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Risk Factors Associated with Missed Medical Appointments Among HIV-Positive Young Men Who Have Sex with Men

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ABSTRACT Young men who have sex with men (YMSM) are overrepresented in the HIV epidemic in America. Retaining HIV positive YMSM in HIV care is very critical to reduce the overall burden of the HIV epidemic in America. Our study focused on identifying significant risk factors that affects retention in care for YMSM. Missing two or more medical appointments was how we measured retention in care. Using data gathered from ATN 086-106 study. This ATN cross-sectional study provided HIV positive males and females between the ages of 12 and 24 with an extensive questionnaire. The goal of this study was to analyze what risk factors are significantly associated with YMSM missing more than two or more appointments in the past 12 months. Our study found that African American and multi-racial young men were more likely to miss more than 2 appointments compared to whites. Methamphetamine, daily marijuana use, and declining mental health status caused individuals to miss multiple appointments.

INTRODUCTION

Major advancements in treatment, prevention, and surveillance of HIV/AIDS in America have caused reductions in mortality and overall incidence for HIV; however, this progress was not shared by everyone: young men who have sex with men (YMSM) are still disproportionately impacted by HIV. From 2005-2014, HIV incidence rates have declined over the past decade by 19%. However, rates for MSM have increased by 6%. 41% of newly infected male and female HIV cases in 2016 were below the age of 30. 70% of newly infected men were gay or bisexual (Centers for Disease Control and

Prevention [CDC], 2016). YMSM were overrepresented in the HIV epidemic in America, they also experienced disparities in access, retention, and adherence to HIV care. An estimated 44% of males and females between the age of 13-24 did not know they were HIV-positive (CDC, 2016). For HIV-positive individuals, engaging in HIV care shortly after diagnosis is critical to preserving the health of the individual. One theory for explaining why HIV heavily impacts YMSM communities is that after acquiring HIV, individuals must adhere to HIV care in order to lower their viral load to an

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undetected level. Maintaining retention in care is important not only for the individual but also for the community. If an HIV-positive YMSM does not retain in care or does not know that they are HIV-positive, they may engage in sexual activity with members in the community, which increases the risk of spreading HIV throughout that community. Creating an environment where the successful treatment of an HIV-positive individual can lead to prevention for the community is critical because it ultimately leads to the lowering of HIV across many different communities, which makes identifying factors that inhibit retention in HIV care critical to reducing the burden of HIV. There is little research into the psychosocial and demographic factors that affect YMSM retention in HIV care. Traegar et al. reported that MSM with depressive symptoms were less likely to adhere to scheduled appointments (Traeger, O'cleirigh, Skeer, Mayer, & Safren, 2012). Rastegar et al. reported missed appointments was a significant risk factor in treatment failure when examining patients who were starting highly active antiretroviral therapy (HAART) sessions in Baltimore (Rastegar, Fingerhood, & Jasinski, 2013). Understanding the factors that inhibit individuals from adhering to retention in HIV care can help researchers and practitioners create more efficient and effective intervention programs that utilize treatment as prevention.

METHODS

Participants

A cross sectional study in 2009-2012 was administered to 15 Adolescent Medicine Trials Units (AMTU) participating in Adolescent Medicine Trials Network for HIV/AIDS Interventions (ATN). To be eligible for participation in the study, individuals had to be male or female between ages 12-24 years old (inclusive). Individuals had to be aware of their HIV status and must be participating in a program at one of the AMTU. They must have acquired HIV through sexual or substance use. Research Coordinators required individuals under the age of 18 years old to have parental consent to participate in the trial. All individuals over the age of 18 needed to provide verbal informed

consent. There was a total number of 991 HIV-positive YMSM that participated in the study. Medical information was obtained from medical records. The survey's goal was to have HIV-positive youth provide more information on cultural and social factors affecting their adherence and retention in HIV care. The participants would complete the survey through an audio computer-assisted self-interview (ACASI). These results were coded in order to protect the participants' identities, and the data was entered into a SPSS file.

Measures

The survey collected participants' demographic information like age, race/ethnicity, education (less than high school degree), and employment. The survey also collected psychosocial information like mental health status, social support, substance use, and healthcare utilization.

Outcome Variables

Retention in care was assessed by two or more missed medical appointments in the past 12 months.

Mental Health Status

BSI is the Brief Symptom Inventory; it is a questionnaire designed to understand how much certain things affect the individual's mental health status. The BSI grand total is a total score for the entire questionnaire. BSI grand total variable is a continuous variable (0-194). The scores reflected how much mental ailments affected their daily behavior. The higher scores reflected individuals suffering from multiple mental ailments like severe depression, anxiety, fear, and etc.

Substance Use

Substance use variables that were analyzed were alcohol, marijuana, methamphetamine, cocaine, and opioids use in the past 90 days. Substance use variables were dichotomous, with alcohol and marijuana measured on a daily/less than daily scale, and methamphetamine, cocaine, and opioids were measured by any use in the past 90 days.

Social Support

Social support variable was a continuous variable. Questionnaire asked participants to rank on a scale of 1 to 5 how much social support they felt for keeping their medical appointments. One was ranked if they strongly disagreed that they felt socially supported to keeping medical appointments. Five was if they strongly agreed that they felt socially supported to keeping medical appointments.

Data Analysis

Bivariate analysis was performed to assess a risk factor's association with missing two or more medical appointments. Factors that demonstrated a statistically significant correlation ($p < .05$) with missing medical appointments were further analyzed in a multivariate logistical regression model to assess these factors' multivariate associations with retention in care.

RESULTS

Average age of participant, race breakdown of YMSM, employment, post high school education, and housing status are all listed in Table 1. 65.5% of YMSM in the study were African American. 55.7% of YMSM participants were unemployed and only 41.4% indicated that they had any form of post high school education. 26.7% of participants reported using marijuana daily in the past 90 days.

Table 2 included Bivariate analysis results for the psychosocial and demographic data. These factors were compared to missing two or more medical appointments in the past 90 days. Significant bivariate associations with 2 or more missed appointments were indicated for mental health symptoms, social support, unemployment, less than high school degree, daily marijuana, methamphetamine, and cocaine use. N/S denoted non-significance in the following table.

Table 3 displays the demographic and psychosocial factors that were significantly associated with missing 2 or more medical appointments. The odd ratio (O.R.) presented in Table 3 denotes the likelihood of an outcome occurring when exposed to a variable. African

Variable	M	SD
Age	21.3	2.002
BSI Grand Total	1.05	.80
Social support to attend medical appointments (5-point: 1-Strongly Disagreed... 5-Strongly Agreed)	4.34	1.02
	N	%
Race		
White	36	10.1
Black	235	65.5
Multi-Racial	76	21.3
American Indian	3	0.8
Asian	6	1.7
Latino	77	21.4
Unemployed	552	55.7
Post HS Education	410	41.4
Unstable Housing	53	5.3
Substance Use, Past 90 days		
Daily alcohol Use	59	6.0
Daily marijuana use	265	26.7
Any methamphetamine use	184	18.6
Any cocaine use	130	13.1

Table 1. Participant Demographic Information

Americans were twice as likely to miss two or more medical appointments compared to Whites (O.R. = 2.01; CI = 1.29, 3.14). Multi-racial individuals were 1.70 times as likely to miss two or medical appointments compared to Whites (O.R. = 1.70; CI = 1.01, 2.84). Individuals with high BSI scores were 1.52 times as likely to miss two or more medical appointments (O.R. = 1.52; CI = 1.28, 1.81). Individuals who used marijuana daily were 1.56 times as likely to miss two or

more medical appointments compared to individuals who did not use marijuana daily (O.R. = 1.56; CI = 1.15, 2.13). Individuals who reported feeling socially supported to attend medical appointments were 0.82 times less likely to miss two or more medical appointments compared to individuals who did not feel socially supported (O.R. = 0.82; CI = 0.72, 0.93).

Variable	Bivariate Analysis	
	Chi Sq.	P
Age	.031	N/S
BSI Grand Total	.207	.000
Social support to attend medical appointments (5-point: 1-Strongly Disagreed... 5-Strongly Agreed)	-.130	.000
	Chi Sq.	P
Race		
White	[Ref]	--
Black	1.06	N/S
Multi-Racial	.79	N/S
American Indian	.17	N/S
Asian	.27	N/S
Latino	1.89	N/S
Unemployed	11.92	<.01
Less than High School Degree	10.83	<.001
Unstable Housing	1.25	N/S
Substance Use, Past 90 days		
Daily alcohol Use	1.67	N/S
Daily marijuana use	18.75	<.001
Any methamphetamine use	11.96	<.001
Any cocaine use	8.51	<.01

Table 2. Bivariate Analysis Results

Model Statistics				95% Confidence Interval	
Variable	B	S.E.	O.R.	Lower	Upper
African Americans	.70	.23	2.01	1.29	3.14
Multi-Racial	.53	.26	1.70	1.01	2.84
BSI Grand Total	.42	.09	1.52	1.28	1.81
Any methamphetamine use	.47	.18	1.60	1.12	2.29
Daily marijuana use	.45	.16	1.56	1.15	2.13
Social Support	-.20	.07	0.82	0.72	0.93

Table 3. Logistical Regression Model

DISCUSSION

Among males younger than 24 years old, African American and multi-racial young men were more likely to miss more than 2 appointments compared to Whites. These results align with other HIV disparities previously reported (CDC, 2016) and suggest that lack of retention care may be contributing to increased HIV burden among African American YMSM. Due to limiting survey structure, it was not possible to analyze why African American males were more likely than their White counterparts to miss medical appointments. Another contributing factor to missing multiple medical appointments was marijuana usage. Individuals who used marijuana daily were more likely to miss medical appointments compared to individuals who did not have marijuana as often, mental health and social support were other variables that affected YMSM retention in care. Singh et al. reported that 57.7% of MSM living with HIV retained in care and 61.2% reached viral suppression, with Younger MSM having the lowest percentages of linkage to care and viral suppression (Singh, Mitsch, & Wu, 2017).

Making this research a starting point for interventions focused on these psychosocial behaviors should be considered in efforts to

increase retention in care. Addressing these factors would greatly improve HIV care in young non-White and low-income populations by improving HIV care outcomes and thereby improving prevention in their communities. One intervention focused around retaining young non-White HIV-positive individuals in care had 63% of cohort was retained in care (Hightow-Weidman, Smith, Valera, Matthews, & Matthews, 2011). Reducing the missing appointments for African American YMSM is critical for future research. The methods for addressing these risk factors, especially in YMSM, could be to create a positive environment at the clinic that allows the HIV-positive youth to maintain their adherence to medical appointments. A study by Magnus et al. found that YMSM of color that are HIV-positive were less likely to miss medical appointments because the males felt respected and cared about at the clinic (Magnus, Jones, Philips, Binson, Hightow-Weidman, Richardson, & Cobbs, 2010). This is a pivotal study in showing that creating inviting and positive environments where HIV-positive

YMSM can seek medical attention without facing much stigma can go a long way in helping to make sure that they stay in adherence with their HIV treatment. Analyzing possible stigmas that make it more likely for African American YMSM to miss more medical appointments compared to their White YMSM peers is just as important as creating a welcoming clinic for the youth. Facilities not only have to create a positive environment for anyone that steps into the clinic, but the clinic has to be able to address the needs of its YMSM of color in order to maintain their retention.

Due to the cross-sectional study design, it is not possible to infer causality of these factors contributing to retention in HIV care. Another limitation in YMSM retention in HIV care research is inconsistent and non-universal criteria for measuring retention in HIV care. The way that our study measured retention in care is not the same for every other study that is analyzing retention in care. This discrepancy can cause a huge discrepancy in data for retention in care.

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