

PUBLIC HEALTH

Puerto Rican Youth in Drug Treatment Facilities: Who Volunteers for HIV Testing?

CARMEN NOEMI VÉLEZ, PhD*; LUIS A. RODRÍGUEZ, MS*; ELLIE SCHOENBAUM, MD†;
JANE A. UNGEMACK, DrPH‡

ABSTRACT. This paper examines the characteristics of youngsters in drug treatment who volunteer for AIDS testing in comparison to those who do not. HIV Antibodies testing was offered on a voluntary basis to a sample of 250 Puerto Rican youngsters enrolled in three ambulatory drug treatment centers in 1991. Sixty-six percent of the youngsters agreed to take the test. Male adolescents who volunteered reported fewer years of education and were more likely to have dropped-out of school. Consistent with research findings among adults, those adolescents at greater risk

of HIV infection as measured by drug use and sexual behaviors were more likely to volunteer for on-site testing for HIV infection. Higher rates of alcohol use and marijuana use differentiated volunteers from those who did not. Among the sexual behaviors investigated, number of partners, engaging in less risk reduction practices, having a sexual partner who had used illicit drugs and using condoms to avoid STD's were found to be significantly higher in volunteers. **Key Words:** AIDS/HIV, HIV testing, Volunteers, Puerto Rican, Drug Use.

The role of voluntary HIV counseling and testing (C&T) in the prevention and early detection of HIV infection among drug users and abusers is surrounded by controversy. Some question whether counseling and testing for HIV can be considered as a part of a HIV prevention strategy for drug users and abusers (1, 2). Others consider HIV risk assessment and voluntary testing a necessary component of drug treatment that should be offered as part of a complete HIV/AIDS risk evaluation (3). In addition, still others have documented that knowledge of HIV status among intravenous drug users (IVDU) has been associated with reduction of risky injecting and sexual practices (4, 5).

Another important issue in the controversy is who volunteers for testing. It is known that a large proportion of HIV prevention activities involve testing and pre/post test counseling. In fact, some researchers reported that 25% of the Centers for Disease Controls HIV prevention budget has been devoted to C&T (6). Nonetheless, variations in testing behavior among different populations remain unexplained. According to Phillips & Coates (6) this difficulty is related to lack of conceptual models and to the diversity of outcomes studied. These outcomes include intention to be tested, actually being tested, repeated testing and choice of testing site. Another shortcoming in the C & T literature is that the testing behavior of youths, whom are considered at increasing risk of HIV infection has not been studied.

There have been several studies of the characteristics of volunteers for HIV testing (7,8,9,10,11,12,13,14). However, most studies of those who volunteer for HIV testing in the continental United States have been conducted in adult populations aged 18 years or older. Several of these reports have been based on a single representative sample of the U.S. population responding to the 1988 National Health Interview Survey [NHIS]. These NHIS studies have found that membership in certain risk groups (e.g., hemophiliacs, Haitians, African Americans, homosexuals, IV drug users having sex with anyone in a risk group or those who have sex for drugs or

*Department of Biostatistics and Epidemiology, Graduate School of Public Health, Medical Sciences Campus, University of Puerto Rico.

†Department of Epidemiology and Social Medicine, Division of Infectious Diseases, Montefiore Medical Center, Albert Einstein College of Medicine, Bronx, NY.

‡Department of Psychiatry, University of Connecticut Health Center, Farmington, CT.

This project was done in collaboration with the Albert Einstein AIDS Research Program and it was funded by the Center for Infectious Diseases, Division of HIV/AIDS of the Centers for Diseases Control, Atlanta.

Address correspondence to: Dr. Carmen N. Vélez. Department of Biostatistics and Epidemiology, Graduate School of Public Health, Medical Sciences Campus, University of Puerto Rico, G.P.O. Box 365067, San Juan, Puerto Rico 00936-5067.

money) is significantly related to the HIV testing decision (7,8). Other research based on samples of convenience have also found that perceived risk is related to HIV testing behavior (9).

In addition to male gender and younger age (e.g., 17-44), black or Hispanic ethnic background, has been associated with the decision to volunteer (8,11). Analyses of the NHIS data, however, have shown that the various nationality groups encompassed within the "Hispanic" heading (i.e., Puerto Ricans, Mexican Americans, and Cuban Americans) behave very differently with respect to volunteering for HIV testing. Among the mainland Hispanics, Puerto Ricans have been found to be the most likely to volunteer for the test and Mexican Americans the least likely to volunteer. Because of procedural limitations in the use of Spanish in administering the NHIS instrument, however, generalization to the Hispanic populations is only tentative (12).

Results from the National AIDS Behavioral Survey (NABS) are similar to the NIHS in spite of totally different methodologies. The NABS uses a population-based telephone survey and sampled the general population as well as residents of areas with high prevalence of AIDS cases (15). In the high risk areas the NABS found that homosexuals, heterosexuals, considerate to be at risk, and partners of IV drug users were more likely to have been tested than persons with no risk factors. They also found that in the national sample, Hispanics males (40%) and Black males (30%) reported being tested more frequently than Whites (23%). The same rank order of ethnic groups was observed among the females and in their high risk sample (15).

The high rates of volunteering for the HIV test among Puerto Ricans on the mainland could be related to the epidemic proportion of AIDS cases both among Puerto Ricans on the Island and on the mainland. The rate of AIDS cases among Hispanics, including Puerto Ricans living on the Island, is 2.5 times the rate found among non-Hispanic whites (16). The annual incidence for males on the Island (71 per 100,000 for cases reported through June, 1995) is second only to Washington, D.C. with an incidence of 214 per 100,000. Among cities in the United States with a half million or more persons, San Juan ranks sixth in terms of the rates of cases (17).

A total of 17,138 cases of AIDS had been reported in Puerto Rico as of January 30, 1996. The overwhelming majority (78%) are males, with about one-fifth being young men between the ages of 20 to 29. The majority of the AIDS cases (66%) in Puerto Rico are related to intravenous drug use. As of January 30, 1996, 89 of the reported AIDS cases were for youngsters between the ages of 13 and 19, 39% of whom are now deceased. In this age

group, 34% of all male AIDS cases are IV drug users (17).

Studies of high risk groups who volunteer for HIV testing, such as homosexuals, IV drug users and runaways, suggest that the factors associated with volunteering vary depending on the population tested. For example, among homosexual men it has been found that those with a history of STD's are more likely to have the test (18). Among runaways in NYC, drug use rather than sexual behavior appears to have more weight in determining who intends to be tested for HIV (19).

Data concerning the factors associated with seeking or volunteering for HIV testing among adolescents are scarce. The paucity of studies is problematic since in Puerto Rico, as in the United States, 22% of all AIDS cases are in their 20's. Given the long incubation period of the virus, it is very likely these cases acquired the infection while in their teens (17).

Adolescence is a transition period during which many of the risk behaviors for HIV infection are initiated, including drug use and sexual behaviors. Evidence suggests that problem behaviors in adolescents are interrelated. Drug use and delinquency, for instance, have been found to be associated with risky sexual practices such as increased numbers of sexual partners (20,21,22). This co-occurrence of problem behaviors has led to the identification of teenage drug users, prostitutes and runaways as high risk groups for HIV infection (23,24,25).

In 1991, a study was designed to analyze the prevalence of HIV risk factors among male teens in drug treatment in Puerto Rico. This population of young males is similar to other problem youth in that most of them are out of school, have had some trouble with the law, and are otherwise very difficult to reach. The youngsters were surveyed about attitudes, beliefs, practices and behaviors related to sexual behavior and drug use. The boys in treatment were interviewed and offered an HIV test on site, which they were free to accept or reject. This paper analyzes the distinguishing characteristics of those adolescents who volunteered to be tested for the HIV virus infection.

Methods

Sample

In 1991, services for drug dependent persons in Puerto Rico were centralized under the auspices of the Department of Anti-Addiction Services (DSCA by its initials in Spanish). Users of illegal substances, predominantly marijuana, were recruited from the community or remanded by the criminal justice system into drug treatment. In 1991, DSCA was the only public institution in Puerto Rico offering youngsters outpatient treatment for substance use problems. Five of the

outpatient clinics in DSCA were designated for minors; of these, three participated in this study.

The three facilities selected as research sites were chosen because they are in or near the Greater San Juan Metropolitan Area and they offer comparable services to their youthful clients. At the time of the survey about 95% of the youngsters enrolled in the treatment centers were boys, therefore only boys were studied. Convenience sampling was used. The first 250 available youngsters were approached for interview, representing approximately 70 percent of the active clients in the selected Centers. Only five percent of those initially asked to participate in the study refused. The most frequent reason given for declining to participate was not having enough time to do the interview and get to the public transportation to be home in time.

Recruitment and data collection including interviews, testing and post-testing counseling sessions took about four months to complete (For more details on the study methodology see Velez et al.(26)). The youngsters who were not included in the sample were mostly those who were formally enrolled in the Centers but had not attended for months. These youngsters are very difficult to reach and most likely will not be impacted by any of the activities in the treatment center.

Data Collection

Two full-time HIV research/counseling staff who were completely independent from the Centers' personnel were responsible for interviewing the youngsters at the research sites. The interviewers approached the youngsters during the normal activities in the Centers. At this first contact they described the study and asked the youngsters to participate in the study. Parental consent was not required in this population because the youngsters in treatment are under the legal supervision of DSCA. Procedures related to securing informed consent and assuring protection of confidentiality were followed. Most youngsters agreed to be interviewed immediately; for a minority of the boys (about 10) the interview was scheduled for another day.

At the time of the interview an informed consent form was read to the participants asking if they would be willing to receive an HIV test. It was explained to them that the test was completely voluntary and that their refusal to take the test would not affect their participation in the interview. It was made clear to them that a \$15.00 participation fee would be paid to all of those who accepted to be interviewed regardless of whether or not they agreed to be tested.

The interviewers had no knowledge of the risk status of the adolescents when recruitment for the survey and the HIV test was done. The blood sample for the HIV

test was taken on-site by a nurse after the interview was completed. A post-test counseling session was scheduled for the youngsters who took the test.

Sixty-six percent of those who participated in the study volunteered to take the test. Only one of the 164 youngsters who agreed to be tested had a positive result; this youngster was referred to the appropriate agency for treatment. All of the youngsters accepting the test were interviewed.

Measures

A highly structured instrument which measured demographic characteristics, substance use behaviors, sexual practices, condom and contraceptive use, and knowledge about AIDS, HIV transmission and safe sex practices was used for the interviews.

Three sets of variables were analyzed in this study: socio- demographic characteristics, sexual practices and drug use behavior, and knowledge about HIV risk reduction practices. The first set included: age, last grade completed, and whether currently attending school or not. Length of time attending the drug treatment Center was also included in the first set because length of time in treatment might be related to lower HIV risk practices as well as the decision to volunteer.

The second set measuring sexual practices includes age of sexual initiation, number of partners in the last year, ever having a sexual partner who uses drugs, and an index measuring the number of HIV-STD risk reduction techniques used. The HIV-STD Risk Reduction Index included effective as well as ineffective practices the youngsters reported that they engaged in. Ineffective sex practices were endorsed even more frequently than effective ones, they included: urinating after sex (62%); washing their genitals after sex (85%); and checking their partners genitals (50%). Among the effective practices reported by the adolescents were: selecting the partners carefully (86%); having only one sexual partner (50%); and not having sex (10%). The analysis of internal consistency in this scale revealed that all items were intercorrelated; so that segregating them into effective and ineffective behaviors lowered the reliability of the scale considerably. The five item scale obtained a Cronbach alpha of .75 compared with only -.33 for the effective behaviors and .65 for the ineffective on. The participants were asked in a separate item whether they used condoms and if they used them as a contraceptive or to prevent STD.

Drug use practices included: age of drug use initiation; ever use alcohol and marijuana; use of these two substances in the last year; use of alcohol and marijuana in the last six months; and lifetime use of any other drug.

An additive index was created to measure the number

of risk practices reported by the adolescent. The risk practices index included the following behaviors: 1) having two or more partners during the past year; 2) using marijuana during the year preceding the interview; 3) using other drugs during the past year; 4) using condoms for STD prevention; and 5) engaging in 4 or fewer HIV-STD risk reduction behaviors. High scores on the index represented more risk behavior.

The third variable set, knowledge of HIV, was measured using a 14-item additive scale. Youngsters responded true or false to such items as: AIDS is incurable; AIDS causes death; number of sexual partners is a risk behavior; the virus is present in the blood and semen of people who have it; and sexual relations without protection can transmit the virus.

Statistical Analysis

Logistic regression was used to analyze the factors associated with volunteering for HIV testing in the studied population. In Table 1, the sociodemographic variables and length of time spent in the Center were entered simultaneously into the equation. In Tables 2 and 3 the analyses focused on the relationship between each of the risk factors (e.g. sexual and drug use practices) and volunteering for HIV testing, controlling for the sociodemographic variables.

Results

Sample Description

The first columns in Tables 1 to 3 show the characteristics and prevalence of the various risk factors studied for the total sample. The mean age of the youngsters was 16. More than half of the boys (55%) no longer attended school. The majority (80%) had gone no further than the ninth grade in their education. Most boys (78%) had attended the Center for at least four months and the average number of months of attendance was 2.8 (Table 1).

The mean age for sexual initiation was reportedly 13.5 years. Twenty-four youngsters reported that they had never engaged in sexual intercourse. This group was excluded from the analyses of some of the sexual activity risk factors as indicated in the tables. The mean number of sexual partners of youngsters who were sexually active was three for the past year (Table 2); almost 20% of the youngsters reported four partners or more (data not shown). About one-in-ten of the youth in treatment reported having had at least one sexual partner who was using illicit drugs such as cocaine, crack or marijuana. None reported a partner using drugs intravenously.

The mean number of HIV-STD risk reduction practices endorsed was three out of a possible total of six practices.

Table 1. Distribution and Adjusted Odds Ratios for Sociodemographics Associated with Volunteering for HIV Testing in Youngsters in Drug Treatment Centers (N=250)

	Total	OR	Sig	
	N	(%)		
Sociodemographics*				
Age				
≤ 15 years	62	(25)	1.47	0.29
(X = 16.35, SD = 1.18)				
Schooling				
Out of school	137	(55)	1.85	0.03
Completed ≤ 9 th grade	199	(80)	2.41	0.01
(X = 7.98, SD = 1.82)				
Length of time in program				
≥ 4 months	55	(22)	2.73	<0.01
(X = 2.8, SD = 12.7)				

*Controlling on other sociodemographic characteristics.

Condoms were reportedly used as contraceptives by less than one-third of the sample as a whole (30%). A somewhat

Table 2. Distribution and Adjusted Odds Ratios for Sexual Behaviors Associated with Volunteering for HIV Testing in Youngsters in Drug Treatment Centers

	Total	OR	Sig	
	N	(%)		
Sexual practices*				
Age initiated*				
Sex (N = 226)				
≤ 13	98	(43)	0.74	0.86
(X = 13.50, SD = 2.05)				
Number of sexual partners last year				
2 or more	114	(46)	1.46	0.18
(X = 3.13, SD = 3.96)				
Number of practices for risk reduction				
≤ 4	190	(76)	2.31	0.01
(X = 3.35, SD = 1.52)				
Non-IV drug users as sexual partners				
Yes	22	(9)	3.58	0.05
Reported not using condom as:				
Contraceptive (N = 226)†	158	(70)	1.42	0.27
For STD's prevention	158	(63)	1.87	0.03
HIV knowledge*				
≤ 11	144	(58)	0.92	0.78
(X = 11.10, SD = 1.54)				

* Controlling for sociodemographic characteristics.

† Includes only sexually active youngsters.

higher proportion (37%) of the young men reported using condoms for STD prevention (Table 3).

With respect to drug use practices the youngsters reported they first initiated drug use--primarily marijuana-- when they were on 13.8 average years of age. Alcohol, the most frequently used substance, was reportedly used by 89% of the youngsters in the year prior to the interview and 75% reported use during the last six months. Marijuana use was reported by more than half of the youngsters and other illicit drug use was reported by slightly more than one-third of the youngsters in the year prior to the interview. The other non-IV drugs most frequently used by the youngsters included: cocaine (30%), crack (10%) and tranquilizers (10%). Compared to use during the year prior to the interview, current illegal drug use (use during the last six months) was lower for marijuana (30%), although use of other non-IV drugs (36%) remained constant. The boys were tested for drug use while attending the Centers which help explain the lowered use of marijuana. Lifetime use of intravenous drugs (IVD) was very rare in this sample; only 3 youngsters reporting ever trying it.

The overwhelming majority (85%) reported at least two of the five risk factors included in the risk behaviors index. The mean number of risk factors reported by the adolescents was three (Table 3). In general, the most frequently reported risk factors were using marijuana during the preceding year (55%), not using condoms for STD prevention (63%), and engaging in four or fewer risk reduction practices included in the index (76%).

Factors related to Volunteering for HIV Testing

The last 2 columns in Table 1 present the adjusted odds ratio for volunteering for AIDS testing for each of the sociodemographic factors studied. Simultaneously controlling on the other sociodemographic variables, volunteers were more than twice as likely to have a ninth grade education or less (OR=2.41) compared to those who refused the test. Similarly, volunteers were almost twice as likely to have dropped out of school compared to those who refused the test. Volunteers were also more likely to have been in drug treatment for a longer period of time than those who refused the test (OR=2.73). Age of the youth was not significantly related to volunteering for HIV testing.

As shown in Table 2, age of reported onset of sexual behavior did not differentiate those who volunteered and those who refused the test. Although number of sexual partners in the last year also did not differentiate volunteers from refusals, volunteers did report taking fewer risk reduction measures than did the boys who refused (OR=2.31) regardless of whether they were effective or

ineffective techniques. Boys who took the test more often reported that they had a sexual partner who used illicit drugs (OR=3.58). Teens who volunteered also reported using condoms specifically to avoid STD's less often than those who refused (OR=1.87).

Knowledge of modes of HIV transmission did not differentiate volunteers from refusals when controlling for sociodemographics factors and length of time in the program.

Drug use behavior did differentiate volunteers from those who refused the test (Table 3). Those who took the test were almost five times more likely to report alcohol use in the year prior to the interview than were those who refused the test. Volunteers also reported lifetime use of marijuana and marijuana use in the year prior more frequently than those who refused (OR=2.47). Likewise, volunteers reported more use of other drugs (OR=1.98).

Finally, the volunteers differed widely from who

Table 3. Distribution and Adjusted Odds Ratios for Drug Use Behaviors Associated with Volunteering for HIV Testing in Youngsters in Drug Treatment Centers

	Total	OR	Sig	
	N	(%)		
Legal drug use practices*				
Use of alcohol last year				
Yes	222	(89)	4.58	<0.01
Use of alcohol in last 6 months				
Yes	170	(68)	2.57	<0.01
Illegal drug use practices*				
Age initiated				
Drug use (N = 106)**				
≤ 14	65	(61)	1.26	0.72
(X = 13.80, SD = 1.99)				
Ever use marijuana				
Yes	165	(66)	2.47	<0.01
Use of marijuana last year				
Yes	137	(55)	1.77	0.04
Use of marijuana in last 6 months				
Yes	74	(30)	2.03	0.03
Ever use of other non-IV drugs				
Yes	106	(42)	1.70	0.07
Use of other non-IV Drugs last year				
Yes	91	(36)	1.98	0.02
Use of other non-IV Drugs in last 6 months				
Yes	41	(16)	1.74	0.16
Number of risk behaviors				
≥ 2	212	(85)	4.35	<0.01
≥ 3	145	(58)	2.96	<0.01
(X = 3.65, SD = 1.29)				

* Controlling for sociodemographic characteristics

** Includes only those who initiated drug use.

refused the HIV test in terms of the number of risk practices the adolescent reported. Volunteers were four times more likely to report two or more risk behaviors. Even when alcohol use, which was the most prevalent risk behavior, was excluded from the index, volunteers were 4 times more likely to report at least two risky behaviors compared to refusals.

Discussion

People who volunteer for HIV testing must first identify themselves as being at risk, and then admit to others that they are at risk (27). The present study showed that the majority of Puerto Rican youth surveyed in drug use treatment centers are willing to volunteer for HIV testing when it is provided on site.

The willingness of Puerto Rican youngsters in substance abuse treatment to volunteer for HIV testing is consistent with findings reported for the Hispanics in the continental US. Among Hispanics on the mainland, Puerto Ricans have been shown to have the highest rate of voluntary HIV testing or intentions to be tested (12). Phillips' results however, are tentative due to small sample sizes and large standard errors (12). A second nationwide survey (using telephone interviews) inquiring about HIV testing behavior, Hispanics also reported having been tested more frequently than other Whites or Blacks (15). In this study, the various ethnic groups under the rubric of Hispanics were not analyzed separately even though the number of Hispanics included in both their national sample (N=222) and in their high risk sample (N=1,711) was large. Using Berrios et al., (1993) definition of at-risk heterosexuals, the sample of youngsters surveyed in the present study qualify to be described as such (15). To qualify as an at-risk heterosexual in Berrios' study, a person had to report two or more sexual partners in the past two months, and to report not using a condom during all sexual contacts in the last six months. The youngsters surveyed in this study, with a mean age of 16 years, reported an average of three sexual partners during the last year. In addition, the majority of them (70%) did not use condoms at all. The risk behaviors reported by the youngsters in Puerto Rico are similar to those reported by adults volunteering for testing (10,28,29).

The adjusted odds ratio analyses showed that volunteers have less education and are more likely to be out of school than those who refuse. Similar findings concerning education have been found in analyses with national data (11). Knowledge of HIV transmission, however, did not differentiate volunteers from refusals of the HIV test. Again, analyses of the 1988 NHIS data have shown similar results (13).

Certain sexual practices, such as taking fewer precautions for risk reduction, as well as use of alcohol and illicit drugs were found to differentiate volunteers from refusals to HIV testing in this study. Use of non-intravenous drugs such as alcohol and marijuana are considered HIV risk factors because they may impair judgment which may lead to a decrease in the probability of protective behaviors such as condom use or an increase in the number of sex partners (29,30). These findings are consistent with other studies which have found that adults engaging in risky sexual practices and in drug use behavior are also more likely to volunteer for HIV testing (14). The findings are also consistent with Mainous et al.'s (10) finding that the main reason for not getting tested was the belief of being at low risk for contracting HIV. Studies with runaways and homeless youth have also reported that those with known risk factors are also more likely to report having been tested for HIV (28).

Adolescents are often described as prone to reckless behavior and as endorsing feelings of invulnerability (31,32). However, the results of this study shows that those teens in drug treatment facilities who volunteer for testing were those who reported more HIV risk behaviors. It can be speculated that teens who are in drug treatment may be more aware that their behavior can put them at risk. Therefore, they may be more susceptible to messages persuading them to volunteer for HIV testing than other youngsters. The findings of this study underscores the importance of coordinating drug use treatment and HIV prevention efforts and they may also be an indicator of how willing these youngsters are to receive HIV prevention messages and interventions. Since many of the youngsters admit to their risky behaviors, this can become the first step in the development of an approach for HIV risk reduction in this population.

This greater involvement on substance abuse and sexual risk behaviors of volunteers suggest that in addition to drug use practices, sexual behaviors and risk reduction techniques should be addressed in any intervention seeking to lower the risk of infection among these youngsters.

Despite their need for HIV prevention services however, these young males in drug treatment centers are not receiving any HIV risk reduction services during their period of treatment. A problem hindering HIV prevention efforts among Hispanic adolescents is the fact that most of the existing interventions have targeted either White or Black samples of adolescents. Interventions for HIV risk reduction geared to Hispanic adolescents and to Spanish-speaking teenagers are sorely lacking. Interventions designed for Hispanic male teens who are also drug users are almost non-existent. The design of such intervention strategies targeted specifically to the

Hispanic population of drug using youth requires not only a well grounded theoretical foundation but the assurance that they are appropriate for the Latin American culture. The design of such intervention strategies should also take into account the experiences from programs developed for adult drug users.

A variety of educational programs to prevent the spread of HIV/AIDS have been successfully employed for adult populations of drug users (33,34,35,36,37). Most of them are psychoeducational in nature and their most salient characteristic is the use of short term intervention programs. Short term intervention programs lasting no more than six sessions are important in order to deal with attrition problems in this population. Another important feature of these interventions that could be very effective with adolescents is the use of incentives to reinforce participation.

Resumen

En el presente artículo se comparan las características de jóvenes varones en tratamiento por uso de drogas que se voluntarizaron a realizarse la prueba para el virus del VIH con aquellos que no se voluntarizaron.

La prueba de anticuerpos para el virus de VIH se ofreció de forma voluntaria a una muestra de 250 jóvenes puertorriqueños participantes en tres centros ambulatorios para tratamiento de droga, en 1991. Un 66% de los jóvenes aceptó realizarse la prueba.

Los adolescentes que se voluntarizaron a realizarse la prueba reportaron menos años de educación y tenían una mayor probabilidad de haber desertado la escuela. Consistente con hallazgos entre adultos, los jóvenes que se voluntarizaron para realizarse la prueba de VIH tenían un mayor riesgo de infección medido en términos de sus patrones de uso de drogas y por sus patrones de comportamiento sexual.

Los voluntarios reportaron tasas más altas de uso de alcohol y de uso de marihuana que los no voluntarios. Las conductas sexuales investigadas que diferenciaron a los voluntarios a la prueba de los no voluntarios incluyeron: número de parejas, parejas sexuales, desempeño de menos prácticas para la reducción del riesgo, haber tenido una pareja sexual que haya utilizado drogas ilícitas y el uso de condones para evitar enfermedades sexuales transmisibles.

References

transmitted diseases rates after HIV testing and posttest counseling, Miami, 1988 to 1989. *Am J Public Health* 1993;83:529-533.

3. Roehrich L, Wall TL, Sorensen JL. Behavioral interventions for in-treatment injection drug users. In DiClemente RJ, Peterson J L (Eds.), *Preventing AIDS: theories and methods of behavioral interventions* New York, Plenum Press. 1994;189-208.
4. Gibson DR, Lovelle-Drache J, Young M, et al. 1992; HIV risk linked to psychopathology in HIV drug users. Paper presented at the 8th International Conference on AIDS. Amsterdam, the Netherlands.
5. Farley TA, Carter ML, Wassell JT, et al. Predictors of outcome in methadone programs: effect of HIV counseling and testing. *AIDS* 1992;6:115-121.
6. Phillips KA, Coates TJ. HIV counselling and testing: research and policy issues. *AIDS Care* 1995;7:115-124.
7. Anderson JE, Hardy AM, Cahill K, et al. HIV antibody testing and post test counseling in the United States: data from the 1989 National Health Interview Survey. *Am J Public Health* 1992;82:1533-1535.
8. Hardy AM, Dawson DA. HIV antibody testing among adults in the United States: data from 1988 NHIS. *Am J Public Health* 1990;80:586-589.
9. Kalichman SC, Hunter TL. HIV-related risk and antibody testing: an urban community survey. *AIDS Educ Prev* 1993;5:234-243.
10. Mainous AG 3rd, Neill RA, Matheny SC. Frequency of human immunodeficiency virus testing among rural US residents and why it is done. *Arch Fam Med* 1995;4:41-45. p73
11. Paringer L, Phillips KA, Hu T. Who seeks HIV testing? The impact of risk, knowledge, and state regulatory policy on the testing decision. *Inquiry* 1991;28:226-235.
12. Phillips KA. Factors associated with voluntary HIV testing for african-americans and hispanics. *AIDS Educ Prev* 1993a;5:95-103.
13. Phillips KA. Subjective Knowledge of AIDS and se of HIV testing. *Am J Public Health* 1993b;83:1460-1462.
14. Quenum B, Guiguet M, Wells J, et al. HIV antibody testing in France: results of a national survey. *J Acquir Immune Defic Syndr* 1992;5:560-564
15. Berrios DC, Hearst N, Coates TJ, et al. HIV antibody testing among those at risk for infection: the National AIDS Behavioral Surveys. *JAMA* 1993;270:1576-1580.
16. Diaz T, Buehler W, Castro JW. AIDS trends among hispanics in the United States. *Am J Public Health* 1993;83:504-510.
17. Puerto Rico AIDS Surveillance Report. Central Office of AIDS Affairs, Health Department, San Juan, P.R. 1995.
18. Dawson J, Fitzpatrick R, McLean J, et al. The HIV test and sexual behavior in a sample of homosexually active men. *Soc Sci Med* 1991;32:683-688.
19. Koopman C, Rotheram-Borus MJ, Dobs L, Gwadz M, et al. beliefs and behavioral intentions regarding human immunodeficiency virus testing among New York City runaways. *J Adolesc Health* 1992;13:576-81.
20. Jessor R, Donovan JE, Costa FM. *Beyond adolescence: problem behavior and young adult development*. Cambridge University Press. New York. 1991.
21. Biglan A, Metzler CW, Wirt R, et al. Social and behavioral factors associated with high-risk sexual behavior among adolescents. *J Behav Med* 1990;13:245-261.
22. Lowry R, Holtzman D, Truman BI, et al. Substance use and HIV-related sexual behaviors among US high school students: are they related? *Am J Public Health* 1994;84:1116-1120.
23. Sugerman ST, Hergenroeder AC, Chako MR, et al. Acquired immunodeficiency syndrome and adolescents: knowledge, attitudes and behaviors of runaway and homeless youths. *Aids and Adolescents. Am J Dis Child* 1991;145:431-436.
24. Rotheram-Borus MJ, Koopman C. Sexual risk behaviors, AIDS

knowledge, and beliefs about AIDS among runaways. *Am J Public Health* 1991;81:208-197.

25. Koopman C, Rotheram-Borus MJ, Henderson R, et al. Assessment of knowledge of AIDS and beliefs about AIDS prevention among adolescents. *AIDS Educ Prev* 1990;2:58-70.

26. Vélez CN, Rodríguez LA, Quiñones HM, et al. HIV risk factors among puerto rican youth in drug treatment. *PR Health Sci J* 1993;12:203-208.

27. Coates TJ, Stall R, Kegeles S, et al. AIDS antibody testing: will it stop the AIDS epidemic? will it help people infected with HIV? *Am Psychol* 1988;43:859-864.

28. Goodman E, Berecochea JE. Predictors of HIV testing among runaway and homeless adolescents. *J Adolesc Health* 1994;15:556-572.

29. Fitterling JM, Matens PB, Scotti JR, et al. AIDS risk behaviors and knowledge among heterosexual alcoholics and non-injecting drug users. *Addiction* 1993;88:1257-1265.

30. Kipke MD, Futterman D, Hein K. HIV infection and AIDS during adolescence. *Med Clin North Am* 1990;74:1149-1165.

31. Boyer CB, Kegeles SM. AIDS risk and prevention among adolescents. *Soc Sci Med* 1991;33:11-23. *Sci Med* 1991;32:221-228.

33. McCusker J, Stoddard AM, Zapka JG, et al. AIDS education for drug abusers: evaluation of short-term effectiveness. *Am J Public Health* 1992;82:533-540.

34. Malow RM, Corrigan SA, Pena JM, et al. Effectiveness of a psycho educational approach to HIV risk behavior reduction. *Psychol Addict Behav* 1992;2:120-125.

35. Dengelegi L, Weber J, Torquato S. Drug Users' AIDS-related knowledge, attitudes, and behaviors before and after AIDS education sessions. *Public Health Rep* 1990;105:504-510.

36. El-Basen N, Schilling RF. 15-Months follow-up of women methadone patients taught skills to reduce heterosexual HIV transmission. *Public Health Rep* 1992;107:500-504.

37. St Lawrence JS, Jefferson KW, Banks PG, et al. Cognitive-behavioral group intervention to assist substance-dependent adolescents in lowering HIV infection risk. *AIDS Educ Prev* 1994;6:425-435.