. Agree	267	8.70%
		3. Disagree	46	1.50%
		4. Strongly disagree	95	3.10%
estig3	A HIV positive person should be fired so that his/her coworkers are protected	0. NS/NR	81	2.60%
		1. Strongly agree	432	14.10%
		2. Agree	237	7.70%
		3. Disagree	283	9.20%
		4. Strongly disagree	2035	66.30%
estig4	Pregnant HIV positive women should get an abortion	0. NS/NR	264	8.60%
		1. Strongly agree	876	28.60%
		2. Agree	324	10.60%
		3. Disagree	229	7.50%
		4. Strongly disagree	1375	44.80%
estig5	Would you accept that an HIV positive person take care of your children?	0. NS/NR	254	8.30%
		1. Yes	982	32.00%
		2. No	1832	59.70%
estig6	Would you accept that a house for support of people living with HIV ?	0. NS/NR	150	4.90%
		1. Yes	2041	66.50%
		2. No	877	28.60%

TABLE 1: Characteristics of the sample according to the variables selected for the typology of individual vulnerability to HIV infection through sexual contact (conclusion)

Variable	Decription	Category	Frequencies	
			absolute	relative
ABILITY TO ANSWER I - SKILLS TO PREVENT INFECTION				
cor	Racial classification	1. White	1555	50.70%
		2. *Negro*	1513	49.30%
escola	Level of schooling	0. Illiterate	237	7.70%
		1. Reads and writes	37	1.20%
		2. Incomplete elementary	1376	44.90%
		3. Elementary	337	11.00%
		4. Incomplete High School	303	9.90%
		5. High school	489	15.90%
		6. Incomplete Universitary	95	3.10%
		7. Universitary	194	6.30%
renda	Monthly individual income	0. NS/NR	112	3.70%
		1. No income	843	27.50%
		2. Up to 1 Mininum wage	508	16.60%
		3. More than 1 and up to 3 minimun wage	765	24.90%
		4. More than 3 and up to 5 minimun wage	382	12.50%
		5. More than 5 and up to 10 minimun wage	290	9.50%
		6. More than 10 minimun wage	168	5.50%
rendafam	Monthly family income	0. NS/NR	496	16.20%
		1. No income	19	0.60%
		2. Up to 1 Mininum wage	267	8.70%
		3. More than 1 and up to 3 minimun wage	715	23.30%
		4. More than 3 and up to 5 minimun wage	554	18.10%
		5. More than 5 and up to 10 minimun wage	565	18.40%
		6. More than 10 minimun wage	452	14.70%
classe	Economic range	A	100	3.30%
		B	543	17.70%
		C	954	31.10%
		D	1118	36.40%
		E	353	11.50%
inf_aids	Knowledge about transmission and risk of HIV infection	0. NR	21	0.70%
		1. Uninformed	117	3.80%
		2. Few informed	1083	35.30%
		3. Reasonably informed	1713	55.80%
		4. Well informed	134	4.40%
av_risco	Selfpercieved risk of HIV infection	0. NS/NR	103	3.40%
		1. No risk	1431	46.60%
		2. Low	1095	35.70%
		3. Moderate	328	10.70%
		4. High	111	3.60%
ABILITY TO ANSWER II - EFFECTIVE CHANGE OF BEHAVIOUR				
testehiv	Was tested for HIV	0. NR	6	0.20%
		1. Yes	485	15.80%
		2. No	2577	84.00%
mudou	Changed behaviour due to AIDS	1. Yes	2185	71.20%
		2. No	883	28.80%
neg_cond	Condom use/non use when partner is unwilling to it	0. NR	3	0.10%
		0. Didn't have sexual intercourse in the last 12 months	624	20.30%
		2. Never faced this situation	2076	67.70%
		3. Decided not to have sex	106	3.50%
		4. Had sex after getting into an agreement, or had unpenetrative sex	170	5.50%
		5. Had a condom, without partners agreement	26	0.80%
		6. Had penetrative sex with no condom	63	2.10%

Source: "Pesquisa sobre Comportamento Sexual da População Brasileira e Percepções sobre HIV/AIDS" (Ministério da Saúde - SAS - PNDST/AIDS, 1998).

Notes: NS stands for "Doesn't know" and NR for "No response"; Economic ranges from A (+) to E (-) serve as a proxi of economic stratification derived from information about familiar consuption patterns; As of 1998 (May) Brazilian minimun wage corresponded to, approximately, U$110.

TABLE 2: Characteristics of interviewees – Vila Barreirinhas, 2004

Category	Men	Women	Total
	20	20	40
Age group			
25-29	5	6	11
30-34	3	10	13
35-39	5	4	9
40-44	4	0	4
45-49	3	0	3
Years of schooling			
0	2	0	2
1-4	2	7	9
5-8	13	11	24
9+	3	2	5
Religion			
Catholicism	10	7	17
Protestantism	6	5	11
Others[1]	3	3	6
None	1	5	6
Lengh of the union (years)			
<2	2	1	3
3-6	5	4	9
7+	13	15	28
Current contraceptive option			
Tubal ligation	7	6	13
Oral contraceptive pills	7	5	12
Male condom	3	4	7
Others[2]	1	4	5
None	2	1	3
Children with current partner			
Yes	17	18	35
No	3	2	5

Source: Fieldwork for the research "Raça, gênero e vulnerabilidade entre casais: negociação sexual e prevenção de DST's/AIDS em uniões heterossexuais em comunidades faveladas de Belo Horizonte – MG".

Notes: [1] Includes spiritism, afro-brazilian religions and mormon church; [2] Includes IUD and hormonal injection.

TABLE 3: Typology of individual vulnerability to HIV infection through sexual contact with 3 pure-types

(continues)

Variable	Category	Frequencies		Lambdas			Factors (1)		
		absolute	relative	λ1jl	λ2jl	λ3jl	1	2	3
RISCO									
sexo	1. Male	1395	0.4550	0.2329	0.3599	0.6727	0.5119	0.7910	1.4785
	2. Female	1673	0.5450	0.7671	0.6401	0.3273	1.4075	1.1745	0.6006
idade	1. 16 - 19	378	0.1230	0.3494	0.0000	0.1275	2.8407	0.0000	1.0366
	2. 20 - 24	385	0.1250	0.0957	0.0842	0.1846	0.7656	0.6736	1.4768
	3. 25 - 29	404	0.1320	0.0450	0.1406	0.1673	0.3409	1.0652	1.2674
	4. 30 - 34	424	0.1380	0.0448	0.1387	0.1856	0.3246	1.0051	1.3449
	5. 35 - 39	362	0.1180	0.0483	0.1198	0.1516	0.4093	1.0153	1.2847
	6. 40 - 49	562	0.1830	0.1162	0.2196	0.1833	0.6350	1.2000	1.0016
	7. 50 - 59	358	0.1170	0.1669	0.2062	0.0000	1.4265	1.7624	0.0000
	8. 60 and +	195	0.0640	0.1338	0.0909	0.0000	2.0906	1.4203	0.0000
religs	1. Not religious	1850	0.6030	0.4527	0.5892	0.6918	0.7507	0.9771	1.1473
	2. Religious	1218	0.3970	0.5473	0.4108	0.3082	1.3786	1.0348	0.7763
num_parc	0. NS/NR	30	0.0100	0.0000	0.0139	0.0102	0.0000	1.3900	1.0200
	1. None	624	0.2030	1.0000	0.0000	0.0000	4.9261	0.0000	0.0000
	1. One	2031	0.6620	0.0000	0.9861	0.6578	0.0000	1.4896	0.9937
	2. More than one	383	0.1250	0.0000	0.0000	0.3319	0.0000	0.0000	2.6552
condom	0. Didn't have sexual intercourse in the last 12 months	624	0.2030	1.0000	0.0000	0.0000	4.9261	0.0000	0.0000
	1. Yes	666	0.2170	0.0000	0.0000	0.5795	0.0000	0.0000	2.6705
	2. No	1778	0.5800	0.0000	1.0000	0.4205	0.0000	1.7241	0.7250
esteril	0. Doesn't apply (interviewees are 50 years old or more)	150	0.0490	0.0000	0.1180	0.0000	0.0000	2.4082	0.0000
	1.Didn't have sexual intercourse in the last 12 months	624	0.2030	1.0000	0.0000	0.0000	4.9261	0.0000	0.0000
	2. Neither the interviewee or the partner is sterilized	1750	0.5700	0.0000	0.5803	0.8649	0.0000	1.0181	1.5174
	3. One of both is sterilized	544	0.1770	0.0000	0.3018	0.1351	0.0000	1.7051	0.7633
dst	0. NS/NR	32	0.0100	0.0547	0.0000	0.0000	5.4700	0.0000	0.0000
	1. Yes	389	0.1270	0.0000	0.0654	0.2655	0.0000	0.5150	2.0906
	2. No	2647	0.8630	0.9453	0.9346	0.7345	1.0954	1.0830	0.8511
sx_anal	0. Didn't have sexual intercourse in the last 12 months	624	0.2030	1.0000	0.0000	0.0000	4.9261	0.0000	0.0000
	1. No	2114	0.6890	0.0000	1.0000	0.7233	0.0000	1.4514	1.0498
	2. Yes, with regular partner	228	0.0740	0.0000	0.0000	0.1926	0.0000	0.0000	2.6027
	3. Yes, with last non-regular partner in the last 12 months	53	0.0170	0.0000	0.0000	0.0437	0.0000	0.0000	2.5706
	4. Yes, with both partners	49	0.0160	0.0000	0.0000	0.0404	0.0000	0.0000	2.5250
estig1	0. NS/NR	48	0.0160	0.0227	0.0275	0.0000	1.4188	1.7188	0.0000
	1. Strongly agree	323	0.1050	0.1277	0.1957	0.0000	1.2162	1.8638	0.0000
	2. Agree	140	0.0460	0.0503	0.0874	0.0000	1.0935	1.9000	0.0000
	3. Disagree	196	0.0640	0.0922	0.0884	0.0248	1.4406	1.3813	0.3875
	4. Strongly disagree	2361	0.7700	0.7071	0.6010	0.9752	0.9183	0.7805	1.2665
estig2	0. NS/NR	40	0.0130	0.0291	0.0182	0.0000	2.2385	1.4000	0.0000
	1. Strongly agree	2620	0.8540	0.7964	0.8121	0.9254	0.9326	0.9509	1.0836
	2. Agree	267	0.0870	0.1017	0.0991	0.0672	1.1690	1.1391	0.7724
	3. Disagree	46	0.0150	0.0243	0.0181	0.0074	1.6200	1.2067	0.4933
	4. Strongly disagree	95	0.0310	0.0486	0.0525	0.0000	1.5677	1.6935	0.0000
estig3	0. NS/NR	81	0.0260	0.0363	0.0473	0.0000	1.3962	1.8192	0.0000
	1. Strongly agree	432	0.1410	0.1611	0.2657	0.0000	1.1426	1.8844	0.0000
	2. Agree	237	0.0770	0.0861	0.1473	0.0000	1.1182	1.9130	0.0000
	3. Disagree	283	0.0920	0.1033	0.1039	0.0750	1.1228	1.1293	0.8152
	4. Strongly disagree	2035	0.6630	0.6133	0.4358	0.9250	0.9250	0.6573	1.3952
estig4	0. NS/NR	264	0.0860	0.1192	0.1165	0.0384	1.3860	1.3547	0.4465
	1. Strongly agree	876	0.2860	0.2521	0.4219	0.1546	0.8815	1.4752	0.5406
	2. Agree	324	0.1060	0.1038	0.0589	0.1557	0.9792	0.5557	1.4689
	3. Disagree	229	0.0750	0.0773	0.0480	0.1012	1.0307	0.6400	1.3493
	4. Strongly disagree	1375	0.4480	0.4476	0.3548	0.5500	0.9991	0.7920	1.2277
estig5	0. NS/NR	254	0.0830	0.1252	0.0416	0.1051	1.5084	0.5012	1.2663
	1. Yes	982	0.3200	0.2505	0.0000	0.6599	0.7828	0.0000	2.0622
	2. No	1832	0.5970	0.6243	0.9584	0.2350	1.0457	1.6054	0.3936
estig6	0. NS/NR	150	0.0490	0.0652	0.0880	0.0000	1.3306	1.7959	0.0000
	1. Yes	2041	0.6650	0.6285	0.3796	1.0000	0.9451	0.5708	1.5038
	2. No	877	0.2860	0.3064	0.5323	0.0000	1.0713	1.8612	0.0000

TABLE 3: Typology of individual vulnerability to HIV infection through sexual contact with 3 pure-types (conclusion)

Variable	Category	Frequencies		Lambdas			Factors (1)		
		absolute	relative	λ1jl	λ2jl	λ3jl	1	2	3
ABILITY TO ANSWER I - SKILLS TO PREVENT INFECTION									
cor	1. White	1555	0.5070	0.4522	0.3780	0.6784	0.8919	0.7456	1.3381
	2. *Negro*	1513	0.4930	0.5478	0.6220	0.3216	1.1112	1.2617	0.6523
escola	0. Illiterate	237	0.0770	0.1252	0.1286	0.0000	1.6260	1.6701	0.0000
	1. Reads and writes	37	0.0120	0.0155	0.0221	0.0000	1.2917	1.8417	0.0000
	2. Incomplete elementary	1376	0.4490	0.5220	0.7920	0.0000	1.1626	1.7639	0.0000
	3. Elementary	337	0.1100	0.1015	0.0573	0.1722	0.9227	0.5209	1.5655
	4. Incomplete High School	303	0.0990	0.1506	0.0000	0.1873	1.5212	0.0000	1.8919
	5. High school	489	0.1590	0.0754	0.0000	0.3995	0.4742	0.0000	2.5126
	6. Incomplete Universitary	95	0.0310	0.0099	0.0000	0.0749	0.3194	0.0000	2.4161
	7. Universitary	194	0.0630	0.0000	0.0000	0.1662	0.0000	0.0000	2.6381
renda	0. NS/NR	112	0.0370	0.0309	0.0445	0.0308	0.8351	1.2027	0.8324
	1. No income	843	0.2750	0.3461	0.3701	0.1450	1.2585	1.3458	0.5273
	2. Up to 1 mininum wage	508	0.1660	0.3237	0.2561	0.0000	1.9500	1.5428	0.0000
	3. More than 1 and up to 3 minimun wage	765	0.2490	0.2645	0.3293	0.1581	1.0622	1.3225	0.6349
	4. More than 3 and up to 5 minimun wage	382	0.1250	0.0348	0.0000	0.2914	0.2784	0.0000	2.3312
	5. More than 5 and up to 10 minimun wage	290	0.0950	0.0000	0.0000	0.2373	0.0000	0.0000	2.4979
	6. More than 10 minimun wage	168	0.0550	0.0000	0.0000	0.1375	0.0000	0.0000	2.5000
rendafam	0. NS/NR	496	0.1620	0.2519	0.1555	0.1327	1.5549	0.9599	0.8191
	1. No income	19	0.0060	0.0107	0.0101	0.0000	1.7833	1.6833	0.0000
	2. Up to 1 mininum wage	267	0.0870	0.1592	0.1421	0.0000	1.8299	1.6333	0.0000
	3. More than 1 and up to 3 minimun wage	715	0.2330	0.3166	0.4384	0.0000	1.3588	1.8815	0.0000
	4. More than 3 and up to 5 minimun wage	554	0.1810	0.1749	0.2539	0.1174	0.9663	1.4028	0.6486
	5. More than 5 and up to 10 minimun wage	565	0.1840	0.0868	0.0000	0.3962	0.4717	0.0000	2.1533
	6. More than 10 minimun wage	452	0.1470	0.0000	0.0000	0.3538	0.0000	0.0000	2.4068
classe	A	100	0.0330	0.0175	0.0000	0.0741	0.5303	0.0000	2.2455
	B	543	0.1770	0.0776	0.0000	0.4245	0.4384	0.0000	2.3983
	C	954	0.3110	0.2629	0.1465	0.5015	0.8453	0.4711	1.6125
	D	1118	0.3640	0.4708	0.6541	0.0000	1.2934	1.7970	0.0000
	E	353	0.1150	0.1713	0.1994	0.0000	1.4896	1.7339	0.0000
inf_aids	0. NR	21	0.0070	0.0098	0.0068	0.0055	1.4000	0.9714	0.7857
	1. Uninformed	117	0.0380	0.0509	0.0688	0.0000	1.3395	1.8105	0.0000
	2. Few informed	1083	0.3530	0.3902	0.4859	0.1957	1.1054	1.3765	0.5544
	3. Reasonably informed	1713	0.5580	0.5229	0.4384	0.7011	0.9371	0.7857	1.2565
	4. Well informed	134	0.0440	0.0262	0.0000	0.0977	0.5955	0.0000	2.2205
av_risco	0. NS/NR	103	0.0340	0.0365	0.0644	0.0000	1.0735	1.8941	0.0000
	1. No risk	1431	0.4660	0.6507	0.6081	0.2325	1.3964	1.3049	0.4989
	2. Low	1095	0.3570	0.2197	0.2185	0.5650	0.6154	0.6120	1.5826
	3. Moderate	328	0.1070	0.0619	0.0678	0.1691	0.5785	0.6336	1.5804
	4. High	111	0.0360	0.0313	0.0411	0.0334	0.8694	1.1417	0.9278
ABILITY TO ANSWER II - EFFECTIVE CHANGE OF BEHAVIOUR									
testehiv	0. NR	6	0.0020	0.0000	0.0071	0.0000	0.0000	3.5500	0.0000
	1. Yes	485	0.1580	0.0000	0.0000	0.4097	0.0000	0.0000	2.5930
	2. No	2577	0.8400	1.0000	0.9929	0.5903	1.1905	1.1820	0.7027
mudou	1. Yes	2185	0.7120	0.6391	0.6452	0.8161	0.8976	0.9062	1.1462
	2. No	883	0.2880	0.3609	0.3548	0.1839	1.2531	1.2319	0.6385
neg_cond	0. NR	3	0.0010	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	1. Didn't have sexual intercourse in the last 12 months	624	0.2030	1.0000	0.0000	0.0000	4.9261	0.0000	0.0000
	2. Never faced this situation	2076	0.6770	0.0000	0.9788	0.7166	0.0000	1.4458	1.0585
	3. Decided not to have sex	106	0.0350	0.0000	0.0212	0.0668	0.0000	0.6057	1.9086
	4. Had sex after getting into an agreement, or had unpenetrative sex	170	0.0550	0.0000	0.0000	0.1431	0.0000	0.0000	2.6018
	5. Had a condom, without partners agreement	26	0.0080	0.0000	0.0000	0.0214	0.0000	0.0000	2.6750
	6. Had penetrative sex with no condom	63	0.0210	0.0000	0.0000	0.0521	0.0000	0.0000	2.4810

Source: "Pesquisa sobre Comportamento Sexual da População Brasileira e Percepções sobre HIV/AIDS" (Ministério da Saúde - SAS - PNDST/AIDS, 1998).
Notes: NS stands for "Doesn't know" and NR for "No response"; Economic ranges from A (+) to E (-) serve as a proxi of economic stratification derived from information about familiar consuption patterns; As of 1998 (May) Brazilian minimun wage corresponded to, approximately, U$110.
(1) Reason between the estimated probability (λkjl) and the relative frequency. Shadows indicate the characteristics that describe the types (= or > to 1.2)

[i] "Ah, assim, tipo assim, eu não sei te explicar, não é assim aquela, não fica aquela coisa assim: de pele com pele, fica plástico com a pele, você sente, né? É diferente, não é legal não".

[ii] "Eu, na minha opinião, eu, particularmente, não gosto de camisinha. Eu sei que ela é uma coisa boa, mas pela confiança que eu tenho na minha parceira, aí já me deixa mais tranqüilo. A camisinha... *O que que você não gosta na camisinha?* Ah, eu não sei te explicar não. [Risos entrevistador] Eu acho esquisito, eu acho muito esquisito. Eu não me sinto bem com ela"

[iii] "(...) eu boto a minha mão no fogo por ela, boto as minhas duas mãos no fogo"

[iv] "[Refletindo acerca da (im)possibilidade de infidelidade em sua união] Quer dizer, a gente não sabe o que pode acontecer com a gente, que a gente não sabe o dia de amanhã, né? Mas, assim, no momento, no momento não. Não de minha parte, né? Eu falo por mim. Agora, dele é que eu não sei, né? Dele, assim, noventa por cento, mas tem dez por cento que pode acontecer, no caso, né?".

[v] "Eu falo: 'olha, abre o olho, se você tiver fazendo alguma coisa ai por fora abre o olho, você é casado, tem esposa, tem filho, né?' Aí eu falo, eu converso muito com ele sobre esses negócios assim. [E aí, você fala o quê nesse 'abrir o olho'?] É pegar mulher aí fora, né, porque homem não é muito confiável. [Você considera que se previne contra a aids?] Olha, eu não uso camisinha não, ele nem usa camisinha. É, ele não usa não, dentro de casa pelo menos não. Mas eu acho, sei lá, eu acho que... Se depender de mim, eu não corro o risco de pegar não, sabe. Agora, eu não sei a parte dele, né?"

[vi] "(…) a gente que é casada, assim, a gente não pode muito confiar. Mas, mesmo assim, eu confio que o meu marido... que ele não tem outras coisas fora, porque a gente conversa muito sobre as coisas, sabe? Então, assim, não me previno agora mais com nada, (...) só com segurança na minha ligadura de que eu não vou ter mais filhos. Só nisso. Assim, às vezes eu acho até errado porque a gente nunca sabe, porque a maioria das doenças que as mulheres tem, de aids, assim, é mais confiando no marido, mas não deve ser assim, né? Eu não sei se é um erro meu (...) *Você considera ter algum risco de pegar aids?* Ah, eu considero sim porque é igual eu te falei: nesse caso ai de eu não usar nada, só confiando na ligadura e às vezes confiando nele, eu corro o risco sim."