

Simone Gonçalves de Assis<sup>I</sup>Romeu Gomes<sup>II</sup>Thiago de Oliveira Pires<sup>III</sup>

# Adolescence, sexual behavior and risk factors to health

## ABSTRACT

**OBJECTIVE:** To analyze the relationships between sexual behavior and risk factors to physical and mental health in adolescents.

**METHODS:** Study of 3,195 pupils aged 15 to 19 in secondary education, in public and private schools in 10 state capitals in Brazil between 2007 and 2008. Multi-stage (schools and pupils) cluster sampling was used in each city and public and private educational network. All of the students selected completed a questionnaire on the following items: socioeconomic and demographic data; sexual behavior; having sex with those of the same sex, the opposite sex, or both; alcohol and cannabis use; using condoms; traumatic sexual experiences as a child or adolescent; suicidal thoughts. The analysis included describing frequencies, Chi-square test, analysis of multiple and cluster correspondence. Responses to an open ended question in which the adolescent expressed general comments about themselves and their lives were qualitatively analyzed using content analysis.

**RESULTS:** Around 3.0% of adolescents reported homosexual or bisexual behavior, with no difference according to sex, age, skin color, social status family structure or educational network. Adolescents with homosexual/bisexual sexual behavior, compared to their heterosexual peers, reported: ( $p < 0.05$ ): getting drunk (18.7% and 10.5%, respectively), frequent cannabis use (6.1% and 2.1%, respectively), suicidal thoughts (42.5% and 18.7%, respectively), and having been the victim of sexual violence (11.7% and 1.5%; respectively). Adolescents with homosexual/bisexual sexual behavior reported that they used condoms less frequently (74.2%) than their heterosexual peers (48.6%,  $p < 0.001$ ). In the correspondence analysis, three groups were found, one composed of adolescents with homosexual/bisexual behavior and experiencing risk factors; suffering sexual violence, never using a condom, suicidal thoughts, frequent cannabis use; another composed of occasional cannabis and condom users, who got drunk frequently, and adolescents with heterosexual behavior and none of the risk factors investigated. More of the risk factors were found in adolescents with homosexual/bisexual behavior compared with those with heterosexual behavior. Adolescents with homosexual/bisexual sexual behavior were more likely to talk about their positive personal experiences and negative relationship experiences than their heterosexual peers, but spoke less about religion.

**CONCLUSIONS:** Not only should this issue be studied in more detail, but preventative actions aimed at adolescents with homosexual/bisexual behavior should be widened.

**DESCRIPTORS:** Sexual Behavior. Dangerous Behavior. Risk Factors. Adolescent. Adolescent Behavior.

<sup>I</sup> Centro Latino Americano de Estudos de Violência e Saúde Jorge Careli. Escola Nacional de Saúde Pública Sergio Arouca. Fundação Oswaldo Cruz. Rio de Janeiro, RJ, Brasil

<sup>II</sup> Instituto Fernandes Figueira. Fundação Oswaldo Cruz. Rio de Janeiro, RJ, Brasil

<sup>III</sup> Centro Latino Americano de Estudos de Violência e Saúde Jorge Careli. Escola Nacional de Saúde Pública Sergio Arouca. Fundação Oswaldo Cruz. Rio de Janeiro, RJ, Brasil

### Correspondence:

Simone Gonçalves de Assis  
Av. Brasil, 4036 sala 700 Manguinhos  
21041-361 Rio de Janeiro, RJ, Brasil  
E-mail: simone.assis@pq.cnpq.br

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## INTRODUCTION

Young people belonging to sexual minorities – homosexuals or bisexuals – live with more risk factors than young people who do not belong to these minorities, the heterosexuals.<sup>12,19</sup>

Ryan et al<sup>20</sup> report that, since the first publications about homosexual young people in the 1970's and 1980's, serious health disparities have been documented between gays or bisexuals and heterosexuals. The health problems found in the studies with homo and bisexual young people are: high levels of attempted suicide, elevated use of substances, symptoms of depression and other mental health problems, frequent risky sexual behavior, including HIV, sexually transmitted diseases (STD's), teenage pregnancy, physical or sexual abuse, eating disorders and rejection of family.<sup>6,17,18,20,22,23</sup>

Meta-analysis taken from 37 American and Canadian studies published between 1980 and 2009 reiterate the elevated presence of risk factors in young people of sexual minorities, like mental health problems, substance use, risky sexual behavior and HIV. These aspects are generally associated with the presence of abuse in childhood. However, the results of these studies show different concepts and methodologies relating to the theme (behavior or sexual identity), that require more attention in existing interpretations.

Interference in the quality of life and health of young people belonging to sexual minorities and devaluation of homosexuality is seen in various studies. One,<sup>1</sup> conducted in 102 Brazilian regions with a probabilistic sample of 2,363 participants, showed that 89.0% of the interviewees were against male homosexuality and 88.0% against female homosexuality. The prejudice is not always shown explicitly. Research<sup>7</sup> done in Goiás with 135 students, predominantly female (87%), concluded that, although the majority of the interviewees had criticised the negative perception that Brazilian society has of homosexuals, the subjects attributed more positive characteristics to heterosexuals than homosexuals, suggesting a subtle prejudice against homosexuals. Carrara<sup>4</sup> reports that men and women are usually exposed to violent situations and discrimination when they break with social conventions of gender or sexuality.

The objective of this study is to analyze the relationship between sexual behavior and health risks, physical or mental, among adolescents.

## METHODS

Research was undertaken in 2007 and 2008 to study the presence of loving and violent experiences in the

emotional-sexual relationships of 3,205 high school students (15 to 19 years old) from public schools, in particular in the capitals of ten Brazilian states: Rio de Janeiro, RJ, Belo Horizonte, MG, Recife, PE, Teresina, PI, Brasília, DF, Cuiabá, MT, Manaus, AM, Porto Velho, RO, Florianópolis, SC, Porto Alegre, RS from 2007 to 2008.<sup>15</sup>

The ten selected cities had the criteria of analyzing incidents of mortality by external causes of students aged from 15 to 19, in the five Brazilian regions. They used collective samples with multiple stages of selection in every city (choice of schools, with a probability of selection proportional to quantity of students from public and private schools) and a randomly selected group per school; questionnaires were given to each student. The sample was scaled to gain estimates of percentages with absolute error of 0.10, 95% confidence level and the percentage of occurrence of victimization between same sex couples at 70.0%.<sup>15</sup> This sample<sup>15</sup> is representative of students in the second year of high school in the ten Brazilian capitals investigated.

The information obtained refers to 3,195 young people, all of whom are experiencing some type of emotional-sexual relationship (casual or stable). The following variables were analyzed: adolescents' profiles: gender, age (15 to 19 years), skin color (white, black, brown and yellow), family structure (mother and father, single parent, with stepmother or stepfather, no parents), social class (strata A-B: Monthly family salary > R\$ 1,669.00,<sup>a,b</sup> strata C-D-E: salary below this limit); type of school (public or private) and city of residence; sexual behavior, relationships with people of the same sex, opposite sex or both sexes; sexual activity with people of the same sex, opposite sex or both sexes; health risks, experience of drinking alcohol until getting drunk or feeling drunk in the last year; use of marijuana in the last year; non use of condoms (personally or by partner) in last year; traumatic sexual experiences in childhood or adolescence; sadness, with no hope of a future due to loving relationship, thinking seriously about killing themselves (suicidal thoughts).

Sexual behavior was classified as: heterosexual – Hete (including casual or sexual relationship with person of opposite sex); Homo: including homosexual (casual or sexual relationship with person of the same sex) and bisexual (casual or sexual relationship with persons of both sexes). The aggregation of the groups homo/bisexuals (with low frequency) was done to give higher consistency to the analysis.

<sup>a</sup> Associação Brasileira de Estudos Populacionais. Critério de classificação econômica Brasil. São Paulo; 2008 [cited 2012 Nov 01]. Available from: <http://www.abep.org/novo/FileGenerate.ashx?id=252>

<sup>b</sup> Equivalent value in dollar = US\$ 834.5

Sexual behavior is not necessarily a fixed sexual characteristic at this stage of life, it could be transitory or could change when adulthood is reached. The category “sexual behavior” was used to share the idea of Cardoso<sup>2</sup> that the concept of sexual orientation is crossed by different theoretical references and discordant criteria for his classification. This author proposes that the major preoccupation in this field of studies should not be with concepts but with sexual practices. In this sense, perhaps, there would be a greater possibility to produce data about sexualities when you compare sexual practices of three different types: partners of the same sex, partners of the opposite sex or both.<sup>2</sup>

A description of frequencies was performed (incorporating the sample weight and design) and the Rao-Scott Chi-square test was conducted (indicated by the incorporation of the sample design and analysis<sup>6</sup>) between the variables that affected risk factor and that measured sexual behavior ( $p < 0.05$  indicated statistically significant associations). Statistical package SPSS version 15 was used.

Multiple Correspondence Analysis (ACM)<sup>11</sup> was used, capable of graphically representing the mode as a group of variable categories that interlink, by arranging the categories in a chart according to dimensions. Each axis of the graphs explains a variant contained in the data. The orientation of each part of the chart, that represents the category of the determined variable, is defined by the Chi-square length. Cluster analysis was used for the hierarchical method in the group of category classifications generated by the ACM to help to show the pattern of groups in the distribution of the ACM points. This technique consists of subdividing each point (ACM categories) into mutually exclusive subgroups by an algorithm that calculates distance between analysed points to express a degree of simplicity between the categories and to group them. Statistical package R version 2.14.2 was used.

In addition to the closed questions described, an open question was used where the adolescent could write what they considered important about themselves and their lives: 20.2% of 3,195 adolescents used this space. The analytical study<sup>10</sup> of this question sought to identify the central ideas of every comment. The following classification was formulated on the basis of these responses: experiences of positive people; experiences of negative people; positive relationships; negative relationships; risk factors; religion. The category “other comments” (chosen by 24 adolescents) was excluded of the results because they did not relate directly to the research. The categories were analyzed by frequency of description and the search of associations with sex, sexual behavior and the presence of risk factors.

The research was approved by the Committee of Research Ethics/ENSP/Fiocruz. All the participants signed the informed consent form. Authorization was obtained from all the schools visited.

## RESULTS

Of the adolescents, 62.6% were female, 88.0% were between 15 and 17 years old, 45.6% were white, 5.5% yellow skinned and the rest considered brown or black; 74.8% attended public school; 56.4% were in social groups A and B, the most wealthy; 61.1% lived with mother and father, 22.9% with only one parent, 11.9% with one parent and a stepmother or father and 4.1% lived with no parents.

Close to 3.0% said they had experience of a casual or stable relationship with a same sex partner (homosexual or partners of both sexes (bisexual): 36 referred to themselves as homosexuals (16 female and 20 male) and 86 spoke of bisexual relationships (66 female and 20 male). No significant statistical difference was found in relation to sexual behavior when analysed by gender, age, skin color, structure and social status. There was similarity according to the types of school attended. A difference was noted between some cities, with a larger percentage of students from Brasilia and Cuiabá with homo or bisexual behavior (both in the Midwest region with 7.1% and 4.5% respectively), and Florianopolis with 5.2%.

When asked with how many people they had had ‘sexual intercourse’; 43.7% informed they had had sexual relationships; 2.3% of young women and 3.8% of young men reported ‘sexual intercourse’ with same sex partners or partners of both sexes. Of the 122 young people who had been in casual or stable relationships with same sex partners, 61.5% had a sexual relationship with their partners.

Almost 12.6% of the adolescents who had experienced homo/bisexual relationships were under the risk of contracting sexually transmitted diseases or becoming pregnant as they rarely used condom during sexual intercourse; 38.7% never used protection (17.8% and 8.0% in heterosexual relationships respectively) were the most vulnerable (Table).

Of adolescents in homo/bisexual relationships, 18.7% reported being “very drunk” many times and 54.6%, a few times. In the heterosexual group, 10.5% had been “very drunk” many times and 29.4% a few times.

Other high risk situations reported by the interviewees with homo/bisexual experience were: greater marijuana use, suicidal thoughts as a result of difficulties in their relationship (42.5% compared with 18.7% in

<sup>6</sup> Pessoa DGC, Nascimento Silva PLD. Análise de Dados Amostrais Complexos. São Paulo: Associação Brasileira de Estatística; 1998.

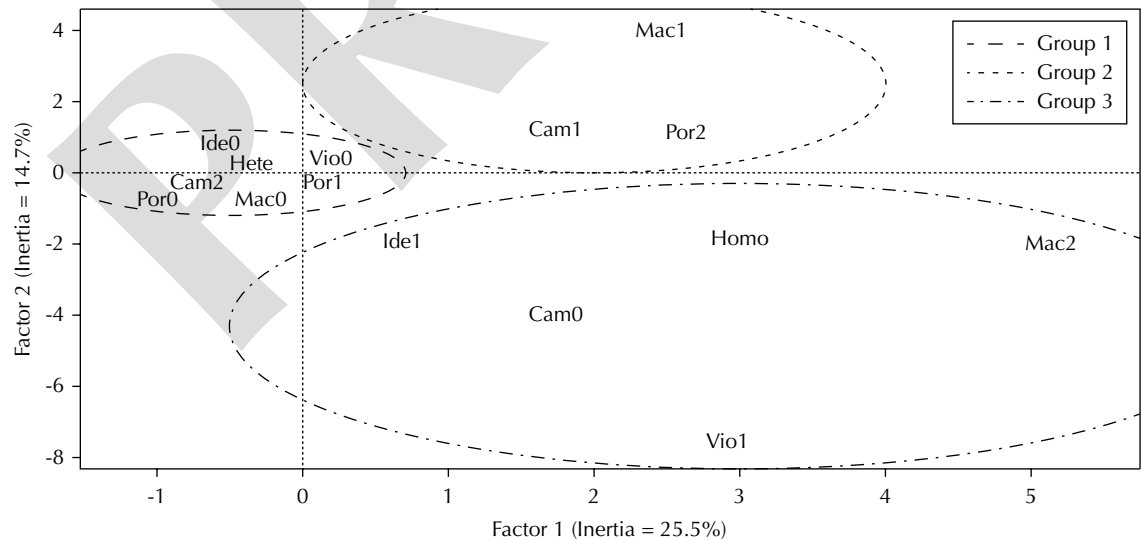
**Table.** Frequency of risk factors in sexual behavior told by adolescent school pupils in 10 Brazilian capitals, 2007-2008. (N = 3,195)

Variable	Heterosexual Behavior		Homo/bisexual Behavior		p
	n	%	n	%	
Use of protection during sexual intercourse					< 0.001
Always/Frequently	1,050	74.2	51	48.6	
Infrequently	173	17.8	14	12.6	
Never use protection	70	8.0	11	38.7	
Getting very drunk					< 0.001
Frequently	325	10.5	31	18.7	
Infrequently	894	29.4	48	54.6	
Never	1,832	60.1	41	26.7	
Marijuana use					0.013
Frequently	51	2.1	9	6.1	
Infrequently	146	4.3	17	8.8	
Never	2,845	93.7	94	85.1	
Suicidal thoughts					< 0.001
Yes	504	18.7	34	42.5	
No	2,329	81.3	80	57.5	
Sexual abuse					0.011
Yes	39	1.5	4	11.7	
No	2,995	98.5	116	88.3	

the heterosexual group) being victim of sexual abuse (11.7% in comparison with 1.5% in the heterosexual group) (Table).

Figure 1 represents the results of the multiple correspondence analysis. Note that the group in the upper

right quadrant (Group 2) has the characteristics of infrequent use of protection during sex (Cam1) and infrequent use of marijuana (Mac1) and getting “very drunk” very frequently (Por2). There was no specific sexual behavior in this group that assembled risky behavior in sexual relationships and in substance use.



Hete: Heterosexual behavior; Homo: Homosexual or Bisexual behavior; Cam2: always/frequent use of protection; Cam1: Infrequent use of protection; Cam0: never use protection; Por2: Get drunk frequently; Por1: Get drunk infrequently; Por0: never get drunk; Mac2: Frequent Marijuana use; Mac1: Infrequent Marijuana use; Mac0: Never used marijuana; Ide1: Presence of suicidal thoughts; Ide0: Absence of suicidal thoughts; Vio1: Presence of sexual abuse Vio0: Absence of sexual abuse.

**Figure 1.** Relationships between the variable categories of risk and sexual behavior, presented in the multiple correspondence analysis in Brazilian capitals, 2007-2008.

In the same figure you can see Group 1, situated near the meeting of the axis, indicating that heterosexual adolescents avoid risks by always/most of the time using protection (Pro2) never/rarely being “very drunk” (Por0 and Por1) and never using Marijuana (Mac0). They had no suicidal thought and no experience of sexual abuse (Vio0).

Group 3, situated in the lower right quadrant of diagram 1, adding adolescents with homosexual or bisexual experiences (Homo), who used Marijuana frequently (Mar2) and never used protection during sexual intercourse (Cam0); had suicidal thoughts as a result of their sexual relationship (Ide1) and a history of sexual abuse (Vio1).

Figure 2 represents the cluster analysis, which confirms the observations in Figure 1: adding to Group 3 adolescents with homo/bisexual experience and many risk factors (suffering of sexual abuse, never using protection, suicidal thoughts, frequent marijuana use); Group 2 consists of occasional marijuana users and occasional use of protection and frequently “very drunk”; Group 1 consists of adolescents in heterosexual tendencies and an absence of any risks investigated.

More adolescents with experience of homosexual or bisexual relationships took the chance to answer the open question to disclose important information about themselves and their lives (35.3%) than the heterosexual adolescents (20.9%;  $p = 0.034$ ).

Positive personal experiences were reported by 9.7% of interviewees. Almost 26.5% of adolescents with

homo/bisexual experiences expressed their experiences (*versus* 9.9% of heterosexuals;  $p = 0.007$ ). The young women expressed these experiences better (12.4%) than the young men (7.1%;  $p = 0.001$ ). The comments mainly showed that the testimonials pointed towards a positive attitude towards their lives and themselves.

“I think the most important thing about me is the way I behave and think about life. My life is wonderful”. (girl/Hete)

“I am a very friendly person, I try to help my friends in the best way possible”. (girl/homo)

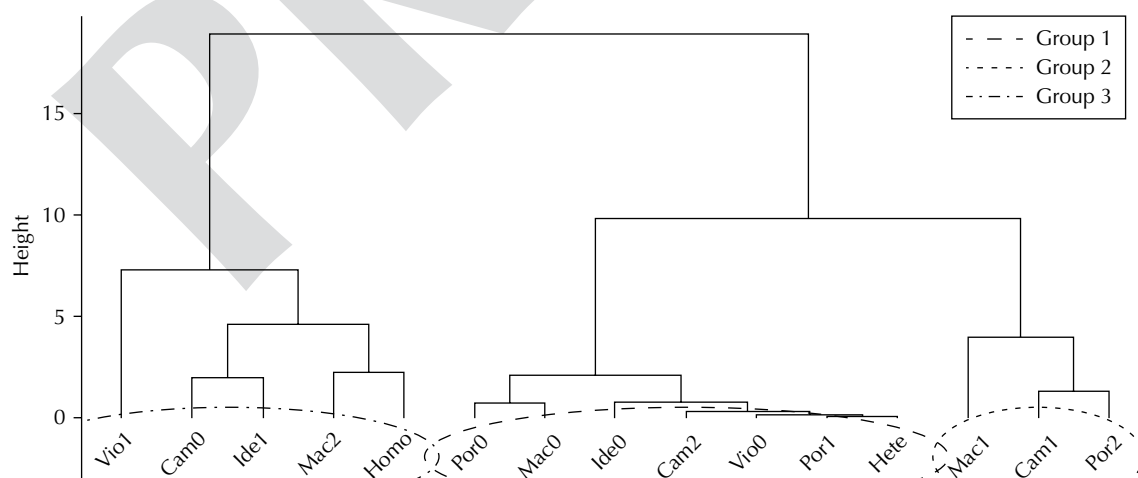
“I think what’s important about me is my intelligence and my charisma to see both the good and bad side of things”. (boy/homo)

Negative personal experiences were mentioned less (0.8%). They were especially commented on by those who lived with high risk factors (1.4% compared with 0.2% who had not experienced these situations ( $p = 0.004$ )). The most common comments reported confusion about sexuality and about life in general.

“My life is a labyrinth with no way out”. (boy/Hete)

“My mind is very confused about my sexuality”. (boy/homo)

“I am very confused at the moment, about how to behave with the person I like and confused about almost everything”. (girl/homo)



Hete: Heterosexual behavior; Homo: Homosexual or Bisexual behavior; Cam2: always/frequent use of protection; Cam1: Infrequent use of protection; Cam0: never use protection; Por2: Get drunk frequently; Por1: Get drunk infrequently; Por0: never get drunk; Mac2: Frequent Marijuana use; Mac1: Infrequent Marijuana use; Mac0: Never used marijuana; Ide1: Presence of suicidal thoughts; Ide0: Absence of suicidal thoughts; Vio1: Presence of sexual abuse; Vio0: Absence of sexual abuse

**Figure 2.** Groups by cluster analysis using the variable categories analyzed in the multiple correspondence analysis in Brazilian capitals, 2007-2008.

Positive relationships were mentioned by 7.9% of young people. The percentage of them who had not reported experiencing the risk factors was 10.6% versus 7.1% who had experienced these factors ( $p = 0.0025$ ). The acceptance and respect of friends and family was the most important factor in having a positive relationship:

“I think my life’s easy and peaceful, just like my parents, my brother and my boyfriend, we don’t have any problems, because we always talk”. (girl/Hete)

“I never have violent experiences, with myself or partners, I think you can resolve everything by talking”. (girl/homo)

“I am homosexual and everyone in my life respects me”. (boy/homo)

Negative relationships were mentioned by 2.2% of adolescents, 14.5% of adolescents with homo or bisexual tendencies mentioned them in contrast with heterosexuals (2.0%;  $p = 0,002$ ). Lack of talking and non acceptance (adolescents independent of sexual tendencies) and prejudice (more present in homo/bisexual adolescents) were the most important factors:

“I don’t talk enough with my father, he’s very closed and I don’t talk to him much about myself. I am ‘a rebel’ sometimes. He doesn’t like the way I am or behave”. (girl/Hete)

“I want to make one thing clear, the worst thing I suffer from is prejudice. It’s very difficult in relation to people of the same sex, it complicates things, it drives us to want to do stupid things, and sexual prejudice at school is very common”. (boy/homo)

Religion was mentioned by 2.0% of adolescents, in this group 5.4% had not experienced risk factors (in comparison with 1.2% who had;  $p = 0.010$ ), and 3.3% represented heterosexual young people (in comparison with 0.3% with homo or bisexual tendencies;  $p = 0.002$ ):

“I think it’s important to serve God. In the midst of so many problems we have in this world. God is the only solution”. (Boy/Hete)

“My life is happy because I have Jesus as my Lord and Saviour. I have a new and different life”. (boy/homo)

The risk factors were described by 0.8% of the interviewees, with no distinction of gender, sexual behavior or exposure to the risk factors being studied. The most mentioned were: sexual abuse, alcohol use, cigarettes and drugs, drug selling, suffering when an

emotional-sexual relationship ends, living with people who use guns, depression, bulimia, physical problems and being involved in violent situations:

“I drink and smoke to disappear”. (boy/Hete)

“My adolescence was complicated, I was clinically depressed, suffered sexual abuse and used cigarettes and drugs”. (girl/homo)

## DISCUSSION

The percentage of adolescents who had experienced homo/bisexual relationships (3.0%) was close to the Brazilian population study<sup>d</sup> which concluded that 2.5% of men and women between 15 and 49 years old had sexual relationships with partners of the same or both sexes in the past five years.

Adolescents who had casual or stable homosexual and bisexual relationships were more exposed to health risks than those in homosexual relationships, pointing towards possible compromises to their health, referenced in other studies.<sup>17,19</sup> In general, research on this theme does not deal with the issue of cause and does not focus on the association between risk and sexual behavior.

Research undertaken by the Ministry of Health<sup>e</sup> with 40,000 young people of 18 years old enlisted in military service, showed that homosexuals represented the fewest cases of use of protection during sexual intercourse and of safe sex. The index of risky sexual behavior among these young people in the whole country was 0.9, while the average jumps to 1.6 for homosexuals. Two possible explanations for this are: loss of a sense of vulnerability and little emphasis on campaigns directed towards homosexuals, suggesting lack of information about the topic.

Comparing women to men – heterosexual and homosexual- unprotected sex is associated more with the use of alcohol.<sup>3</sup> Beyond this, men who have sex with other men more frequently associate unprotected sex with the use of alcohol and drugs, compared with heterosexuals. Homosexual women reported a high risk when alcohol is consumed.<sup>13</sup> There is not much data on this subject for the adolescent phase. Altogether, the data represented indicates a normality of alcohol consumption among young people.

Another recurrent association is the risk of suicide among homosexuals. Compared with heterosexuals, gays are more associated with suicidal behavior.<sup>5,14,21</sup> The study of Evans et al<sup>5</sup> concludes that gay and

<sup>d</sup>Berquó E, Loyola MA, Pinho MDG, Ferreira MP, Correa M, Souza MR, et al. Comportamento sexual da população brasileira e percepções do HIV/AIDS. Brasília (DF): Ministério da Saúde; 2000 [cited 2011 Jan 1]. Available from: <http://bvsmms.saude.gov.br/bvs/publicacoes/168Comporamento.pdf>  
<sup>e</sup>Ministério da Saúde. Uso de preservativos é menos entre homossexuais. Brasília (DF); 2004 [cited 2011 Jan 18]. Available from: <http://www.aids.gov.br/noticia/uso-de-preservativos-e-menor-entre-homossexuais>

bisexual adolescents have 2 to 7 times more chance of suicidal thoughts than heterosexuals.

The standardization of types of sexual behavior used in this article, “having had a casual or stable relationship with a partner of the same sex or both sexes”, point to past practices of adolescents. Adolescence is a period when emotional-sexual relationships are being consolidated, because of this there was the option of not choosing a sexual orientation category that could otherwise suggest a consolidated identity. Berquo et al<sup>d</sup> sought to discover if the sexual orientation of people between 16 and 65 had been the same for the past five years, he discovered that 3.9% of men and 3.5% of women changed orientation.

Adolescents with homo/bisexual tendencies more often commented on the open question than heterosexuals. They described more experiences of positive people and of negative relationships than their heterosexual peers, however they talked less about religion. As they have little opportunity to talk about themselves without being discriminated against it could be that they made use of the space to express themselves. Implicitly or explicitly the adolescent's comments give no value to relationships between same sex partners. This can mainly be seen in the comments that adolescents with homo/bisexual tendencies make about lack of acceptance from family and friends.

Health risks for homo/bisexual adolescents can be better understood from the social ideal that does not value their emotional/sexual relationships as they are not exclusively heterosexual. Stories of sexual abuse contribute to this understanding.

At the forefront of this scenario, adolescents with homo/bisexual tendencies not only consume more alcohol

but also have suicidal thoughts. The non use of protection during sexual intercourse could also be linked to the thought of giving no value to their sexuality, this leads them to think that they have nothing more to lose than what they have already lost and continue to lose. Despite this, they reported more positive experiences than heterosexual adolescents. This contradiction could be understood by the fact they reported more negative relationships than the heterosexual adolescents. These adolescents seem to be more exposed to risks not because of their homosexual or bisexual behavior but because of the lack of acceptance from family and peers.

There have been some limitations in the study of sexual behavior in adolescents in the national and international sphere, there is a certain instability in the studies of this early stage of life. Most of the studies done with young adults obtain diverse data. There are more studies about men. It is necessary to better understand the differences between men and women in relation to homo/bisexuality.

In this article, the limitations of a cross-sectional study are highlighted: the data was retrieved from only ten Brazilian state capitals and restricted to adolescents who attend school. There are also limitations in the statistical analysis used that does not permit extrapolation of results for other purposes, the data represented here should be interpreted for the 3,195 adolescents in the public schools system of the ten chosen capitals.

The homo/bisexual behavior is associated more with health risks than that of heterosexual behavior. The discussion at the centre of this topic should be developed in future studies and preventative measures aimed at adolescents in homo/bisexual relationships should be widened.

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