AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/caic20

Demographic and psychosocial factors associated with appointment attendance among HIV-positive outpatients

Lina Bofill a , Drenna Waldrop-Valverde b , Lisa Metsch a , Margaret Pereyra a & Michael A. Kolber a c

a Department of Epidemiology and Public Health, University of Miami, Miller School of Medicine, Miami, FL, USA
b Department of Psychiatry & Behavioral Sciences, University of Miami, Miller School of Medicine, Miami, FL, USA
c Department of Medicine, University of Miami, Miller School of Medicine, Miami, FL, USA

Published online: 11 May 2011.

To cite this article: Lina Bofill , Drenna Waldrop-Valverde, Lisa Metsch, Margaret Pereyra & Michael A. Kolber (2011): Demographic and psychosocial factors associated with appointment attendance among HIV-positive outpatients, AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV, 23:10, 1219-1225

To link to this article: http://dx.doi.org/10.1080/09540121.2011.555743

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: http://www.tandfonline.com/page/terms-and-conditions

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.
Demographic and psychosocial factors associated with appointment attendance among HIV-positive outpatients

Lina Bofilla*, Drenna Waldrop-Valverde, Lisa Metsch, Margaret Pereyra and Michael A. Kolber

aDepartment of Epidemiology and Public Health, University of Miami, Miller School of Medicine, Miami, FL, USA; bDepartment of Psychiatry & Behavioral Sciences, University of Miami, Miller School of Medicine, Miami, FL, USA; cDepartment of Medicine, University of Miami, Miller School of Medicine, Miami, FL, USA

(Received 11 August 2010; final version received 14 January 2011)

Non-adherence to medical regimens is a critical threat to HIV-infected individuals. Persons living with HIV/AIDS must adhere to their outpatient medical appointments to benefit from continually improving HIV care regimens. The primary purpose of the present study was to identify individual and psychosocial characteristics associated with HIV-related medical appointment non-attendance. One hundred seventy eight adult participants attending the Outpatient Adult HIV/AIDS Immunology Clinic at Jackson Memorial Hospital (JMH) in Miami, Florida participated in the study. Scheduled and missed appointments obtained retrospectively over a 12-month period indicated that medical appointment non-attendance was a significant problem. Overall, 27.9% of scheduled appointments were missed during the study period. Young age and limited family support were predictors of non-attendance. These findings support those of others and highlight targeted intervention efforts to reduce appointment non-attendance among persons living with HIV/AIDS.

Keywords: appointment attendance; HIV/AIDS; non-adherence; missed appointment

Introduction

Medical care of patients who has HIV/AIDS, has improved dramatically due to the development of combinations of highly active antiretroviral therapies (HAART) that can suppress viral loads thereby greatly reducing mortality and morbidity (Center for Disease Control and Prevention [CDC], 2007). The strict adherence levels required to achieve these benefits, however, necessitate close monitoring of disease progress and regular medical follow-up over extended periods. The consensus in the medical community is that HIV-1 infected patients should be screened for viral load and CD4+ counts at least two to three times per year (Department of Health and Human Services [DHHS], 2009). Despite these recommendations, a number of studies have demonstrated poor attendance at outpatient medical appointments among many patient populations. In one study, 15% of patients failed to attend the ideal number of visits in a cohort of 1824 African-American and white participants (Kissinger et al., 1995). Thirty-six percent of HIV-positive pregnant women were found to miss their scheduled appointments on a randomly selected week in an HIV prenatal clinic (Shelton et al., 1993).

Increasing appointment attendance is not only an important strategy for ensuring adherence to antiretroviral (ARV) medication, but also for providing opportunities for HIV care professionals to assess the patient’s need for medical advice, individualized treatment combinations, and to create or implement behavior interventions when indicated. Failing to attend medical appointments precludes the patient’s chance to receive advanced therapeutic and prophylaxis regimes and may compromise the effectiveness of care that has been implemented.

Missed HIV medical appointments are associated with poorer disease markers and outcomes. Longer durations between missed HIV care appointments within one year of initiating HAART has been linked to increased risk for new AIDS-defining illnesses or death (Park et al., 2007). Others have shown that even when taking HAART, increasing numbers of missed medical appointments were associated with a greater risk for AIDS-defining CD4 levels and moving from a non-detectable to detectable viral load (Berg et al., 2005). Moreover, patients who missed appointments within the first year after initiating outpatient treatment for HIV infection had more than twice the rate of long-term mortality compared with those patients who attended to all scheduled visits (Mugavero et al., 2009). Such outcomes clearly demonstrate the need to uncover the factors that influence medical non-attendance.

A number of patient-related characteristics have been related to missed HIV medical appointments. These being a racial/ethnic minority (Catz, 1999;
Israelski, 2001; Mugavero, 2009), recent drug use (Butz, Hutton, & Joyner, 1993), less severe illness (Catz, McClure, Jones, & Brantley, 1999), younger age (Butz, 1993; Catz, 1999; Israelski, 2001; Mugavero, 2009), female gender and lack of private insurance (Mugavero, 2009). In addition to the above characteristics, other studies on HIV health care utilization found that family and social support, psychological distress and depression were related to appointment non-attendance (Bean & Talaga, 1992; Butz, 1993; Giordano et al., 2005; McClure, 1999). These studies indicate individual level risk factors, however, these risks are not consistently identified. Therefore additional study is needed to further our knowledge in this field. The main purpose of the present study was to analyze whether demographic, social behavioral factors, and disease status were associated with subsequent non-attendance to outpatient HIV medical appointments over a 12-month period.

Methods
Participants
From June 2000 to May 2001, patients attending the Adult HIV/AIDS Section at JMH in Miami, Florida, on their regular clinic visit were invited to participate in the study. Individuals living with HIV were eligible to participate in the study if they were 18 years old or older, had not been on ARV medication for six months prior to, or were treatment naive at, the time of the interview. Participants were told of the study by clinic personnel (HIV clinic nurses) and those that agreed to participate were referred to the study for screening. Patients who met the inclusion criteria were provided with an explanation of the aim of the study and asked to sign the consent form. All of the participants were English speakers. Trained personnel administered a baseline questionnaire that included demographic, social, and behavioral determinants. CD4/C27 T-cell count data was obtained at the time of the study entry by reviewing medical chart records of routine laboratory reports at the time of the interview. Patients were paid US$10 as an incentive for their participation at baseline. Twelve months after the baseline questionnaire was administered, total scheduled and missed medical appointments were obtained retrospectively through medical record abstractions from the computerized Human Information System (HIS)/Jackson System at the JMH, Miami, Dade County, Florida.

Measures
Demographic, social, and behavioral determinants
Demographic measures included age, race, and gender. Social determinants included two questions from the baseline questionnaire. The first question was the patient’s living situation defined as living with spouse/partner or with family and grouped as category 1, or living alone, living on the street or in a shelter, mental health, or drug treatment facility and grouped as category 2. The second question was having family support when patient needed as a yes/no answer. Information on drug risk behavior in the past 30 days before the interview was obtained. Information on alcohol consumption, intravenous drug injection, and crack smoking were obtained. Depression levels of participants were determined using the Center for Epidemiological Studies Depression Scale (CES-D), a 20-item inventory that has been utilized extensively to evaluate depression among persons living with HIV (Radolff, 1977).

Disease measure
Disease status was classified by CD4+ T-cell counts at baseline. CD4+ T-cell count was grouped in three categories: participants with CD4+ T-cell count fewer than 200 cell/ml (group 1), those with CD4+ T-cell count from 200 to 350 cell/ml (group 2), and those with more than 350 cell/ml CD4+ T-cell count (group 3), according to the guidelines for the use of antiretroviral agents in HIV-1 infected adults and adolescents (CDC Department of Health and Human Services [DHHS], 2009).

Appointment attendance
Data on medical appointment attendance were obtained from the HIS/Jackson Computer Data System. Information abstracted for all scheduled appointments at the clinic included date and whether or not the patient was a “no show” at the appointment. The baseline interview questionnaire date was recorded as the first scheduled medical appointment date and data was abstracted from records for the 12 months following this date. Several types of appointments were excluded. Attendance to scheduled laboratory testing or consultation to other medical specialists outside the Special Immunology Clinic was not included in the medical record abstraction. All recorded “no-show” appointments due to concurrent hospitalization were not included. Cancellation of appointments by the clinic or by the patients was not included in the database since they were re-scheduled.
During the same day or the following days, according to medical records. For the purpose of the present analysis, an attendance rate was calculated as the number of appointments attended over the total scheduled appointments in a 12-month period and expressed as a percentage.

**Statistical analysis**

Descriptive characteristics and mean percent of scheduled and missed appointments of the study group over a 12-month period were obtained. Pearson correlation obtained for continuous variables and Spearman correlations for discrete variables were used to analyze the relationship between potential predictors. To examine factors predicting non-attendance at clinic appointments, hierarchical multiple linear regression analysis with percentage of "no-show" appointments as the dependent variable was conducted. Variables were entered in two blocks. Demographic factors (age, gender, and race/ethnicity) were entered first. Gender was coded as 1 = male and 0 = female. Race/ethnicity was coded as African-American = 1 and other = 0. To determine if there was still a significant amount of variance of non-attendance after controlling for demographic factors, the second block entered included living situation, family support, depression, and CD4 count. Family support was coded as 1 = yes and 0 = no. Living situation was categorized as 1 = living with spouse or partner/living with friends or with own children, vs. 0 = living alone, shelter, or in the street. Depression was categorized according to the score on the CES-D. Category 1 included non-depressed participants with a score from 1 to 15; category 2 included moderately depressed participants with a score from 16 to 21; and category 3 included severely depressed participants with a score of 22 or higher. Two dummy variables were created for the analysis representing categories 2 and 3, with the non-depressed patients serving as the reference category. CD4+ count was entered as a continuous variable. To evaluate the contribution of each independent variable standardized coefficients β were used to determine the contribution on the variability of non-attendance to medical appointments of each variable. The percentage of no-show appointments was analyzed rather than the absolute number of medical appointments to reduce confounding individual variations in the frequency of scheduled appointments. The Kolmogorov–Smirnov test for normality of the dependent variable showed a normal distribution, z: 1.36; significance (two-tailed): 0.051. Therefore, transformation of the dependent variable was not necessary (Cohen & Cohen, 1988). One-way analysis of variance (ANOVA) was performed to examine whether no-show appointment rates would vary across patient disease groups based on their CD4 count at baseline. Group 1 consisted of patients with CD4+ count fewer than 200 cell/ml, group two included patients with CD4+ from 200 to 350 cell/ml, and group three included patients with CD4+ over 350 cell/ml.

**Results**

Of the 189 participants who completed a baseline interview, 10 were excluded from the analysis because they never returned to the Special Immunology clinic after the baseline interview and patient medical appointment record attendance and laboratory follow-up information at the Jackson HIS/System for these participants was missing.

Sociodemographic characteristics of the remaining 178 patients who completed the baseline questionnaire are summarized in Table 1. There were 110 (61.7%) males and 68 (38.2%) females. The majority of participants had insurance through Medicaid or Medicare, or had financial assistance through Ryan White and AIDS Drug Assistance Program (ADAP). Only four (2.2%) participants had private insurance and 17 (9.5%) were self-paid. Only one participant...
(0.6%), reported intravenous drug use (IDU), and another five (2.8%) had used crack 30 days before entering the study. Ten participants (5.6%) reported drinking alcohol three times per week or more during the previous 30 days. The racial/ethnic distribution of the sample showed African-American as the predominant group, accounting for 70.2% ($p < 0.001$). Hispanics comprised the second most common racial/ethnic group with 22.5%, followed by non-Hispanic White (6.7%) and Asian or Pacific Islander (0.6%). The average age was 41.5 (standard deviation [SD] 10.04) years for men and 43.2 (SD 12.23) for women. Of the 178 patients, 131 (73.6%) missed at least one appointment over the 12-month period, 29 (16.29%) did not return to any appointment after the baseline interview, and only 18 (10.1%) attended all scheduled appointments (Table 2). Mean number and SD for no-show appointments are shown in Table 3. The mean number of appointments scheduled during the 12 months after the baseline interview was 9.1 (SD = 3.9). Of these, patients missed an average of 2.5 (SD = 1.8) appointments. Participants attended about 72% of scheduled appointments and no-show appointments averaged 27.9%. Only 13 (7.3%) participants were naive to HAART/ARV at baseline.

Correlation coefficients are presented in Table 4. Appointment non-attendance was significantly correlated with age and family support. Non-attendance was negatively correlated with age, where younger patients missed more appointments ($r = -0.18; p = 0.02$). Lack of family support was correlated with non-attendance (missed more appointments) and showed as significant negative correlation ($r = -0.17; p = 0.03$). However, there was not a significant correlation with gender, race, living situation, and depression, CD4 or VL. When appointment non-attendance was dichotomized into missing two or more appointments in the past 12 months, chi-square analysis showed that a significantly greater proportion of those without family support (83%) missed two or more appointments ($p = 0.013$).

Table 5 presents the results of the hierarchical multiple regression analysis predicting appointment no-shows. The overall regression of model 1 was significant ($R^2$: 0.064, $F_{(3,142)} = 3.17, p = 0.026$). In the first block greater non-attendance was associated with younger age ($\beta = -0.21 t = -2.5, p < 0.014$). Neither gender nor race was an independent predictor for missing appointments. In model 2, family support, living situation, depression and CD4 added significantly to the explained variance in medical appointment non-attendance after controlling for age, gender, and race ($R^2$: 0.107, $F_{(7,142)} = 2.3, p = 0.029$). The difference in the variance of family support, living situation, and depression count over appointment non-attendance after the effect of demographic factors were removed from the model was not significant ($F$ change $F_{(4,135)} = 1.63, p = 0.17$). In the second model, family support was the only significant predictor of non-attendance in block 2 with no family support associated with higher rates of non-attendance ($\beta = -0.19, t = -2.23, p = 0.028$).

A one-way ANOVA on CD4+ count at baseline was performed to examine whether appointment non-attendance rates would vary across the three groups. No significant differences in non-attendance were found across the three groups (Table 6).

**Discussion**

This study was designed to replicate and add to existing research on individual-level factors associated with non-adherence to outpatient HIV medical appointments. Findings showed that age and the presence of family support were related to medical appointment attendance when considered with other individual characteristics in the model. Those in the sample who were older and who reported having family support were less likely to miss their HIV outpatient medical appointments. Other personal factors including gender, African-American race, depression, living situation and CD4 cell count were unrelated to missed medical appointments in this study.

Consistent with other studies (Catz, 1999; Israelski, 2001; Mugavero, 2009), our results revealed that younger age is significantly associated with non-attendance to scheduled medical appointments.

---

**Table 2. Patient appointment attendance over 12 months.**

<table>
<thead>
<tr>
<th>Appointment attendance</th>
<th>Number of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missed one or more</td>
<td>131</td>
<td>73.6</td>
</tr>
<tr>
<td>Attended all appointments</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Missed follow-up</td>
<td>29</td>
<td>16.3</td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>100</td>
</tr>
</tbody>
</table>

**Table 3. Mean and standard deviation (SD) of number of appointment scheduled, and no-show over 12 months.**

<table>
<thead>
<tr>
<th></th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Number of scheduled appointments</td>
<td>9.1</td>
</tr>
<tr>
<td>Number of non-attended appointments</td>
<td>2.45</td>
</tr>
</tbody>
</table>
Previous studies have shown that being HIV-positive may not be sufficient motivation for patients to access preventive medical care as patients with AIDS (Israelski, 2001). Younger HIV patients might miss appointments as a function of not having the infection as long as their older counterparts, having a greater perception of health, being less symptomatic, or due to a different lifestyle (i.e., work, school status) that prevent them from maintaining consistent medical appointment attendance.

In addition, individuals lacking family support had significantly poorer appointment attendance. More than 80% of those without family support in our sample missed two or more appointments. The literature has emphasized the importance of social support in adherence to medical appointments (Catz, 1999; Singh, 1996) and our findings bring additional support. The presence of a family member capable of providing support when needed appears important in keeping appointments. Questioning by health care providers about the availability of family and other supports may be a simple tactic to identify and intervene with patients at risk for poor medical appointment adherence.

Although others have found race/ethnicity to be related to appointment adherence, this was not supported in the present study. Estimates continue to demonstrate that African-American are disproportionately affected by HIV than any other racial/ethnic group in the United States and account for 51% of new infections (CDC, 2009). Previous studies have shown that African-Americans are more likely than other ethnic groups to miss their scheduled appointments (McClure, 1999; Muma, 1995; Singh, 1996). In our study group however, African-Americans were not more likely to miss appointments. These results should be interpreted with caution since the association of demographic factors with appointment attendance has been inconsistent in the literature and barriers to medical appointment attendance may

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>T</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Constant</td>
<td>42.95</td>
<td>6.778</td>
<td>6.336</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>3.569</td>
<td>3.300</td>
<td>0.091</td>
<td>1.081</td>
<td>0.281</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>-0.382</td>
<td>0.154</td>
<td>-0.206</td>
<td>-2.484</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>Race</td>
<td>-6.175</td>
<td>3.505</td>
<td>-0.148</td>
<td>-1.762</td>
<td>0.080</td>
</tr>
<tr>
<td>2</td>
<td>Gender</td>
<td>3.953</td>
<td>3.282</td>
<td>0.101</td>
<td>1.204</td>
<td>0.231</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>-0.383</td>
<td>0.153</td>
<td>-0.206</td>
<td>-2.502</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>Race</td>
<td>-5.858</td>
<td>3.611</td>
<td>-0.141</td>
<td>-1.622</td>
<td>0.107</td>
</tr>
<tr>
<td></td>
<td>Living situation</td>
<td>2.879</td>
<td>3.385</td>
<td>0.073</td>
<td>0.851</td>
<td>0.397</td>
</tr>
<tr>
<td></td>
<td>Family support</td>
<td>-8.218</td>
<td>3.689</td>
<td>-0.190</td>
<td>-2.228</td>
<td>0.028</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>-2.531</td>
<td>3.173</td>
<td>-0.066</td>
<td>-0.798</td>
<td>0.426</td>
</tr>
<tr>
<td></td>
<td>CD4</td>
<td>0.002</td>
<td>0.006</td>
<td>0.030</td>
<td>0.359</td>
<td>0.720</td>
</tr>
</tbody>
</table>

Note: The β coefficient is the standardized value indicating the relative magnitude and the direction of the relationship of each independent variable to the dependent variable.

*Living with spouse/partner; friend/own children vs. alone/street/shelter/mental health or drug facility center.
*p < 0.05.
Note: N = 178 patients.
Further research is needed to delineate the determinants of appointment adherence among persons living with HIV/AIDS. Identification of the barriers or behaviors that preclude patients from attending to the HIV/AIDS clinic can provide important information for the development of interventions for those at high-risk for non-attendance to prevent future poor outcomes and instruct the importance of long-term medical appointment attendance as part of the complexity of HIV/AIDS care. These findings suggest that intervention efforts to reduce appointment adherence problems targeted to young patients and to improve family bonds and support may improve adherence to HIV medical appointments.

References


and methodological issues. *AIDS and Behavior*, 1, 29–42.


