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# Stigma, discrimination and HIV/AIDS in the Brazilian context, 1998 and 2005

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## ABSTRACT

**OBJECTIVE:** To identify discriminatory attitudes in two moments of the Brazilian HIV/AIDS epidemic, as well as the occurrence of possible changes.

**METHODS:** The Intention of Discrimination Index was obtained by scoring 1 for discriminatory situations or 0, when the opposite was the case. Intention of discrimination ranges were established by means of the clustering technique, and made compatible between the 1998 and 2005 surveys. Mean comparisons, chi-square test and ordered logit adjusted regression models were used to verify association between the index and socio-demographic variables.

**RESULTS:** Between the 1998 and 2005 surveys, there was a statistically significant reduction in the proportion of people who answered "yes" to anti-HIV test's being mandatory in the following cases: admission for employment, before getting married, when joining the military service, drug users, foreigners entering the country, sex professionals, and for all the people. To have lower level of education, to be female, to live in the North/Northeast regions of Brazil, and to be aged over 45 years are factors associated with higher intention of discrimination level.

**CONCLUSIONS:** The growth of intention of discrimination shows that information about ways of AIDS transmission and non-transmission still needs to be better planned and promoted, especially among populations that have lower level of education, live in the North/Northeast regions, are female and aged over 45 years.

**DESCRIPTORS:** Acquired Immunodeficiency Syndrome. Stigma. Prejudice. Health Knowledge, Attitudes, Practice. Population Studies in Public Health. Brazil. Cross-sectional studies. Brazil.

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## INTRODUCTION

Stigma and discrimination associated with HIV/AIDS may reduce/hinder one's search for a test, due to fear of the results, as well as the search for adequate treatment in health services after confirmation of positive serology.<sup>8-10</sup>

In Brazil, population surveys have enabled the assessment of some discriminatory opinions in relation to HIV, and also the magnitude of this problem.

Usual stigma definitions<sup>a</sup> somewhat express the strength of the meanings that have been attributed to stigma as regards people affected by the HIV/AIDS epidemic.

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<sup>a</sup> The Aurélio Portuguese Dictionary describes the word "stigma" as follows: noun. 1. Scar, sign; figurative. Shameful, infamous characteristic.

Throughout history, other diseases have been stigmatized, such as the Black Death in the 14<sup>th</sup> century and the cholera in the 19<sup>th</sup> century. However, the nature of the AIDS epidemic, its dynamics, reach, specific characteristics, and moral issues involved pose challenges to the field of knowledge and intervention. This, in its turn, requires quick and adequate responses with an effective impact on the design of strategies to fight stigma and its consequences.

According to Mann (1987), cited by Parker & Agleton,<sup>a</sup> stigma and discrimination characterize the third phase of the AIDS epidemic and constitute “an issue which is as important for global AIDS as the disease itself”. AIDS stigmatization followed the appearance of the first cases of this disease in the 1980’s, due to its association with specific population groups that were more affected in the beginning (men who had sex with other men, drug users and sex workers), as well as with the image of a deadly, terrifying disease, which was created with the support of the media. Despite public campaigns to clarify ways of AIDS transmission and the revelation of seropositivity by public figures, AIDS/HIV stigma remains in distinct ways throughout the world.<sup>7,10,a,b</sup>

Even by acknowledging stigma as a marker of individual and social differences, this does not mean a fixed attribute, but rather a social and cultural construction, thus historical and changeable, which establishes relationships that belittle others. In this sense, it is inserted into socially constructed contexts and processes.<sup>b</sup>

Many of the harmful consequences of the stigmatization of people and/or specific groups involve discrimination in public places and private institutions, generating hostility, segregation, exclusion and/or self-exclusion of those who have their serology revealed. Even though the stigma and epidemic are a worldwide concern, there are specific, contextualized forms of discriminatory manifestations of an individual or collective nature.<sup>1-3,6,10,11,b</sup> In some contexts, this discrimination is reflected in laws that deal with mandatory testing for specific populations, the so-called risk groups. In other situations, there are laws that intend to limit the flow of seropositive people through the application of immigration laws.<sup>b</sup> Coercive measures adopted by some countries, such as the mandatory notification by those who are infected, directly affect people’s level of vulnerability, thus contributing to further reinforce stigma and discrimination.

AIDS stigma overshadows previous stigmas associated with different social groups, such as the homosexuals,

sex workers and drug users, evoking multiple meanings. These concepts and pre-conceived meanings are part of the cultural and social matrix that creates differences and hierarchies and also legitimizes social inequality structures. Pre-existing stigmas establish an association between AIDS and homosexuality, prostitution and sexual deviation, markers that still exist in the stigmatization process.<sup>b</sup>

Some studies<sup>1,11</sup> have pointed out that, regardless of the differences concerning the populations affected, subgroups or the population in general, there is little distinction in the ways stigma is manifested. In this sense, the universalization of stigma and discrimination in different socioeconomic and cultural contexts has been observed.

When analyzing what Brazilians think about living with people with HIV, tests for specific population groups and abortion for seropositive pregnant women being mandatory, there is the possibility to explore the degree of intention of discrimination against people with HIV/AIDS in both surveys mentioned.

The present article aimed to identify the prevalence of discriminatory attitudes in two moments of the Brazilian HIV/AIDS epidemic and the possible changes that occurred.

## METHODS

Data analyzed refer to the findings from the survey entitled “Sexual Behavior and Perceptions on HIV/AIDS by the Brazilian Population”, conducted in 2005,<sup>c</sup> and compared to a similar survey conducted in 1998.<sup>d</sup> The 1998 survey<sup>d</sup> covered 24 Brazilian states (except for Tocantins and Roraima) and the Federal District, totaling a sample of 3,600 people who answered a questionnaire with 204 questions.

In 2005, a second survey was conducted. A total of four geographic areas were established, corresponding to groups of states per regions: North and Northeast; Central-West and Southeast, except for São Paulo; South; and the state of São Paulo. The target-population for research consisted of all the residents, aged between 16 and 65 years, from urban areas in micro-regions that had over 100,000 inhabitants by the year 2000.

Stratified multiple-stage sampling was used, with a methodology described in Bussab<sup>4</sup> (2007). Sample size was defined as 5,040 interviews, with 1,260 homes randomly selected in each of the four major geographic

<sup>a</sup> Parker R, Agleton P. Estigma, discriminação e AIDS, Rio de Janeiro: Associação Brasileira Interdisciplinar de AIDS; 2001. (Coleção ABIA, Cidadania e Direitos, 1)

<sup>b</sup> Cogan J, Herek G. Stigma. In: The body: the complete HIV/Aids resource. 1998. Available from : <http://www.thebody.com/encyclo/stigma.html> [Cited 2007 Nov 11].

<sup>c</sup> Research coordinated by Centro Brasileiro de Análise e Planejamento (Cebap) and Ministério da Saúde.

<sup>d</sup> Berquó E, coordenador. In: Comportamento sexual da população brasileira e percepções do HIV/AIDS. Brasília (DF): Ministério da Saúde, Secretaria de Políticas de Saúde, Coordenação Nacional DST e Aids; 2000. (Série avaliação, 4).

regions. For each individual randomly selected in a household, a questionnaire containing 237 questions divided into 13 sections was applied. A total of 13 questions about behavior associated with prejudice and discrimination against HIV/AIDS were asked.

Simple descriptive analyses were performed, and standard error for numeric variables and frequencies for category variables were presented. Chi-square tests which took into account the complex structure of the sample design were used to compare the distributions of category variables between years. A discrimination score was subsequently proposed from the items on Table 1, whose consistency was assessed using Cronbach's Alpha coefficient. The intention of discrimination index (IDI) was created by scoring 1 for responses considered to be discriminatory, and 0 for not discriminatory. Individuals who answered "I do not know" or those who refused to answer were excluded from the study. The "Yes" or "I completely/partly agree" responses were considered discriminatory in questions 1 to 11. For questions 12 and 13, the "No" or "I completely/partly disagree" responses were considered discriminatory.

To measure score reliability, Cronbach's alpha values were calculated for 1998 and 2005 for the 13 items, resulting in 0.458 and 0.585 for 1998 and 2005, respectively. Analyses revealed nine items with acceptable levels of reliability (0.748 in 1998 and 0.808 in 2005). Thus, the intention of discrimination index was comprised of nine items about anti-HIV test's being mandatory (1 to 9). Items 10 to 13, which were not included in the index, were analyzed separately. The IDI varied from zero to nine points.

IDI groups were generated by cluster analysis using both periods simultaneously. The algorithm used in cluster analysis was the k-means. The six final groups were determined using evaluating gains in homogeneity within the groups, according to the increase in the number of classes (reduction in the sum of squares within groups). Groups 1 to 6 correspond, respectively, to respondents whose IDI values were: 0 to 1 point (group with lowest IDI); 2 to 3 points; 4 points; 5 points; 6 to 7 points; and 8 to 9 points (group with highest IDI).

To establish associations between these groups and the independent variables, ordered logit model was performed,<sup>12</sup> which corresponds to a generalization of logistic regression for ordered polytomous responses. For each year, ordered logit models were adjusted to verify associations with several independent variables.

According to Wooldridge<sup>12</sup> (2002), ordered logit enables the construction of a model where each individual can be classified into one of the groups of intention of discrimination (resulting from the cluster analysis), according to their level of prejudice (latent variable), and depends on their socio-demographic profile or HIV-related items. In each ordered logit model, in addition

to estimated coefficients, discrimination thresholds were shown. The  $t_1 < t_2 < \dots < t_5$  thresholds define, on the latent variable scale, the class range limits of degree of discrimination for the baseline group. Thus, an individual from the baseline group with a degree of discrimination lower than  $t_1$  is classified as belonging to group 1, that of lowest discrimination. On the other hand, that with a degree above the  $t_5$  threshold would tend to be classified in the group with highest intention of discrimination. For the groups that did not form the basal group, the thresholds were adjusted according to their profile.

The method adopted for the selection of variables in the model was the backward elimination method, which consists in initially incorporating all independent variables, eliminating, at each step, the non-significant variables at the 5% level. However, the sex and ethnic group variables were kept in the model as control variables, regardless of the significances obtained. Models were constructed in an independent manner for each year.

The Stata statistical software was used to adjust the models, based on the information from the sample design structure. A level of significance of 5% was considered for statistical tests.

The project of the survey "Comportamento Sexual e Percepções da População Brasileira Sobre HIV/Aids" was approved by the Ethics Committee of Faculdade de Saúde Pública of Universidade de São Paulo.

## RESULTS

Table 2 shows a statistically significant reduction in the percentage of people who, between 1998 and 2005, answered "Yes" to the AIDS test being mandatory for the following cases: admission for employment, before getting married, when joining the Army, drug users, foreigners entering the country, and sex workers. On the other hand, changes in the pattern of responses between 1998 and 2005 were not found in the following cases: before hospitalizations and among pregnant women. A high level of agreement for tests being mandatory in the case of sex workers, drug users and pregnant women could be verified in both periods (>90%).

In relation to the agreement of the item "pregnant women should have an abortion", a reduction from 45.2% in 1998 to 21.9% in 2005 was observed.

Table 3 shows the means of the intention of discrimination index, where the tendency of reduction of this score in 2005 in relation to 1998 stands out.

On Tables 4 and 5, the mean IDIs are shown, according to the socio-demographic variables and questionnaire items: testing sometime in life; close contact with people living with HIV/AIDS; and abortion.

**Table 1.** Comparable dependent variables between 1998 and 2005.

| Variable  | 2005 | 1998                                  |
|---|------|---------------------------------------|
| Do you think an AIDS test should be mandatory...  |      |                                       |
| D1 in employment admission?   | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D2 before getting married?  | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D3 at hospitalizations?   | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D4 for pregnant women?  | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D5 to join the Army?  | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D6 for drug users?  | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D7 for foreigners entering the country?   | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D8 for sex workers?   | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D9 for all the people?  | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D10 – Do you think that before someone is tested for HIV, it should be mandatory that him/her authorize it? | Yes  | Yes                                   |
|   | No   | No                                    |
| D11 –Do you agree that HIV- infected pregnant women should have an abortion?                                | Yes  | Totally agree/ partially agree        |
|   | No   | Partially disagree / totally disagree |
| D12- Would you accept a support center for people living with HIV/AIDS operate near your home?              | Yes  | Yes                                   |
|   | No   | No                                    |
| D13- Would you let your children be in company of a person living with HIV/AIDS?                            | Yes  | Yes                                   |
|   | No   | No                                    |

On Table 4, a decrease in the means of indices between 1998 and 2005 was observed, except among those who were separated/divorced or widowed, and those who did not know how to read or write.

In the 1998 survey edition, there were no differences among the means of intention of discrimination indices, regardless of one having a religion or what religion that was. Conversely, in the 2005 survey findings, Pentecostals showed means that were above those of people who had a different religion or no religion (Table 4). In terms of level of education, a gradual decrease in mean IDI scores both in 1998 and 2005 was observed.

In relation to marital status in 1998, only those who were single showed patterns that were distinct from the remaining ones, with the lowest mean of IDI. In 2005, widowed people showed the highest means of IDI, followed by those who were separated/divorced, married/cohabiting, and lowest values were found among single people.

By analyzing scores per age group, in 1998, the 16-34-year age group showed means of IDI below the 35-year-or-older age group. In 2005, individuals within the 16-24-year age group showed means below those from other age groups, which had similar patterns.

In 1998, people from the North/Northeast regions showed means of IDI above those from people living in the South. In 2005, a similar situation was found between these two regions, in addition to a difference between the state of São Paulo and the North/Northeast regions.

On Table 5, the means of IDI referring to the questions “Have you ever been tested for HIV in your life?” and “Do you know/have you met anyone who has the AIDS virus?” are shown, as well as a hypothetical situation for male respondents to choose from – “If your wife or female partner were pregnant and tests pointed to her having the AIDS virus, which of the following would you advise her to do?” – and the question “Do you agree that pregnant women with the AIDS virus should have an abortion?”.

**Table 2.** Distribution of the dependent variables mentioned. Brazil, 1998 and 2005.

| Variable   | 1998      |       | 2005      |       |
|--|-----------|-------|-----------|-------|
|  | Frequency | %     | Frequency | %     |
| Should the AIDS test be mandatory in the case of admission for employment? |           |       |           |       |
| Yes  | 2,171     | 65.9  | 2.835     | 57.3  |
| No   | 1,126     | 34.1  | 2.114     | 42.7  |
| Total  | 3,296     | 100.0 | 4.949     | 100.0 |
| Does not know/<br>Did not answer   | 28        |       | 91        |       |
| Total  | 3,324     | 100,0 | 5,040     | 100.0 |
| p*   | <0.001    |       |           |       |
| Should the AIDS test be mandatory before getting married?                  |           |       |           |       |
| Yes  | 3,013     | 91.5  | 4.009     | 79.5  |
| No   | 281       | 8.5   | 975       | 19.3  |
| Total  | 3,294     | 100.0 | 4.983     | 98.9  |
| Does not know/<br>Did not answer   | 30        |       | 57        | 1.1   |
| Total  | 3,324     |       | 5,040     | 100.0 |
| p*   | <0.001    |       |           |       |
| The AIDS test should be mandatory before hospitalizations?                 |           |       |           |       |
| Yes  | 2,824     | 85.4  | 4.077     | 82.1  |
| No   | 483       | 14.6  | 889       | 17.9  |
| Total  | 3,307     | 100.0 | 4.967     | 100.0 |
| Does not know/<br>Did not answer   | 17        |       | 73        |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | 0.077     |       |           |       |
| The AIDS test should be mandatory for pregnant women?                      |           |       |           |       |
| Yes  | 3,107     | 94.3  | 4.642     | 92.8  |
| No   | 186       | 5.7   | 361       | 7.2   |
| Total  | 3,294     | 100.0 | 5.003     | 100.0 |
| Does not know/<br>Did not answer   | 30        |       | 37        |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | 0.092     |       |           |       |
| The AIDS test should be mandatory to join the Army?                        |           |       |           |       |
| Yes  | 2,817     | 85.9  | 3.719     | 75.5  |
| No   | 462       | 14.1  | 1.210     | 24.5  |
| Total  | 3,279     | 100.0 | 4.929     | 100.0 |
| Does not know/<br>Did not answer   | 45        |       | 111       |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | <0.001    |       |           |       |
| The AIDS test should be mandatory for drug users?                          |           |       |           |       |
| Yes  | 3,167     | 95.8  | 4.632     | 92.9  |
| No   | 139       | 4.2   | 353       | 7.1   |
| Total  | 3,307     | 100.0 | 4.984     | 100.0 |
| Does not know/<br>Did not answer   | 18        |       | 56        |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | 0.048     |       |           |       |

To be continued

Continuation Table 2

| Variable   | 1998      |       | 2005      |       |
|--|-----------|-------|-----------|-------|
|  | Frequency | %     | Frequency | %     |
| The AIDS test should be mandatory for foreigners entering the country?                       |           |       |           |       |
| Yes  | 2,918     | 87.8  | 3.933     | 78.0  |
| No   | 375       | 11.3  | 1.012     | 20.1  |
| Total  | 3,293     | 99.1  | 4.945     | 98.1  |
| Does not know/<br>Did not answer   | 31        | 0.9   | 95        | 1.9   |
| Total  | 3,324     | 100,0 | 5,040     | 100.0 |
| p*   | <0.001    |       |           |       |
| The AIDS test should be mandatory for sex workers?   |           |       |           |       |
| Yes  | 3,240     | 97.8  | 4.768     | 95.3  |
| No   | 74        | 2.2   | 237       | 4.7   |
| Total  | 3,314     | 100.0 | 5.005     | 100.0 |
| Does not know/<br>Did not answer   | 10        |       | 35        |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | 0.002     |       |           |       |
| The AIDS test should be mandatory for all the people?  |           |       |           |       |
| Yes  | 2,749     | 83.8  | 3.246     | 65.0  |
| No   | 530       | 16.2  | 1.750     | 35.0  |
| Total  | 3,278     | 100.0 | 4.996     | 100.0 |
| Does not know/<br>Did not answer   | 46        |       | 44        |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | <0.001    |       |           |       |
| Before someone is tested for HIV, should it be mandatory for him/her to authorize this test? |           |       |           |       |
| Yes  | 2,405     | 74.2  | 3.685     | 74.5  |
| No   | 836       | 25.8  | 1.261     | 25.5  |
| Total  | 3,241     | 100.0 | 4.947     | 100.0 |
| Does not know/<br>Did not answer   | 83        |       | 93        |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | 0.885     |       |           |       |
| Do you agree that pregnant women with the AIDS virus should have an abortion?                |           |       |           |       |
| Yes  | 1,401     | 45.2  | 1.042     | 21.9  |
| No   | 1,702     | 54.8  | 3.713     | 78.1  |
| Total  | 3,103     | 100.0 | 4.755     | 100.0 |
| Does not know/<br>Did not answer   | 222       |       | 285       |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | <0.001    |       |           |       |
| Would you let your children be in the company of someone living with HIV/AIDS?               |           |       |           |       |
| Yes  | 1,128     | 37.2  | 1.760     | 36.8  |
| No   | 1,906     | 62.8  | 3.021     | 63.2  |
| Total  | 3,034     | 100.0 | 4.781     | 100.0 |
| Does not know/<br>Did not answer   | 290       |       | 259       |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | 0.867     |       |           |       |
| Would you let a support center for people with AIDS operate near your home?                  |           |       |           |       |
| Yes  | 2,294     | 71.9  | 3.707     | 75.6  |
| No   | 896       | 28.1  | 1.199     | 24.4  |
| Total  | 3,190     | 100.0 | 4.905     | 100.0 |
| Does not know/<br>Did not answer   | 134       |       | 135       |       |
| Total  | 3,324     |       | 5,040     |       |
| p*   | 0.113     |       |           |       |

\* Descriptive level of the comparative chi-square test between 1998 and 2005

**Table 3.** Mean, standard-error, confidence interval of the intention of discrimination index in relation to people with HIV/AIDS per year. Brazil, 1998 and 2005.

| Year  | Mean    | Standard-error | 95% CI  | Cases (pondered) | Cases (not pondered) |
|-------|---------|----------------|---------|------------------|----------------------|
| 1998  | 7.9     | 0.08           | 7.8;8.1 | 3,194            | 3,167                |
| 2005  | 7.2     | 0.05           | 7.1;7.3 | 4,699            | 4,685                |
| Total | 7.5     | 0.05           | 7.4;7.6 | 7,893            | 7,852                |
| p*    | <0.0001 |                |         |                  |                      |

\* Descriptive level of the comparison test of means between 1998 and 2005

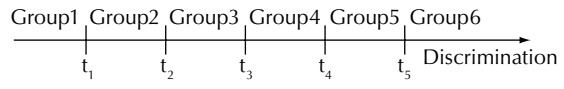
As regards responses to the items “Have you ever been tested for HIV in your life?” and “Do you know/have you met anyone who has the AIDS virus?”, shown on Table 5, a reduction in the means of IDI scores between the two periods of analysis, both for “Yes” and “No” responses, was observed.

It was also verified that people who, in 2005, stated having had the anti-HIV test done sometime in their lives showed a lower mean of intention of discrimination index than that from people who had never been tested. In 1998, differences between these two groups were not detected.

In relation to the question “Do you know/have you met anyone who has the AIDS virus?”, people who answered “Yes” in 1998 showed a mean below that from those who answered “No”. However, in 2005, there was no difference between both groups.

On the other hand, for the question “If your wife or female partner were pregnant and tests pointed to her having the AIDS virus, which of the following would you advise her to do?”, differences in means between 1998 and 2005 were not detected for the following responses: “Would have an abortion”, “Would have an abortion and tubal ligation after delivery” and “Would consult a doctor about tubal ligation”; whereas, a decrease in the mean of IDI was verified among the remaining responses. In this same question, by grouping the responses in “Decide” (Would let the pregnancy continue; Would let the pregnancy continue and have tubal ligation performed after delivery; Would have an abortion; Would have an abortion and tubal ligation performed after delivery) and “Does not decide” (Would consult a doctor about abortion or tubal ligation), there were no differences in degree of intention both in 1998 and 2005.

According to the survey, in 1998, the mean of IDI of those who answered “Yes” to the question “Do you agree that pregnant women with the AIDS virus should have an abortion?” was above that of those who answered “No”. Likewise, in 2005, the mean of IDI for people who answered “Yes” was found to be above that of people who answered “No”. However, the mean IDI decreased between the two periods, among both the people who answered “Yes” and those who answered “No”.



**Figure.** Diagram with ordered logit thresholds.

Strong asymmetry in the IDI distribution was found, suggesting improper use of the linear regression model to establish an association between the IDI and the independent variables, and thus emphasizing the fact that this score shows only small values in the 0 to 9 interval.

On Table 6, the results from the ordered logit models adjusted for the years 1998 and 2005 are shown. Categories of a variable with similar coefficients were grouped to facilitate interpretation and improve precision. Interpretations for each variable were performed, keeping the characteristics of the remaining variables under control.

In the 1998 model, associations with age group, level of education and region of residence were observed. No statistically significant associations in relation to religion, marital status, sex and ethnic group were found. However, the two last variables were kept in the model as control variables.

People in the 35-44, 45-54, and 55-65-year age groups were grouped in only one category (basal) once they showed similar patterns. Similarly, the Central-West/Southeast, South and the state of São Paulo regions were grouped in the same basal group; whereas high-school and university formed the basal group for level of education. The categories “male” and “ethnic group/white color” were considered the basal groups for sex and ethnic group, respectively.

Younger people (up to 34 years) showed lower intention of discrimination than people above 35 years of age, *ceteris paribus*. In terms of likelihood, people between 16 and 19 years were 61% less likely to show intention of discrimination than those from other age groups.

In terms of level of education, people who either did not know how to read or write or had completed up to elementary school were 50% more likely to show higher intention of discrimination than those with higher level of education, when keeping the remaining characteristics under control. As regards the region of residence,

**Table 4.** Mean, standard-error (SE), confidence interval (CI) of the intention of discrimination index, according to sociodemographic variables. Brazil, 1998 and 2005.

| Sociodemographic variable                       | 1998    |      |         | 2005    |      |         | P*      |
|---|---------|------|---------|---------|------|---------|---------|
|   | Mean    | SE   | 95% CI  | Mean    | SE   | 95% CI  |         |
| <b>Sex</b>                                      |         |      |         |         |      |         |         |
| Male  | 7.7     | 0.11 | 7.5;8.0 | 6.9     | 0.07 | 6.8;7.1 | <0.0001 |
| Female  | 8.1     | 0.09 | 7.9;8.3 | 7.5     | 0.06 | 7.4;7.6 | <0.0001 |
| p**   | 0.0130  |      |         | <0.0001 |      |         |         |
| <b>Marital status</b>                           |         |      |         |         |      |         |         |
| Married/cohabiting                              | 8.1     | 0.07 | 7.9;8.2 | 7.4     | 0.06 | 7.3;7.5 | <0.0001 |
| Separated/divorced                              | 8.1     | 0.19 | 7.7;8.4 | 7.7     | 0.11 | 7.5;8.0 | 0.1472  |
| Single  | 7.6     | 0.16 | 7.3;7.9 | 6.8     | 0.08 | 6.7;7.0 | <0.0001 |
| Widowed   | 8.4     | 0.12 | 8.1;8.6 | 8.2     | 0.12 | 8.0;8.4 | 0.2475  |
| p**   | 0.0002  |      |         | <0.0001 |      |         |         |
| <b>Age group (in years)</b>                     |         |      |         |         |      |         |         |
| 16-19   | 7.7     | 0.14 | 7.4;7.9 | 6.8     | 0.11 | 6.6;7.0 | <0.0001 |
| 20-24   | 7.7     | 0.16 | 7.4;8.0 | 6.7     | 0.11 | 6.5;6.9 | <0.0001 |
| 25-34   | 7.7     | 0.13 | 7.4;7.9 | 7.2     | 0.08 | 7.0;7.3 | 0.0020  |
| 35-44   | 8.1     | 0.11 | 7.9;8.3 | 7.4     | 0.09 | 7.2;7.5 | <0.0001 |
| 45-54   | 8.4     | 0.09 | 8.2;8.5 | 7.6     | 0.10 | 7.4;7.8 | <0.0001 |
| 55-65   | 8.2     | 0.16 | 7.9;8.5 | 7.7     | 0.11 | 7.4;7.9 | 0.0045  |
| p**   | 0.0203  |      |         | <0.0001 |      |         |         |
| <b>Level of education</b>                       |         |      |         |         |      |         |         |
| Does not know how to read or write              | 8.4     | 0.11 | 8.2;8.6 | 8.0     | 0.16 | 7.7;8.4 | 0.0781  |
| Elementary school                               | 8.0     | 0.09 | 7.8;8.2 | 7.7     | 0.06 | 7.6;7.8 | 0.0047  |
| High-school                                     | 7.8     | 0.12 | 7.5;8.0 | 7.1     | 0.06 | 7.0;7.2 | <0.0001 |
| University – graduate and post-graduate studies | 7.5     | 0.16 | 7.1;7.8 | 5.9     | 0.11 | 5.7;6.2 | <0.0001 |
| p**   | <0.0001 |      |         | <0.0001 |      |         |         |
| <b>Religion</b>                                 |         |      |         |         |      |         |         |
| Catholic  | 7.9     | 0.08 | 7.8;8.1 | 7.3     | 0.06 | 7.2;7.4 | <0.0001 |
| Protestantism                                   | 8.0     | 0.24 | 7.5;8.4 | 7.1     | 0.13 | 6.9;7.4 | 0.0022  |
| Pentecostal                                     | 8.2     | 0.15 | 7.9;8.5 | 7.6     | 0.10 | 7.4;7.8 | 0.0004  |
| Others  | 7.8     | 0.19 | 7.4;8.2 | 6.8     | 0.15 | 6.5;7.1 | 0.0001  |
| None  | 7.4     | 0.35 | 6.7;8.1 | 6.6     | 0.15 | 6.3;6.9 | 0.0414  |
| p**   | 0.1827  |      |         | <0.0001 |      |         |         |
| <b>Family income</b>                            |         |      |         |         |      |         |         |
| Up to 1 MW*                                     | 8.2     | 0.11 | 8.0;8.4 | 7.8     | 0.11 | 7.6;8.1 | 0.0106  |
| More than 1 to 3 MW                             | 8.2     | 0.09 | 8.0;8.4 | 7.6     | 0.05 | 7.5;7.7 | <0.0001 |
| More than 3 to 5 MW                             | 7.9     | 0.16 | 7.6;8.2 | 7.3     | 0.08 | 7.1;7.4 | 0.0001  |
| More than 5 to 10 MW                            | 7.7     | 0.15 | 7.4;8.0 | 6.8     | 0.10 | 6.6;7.0 | <0.0001 |
| More than 10 MW                                 | 7.8     | 0.14 | 7.5;8.0 | 6.1     | 0.15 | 5.8;6.4 | <0.0001 |
| p**   | 0.0119  |      |         | <0.0001 |      |         |         |
| <b>Region of residence</b>                      |         |      |         |         |      |         |         |
| North/Northeast                                 | 8.1     | 0.09 | 8.0;8.3 | 7.5     | 0.09 | 7.3;7.7 | <0.0001 |
| Central-West/Southeast                          | 7.8     | 0.14 | 7.5;8.1 | 7.3     | 0.09 | 7.1;7.5 | 0.0033  |
| State of São Paulo                              | 8.0     | 0.18 | 7.7;8.3 | 7.0     | 0.10 | 6.8;7.2 | <0.0001 |
| South   | 7.6     | 0.11 | 7.4;7.8 | 7.0     | 0.09 | 6.8;7.2 | <0.0001 |
| p**   | 0.0010  |      |         | <0.0001 |      |         |         |
| <b>Ethnic group</b>                             |         |      |         |         |      |         |         |
| White   | 7.9     | 0.08 | 7.8;8.1 | 7.1     | 0.07 | 6.9;7.2 | <0.0001 |
| Black   | 7.9     | 0.09 | 7.7;8.1 | 7.4     | 0.06 | 7.3;7.5 | <0.0001 |
| p**   | 0.8241  |      |         | <0.0001 |      |         |         |

\* Descriptive level of the comparison test of means between 1998 and 2005

\*\* Descriptive level of the comparison test of means in the year

MW: monthly minimum wage

people who lived in the North/Northeast were 67% more likely to show intention of discrimination than those who lived in other regions.

In the 2005 model, women were 66% more likely to show intention of discrimination than men. In relation to age, the younger the age group, when compared to people who were 45 years or older, the lower the intention of discrimination. On the other hand, the lower the level of education, when compared to those with university level, the higher the intention of discrimination. In the case of those who did not know how to read or write, this likelihood increased more than six times in relation to those with university level.

In the North/Northeast region, the likelihood of showing intention of discrimination in relation to those who lived in the South region or in the state of São Paulo was 46% higher, while in the Central-West/Southeast regions, 39% higher.

People who were separated/divorced or widowed, when compared to other marital status categories, were

36% more likely to show intention of discrimination. Finally, those who did not have a religion were 27% less likely to show lower intention than people who had a religion.

Items that were not included in the IDI were analyzed separately. There was no change in the pattern of responses to the following items between 1998 and 2005: "Do you think that before someone is tested for AIDS, it should be mandatory that him/her authorize it?" ( $p=0.8847$ ), "Would you let your children be in the company of a person living with HIV/AIDS?" ( $p=0.8673$ ), and "Would you let a support center for people with AIDS operate near your home?" ( $p=0.1134$ ).

As regards the item "Do you agree that pregnant women with the AIDS virus should have an abortion?", there was a reduction in the proportion of positive responses from 45.2% (1998) to 21.9% (2005) ( $p<0.0001$ ): in 1998, the positive responses were higher ( $p=0.0038$ ) among men (50.6%) than women (40.1%). In 2005, positive responses were similar between men and

**Table 5.** Mean, standard-error (SE), confidence interval (CI) of the intention of discrimination index, according to variable questions related to HIV. Brazil, 1998 and 2005.

| Variable  | 1998   |      |         | 2005    |       |         | p*      |
|---|--------|------|---------|---------|-------|---------|---------|
|   | Mean   | SE   | 95% CI  | Mean    | SE    | 95% CI  |         |
| Have you ever been tested for HIV in your life?   |        |      |         |         |       |         |         |
| Yes   | 7.9    | 0.12 | 7.6;8.1 | 7.1     | 0.08  | 7.0;7.2 | <0.0001 |
| No  | 7.9    | 0.09 | 7.7;8.1 | 7.3     | 0.05  | 7.2;7.4 | <0.0001 |
| p**   | 0.6804 |      |         | 0.0257  |       |         |         |
| Do you know/have you ever met anyone who has the AIDS virus?  |        |      |         |         |       |         |         |
| Yes   | 7.8    | 0.11 | 7.5;8.0 | 7.25    | 0.06  | 7.1;7.4 | <0.0001 |
| No  | 8.0    | 0.07 | 7.8;8.1 | 7.22    | 0.07  | 7.1;7.4 | <0.0001 |
| p**   | 0.0296 |      |         | 0.7438  |       |         |         |
| If your wife or female partner were pregnant and tests pointed to her having the AIDS virus, which of the following would you advise her to do? |        |      |         |         |       |         |         |
| Would let the pregnancy continue  | 7.7    | 0.17 | 7.4;8.0 | 7.0     | 0.08  | 6.9;7.2 | 0.0002  |
| Would let the pregnancy continue and have tubal ligation performed after delivery   | 7.9    | 0.11 | 7.7;8.1 | 7.1     | 0.07  | 7.0;7.3 | <0.0001 |
| Would have an abortion  | 8.0    | 0.12 | 7.8;8.2 | 7.8     | 0.1   | 7.6;8.1 | 0.2762  |
| Would have an abortion and a tubal ligation performed subsequently  | 7.9    | 0.25 | 7.4;8.3 | 7.6     | 0.17  | 7.3;8.0 | 0.497   |
| Would consult a doctor about abortion   | 8.2    | 0.12 | 7.9;8.4 | 7.4     | 0.13  | 7.1;7.7 | <0.0001 |
| Would consult a doctor about tubal ligation   | 8.1    | 0.19 | 7.7;8.5 | 7.7     | 0.11  | 7.5;7.9 | 0.0661  |
| Others  |        |      |         | 7.4     | 0.25  | 6.9;7.9 |         |
| p**   | 0.5478 |      |         | 0.4955  |       |         |         |
| Do you agree that pregnant women with the AIDS virus should have an abortion?***  |        |      |         |         |       |         |         |
| Yes   | 8.0    | 0.08 | 7.9;8.2 | 7.7     | 0.069 | 7.6;7.9 | 0.0017  |
| No  | 7.8    | 0.11 | 7.6;8.0 | 7.1     | 0.058 | 7.0;7.2 | <0.0001 |
| p**   | 0.0157 |      |         | <0.0001 |       |         |         |

\* Descriptive level of the comparison test of means between 1998 and 2005.

\*\* Descriptive level of comparison test of means in the year.

\*\*\* This question was also analyzed as an independent variable.



women ( $p=0.5164$ ). Among people who did not know how to read or write, there were percentages of positive responses (59.5% in 1998,  $p=0.0066$ ; 32.2% in 2005,  $p=0.0024$ ), when compared to people with other levels of education. This suggests the effect of this group's lack of knowledge about the existence of prevention against vertical transmission of HIV.

## DISCUSSION

This is the first national population-based study that documents and relates discriminatory opinions in relation to people with HIV, providing data with implica-

tions for public policies to fight stigma and discrimination against people with HIV, symptomatic or not.

As regards the methodology employed, the construction of the IDI may function as reference for other surveys on the theme of stigma and discrimination. To construct this index, a factor analysis with tetrachoric correlation was initially tested. However, the result was not found to be adequate in terms of how well it can be interpreted. In addition, the construction of a simple indicator, based on a sum of points that enabled to compare actions throughout time was the choice. In factor analysis, or another one with structural equations,

**Table 6.** Coefficients of the ordered logit model for 1998 and 2005.

| Variable                           | 1998        |      |       |         |     | 2005        |      |       |         |     |
|------------------------------------|-------------|------|-------|---------|-----|-------------|------|-------|---------|-----|
|                                    | Coefficient | SE   | t     | p       | OR  | Coefficient | SE   | t     | p       | OR  |
| Sex                                |             |      |       |         |     |             |      |       |         |     |
| Female                             | 0.32        | 0.20 | 1.6   | 0.102   | 1.4 | 0.51        | 0.08 | 6.6   | <0.0001 | 1.7 |
| Male                               | 0.00        | -    | -     | -       | 1.0 | 0.00        | -    | -     | -       | 1.0 |
| Age group ( in years)              |             |      |       |         |     |             |      |       |         |     |
| 16-19                              | -0.94       | 0.26 | -3.7  | <0.0001 | 0.4 | -0.76       | 0.13 | -5.8  | <0.0001 | 0.5 |
| 20-24                              | -0.72       | 0.20 | -3.7  | <0.0001 | 0.5 | -0.70       | 0.13 | -5.3  | <0.0001 | 0.5 |
| 25-34                              | -0.95       | 0.21 | -4.6  | <0.0001 | 0.4 | -0.37       | 0.11 | -3.2  | 0.001   | 0.7 |
| 35-44                              | 0.00        | -    | -     | -       | 1.0 | -0.27       | 0.12 | -2.3  | 0.023   | 0.8 |
| 45 and older                       | 0.00        | -    | -     | -       | 1.0 | 0.00        | -    | -     | -       | 1.0 |
| Level of education                 |             |      |       |         |     |             |      |       |         |     |
| Does not know how to read or write | 0.41        | 0.19 | 2.1   | 0.038   | 1.5 | 1.85        | 0.25 | 7.4   | <0.0001 | 6.4 |
| Elementary school                  | 0.00        | -    | -     | -       | 1.0 | 1.48        | 0.11 | 14.0  | <0.0001 | 4.4 |
| High-school                        | 0.00        | -    | -     | -       | 1.0 | 1.05        | 0.10 | 10.2  | <0.0001 | 2.9 |
| University                         | 0.00        | -    | -     | -       | 1.0 | 0.00        | -    | -     | -       | 1.0 |
| Region of residence                |             |      |       |         |     |             |      |       |         |     |
| North/Northeast                    | 0.51        | 0.16 | 3.1   | 0.002   | 1.7 | 0.38        | 0.11 | 3.4   | 0.001   | 1.5 |
| Central-West/Southeast             | 0.00        | -    | -     | -       | 1.0 | 0.33        | 0.10 | 3.2   | 0.001   | 1.4 |
| Others                             | 0.00        | -    | -     | -       | 1.0 | 0.00        | -    | -     | -       | 1.0 |
| Ethnic group/color                 |             |      |       |         |     |             |      |       |         |     |
| Black                              | -0.28       | 0.16 | -1.7  | 0.095   | 0.8 | 0.07        | 0.08 | 0.9   | 0.359   | 1.1 |
| White                              | 0.00        | -    | -     | -       | 1.0 | 0.00        | -    | -     | -       | 1.0 |
| Marital status                     |             |      |       |         |     |             |      |       |         |     |
| Separated/divorced or widowed      | 0.00        | -    | -     | -       | 1.0 | 0.31        | 0.12 | 2.6   | 0.009   | 1.4 |
| Others                             | 0.00        | -    | -     | -       | 1.0 | 0.00        | -    | -     | -       | 1.0 |
| Religion                           |             |      |       |         |     |             |      |       |         |     |
| No religion                        | 0.00        | -    | -     | -       | 1.0 | -0.31       | 0.12 | -2.6  | 0.011   | 0.7 |
| Others                             | 0.00        | -    | -     | -       | 1.0 | 0.00        | -    | -     | -       | 1.0 |
| Thresholds                         |             |      |       |         |     |             |      |       |         |     |
| $t_1$                              | -5.0        | 0.63 | -8.0  | <0.0001 |     | -2.5        | 0.18 | -14.3 | <0.0001 |     |
| $t_2$                              | -4.0        | 0.38 | -10.7 | <0.0001 |     | -1.6        | 0.15 | -10.5 | <0.0001 |     |
| $t_3$                              | -3.3        | 0.35 | -9.5  | <0.0001 |     | -1.0        | 0.14 | -7.0  | <0.0001 |     |
| $t_4$                              | -2.5        | 0.29 | -8.7  | <0.0001 |     | -0.3        | 0.13 | -2.3  | 0.0210  |     |
| $t_5$                              | -1.2        | 0.24 | -5.0  | <0.0001 |     | 1.0         | 0.13 | 7.1   | <0.0001 |     |

weights could vary throughout time and some variables could lose their importance, thus affecting comparability between periods. Nonetheless, it was not possible to establish association between degrees of intention of discrimination and levels of knowledge about HIV transmission mechanisms.

State interventions and actions between 1998 and 2005 could have had an impact on the reduction of discrimination, in terms of the volume and quality of the information disseminated, in addition to the exposure of people infected with HIV in the media.

Despite the IDI reduction, the dissemination of information about ways of AIDS transmission (and non-transmission) still needs to be better planned and promoted. This investment must be substantially greater for the populations who showed higher degrees of intention of discrimination: those with lower level of education, those who live in the North/Northeast regions, and those who are aged over 45 years. Comparison between the 1998 and 2005 surveys revealed a percentage higher than 90% in both periods among pregnant women, sex workers and drug users, thus indicating stigmatizing elements that demand more social control over these groups. Paradoxically, the level of agreement remained high, without changes in this period, when the person's authorization or consent was necessary to perform the anti-HIV test.

The *Programa Nacional DST/Aids* (National STD/AIDS Program) has supported the promotion of anti-HIV testing during pre-natal care, delivery, and follow-up of children exposed to HIV. In this context, it is possible to affirm that part of the significant reduction in the percentage of positive responses to the question "Do you agree that pregnant women with the HIV virus should have an abortion?" is related to the dissemination of information that have contributed to change the way people deal with the pregnancy of seropositive women. Abortion, however, is a controversial issue, with religious and political opposing groups in all spheres of society. In the present study, it was not possible to investigate the interaction between opinions against abortion and knowledge about prevention and treatment of vertical transmission of HIV.

The increase in the means of IDI among Pentecostals is not related to the sample size, which was controlled in the regression model. According to the *Instituto Brasileiro de Estatística e Geografia* (Brazilian Institute of Geography and Statistics), the percentage of Evangelicals increased from 9% in 1991 to 15.4% in 2000. This increase can be partly explained by the strengthening of political-religious leaderships reflected in their participation in the country's public life, through elected positions in the Federal and State Chambers

or through the acquisition of television channels with national reach. This strengthening supports the demand for followers adopting more conservative positions, which translates into drawing a moral line so that HIV and AIDS are viewed and treated as "a virus and a disease from those who are sinners".

The international investigation "Spirit and Power – a 10-country survey of Pentecostals"<sup>a</sup> shows that 86% of these Pentecostals affirm going to church weekly. When it comes to issues with strong moral content, such as abortion, Brazilian Pentecostals stand out as the most conservative.

Fear of contracting HIV through social contact with people infected by the virus has been frequently reported in several studies. Ferreira<sup>5</sup> shows the reduction in the number of people who were well-informed about social contact with people infected with HIV, about 50% in 1998 and 40% in 2005. However, the number of people who believe that social contact with people infected by the virus poses risk of transmission remains high, thus pointing to the need to focus on informative actions that take into consideration distinct cultural and local contexts.

A survey conducted in Zambia, Ethiopia, Tanzania and Vietnam<sup>11</sup> showed that, regardless of their structural and contextual differences, social contact with infected people which does not involve body fluid exchange still causes fear of contamination. Even considering the high level of knowledge about ways of HIV transmission (through sexual contact, blood and vertical transmission) in these countries, beliefs about transmission and mistrust of the information about how the virus is transmitted still remain.

The percentage of people who would let their children be in the company of someone with HIV remained low. Likewise, there was no significant change in the percentage of agreement related to letting a support center for people with AIDS operate near the interviewees' home. This may indicate that rejection rates become higher as the possibility of closeness, intimacy and interaction with people with HIV increases. Such situations reveal lack of information (or mistrust of the information obtained) in relation to exposure to the virus through social contact and great stigma of the disease repeatedly mentioned here. All this adds to the stigma and generates isolation and distancing of those who live with HIV, as well as the resulting discrimination against them.

In conclusion, individual actions reflect ideas and beliefs that are part of the economic and political structures which influence life in society. Social commitment and responsibility to create a more compassionate,

<sup>a</sup> Pew Forum on Religion & Public Life in the following countries: United States, Brazil, Chile, Guatemala, Kenya, Nigeria, South Africa, India, the Philippines, and South Korea. Available from: <http://www.folha.uol.com.br/folha/brasil> [Cited 2007 Dec 18].

creative, and liberal culture are necessary. In this sense, to respond to the challenges of the epidemic and to the suffering of people is, above all, to celebrate differences, protect rights and develop the ability to face challenges with ethical vision and conscience.

There are no simple answers as to how to tackle and eliminate stigma and discrimination. These challenges require joint efforts to understand and plan actions that are more efficient and in accordance with specific cultural contexts. It is essential not to view AIDS as

somebody else's disease. Likewise, it is vital that the State implements policies that guarantee men's and women's equal access to proper prevention, care and treatment in all public spheres.

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