

Knowledge and Risk Behaviors of People Seeking HIV Antibody Testing at a Community Site

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People seeking HIV antibody testing at a community-based AIDS service organization (N = 342) were asked to complete a self-report questionnaire to determine knowledge of HIV transmission, source(s) of HIV-related knowledge, and recent risk behaviors. The overall knowledge level of risk for transmitting HIV associated with 16 related behaviors was relatively high. Yet, 69% of the participants reported engaging in unsafe sex during the previous six months. Poorly informed subjects tended to overestimate their level of knowledge. In a multiple regression analysis, knowledge, age, and gender were the only significant predictors of engaging in unsafe sex in this cohort. Nurses must be on the forefront in developing (1) strategies to reach people at high risk for HIV infection and HIV transmission, (2) culturally relevant and sensitive education, and (3) interventions that will enable people to make appropriate choices concerning high-risk behaviors.

Key Words: AIDS service organization, HIV knowledge, risk behaviors, unsafe sex

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After more than a decade of education and prevention, the number of new cases of human immunodeficiency virus (HIV) infection in the United States continues to spiral upward (CDC, 1994b). Much of the population of the U.S. incorrectly views HIV infection as a problem for other groups of individuals, including injecting drug users and homosexual men. This ideology serves as a barrier to incorporating information concerning HIV transmission and behavioral risk reduction in general public health messages. Restricted views of sexuality and discrepancies between societal norms and actual sexual practices may further retard effective HIV prevention (Reinesh, Sanders, & Ziemba-Davis, 1988).

Using a modeling methodology, it was estimated that in 1990, 3 million to 6 million people had sex with five or more partners and 5 million to 8 million had sex with a stranger. Studies of married couples indicate that between 20% and 50% of married people have engaged in at least one extramarital sexual encounter (Anderson & Dahlberg, 1992; Kinsey, Pomeroy, Martin, & Gebhard, 1953). Choi, Catania, and Dolcini (1994) report that of 5,513 married respondents in the National AIDS Behavioral Survey, 2.2% to 2.5% (urban and rural locations, respectively), reported extramarital sexual encounters. Of those individuals reporting extramarital sex, condom use was inconsistent and infrequent (Choi et al.), even among women of ethnic minorities in areas with a high prevalence of acquired immunodeficiency syndrome (AIDS).

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Intravenous (IV) drug users and their partners represent a group of individuals at high risk for HIV infection, but among whom risk reduction behaviors may be difficult to achieve (Allen, Onorato, Green, & The Field Services Branch of the Centers for Disease Control, 1992; Corby, Wolitski, Thornton-Johnson, & Tanner, 1991; Des Jarlais & Friedman, 1987; Lewis, Walters, & Case, 1990). Although HIV transmission knowledge has been reported as high among IV drug users and their partners, such knowledge often does not correlate with actual risk-reducing behaviors (Corby et al.). Explanations for continued high-risk behavior (both needle sharing and sex-related) are multifaceted. A number of factors have been identified that negatively impact HIV-prevention efforts' ability to reach marginalized groups such as IV drug users (Morales, 1989). These factors include individual and community characteristics, lack of credibility of prevention messages, negative attitudes toward conventional risk groups, poverty and lifestyle, and lack of involvement in community structure and decision-making.

Finally, while a number of research reports have documented a decline in HIV transmitting behaviors among gay men in several urban centers (CDC, 1985; Joseph et al., 1987; Martin, 1987; McKusick et al., 1985; Schechter et al., 1988; Stall, McKusick, Wiley, Coates, & Ostrow, 1986), HIV transmission rates are again rising among gay men, especially younger gay men (CDC, 1994a; Hoover et al., 1991; Stall, Coates, & Hoff, 1990; Steiner, Lemke, & Roffman, 1994). The successes of gay men during the 1980s in HIV education and subsequent risk behavior modification have begun to decline and unsafe sexual activity is increasing. Many men, particularly young men, practicing unsafe sex perceive themselves as being invulnerable to HIV infection (Ku, Sonenstein, & Pleck, 1993; Lemp et al., 1994). Innovative educational efforts that include peer support need to be developed for these groups at risk for infection (Harrison et al., 1991; Mays & Cochran, 1988; Oberlink, 1989). HIV-prevention strategies that integrate community standards and are tailored to the unique characteristics of the people to be reached are proving to be one of the most effective means of providing useable pre-

ventative messages (Jemmott & Jemmott, 1992; Kalichman, Kelly, Hunter, Murphy, & Tyler, 1993; Leviton et al., 1990; Mays & Cochran). Recent initiatives by the CDC (1994a) to focus HIV prevention at the local level acknowledges the importance of community planning in any effective response to the HIV/AIDS epidemic. Behavior change that reduces high-risk behaviors is the desired outcome of HIV/AIDS education and prevention programs. Since knowledge does not necessarily equate to behavior change, it is important that comprehensive risk-reduction programs move people across the "awareness-education-behavior change" continuum. The ability of information to achieve desired risk behavior reduction lies in effective communication that is both population relevant and culturally sensitive (Kalichman et al.; National Commission on AIDS, 1992).

Previous research examining HIV-related knowledge and behaviors has primarily focused on high risk groups in HIV/AIDS epicenters such as San Francisco, New York, or Miami (Martin, 1987; Peterson et al., 1992; Stall et al., 1988; Walter et al., 1992). While there has been investigation of the effectiveness of HIV-risk reduction interventions in smaller cities (Kelly et al., 1992; Ruefli, Yu, & Barton, 1992), there is limited empirical data on HIV-related knowledge and behaviors in large urban cities in the South, such as Atlanta. Georgia has consistently been among the top 10 states in the U.S. in number of reported cases of AIDS. Approximately 70% of the cases of AIDS reported in Georgia since 1981 have been located in the metropolitan Atlanta area. This large number of AIDS cases clustered in metropolitan Atlanta has resulted in an early and ongoing HIV/AIDS education initiative within the city. Yet, despite such educational efforts the rate of AIDS reported in the two counties making up the core of the metropolitan Atlanta area (Fulton and DeKalb counties) accounted for 59% of all AIDS cases in Georgia between December 1993 and November 1994 (Georgia Department of Human Resources, Division of Public Health, 1994). This continued high rate of cases of AIDS underscores the need to re-evaluate the assumptions underpinning present HIV/AIDS education and prevention programs.

The purpose of this study was to examine the demographic characteristics, HIV transmission knowledge, and HIV-related risk behaviors within a group of individuals seeking HIV antibody testing at a community site. The study further sought to provide nurses and other healthcare providers with insight into the prevalence of specific HIV risk behaviors and predictors of such risk behaviors within this group. The results of this study can provide community specific data that will be useful to volunteer-based and governmental agencies in tailoring future HIV/AIDS prevention approaches and programs. Such information can be valuable to nurses and other healthcare providers in other communities with similar geographic characteristics and cultural mix in their efforts to develop HIV/AIDS educational strategies and programs.

Methods

Subjects

The study participants composed a convenience sample. Data were collected from 342 individuals seeking HIV antibody testing at a community based site in a metropolitan center in Atlanta, GA. Participants ranged in age from 15 to 75 ($M = 30.7$). Two hundred seventy-one (79.2%) were Caucasian, while 10.8% of the participants self-identified as African-American. The remaining participants identified themselves as Asian, Hispanic, or Native American. The sample was composed of 59.9% male and 38.3% female (missing data = 6 cases). One hundred fifty-two (44.5%) of the sample reported homosexual or bisexual activities as a risk behavior. One hundred eighty-three (52.2%) reported heterosexual activities as a potential source of HIV infection, while only six (1.8%) reported injecting drug use as a potential source of HIV infection. A number of participants listed multiple risk behaviors for potential HIV infection. Only two participants (0.6%) indicated no known risk behaviors. Of the 342 individuals in the study sample, 13 (3.8%) obtained an HIV-positive diagnosis from the current testing episode.

Instrumentation

The data collection instrument was a self-administered "paper and pencil" questionnaire. This questionnaire was divided into three major sections. The first section sought demographic data, including age, gender, sexual orientation, and potential risk behavior for HIV transmission. The second section requested information on the participants' perceptions as to their level and source of HIV transmission knowledge. Actual knowledge of HIV transmission was assessed using a list of 16 behaviors for which participants were asked to identify the potential risk of HIV transmission. Behaviors ranged from high-risk behaviors, such as receptive anal intercourse without a condom, to no-risk behaviors, such as sharing eating utensils with a person infected with HIV. Additionally, participants were asked to identify the type of HIV education (i.e., printed materials, one-on-one counseling, etc.) they thought would be most effective in changing their potential or own actual risk-taking behaviors. The third section of the questionnaire explored the individual's recent sexual behaviors. Particularly, questions focused on possible high-risk behaviors for HIV transmission, condom use, and possible reasons or conditions that were associated with risk-taking behaviors.

Procedures

Over a three month period all person presenting to an anonymous HIV antibody testing site operated within an urban community-based organization were invited to participate in the study. The study questionnaire and a cover letter explaining the study and its volunteer nature were provided to potential participants when they checked in for testing. Potential participants were asked to complete the questionnaire while waiting for testing. Pre-test counselors collected completed questionnaires before pre-test counseling began. The counselor placed an anonymous number on the questionnaire so that when antibody test results became available they could be matched with the person's completed questionnaire.

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Participant's test results and completed questionnaire were placed in an envelope for the research staff. At the end of the study period, completed questionnaires were coded and analyzed using a random number system. No identifying information was included in the data set.

Results

Risk behaviors reported by participants were analyzed to cluster individuals into risk behavior groups. Based on these groupings, three patterns of risk behavior emerged. The first pattern consisted of people who self-identified as homosexual, men who have sex with men, or bisexual. The second pattern consisted of people who self-identified as injecting drug users (IDU), having sex with someone who injects drugs, or engaging in alcohol and drug use. The third pattern consisted of people who identified as heterosexual, had multiple sex partners, exchanged sex for money, or reported unprotected sex. Although these clusters were identified orthogonally, the groups were not mutually exclusive on all reported risk behaviors.

In final categorization of the groups, the researchers started with all people reporting injection drug use and added those reporting other drug use as their sole risk factor and put them into the category labeled drug use. A small number of homosexual men who also reported injecting drug use were included as drug users. Next, all people reporting being homosexual or men having sex with men were categorized in the second group labeled men who have sex with men. Last, the group of participants characterized by having multiple sex partners or other sexual risks was categorized into the group labeled general sexual activity. Nine participants who reported only healthcare exposure or no identified risk were excluded from further analysis due to the small number.

Table 1 illustrates the relationship between the three identified cluster groups and number of risk behavior categories identified by participants. Men who have sex with men reported belonging to the highest number of HIV-transmission categories, with as many as nine different categories being identified (median number of risk

Table 1. Relationship Between the Three Cluster Groups and the Number of Risk Behavior Categories Participants Self-Reported ($n = 333$, missing data = 9)

Number of Different Risk Behaviors	Cluster Groups		
	Men Who Have Sex With Men	Drug/Alcohol Use	General Sexual Activity
1	15	1	18
2	23	7	44
3	21	31	30
4	36	34	4
5	30	11	0
6	10	7	1
7	5	2	
8	2		
9	1		

Chi square = 138.5, $p < .000$

categories = 4). The group of people identified as drug users reported the second highest number of risk behavior categories with a median number of categories equaling three. The third group of individuals who primarily reported risk associated with heterosexual sexual contact identified the smallest number of different risk behavior categories (median number of risk categories = 2).

Knowledge

Overall, study participants were relatively well-informed concerning the level of potential HIV transmission that is associated with specific behaviors. Two hundred sixty-seven participants (78%) correctly identified the level of risk for 10 or more of the 16 behaviors presented in the questionnaire. Self-reported knowledge (ranging from well-informed to poorly informed) was compared to the actual score participants achieved on the 16-item knowledge test. There was a low correlation between perceived knowledge of transmission risk and actual knowledgeable score ($r = 0.17$, $p < 0.05$). The low correlation between these two items was primarily due to people scoring poorly on the 16-item knowledge test

who overestimated their level of knowledge. Participants reporting to be moderately well-informed or well-informed more accurately estimated their level of knowledge. Comparison of the three identified cluster groups showed no significant difference between the three groups for both self-reported knowledge of HIV-transmission risk and tested knowledge.

Participants were asked to identify the source(s) they considered most important for receiving HIV related information. Of the 334 participants responding, 185 (55%) identified a single information source and 149 (45%) participants identified two or more sources. Table 2 shows that the largest number of participants reported their most important information source was an AIDS service organization (19.3%, $N = 66$). The second most frequently identified source was general written or printed materials (16.4%, $N = 56$). Further examination of the 149 multiple choice responses revealed a total frequency of 536 occurrences of information sources being identified as important to participants. In this expanded analysis, the sources important in obtaining HIV-related information remained consistent with the findings reported above. Of the total 536 times an information source was identified, written material was identified

173 times (32.5%), AIDS service organizations (ASOs) were identified 164 times (30.8%) and news or TV was identified 94 times (17.7%). Family members were identified least frequently as being a source of information by study participants ($n = 6$).

Risk Behaviors

A high level of risk behaviors for HIV transmission was reported among the study participants. While only 2 percent of the participants reported injecting drug use, a larger number (5 percent) reported sexual activity with an injecting drug user. Sixty-nine percent of the sample reported unsafe sexual activity in the past six months; therefore, the primary risk behavior identified in this study related to sexual activity. Only 24% of the participants reported always using condoms during sexual activity and 23% reported never or almost never using condoms.

Further analysis was conducted for those participants who reported unsafe sex in the past six months. Of this subsample, one-third identified "I was turned on and didn't want to stop" as a reason for participating in unsafe sex. "I was drunk or high" was the second most frequently identified reason (24.3%) and "not having a condom available" was a close third (23.5%). The fourth most frequent reason given for having unsafe sex provides a different perspective as compared to the above. The reason "I know what the risk is and choose to take it" was represented by 19.9% of the subsample (see Table 3).

Multiple regression analysis was used to identify predictors of the frequency of condom use and unsafe sex. The initial model for both dependent variables included age, homelessness, knowledge, race (African-American vs. others), gender, and two categorical variables representing risk groups. In the final model, age, gender, and knowledge of HIV transmission were the significant predictors explaining 12% of the variance in unsafe sexual behavior ($F = 13.44$, $R^2 = 0.116$, $p < 0.000$). Younger people, males, and those reporting less knowledge of HIV transmission were more likely to report engaging in unsafe sex. In the analysis of condom use, knowledge was the

Table 2. Sources Identified as Most Important for Obtaining HIV-Related Information ($n = 334$, missing data = 8)

Source	Number	Percentage
• News or TV	33	9.6%
• Friends	13	3.8%
• School	15	4.4%
• AIDS service organization	66	19.3%
• Written/Printed material(s)	56	16.4%
• Family member(s)	2	0.6%
• Multiple sources*	149	43.6%
• Missing data	8	2.3%
Total	342	100%

* 106 participants identified 2 sources, 30 participants identified 3 sources, 13 participants identified 4 or more sources

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Table 3. Frequency of the 10 Most Often Reported Reasons for Engaging in Unsafe Sex During the Past 6 Months

Reasons for Unsafe Sex	Number	Percentage
• I was turned on and didn't want to stop	75	33.2%
• I was drunk or high	55	24.3%
• No condom was available	53	23.5%
• I know the risk and I chose to take it	45	19.9%
• My partner and I are both HIV+ and we don't have sex with anyone else	35	15.5%
• Safer sex is not satisfying	35	15.5%
• I don't know the reason	29	12.8%
• Safer sex is not convenient	29	12.8%
• I don't like condoms	28	12.4%
• I didn't know at the time it was risky	24	10.6%

Note. Participants were allowed to identify more than one reason for engaging in unsafe sex.

only predictor with higher levels of reported knowledge of HIV associated with increased condom use ($p < 0.008$).

Because of the small number of people testing HIV positive in this sample ($n = 13$), complex analysis was not possible. However, 9 of the 13 (69%) people infected with HIV were men who reported having sex with men.

Discussion

Participants in this study were seeking HIV testing and may have engaged in higher levels of risk behavior. Hence, the prevalence of unsafe sexual activity in this group may have been higher than in the general population. Even so, the self-report nature of the study may have resulted in underreporting of unsafe behaviors by people not wanting to disclose behaviors that might be viewed as socially unacceptable or stigmatizing (Harrison et al., 1991).

The HIV-transmission knowledge of study participants was generally high, with 78% correctly identifying the risk associated with 10 or greater of the 16 behaviors on the knowledge test. It is noteworthy that people who fell into the poorly informed category as a result of the knowledge test consistently overestimated their knowledge level. This overestimate of their level of knowledge potentially places them at unanticipated risk for HIV infection. These people form an audience that may be hard to reach with HIV-prevention messages since they perceive they already have the necessary information. Pre-test counselors at HIV antibody test sites may have a unique opportunity to identify such people by basing assessments on knowledge tests prior to antibody testing instead of self-perceived knowledge. Counselors can then provide relevant information to these people or refer them to appropriate information sources.

Despite the high level of knowledge among participants, 69% of the sample reported engaging in unsafe sex in the past six months. While knowledge was significantly related to both condom use and participation in safe sexual behaviors, our results indicate that knowledge alone is not sufficient to eliminate risk behaviors. This finding is consistent with the results of previous studies that document high levels of risk behaviors in people with moderate to high levels of HIV knowledge across populations (Emmons et al., 1986; Landis, Erp, & Koch, 1992; McCusker, Westenhouse, Stoddard, Zorn, & Mayer, 1990; Robins et al., 1994). In addition to knowledge, age and gender were significant predictors of unsafe sexual behavior (not of condom use) in this study. Specifically, younger men (ages 15 to 27) were more likely to engage in unsafe sexual activities. These data support findings of greater risk taking by young men reported by researchers who examined HIV risk behaviors in the general population (Ku et al., 1993) and others who focused on homosexual and bisexual men (Lemp et al., 1994).

When asked to identify the reason(s) for engaging in unsafe sex, participants most frequently reported being sexually aroused or high on drugs and/or alcohol. The negative impact of drug and alcohol use on sexual risk taking has been identified by numerous researchers

examining other cohorts (Schilling et al., 1994; Stall et al., 1986). Clearly, the need to adequately address alcohol and drug use in HIV-prevention programs is paramount.

In this study, 19.9% of the participants who had engaged in unsafe sex in the past six months reported "they knew the risk and chose to take it." This finding offers a different type of challenge to HIV-prevention efforts. The decision to engage in activities that place one at high risk for HIV infection may be rooted in complex social behavioral factors, including peer support and mechanisms of coping and cognitive appraisal of benefit (Coates et al., 1987; Lazarus & Folkman, 1984). Such a situation underscores the need for prevention programs to go beyond information giving. It suggests a need to develop HIV-risk reduction strategies that are relevant to people in the context of their belief system and expression of their sexuality. Lemp et al. (1994) stress the importance of integrating peer support into HIV prevention targeted at younger men. Ongoing peer support also may be an important component of prevention efforts for both women and older men.

That knowledge was the only predictor of condom use suggests, conversely, that a lack of understanding of the protective benefits of condoms can result in their decreased use. While use of condoms does not guarantee complete protection from HIV infection, their use is an important part of prevention for sexually active people. However, 40% of the responses given by study participants as reasons for engaging in unsafe sex in the past six months reflected a negative attitude toward condom use. HIV prevention messages need to focus on both encouraging condom use during sexual activity and providing information on eroticized, proper use of condoms.

The effectiveness of prevention efforts depends on the ability to be relevant and population specific. The continued high level of unsafe sexual activity reported by men who have sex with men supports a renewed emphasis on education and behavior change programs targeted to homosexual and bisexual men. A new partnership between government and community specific responses

may offer the greatest potential for effective HIV prevention in the future. The fact that only 1.8% of study participants identified family and 9.9% identified friends as a source of HIV information reveals a potential lack of family and peer support and the under utilization of these networks for information giving and values clarification.

When asked to identify important sources of HIV-related information, printed materials and ASOs were the most frequently identified sources. The fact that much of the printed material concerning HIV/AIDS in the community is provided by ASOs further indicates the important role community HIV/AIDS service groups can play in HIV-related information dissemination. This finding supports the wisdom of recent prevention initiatives undertaken by the CDC (1994a) that focus on community planning. Prevention efforts developed in communities can facilitate needed specificity in targeted prevention messages and ongoing peer support for risk reduction.

Conclusion

Nurses provide much of the primary, secondary, and tertiary counseling in regard to the prevention prior to infection and treatment for those who are already infected with HIV. Nurses must be aware that perceived knowledge does not necessarily reflect what people actually know. Further, having accurate information about HIV transmission does not necessarily translate into reduction of risky sexual behaviors. There is a need for ongoing counseling and support for people at risk for HIV infection to help them move across the continuum from knowledge to sustained behavior change. Nurses must be on the forefront in developing (1) strategies to reach persons at high risk for HIV infection and HIV transmission, (2) culturally relevant and sensitive education, and (3) interventions that will enable the person at high risk to make appropriate choices concerning high-risk behaviors. Since this study shows that risk-reduction information and support will be most effective when coming from multiple sources, it is important for nurses to link people at risk for HIV to available community resources such as those found in ASOs.

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Nurse Manager Pulmonary & Special Immunology Units

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We're seeking a creative, innovative RN with strong management skills for our Pulmonary and Special Immunology Units. Utilizing your proven track record and exceptional skills, you'll have 24-hour accountability, and will be responsible for staff development and management, strategic planning and continuous quality improvement of this area. HIV/AIDS and pulmonary nursing experience are required. 5-8 years of clinical and management experience are preferred. A BSN is required; MSN preferred.

We offer a competitive salary and benefits package including medical/dental/life insurance, on-site child care and more. Mercy Hospital requires a post-offer, pre-employment physical. For more information, please call our Human Resources Department at (305) 285-2727. You may also fax your resume to (305) 285-5015 or forward to Sabrina Ricelli, Mercy Hospital, 3663 South Miami Avenue, Miami, Florida 33133. Equal Opportunity Employer.

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