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Low HIV/AIDS Knowledge among Hispanic Adolescents

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Abstract

Introduction: Hispanic adolescents domiciling in Florida rank second in the U.S. with respect to HIV/AIDS incidence and prevalence. Extending studies showing that risky sexual behavior is associated with limited access to information, this project surveyed knowledge about HIV etiology, prevention and treatment.

Methods: The sample consisted of 400 Hispanic youth between 11-18 years of age living in Miami, Florida. The sample is enrolled in an ongoing project Role of Brain Derived Neurotrophic Factor in Decision Making *(ROBIM)*. The HIV Knowledge Questionnaire (HIV-KQ-18), an 18 item self-administered questionnaire was used to measure HIV knowledge, particularly transmission and prevention.

Results: Less than 10% of the sample had comprehensive knowledge about HIV/AIDS. Approximately 25% incorrectly answered all of the questions. Questions pertaining to transmission were incorrectly answered by more than half of the sample. The most frequent topics reflecting absence of knowledge are related to high-risk sexual behaviors (sex during the menses) and infection prevention methods (e.g. condoms). A majority of youth believed incorrectly that HIV could be cured (61%), an effective vaccine is available (61%), and antibiotics protect against HIV infection (76%). School (28%) and parents (26%) were the most frequent sources of knowledge about HIV/AIDS. However, youth receiving information from parents had significantly higher knowledge scores than peers receiving education in school (7.4 ± 4.15 vs. 6.1 ± 4.5 scores, p = 0.037). Yet, 68% of the sample had never discussed condom use with their parents.

Conclusions: These findings indicate Hispanic youths, although at very high risk, are poorly informed about prevention of HIV/AIDS. Moreover, the most frequent source of information, namely schools, inculcates less knowledge than parents. Lastly, youths who discuss sex with parents do not typically dialog about condoms, the most readily available protection from HIV/AIDS. These findings identify gaps that need to be addressed for lowering the high rate of HIV infection in Hispanic youths.

Keywords: HIV acquisition; HIV infection; HIV/AIDS; Hispanic

Introduction

The highest worldwide incidence of HIV acquisition, which accounts for approximately half of new infections (N=780,000 in 2012), occurs in individuals between 15-24 years of age [1]. HIV is the second leading cause of death among young individuals worldwide [2]. This global incidence is similar to that of the U.S. population in which 13-29 year olds account for as much as 40% of new infections [1,2]. Moreover, the HIV/AIDS epidemic is not equally distributed geographically, but is more prominent in the southern states, and particularly in Florida where the prevalence of HIV among Hispanics is nearly twice the national rate [1,2]. Moreover, Florida ranks second in terms of HIV/AIDS prevalence in the 13-19 year old segment of the population, with the highest rate in Miami-Dade county [3].

Individuals at highest risk for HIV/AIDS should be prioritized and targeted for prevention intervention. In this regard, it is noteworthy that prevention programs have been largely successful in reducing infection incidence, yet the rate of decline has been lower among Hispanics/Latinos compared to white non-Latino youth [4]. Complementing these alarming trends, Hispanic youth have the third highest rates of sexually transmitted infections such as chlamydia, gonorrhea, and syphilis [5].

Though the HIV/AIDS Strategy for the United States and the Community Preventive Services Task Force (CPSTF) emphasize the need for sex education, it remains a highly controversial issue. Underlying the barriers surrounding sex education are disagreements about the role of government, and whether government or families are better suited to provide this education. The structured environment in schools facilitates inculcation of knowledge and surmounts taboos pertaining to talking about sex. Parent-child conversations about sexuality are also a sensitive issue among Hispanics inasmuch as religious values and cultural folkways hamper open discussion. Consequently, parents and their children feel uncomfortable talking about sex. In addition, there is a common belief that talking about sex induces youths to engage in this behavior. Although this assumption is incorrect, Hispanic youths under age 13 are more likely to have sex than, according to national surveys, 4% of Caucasian youths. Moreover, with the empirical literature consistently reporting that increasing parent-child communication positively impacts knowledge and reduces risk behaviors among youths, Hispanic families have to surmount stronger taboos regarding talking about sex. Incorporating parent involvement in sex education is especially timely in Florida in view of national data indicating that many schools are not fulfilling this requirement [6].

This study of Hispanic youths had three objectives: 1) Document strengths and deficits regarding knowledge about HIV; 2) Evaluate the strength of association between HIV knowledge and sociodemographic

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characteristics; and 3) Determine whether there is a relationship between source of information (school or parents) and knowledge about HIV/AIDS etiology, prevention and treatment.

Methods

Subjects

The participants (N=400) in this study are 11- 18 year old Hispanic youths enrolled in a longitudinal study based in Miami-Dade County in South Florida. They were recruited through outreach from health care facilities and centers that provide recreational, social, and educational services for Hispanic youths. Participation required that they identify themselves and their parents as Hispanic. Exclusion criteria included a history of a major neurological/psychiatric disorder (i.e., autism, severe developmental problems, mental retardation, schizophrenia), or chronic disease (i.e., cancer, renal or heart disease). Youths receiving any type of neuro-pharmacological intervention or reported using bodybuilding substances (i.e., steroids, growth hormones) were also ineligible. Informed consent was obtained from the youths and their parents before initiating the research protocol. This study was approved by the Institutional Review Boards at both Florida International University and University of Miami.

Assessments

Trained interviewers administered questionnaires to gather sociodemographic information, medical history, knowledge about HIV and sexual behavior history.

HIV knowledge

The HIV knowledge Questionnaire (HIV-KQ-18) is a validated 18-item self-administered scale that assesses knowledge of HIV transmission, diagnosis and prevention [7]. The items are geared to the 4th grade reading level.

Participants responded "true" or "false" to each statement. A "Do Not Know" option eliminates the likelihood of a correct answer obtained by guessing. The score ranges from 0-18, with higher scores indicating more knowledge about HIV. The dependent variable was percent of correct answers. For obtaining a global score, the survey includes an answer key in which "do not know" responses are scored incorrect.

Sexual behaviors

Sexual behavior was documented by questioning the participants about their history of vaginal, anal and oral intercourse. An affirmative response to any question was followed up with inquiries about age of first intercourse, number of partners and condom use in the past 6-12 months and during their most recent intercourse.

Statistical analysis

Descriptive statistics (e.g., minimum, maximum, median, and mean with SD for each variable and frequency and percent score of each categorical variable) summarized the data. Analysis of variance was used to compare differences in HIV knowledge according to sources of information, followed by exploring the role of demographic characteristics of the participants, including age and gender in relation to HIV knowledge. Covariates included sociodemographic status, drug use, medical history, age stratified into three groups (11-14, 15- 17, 18+ years), family annual income categorized into four groups (<$11,000; $11,001- $20,000; $20,001- $49,999, $50,000+), and grade in school.

Results

Sample characteristics

The characteristics of the sample are shown in Table 1. The male: female ratio was nearly 1:1. Age of the respondents ranged from 11-18 years (M= 14.7, SD=2). Although not an eligibility requirement, all the participants were in school. Most were in middle (35%) or high-school (50%) with remaining participants in elementary school (14%) or university (1%). The sample captured the spectrum of high, middle, and low-income families. Almost a third of the sample was composed of immigrants (27%) and 9% were born in another U.S. state. There were no differences between community participants and clinic participants.

Sexual intercourse and condom use

Many high school students nationwide are engaged in sexual risk behaviors that contribute to unintended pregnancies and STIs, including HIV infection. Nearly a third (29%) of adolescents in this study had ever had sexual intercourse, of which 90% were currently sexually active. On average, first sexual intercourse occurred at 14 years (SD 2) of age. Sexual intercourse before age 13 years was reported in 10% of the sample; this is almost twice as high as the national average (6%) [8].

The sample reported having sex with 1-12 partners during their lifetime (M=2.7 ± 2.5 sex partners). Nationwide, 15.0% of students have had sexual intercourse with four or more persons during their lifetime. In this sample, 17% reported having had four or more partners. Among sexually active students, 30% never used a condom during sexual intercourse. The remaining 70% had used a condom in the past, albeit not consistently. The majority (80 %) did not use a condom the last time they had intercourse. When used, condoms were intended to prevent pregnancy, not HIV/STDs. The main reasons justifying not using a condom were: lack of availability, beliefs that sex is less satisfactory with a condom, and commitment to one partner.

HIV knowledge

Mean score for the sample was 44% correct answers (SD = 4). Less than 10% of the sample had comprehensive HIV/AIDS knowledge

Demographic Variable	Percent
Gender	
Male	47%
Female	53%
Age In Years	14.7 ± 2
Current Education Level	
Elementary	14%
Middle School	35%
High School	50%
University	1%
Family Income	
Low/Poverty 42%	42%
Middle	26%
High 32%	32%
Birth Location	
Immigrant 27%	27%
Born In Florida 64%	64%
Relocated From Another US State	9%

Table 1: Demographic Characteristics of the Adolescent Population (*N* = 400).

ITEM		% Correct	Do not know
T	It is possible to get HIV when a person gets a tattoo	56%	31%
T	A person can get HIV by sharing a glass of water with someone who has HIV	48%	41%
P	Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex	56%	28%
T	A woman can get HIV if she has anal sex with a man	53%	42%
P	Showering, or washing one's genitals, after sex keeps a person from getting HIV	23%	74%
T	All pregnant women infected with HIV will have babies born with AIDS	24%	47%
G	People who have been infected with HIV quickly show serious signs of being infected	51%	37%
P	There is a vaccine that can stop adults from getting HIV	39%	47%
T	People are likely to get HIV by deep kissing, if their partner has HIV	34%	44%
T	A woman can get HIV if she has sex during her period	43%	53%
P	There is a female condom that can help decrease a woman's chance of getting HIV	33%	58%
P	A natural skin condom works better against HIV than does a latex condom	13%	83%
P	A person will NOT get HIV if she/he is taking antibiotics	24%	62%
T	Having sex with more than one partner can increase a person's chance of being infected with HIV	90%	10%
G	Taking a test for HIV one week after having sex will tell a person if she or he has HIV	23%	68%
T	A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV	100%	0%
T	A person can get HIV from oral sex	51%	40%
P	Using Vaseline or baby oil with condoms lowers the chance of getting HIV	26%	70%

Table 2: HIV-KQ-18: Individual percent of correct answers.

(≥75% correct answers). Also, it was observed that 25% of the sample did not have any HIV knowledge. As depicted in Table 2, the frequency of correct answers varied across items. Most participants correctly answered the questions related to averting HIV infection. However, key questions regarding transmission, such as risk for HIV when having sex during menses, were incorrectly answered by more than half of the sample. Absence of knowledge is primarily related to HIV prevention (i.e., using condoms). Most youth incorrectly believe that 1) HIV can be cured (61%), 2) there is an effective vaccine (61%), and 3) antibiotics protect against HIV infection (76%).

Level of HIV knowledge was correlated with age (r= 0.39, p= 0.001); Indeed, the age of the participants in each knowledge scale tertile (1st tertile 0-6 scores: 14.0 ± 2.1 years old vs. 2nd tertile with scores of 7-10: 15.2 ± 2.2 years old vs. 3rd tertile with scores of 11-18: 15.7 ± 1.8, p= 0.01) was significantly correlated with age. While prior studies have suggested that low socioeconomic status is associated with suboptimal HIV knowledge, an association with family income was not observed in this sample.

Total knowledge score trended higher in females (7.5 ± 4.1 vs., 6.5 ± 4.3, p=0.09). Results also indicate that average/low knowledge score compared to moderate knowledge was more likely among males (OR=1.2, 95% CI 1, 1.3). Furthermore, males were 20% more likely that females to have low, rather than high, HIV knowledge scores (OR=1.2, 95% CI 1, 1.3).

Source of sex health information

The next topic addressed pertained to the source of knowledge about HIV. Results indicate that the school is the most frequent source of information (28%) followed by the parents (26%), peers (17%), internet (9%), and health care providers (7%). Of concern, 8% of the sample reported that they have no reliable source of information. It is also noteworthy that the source of information about HIV changed with age. High school students reported that school programs and their parents were the main source of information. In contrast, older teens obtained information from other sources.

Further analyses, summarized in (Table 3), reveal that as many as half of the sample reported talking about sexual health topics with their parents, whereas approximately 40% reported never discussing sexual health with their parents. The topics most often addressed were pregnancy and sexually transmitted diseases meanwhile using condoms, sex, and HIV are less frequent topics of communication. Significantly, 65% of the sample never discussed condom use with parents (Table 4).

Do the sources of information impact HIV knowledge?

Results of ANOVA demonstrate that youths who receive information from their parents have significantly more knowledge compared to those who cite school as their primary information source (7.4 ± 4.15 vs. 6.1 ± 4.5 scores, p = 0.037). As can be seen in Table 3, several questions accounted for this difference. Specifically, parents who assume the role of sex educators and often talk with their children is manifest through higher knowledge scores in their children (9.1 ± 4.1 vs. 6.3 ± 4.3, p = 0.000).

When knowledge scores were compared, it was found that HIV knowledge is significantly lower for youths whose information is obtained from schools. Higher scores were obtained in the HIV knowledge survey when other sources of information were present (i.e., media, internet, primary care providers) on several transmission questions, such as cums (p = 0.01), anal sex (p = 0.04), tattoo risks (p = 0.03), and sex during menstruation (p = 0.08).

Discussion

To briefly recapitulate the results, it was found in this study that a sizable portion of Hispanic youths engage in high-risk sexual behavior with potentially low likelihood of using a condom to prevent HIV. Furthermore, the results indicate that less than half the items (44%) are correctly answered. The level of HIV/AIDS knowledge in this sample is low, even lower than a comparable sample of African American youths who obtained an average score of 50% correct responses on this questionnaire. Indeed, only 25% of the present sample obtained more than 10 correct responses, underscoring their knowledge deficiency pertaining to HIV prevention. This gap has public health ramifications in view of the national goal of eliminating HIV in the next generation [1,4]. Schools are an excellent location to provide HIV prevention education. Youths up to age 16 are required by law to be in school and they essentially comprise a "captive" population. However, it was

		Mean	Std. Dev.	P value
Prevention	No Source	0.44	0.089	
Does pulling out the penis before a man climaxes (cums/ ejaculates) keep a person from getting HIV during sex?	School	0.35	0.047	0.03
	Parents	0.42	0.05	
	Other sources	0.35	0.044	
Prevention				
Is there a female condom that can help decrease a woman's chance of getting HIV?	Parents	0.22	0.074	
	School	0.27	0.044	
	Parents	0.36	0.048	0.036
	Other sources	0.42	0.055	
General Knowledge				
Do all people who have been infected with HIV quickly show serious signs of being infected?	Parents	0.38	0.087	
	School	0.42	0.048	
	Parents	0.55	0.05	0.035
	Other sources	0.6	0.044	
Transmission				
Can a woman get HIV if she has anal sex (penis inside the buttocks) with a man?	Parents	0.41	0.088	
	School	0.42	0.048	
	Parents	0.63	0.049	0.004
	Other sources	0.57	0.044	
Transmission				
Is it possible to get HIV when a person gets a tattoo?	Parents	0.38	0.087	
	School	0.36	0.047	
	Parents	0.47	0.05	0.123
	Other sources	0.5	0.041	
Transmission				
Is it possible to get HIV when a person had sex during the menses (her period)?		0.38	0.087	
		0.35	0.047	
		0.46	0.05	0.004
		0.48	0.044	
Does douching after sex keep a person from getting HIV?	Parents	0.22	0.074	
	School	0.17	0.037	
	Parents	0.28	0.045	0.004
	Other sources	0.25	0.036	
There is a vaccine that can stop people from getting HIV	Parents	0.34	0.085	
	School	0.42	0.048	
	Parents	0.39	0.049	0.001
	Other sources	0.42	0.044	

Table 3: Knowledge scores by source of information.

found in this study that HIV knowledge scores were among the lowest in youths for whom school was the main source of information. This finding aligns with data showing that up to 20% of middle school health education teachers in Florida report that they "did not teach how HIV and other STDs are transmitted, diagnosed, and treated; or how to prevent HIV/STDs" [9].

Our observation that the youngest segment of the sample scored very poorly illustrates the priority for prevention programs directed at averting risky behaviors before they are entrenched. In addition,

Variable	Sex	Condoms	Pregnancy	STDs	HIV
Never	39%	65%	31%	40%	43%
Rarely	30%	16%	14%	15%	15%
Sometimes	23%	10%	18%	19%	19%
Often	8%	9%	37%	26%	23%

Table 4: Frequency and topics of sexual health communication.

the school system can use the expertise of health professionals (e.g., physicians, nurses) and behavioral services (e.g., counselors). Over half a million unintended pregnancies, [10] and about ten million new STI cases occur annually among adolescents that could be prevented with condom use [11]. Yet, neither parents nor schools are effectively engaged in prevention. A CDC survey indicates that less than half of Florida schools teach youth about condom effectiveness [12] which unsurprisingly results in the highest incidence of HIV in the U.S. [13].

Comprehensive sex education and condom use promotion remains controversial. Sex education advocates contend that sex education reduces STDs and unplanned pregnancies [14]. The opposing position asserts that education about condom use encourages sexual behavior [15]. Prior studies demonstrated, however, that the sexual activity is not catalyzed by sex education in schools and information about condom availability [9,16]. Limited knowledge, in conjunction with the low rate of condom use in our sample, supports the urgency for interventions that emphasize comprehensive sex health education. Preventing HIV/ STD infection and unplanned pregnancy requires teachers who are prepared to conduct sex health education.

The present study expanded prior research [17] by exploring the association between frequency of discussion with parents and sex health topics. Considering that a sizable portion of Hispanic youth report that they engage in dialogue with their parents regarding sex, and families positively impact adolescents' values and sexual behavior [18], it is therefore possible that more frequent topic-focused communications would prevent risky sexual behavior. Furthermore, it is important to note that the internet is a ubiquitous facet of daily life for adolescents [19]. It is thus surprising that only a small portion of the present sample used the internet as a source of obtaining information pertaining to risky sex. These findings point to the need to explore whether an internet-based intervention would be beneficial in school-based sex education programs.

Lastly, it is important to note that mass media frequently reports stories that create high expectations about new vaccines that prevent or cure HIV [20]. Unfortunately, these reports add to the misconception that vaccines and antibiotics prevent and cure HIV. Furthermore, because follow-up stories are not newsworthy, especially since findings in the two stem cell transplant patients reveal relapses [21], there is little opportunity to correct misconceptions. In effect, information needs to be communicated to youths to offset the negative impact of mass media.

In summary, the Office of National AIDS policy asserts that it is essential that "all Americans have access to a shared base of factual information about HIV" by the end of 2015 [22]. The data obtained in this study indicate that we are far from achieving this goal in South Florida. Significant gaps in knowledge are documented in this study. Without a factual base of information, youths are predisposed to engage in risky behaviors and accordingly sustain the high incidence rate of HIV/AIDS in South Florida.

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