

HIV-related risky practices among Brazilian young men, 2007

Práticas de risco relacionadas à infecção pelo HIV entre jovens brasileiros do sexo masculino, 2007

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Abstract

Behavioral surveillance surveys have been carried among military conscripts, in Brazil, since 1996. This paper presents the results of the 2007 survey and compares actual findings with those obtained in previous studies carried out in the period 1999-2002. The conscripts were selected with a two stage sampling stratified by geographical region. The study included a self-reported questionnaire and blood collection for HIV and syphilis testing. Data from 35,432 conscripts aged 17-20 years old were analyzed. The findings show a reduction in regular condom use, with fixed and casual partners, mainly among those with poor educational level. The proportion of conscripts that have sex with other men was maintained (3.2%), but the index of risky sexual behavioral showed worsening results in this group. Also, the HIV prevalence rate increased from 9 to 11.3 per 10,000 in 2007, though the increase was not statistically significant. In conclusion, the evidences found in this paper indicate the need of reformulate policy among young adults.

Sexual Behavior; HIV; Syphilis; Military Personnel

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Introduction

National and international surveys have shown greater vulnerability of adolescents and young men to sexually transmitted infections (STI), in particular HIV infection ^{1,2}. In the USA while HIV infection has shown a decline in recent years, the incidence of HIV among young adults has not been presenting the same decreasing behavior ³. In Brazil, a survey revealed a proportion of 32% of non-planned pregnancy among adolescents. Among sexually active young women, the prevalence rates of chlamydia and gonorrhea were respectively 12% and 2% ⁴.

In the stage of adolescence the individual develops physically and emotionally, becomes sexually active and adopts behaviors that are influenced by psychological aspects related to this age group, peers and social context ⁵. Despite younger adults constitute a population group that represents the greatest rate of use of condoms, they frequently gauge in behaviors that expose them to situations of greater risk. These behaviors include flaws or inconsistencies in the use of condoms, sexual activity with different partners and the use of alcohol or drugs before intercourse ⁶.

Studies performed for the investigation of different factors involved in the risky sexual behavior of adolescents, as well as their interrelations, has been acknowledged as a portable instruments for the control of HIV dissemination since they pro-

vide elements to subsidize preventive measures, increasing effectiveness of interventions at the level of collective health ^{7,8}.

In the international scene, Thailand was the first country to perform studies of HIV prevalence among young conscripts in the Army ⁹. In Brazil, due to military services be mandatory for young men at the age of 18, the opportunity for conducting studies about the knowledge of sexual practices of the population of young males at a national level stimulated the performance of periodic surveys in this population group.

The project for technical cooperation between the Brazilian Ministry of Health and the former Ministry of Army in Brazil started in 1996, by integrating actions in order to know and prevent HIV and STI infections among military conscripts and members. This partnership equally resulted in periodical surveys of risky practices related to infection by HIV among conscripts by occasion of its presentation to Military Commissions ^{10,11}.

The surveys with conscripts have focused on distinct objects each year, with the purpose to enhance the knowledge about the behavior of Brazilian young men. However, part of the questionnaire is periodically repeated to defining relevant changes in risky practices and monitoring of preventive actions. In the years of 1996 and 1997, the surveys mainly aimed to investigate the knowledge about the infection transmission by HIV and means of access to information by the Brazilian young men. The year of 1998 was highlighted by a more comprehensive research instrument, which involved several questions about sexual practices, problems related to STI and other factors related to the transmission of infection by HIV such as the use of injectable drugs. Also for the first time there were collected blood samples for HIV infection testing whose results could be attached to the behavioral survey ¹².

The 1999 survey focused the relations between the risky sexual behavior and the use of alcoholic beverages and illicit drugs ¹³, while in the year of 2000 the focus was directed towards defining associations among the social condition of the conscript, risky sexual behavior and problems related to STI ¹⁰. In the year of 2002, the specific purpose of the survey was to estimate the HIV prevalence rate at a national level and defined the main factors associated to the infection by HIV among young males ¹¹.

This article presents the results of research performed in the year of 2007 among conscripts of the Brazilian Armed Forces, by comparing current results with those results from previous studies from 1999 to 2002. In the first part of the analysis, the focus was given to the comparison

of results with those obtained in previous surveys, while in the second part there were estimated prevalence rates of HIV and syphilis infection in some population subgroups.

Material and methods

The study was performed in 2007 by the Department of STI, AIDS and Viral Hepatitis of the Brazilian Ministry of Health in a partnership with the Brazilian Ministry of Defense, with the approval of the National Committee of Ethics in Research (Number 589/2006).

There were selected about 39,000 conscripts for the survey, obeying a sampling plan by stratifying in two selection stages. In the first stage, the selection commissions were stratified by geographical macro region and selected with probability proportional to size, which was defined by the frequency of conscripts presented in the previous year (2006). In the second stage, there were selected conscripts at the moment of their presentation, in a number proportional to the size of the selection commission.

The study included a fill-in questionnaire and blood sample collection for testing of HIV and syphilis infection. The questionnaire included information about social-demographic characteristics, sexual behavior practices, problems related to STI and the use of illicit drugs.

For all selected conscripts there were collected blood samples that were submitted to two immunoenzymatic essays (ELISA), with methodological principles and different antigens to detect HIV infection. At this stage, undetermined or divergent samples were analyzed by Western Blot test for confirmation. Serological tests for syphilis were also performed by ELISA. All the essays were performed in the Laboratory of the Institute of Biology of the Brazilian Army, in the city of Rio de Janeiro.

In the current analysis there were considered 36,945 conscripts aged 17 to 20 years old, but it was only possible to analyze the data of 35,432 young men, since 1,513 (4.1%) of them did not have information about the municipality of residence or level of education. There were investigated all variables related to sexual behavior of the conscripts by using the following indicators:

- a) rate of sexual activity – defined as the proportion of conscripts that have already had sexual relations;
- b) age at the first sexual relation;
- c) total numbers of partners in life and during last year;
- d) number of partners in the last year, according to the following types: steady partner (male);

casual partner – friend, acquaintance, flirt; paid partner (male or female), whenever the conscript paid the partner to have sexual relations; paying partner, when the partner paid the conscript to have sexual relations;

e) percentage of men who have sex with men (MSM);

f) percentage of conscripts that used condom in their last sexual relation;

g) percentage of conscripts that used condom in their first sexual relation;

h) percentage of conscripts that used condom in all their sexual relations during last year (regular use of condom) according to the type of partner;

Additionally, it was used the synthesizing indicator of risky sexual behavior defined by Szwarcwald et al.¹⁰.

i) risky sexual behavior index in the last year – defined by the weighted mean of the number of partners in the previous year, taking as weights the percentage frequencies of no use of condoms according to the type of partner. Mathematically, we may express the risky sexual behavior index by:

$$ICSR = \sum_{i=1}^4 (1-w_i) \cdot P_i$$

where: i indicates the type of partner; $w_i = 0.00$ – never used a condom with partners in category i ; $w_i = 0.25$ – used a condom in less than half of times with partners in category i ; $w_i = 0.75$ – used a condom in more than half of times with partners in category i ; $w_i = 1.00$ – used a condom in all the times with partners in the category i ; P_i = number of partners in category i .

Regarding problems related to STI, the conscripts were questioned about the following problems: discharge (pus) in the urethra; wounds in the penis; small blisters in the penis; and warts in the penis. After the previous selection of conscripts who declared having the problem after the start of sexual activity, there were calculated the percentages of occurrence for each one of the problems, as well as the non-occurrence of any of these problems.

For the analysis of the use of injecting drugs, two indicators were considered: Proportion of use at least once in life and the proportion of conscripts who reported current use.

Since it is a set of data obtained by means of a complex sample that combines stratification and conglomeration, the design of the survey was incorporated in the statistical analysis of data. It was also necessary to use a calibration procedure of the sample, according to the census distribution by population size of city of residence (less than 50,000 inhabitants; 50,001 to 200,000 inhabitants and greater than 200,000 inhabitants), age and education level.

There were estimated the prevalence rates of HIV for the total sample and by population subgroup, established by education level, sexual preference and problems related to STI.

In the multivariate analysis, there were used procedures of logistic regression to find factors that were mostly associated to HIV infection in 2007. Initially there were used models of univariate logistic regression to calculate the crude odds ratio. In the multivariate analysis, there were included all variables that are potentially associated to HIV infection: Education level (incomplete fundamental school); being MSM; risky index of sexual behavior; more than 5 partners in a year; more than 10 partners in life; at least one problem related to STI. For the selection of joint variables more associated to HIV, there was used a stepwise procedure, with inclusion and exclusion of variables in each step based on the likelihood ratio.

Results

There were analyzed 35,432 conscripts aged 17 to 20. Table 1 presents indicators of sexual behavior compared with those obtained in previous surveys with conscripts (1997-2000 and 2002). There is a decrease in sexual activity among young people from 82% in 2002 to 75% in 2007. Likewise, the proportion of young people who start their sexual activity before age 14 reduced from 25% in 1999 to 17% in 2007.

Regarding the use of injecting drugs, the trend for decrease is clear: the proportion of use at least once in life reduced from 1.9% in 1999, to 0.5% in 2007 (Table 1).

Among sexually active young men, the proportion of conscripts who had sexual relations with men (MSM) remained at 3.2%, while the proportion with more than 10 partners in life showed a small increase (22.6%). Regarding protected sex in the analyzed period, there was a gradual increase in the proportion of conscripts using a condom in their last sexual relation, reaching 71.5% in 2007 while the proportion of use in the first sexual relation was slightly lower at 67% (Table 1).

Among the young men who had sexual relations in the last year, the proportion of paid sex was in the same rate as the year of 2002 (16%), but the proportion of conscripts who were paid to have sex reduced considerably in more than 5% in 1999 and 2000 to less than 3% in 2007.

Regarding the regular use of condoms among young men who had sexual relations in the past year, there was a decrease in the results: the proportion in the regular use of condoms whether

Table 1

Indicators (%) of sexual behavior, per year. Conscripts of Brazilian Army, 1999-2007.

Group/Proportions	Year			
	1999	2000	2002	2007
Total sample (n = 35,432)				
Sexual activity	81.8	83.0	82.5	75.1
Injected cocaine				
At least once last year	1.9	*	0.9	0.5
Currently user	0.6	*	0.2	0.2
Sexually active conscripts (n = 26,198)				
Start of sexual activity < age 14	24.8	19.8	20.2	17.1
More than 10 partners in life	19.7	19.6	18.7	22.6
Men that have sex with other men	3.3	3.0	2.9	3.2
Use of a condom in the last sexual intercourse	62.2	68.8	69.7	71.5
Use of a condom in the first sexual intercourse	*	*	*	67.1
Sexually active conscripts (last year) (n = 20,779)				
At least one paid partner by the conscript	16.6	17.3	16.2	16.1
The conscript was paid for sex at least once	5.5	5.9	4.1	2.7
More than 5 partners in the last year	14.3	13.6	13.9	14.7
Regular condom use				
Steady partner	43.1	48.4	43.7	38.2
Casual partner	53.2	56.2	57.2	53.5
Paid partner	68.8	67.0	77.9	68.1
The conscript was paid for sex	53.8	48.6	44.0	63.0

* Information not collected during the year.

with steady partners or casual ones decreased 5.4% and 3.7% respectively in comparison to 2002.

The percentage of regular condom use with any partner and the index of risky sexual behavior are presented on Table 2 for the years of 2002 and 2007. Regarding the regular use of condoms, the percentage of conscripts declined, especially among those with less education. Among young people with incomplete fundamental education, the average rate of risky sexual behavior increased from 1.0 in 2002 to 1.57 in 2007, while among the conscripts with complete fundamental education the rate remained stable. Among MSM, the index increased 36%, while among heterosexual young people it increased 9%.

Regarding sexually active conscripts who reported problems related to STI (Table 3), the percentage of occurrence of all the problems studied here (discharges, blisters, wounds and warts on the penis) decreased from 2002 to 2007. The prevalence rate of syphilis declined from 0.85% to 0.53%. The HIV prevalence rate increased, although not statistically significant, increasing from 0.090% in 2002 to 0.117% in 2007.

Table 4 shows the estimated rates of HIV prevalence in population subgroups in 2007.

We highlight the high levels of prevalence rate among MSM.

The results of multivariate logistic regression with the test result for HIV as the response variable are presented on Table 5. The main factors associated with HIV infection were: being MSM (OR = 14.6; $p < 0.0001$); having at least one problem related to STI; more than 10 partners in life.

Discussion

The series of surveys performed with Brazilian Army conscripts represents a unique opportunity to analyze the behavior of young males. Since the presentation to military service is a legal obligation of the young men when they reach 18, the continued inclusion of questions about practices related to HIV allows the monitoring of indicators and evaluating actions of prevention and control. Five years after the last survey, the data collected in 2007 enabled the observation of relevant changes in the behavior of the Brazilian young men as well as reporting risky practices to HIV infection.

However, it is necessary to point out some limitations of surveys with conscripts. The first

Table 2

Percentage (%) of the regular condom use and index of risky sexual behavior per year. Conscripts of the Brazilian Army, 2002 and 2007.

Group	% of regular condom use		Index of risky sexual behavior	
	2002	2007	2002	2007
Total sample	48.5	43.1	0.87	0.98
Incomplete fundamental School	44.0	32.2	1.01	1.57
Complete fundamental School	50.1	45.8	0.83	0.82
Men who have sex with men	34.1	29.5	1.56	2.12
Start of sexual activity < age 14	41.7	33.0	1.26	1.57
More than 5 partners during last year	42.2	40.2	2.11	2.97

Table 3

Percentage (%) of recruits who reported problems related to sexually transmitted infections (STI), HIV and syphilis prevalence rates * and indicators of sexual behavior according to the occurrence of STI related problems. Conscripts of the Brazilian Army, 2002 and 2007.

Problem	% of conscripts		% of regular condom use		Index of risky sexual behavior	
	2002	2007	2002	2007	2002	2007
Discharge at the urine canal	3.9	2.4	24.3	17.1	1.89	2.33
Blisters on the penis	5.7	2.8	28.6	25.3	1.89	1.62
Wounds on the penis	7.5	6.4	29.2	28.3	1.66	1.47
Warts on the penis	2.9	2.7	21.4	22.5	2.10	2.14
None of the above	84.4	87.1	52.6	45.7	0.73	0.86
Syphilis (positive)	0.848	0.531	34.2	35.6	1.37	1.65
HIV (positive)	0.090	0.113	66.7	23.8	0.54	1.23

* Not necessarily syphilis in activity, it may refer to a previous infection (serologic scar).

Table 4

Prevalence rate by HIV infection in selected groups. Conscripts of the Brazilian Army, 2007.

Group	Size (%)	Prevalence ratio	95%CI
Total sample	100.0	0.113	0.069-0.157
Incomplete Middle School	26.0	0.165	0.072-0.258
Complete Middle School	74.0	0.095	0.059-0.132
Men who have sex with men	3.2	1.234	0.341-2.127
At least one STI problem	20.6	0.267	0.126-0.408

95%CI: 95% confidence interval.

one refers to the exclusion of illiterate ones, who are only conscripted and then dismissed from military service. The second is related to the way

the survey was conducted, with self-filling of questionnaires. On one hand, the self-filling facilitates the veracity in response, but on the other

Table 5

Predictor factors of HIV infection. Recruits in Brazilian Army, 2007.

Predictors	OR (crude)	95%CI	p-value	OR (adjusted)	95%CI	p-value
Men who have sex with men	14.638	6.849-31.286	< 0.001	11.164	4.908-25.392	< 0.001
At least one STI problem	3.633	1.872-7.050	< 0.001	2.538	1.201-5.362	0.015
More than 10 sex partners in life	3.422	1.668-7.018	0.001	2.523	1.213-5.251	0.013

OR: odds ratio;

95%CI: 95% confidence interval.

hand, it leads to losses by the inadequate filling of relevant information, which is necessary for sample calibration.

Regarding the comparison of 2007 results with previous results, there were observed some positive changes. Among them, we highlight the trend of steady decline in the proportion of use of injecting drugs, the increase in the proportion of condom use during the last sexual relation and the reduction in the occurrence of problems related to STI, including the reduction in the rate of prevalence of syphilis. It is necessary to mention that the positive ELISA test for syphilis does not necessarily indicate active syphilis, and it may refer to prior infection (serological scar) by *Treponema pallidum*.

A survey performed in the United States with the young American population shows similar results to ours². Like in Brazil, the use of condoms by males in the first and most recent sexual intercourse is around 70% among male adolescents aged 15-19 years.

However, the 2007 study also presented negative results. Among MSM there is a worsening in sexual behavior indicators, with a significant increase in the rate of risky sexual behavior between 2002 and 2007. This population subgroup presents a significantly lower percentage of regular condom use when compared to the heterosexual group 14 times more likely to be infected with HIV. It is important to mention that 13 of the 39 young men infected by HIV were MSM. These results indicate the need to direct specific efforts to young MSM, with prevention campaigns and strategies that take into consideration the increased risk of this population subgroup.

As discussed by Merson et al.¹⁴, it is necessary to understand that the prevention strategies may not be unique to the total population of Brazilian young men. The findings here among homo/bisexual young men show different risk behaviors and reinforce strategies geared towards groups presenting greater risk. Access strategies to pop-

ulation subgroups under higher risk through recruitment chain have been used internationally, achieving better results than with traditional approaches¹⁵.

The results related to the regular use of condoms, in a general way, did not show progress either and suggest that the prevention strategies need to be reformulated. The regular use of condoms among young people declined for both fixed and casual partners between 2002 and 2007. After more than 20 years since the first cases of AIDS in Brazil, young people who were part of the present study were born with the epidemic already present in the country, living with a disease that has treatment, without having experienced the high lethality of AIDS at the onset of AIDS epidemic¹⁶. Although there is no longer the death sentence perception, AIDS has no cure and people under antiretroviral therapy present losses in quality of life, restrictions in work activities, and loss of socioeconomic conditions^{17,18}.

Studies have shown that the efforts for prevention related to the use of condoms are without a doubt effective and may significantly reduce the incidence of HIV infection, but they cannot eliminate the disease. Through mathematical modeling, it is shown that the transition from endemic to epidemic stage would be accelerated to an elimination stage, in case all HIV-infected adults who were not on antiretroviral therapy started receiving it¹⁹. In the current literature, it is debated the impact of the expansion of treatment among recent cases of HIV infection²⁰. However, the stigma and fear of the result still restrict many of the youth to perform periodic testing for HIV.

Another aspect presented in the survey was the synergy of risky sexual practices. The young people who perform unprotected sex have, at the same time, multiple partners and earlier sexual initiation. Considering that this is also the population segment that generally presents lower education, it is the group that should be primarily targeted with preventive measures and educa-

tional campaigns ²¹. The analysis showed that the rate of risky sexual behavior has increased over 50% in the period 2002-2007 among young people with incomplete fundamental education, while among the conscripts with complete fundamental education index remained stable.

Among the predictor factors of HIV infection, besides being MSM, we also highlight the multiple partners and problems related to STI. The survey showed an increase in the prevalence among conscripts who presented positive results for syphilis. Preventive actions considering the free distribution of condoms, treatment and control of sexually transmitted infections have been cost-effective ²².

Despite the continued efforts and some positive results, we must admit that the response to the AIDS epidemic among young people is going through a time of vulnerability. In a period of five years there has been an increase in the HIV prevalence rate, although not statistically significant. There is a clear reduction in the regular use of condoms among young people with low educational level and a worsening in the rate of risky sexual behavior among MSM, a group that continues to be disproportionately affected by the epidemic of HIV/AIDS ²³. In conclusion, the evidence found in this survey indicate the need for restructuring policies among Brazilian young adults.

Resumo

Pesquisas periódicas sobre práticas de risco relacionadas à infecção pelo HIV têm sido realizadas entre os conscritos das Forças Armadas do Brasil, desde 1996. Este artigo traz os resultados da pesquisa realizada no ano de 2007, comparando com os obtidos no período 1999-2002. Obedecendo a um plano de amostragem estratificada por região geográfica em dois estágios de seleção, 35.432 conscritos de 17 a 20 anos de idade preencheram um questionário sobre comportamento sexual. O estudo incluiu coleta de sangue para detecção de HIV e sífilis. Os achados mostram diminuição do uso regular de preservativo, com parcerias fixas e casuais, sobretudo entre os jovens com baixo grau de escolaridade. A proporção de conscritos que têm relações sexuais com homens (HSH) se manteve (3,2%), mas há uma piora no índice de comportamento sexual de risco entre os HSH. Há também um aumento na taxa de prevalência do HIV, de 9 para 11,3 por 10 mil, embora não estatisticamente significativo. Em conclusão, as evidências aqui encontradas indicam a necessidade de reformulação das políticas entre os jovens brasileiros.

Comportamento Sexual; HIV; Sífilis; Militares

Contributors

C. L. Szwarcwald was the head of the article, in charge of its conception and text development. C. L. T. Andrade participated in the text conception and was responsible for the composition of results and development of tables. A. R. P. Pascom worked on data analysis, composition of methodology and discussion. E. Fazito was the coordinator of the field study and participated in the development of the methodology. G. F. M. Pereira coordinated the survey and participated in the development of the methodology. I. T. Penha performed the bibliographic research and participated in the development of the development of the tables.

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