Gender Disparities in HIV Health Care Utilization among the Severely Disadvantaged: Can We Determine the Reasons?

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Abstract

Data repeatedly demonstrate that HIV-infected people who regularly utilize primary health care services are more likely to have access to lifesaving treatments (including antiretroviral medications); have better indicators of health status; survive longer; and use acute care services far less. Women tend to have poorer HIV outcomes than men, which is likely due to gender disparities in optimal utilization of HIV primary care services. To understand the relationship between gender and the HIV health care system, we collected interview and medical record data between August 12, 2004 and June 7, 2005 from 414 severely marginalized, HIV-infected people in New York City and examined whether gender-related disparities in HIV health care utilization existed, and, if so, whether these patterns were explained by patient sociodemographic/behavioral characteristics and/or attitudes toward the health care system and providers. Women were significantly less likely to have optimal HIV health care services utilization, including lower use of HIV primary care services (odds ratio [OR] = 0.56, 95% confidence interval [CI] = 0.35, 0.90) and greater use of the emergency department (OR = 2.13, 95% CI = 1.31, 3.46). Although we identified several factors associated with suboptimal HIV health care services utilization patterns in addition to female gender (low education, insurance status, mistrust of the health care system, and poor trust in health care providers), we were unable to identify factors that explained the observed gender disparities. We conclude that gender disparities in HIV health care utilization are due to a complex array of factors, which require more qualitative and quantitative research attention. Development of intervention strategies that specifically target severely disadvantaged women's HIV health care utilization is in great need.

Introduction

ACCESS TO AND REGULAR USE OF primary health care is crucial to ensure that patients benefit from the recent, significant treatment advances that have greatly improved longevity and quality of life for those infected with HIV. Data repeatedly demonstrate that people who regularly utilize HIV primary health care services are more likely to have access to these treatments (e.g., highly active antiretroviral therapy¹⁻⁶), have better indicators of health status, survive longer,¹⁻³ and use acute care services far less.⁷⁻¹⁰ Optimal HIV health care utilization patterns include receipt of regular HIV primary care to monitor CD4 count and viral load, manage other comorbid illnesses, adjust medications, and encourage adherence. Optimal health care utilization also includes minimizing

the use of acute care services, such as emergency department visits and hospitalizations.^{9,11}

Despite the documented benefits of engaging in optimal HIV health care utilization patterns, recent data indicate that a significant proportion of the 1.2 million people living with HIV/AIDS in the United States do not obtain regular health care.^{12,13} In fact, approximately one third of those who are aware of their HIV status are not consistently linked with the HIV health care system.¹⁴ Although a variety of reasons have been documented for suboptimal patterns of HIV health care utilization, these patterns generally reflect the fact that HIV-infected patients frequently are socially and economically marginalized, making it difficult, if not impossible, to prioritize their health care above other needs.¹¹ For example, suboptimal HIV health care utilization patterns are associated

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with racial/ethnic minority status,^{9,15–18} economic and health insurance difficulties,^{19–22} engaging in illicit drug or alcohol use,^{23–27} having unstable housing,^{28,29} and difficulty developing positive relationships with a primary care provider.^{30–38} Because barriers to health care utilization vary by population, it is crucial for providers and interventionists to identify key barriers that are specific to the disadvantaged populations that they target.

A growing risk group that has received insufficient attention is women. According to the Centers for Disease Control and Prevention (CDC), women now account for more than one fourth of all new HIV diagnoses in the United States,³⁹ and the proportion of people with AIDS who are women has grown dramatically over the past decade.^{39,40} Furthermore, women tend to delay getting tested for HIV. Recent surveillance data indicate that 33% of women convert from HIV to AIDS within a year of diagnosis.⁴⁰

While few data exist to inform our hypothesis, we believe it is likely that gender disparities reflect suboptimal utilization of HIV primary care for women. Although women generally are more frequent users of the health care system than men,^{41–44} this pattern does not necessarily mean that they receive consistent care and routine HIV primary care services. If our hypothesis that women are less likely than men to engage in optimal HIV care utilization patterns is true, it is crucial to begin to explore the factors that drive these disparities. It is uncertain whether factors that drive suboptimal HIV health care utilization patterns in general, impact men and women differently, including social and economic hardships, drug use behaviors, and difficulties in developing effective relationships within the health care system. To begin to understand the relationship between women and the HIV health care system, we collected data from a large sample of HIV-infected people who are severely marginalized and living in New York City. Comparing women with men, we addressed the following research questions: in a community-based sample of severely marginalized people, (1) do gender-related disparities in optimal HIV health care utilization patterns exist and, if so, (2) do characteristics of patients, including educational level, insurance status, housing status, and drug use behaviors explain these differences, and/or (3) do patients' attitudes toward the health care system and providers, such as perceptions of access to health care, mistrust in the health care system, trust in providers, engagement with a health care provider, and perceptions of control over the course of one's illness explain these differences?

Methods

Participants

We enrolled a convenience sample of HIV-infected women and men living in 14 different single-room occupancy (SRO) hotels in Manhattan and the Bronx, New York, between August 2004 and June 2005. In New York City, SRO hotels are used as transitional emergency housing for homeless people living with HIV/AIDS. Inclusion criteria in our study were: (1) residing in one of the targeted SRO hotels; (2) HIV-infected by self-report and confirmed by medical chart review; (3) at least 18 years of age; and (4) English or Spanish speaking. The only exclusion criterion was intoxication at the time of recruitment.

Of the 614 individuals encountered in SRO hotels, 536 (87.3%) participated in the study. Of these, 5 were ineligible, 9 withdrew, and 1 was excluded because of a computer malfunction. We were unable to obtain medical records from an additional 77 participants due to administrative reasons (e.g., incorrect authorization forms were used). Thus, we obtained sufficient data from 444 participants in total. From this sample, we dropped 12 people who self-identified as transgendered, because this number was too small for meaningful interpretation of observations that may differ from the other gender groups, and 18 people who were missing information on any of our 3 outcome variables (1 was missing ambulatory care data, 14 were missing emergency room data, and 3 were missing hospitalization data). Our final sample consisted of 414 people.

Procedures

Two research interviewers (one white, English- and Spanish-speaking female and one African American, English-only speaking male) knocked on every door in each of the target SRO hotels and invited eligible residents to participate in the study. The interviewers returned to each hotel on at least 3 consecutive days to locate and invite participation from as many hotel residents as possible.

Interviewers informed interested residents about the study procedures and obtained written informed consent. Institutional Review Boards at Montefiore Medical Center and the Centers for Disease Control and Prevention approved this study.

The interviews were administered using Audio Computer-Assisted Self-Interviewing (ACASI) technology. The ACASI system displayed each interview question on a lap top computer screen while simultaneously playing an audio recording of the question through headphones. Participants entered their responses to the questions directly on the computer using the touch screen. Use of ACASI technology has been shown to result in participants' reporting higher rates of sensitive behavior than other survey methods.^{45–47} The 45-minute interview was administered in participants' SRO hotel rooms in English or Spanish. Portions of the Spanish questionnaire were obtained from the original authors of developed instruments. Those instruments that were not already available in Spanish were translated, back-translated into English, and compared to the original English version to ensure fidelity of the translation.

Questions on the questionnaire were from standardized instruments or the HIV Cost and Services Utilization Study (HCSUS).²² The questions enquiring about socio-demographic information, HIV-related health status (CD4 counts), and use of HIV-related health services (emergency department use and hospitalizations) were obtained from the HCSUS questionnaire.²² All participants were residents of SRO hotels, but we additionally asked them to report whether their SRO hotel room was listed in their own name. This indicates whether the respondent took independent responsibility for his/her living situation, as opposed to temporarily doubling up with acquaintances, friends, or family. Data on current (past 30 days) drug and alcohol use were obtained using a modified version of the Addiction Severity Index.⁴⁸

Five measures of patients' attitudes toward the health care system and toward their providers were included: percep-

tions of access to health care, patients' mistrust in the health care system, patients' trust in providers, engagement with a health care provider, and perceptions of personal and treatment control over the course of one's illness. Perceptions of access to health care consisted of a six-item scale that includes statements related to access to hospital admission, emergency care, specialists, health services locations, and health care costs. Participants rated these statements on a five-point Likert scale (1 = lowest access and 5 = highest access) in which the average of these ratings was used for analyses. Patients' mistrust of the health care system was measured using a seven-item scale that included statements regarding mistrust related to hospitals, scientists, and the pharmaceutical industry.⁴⁹ Participants rated each statement on a five-point Likert scale (1 = lowest mistrust and 5 = greatest mistrust); the average of these ratings was used for analyses. Trust in one's provider was measured using an eight-item scale that included statements about trust in primary care providers.⁵⁰ Participants rated each statement (1 = lowest trust in a selected primary care provider and 5 = highest trust in a selected primary care provider), and the scale was coded according to an algorithm provided by the authors of the scale. Engagement with health care provider was measured using a 13-item scale, which consisted of statements about providers' ability to listen, answer questions, support decisions, respect choices, and so on.⁵¹ Participants rated each statement on a four-point scale (4 = always to 1 = never), and the average of these 13 ratings was used for this analysis. Perceptions of control over the course of one's illness were measured using two five-item scales which included statements about participants' ability to control their HIV disease and their perceptions of how well HIV treatment could control their illness. Participants rated each statement on a five-point scale (1 = low ability to control illness outcomes to 5 = high ability to control illness outcomes); responses were averaged for each of the two separate scales for analyses.⁵²

Medical records. All participants were asked to release medical information that allowed the investigators to review HIV-related health information from the previous 6 months. Participants reported names of medical providers and medical facilities from which they received ambulatory care services in the previous 6 months. One physician extracted data from all medical records using a standardized extraction tool. To ensure high-quality data, approximately 10% of all medical records were extracted by a second physician as well, until it was consistently found that there were no discrepancies noted between extractors.

Data on HIV-related primary care visits and CD4 counts were obtained from medical records. HIV-related primary care visits were defined as visits made to a medical doctor, doctor of osteopathy, nurse practitioner, or physician assistant in the ambulatory setting, including gynecologic visits. Specialty care visits (e.g., dermatology, ophthalmology) and nurse visits (e.g., reading of a tuberculin skin test) were not included.

Analyses

We first conducted bivariate analyses that compared women and men on the three main outcome variables: (1) their use of primary HIV care services, (2) their use of emergency departments, and (3) their hospitalizations. Consistent

with national guidelines and other published literature, "optimal" HIV health care services was defined as having at least two HIV-related primary care visits over a 6-month period, and patients were categorized as meeting this criterion or not.^{9,11,53} Although emergency department visits and hospitalizations may be required for optimal care, their use should be minimized. Thus, emergency department visits were categorized as having any emergency department visit in the previous 6 months or not, and hospitalization data were categorized as having any hospitalization in the previous 6 months or not. Gender comparisons were based on χ^2 tests of association.

We then further characterized the sample by comparing women and men on background demographic characteristics, socioeconomic and behavioral factors, and attitudes using χ^2 tests for categorical variables and *t* tests for continuous variables. Finally, we identified demographic characteristics, socioeconomic and behavioral factors, and attitudes that were associated with our three main outcomes, again using χ^2 tests for categorical variables and *t* tests for continuous variables.

To test our first hypothesis that women would be less likely than men to have optimal HIV health care patterns, we compared women with men on the three main outcome variables using logistic regression models that predicted each outcome separately, with gender (female versus male) as the main predictor variable. We hypothesized that the coefficient associated with gender would indicate that women would be less likely than men to have optimal HIV primary care and more likely than men to use acute care services (e.g., the emergency department and hospitalizations). Our regression models adjusted for sampling differences in race/ethnicity (Hispanic, non-Hispanic black, and non-Hispanic other), age (<45 years and >45 years), and illness severity (CD4 count >500, 201–500, <200 cells/mm³ as extracted from medical records or, when necessary self-reports).

To test our second hypothesis, that gender patterns in HIV health care utilization were due to socioeconomic and behavioral differences between women and men, we added variables representing these measures to the models described above. The measures we included were considered to be potentially modifiable factors. The socioeconomic and behavioral differences included education (at least a high school degree/GED versus less than a high school degree/GED), insurance status (insured versus uninsured), had an SRO hotel room in one's own name (yes versus no), use of cocaine or crack in the past 30 days (yes versus no), and use of heroin or nonprescription opioids in the past 30 days (yes versus no). If adding these variables one at a time to the logistic regression models that predicted each of our three health care services utilization outcome measures substantially changed the coefficient associated with gender, we concluded that they explained (or partially explained) the gender relationship to health care utilization. Our final model included all of these variables in the model simultaneously.

Finally, to test our third hypothesis, that gender patterns in HIV health care utilization were due to differences between women and men in their attitudes toward the health care system and providers, we added the following measures one at a time to initial model as described above: perceptions of access to health care, mistrust in the HIV health care system, trust in HIV providers, engagement with an HIV health care provider, and perceptions of personal and treatment control

over the course of one's illness. Again, if adding these variables to the models that predicted each of our three health care services outcome measures substantially changed the coefficient associated with gender, we concluded that they explained (or partially explained) the gender relationship to health care utilization.

We imputed missing data for some essential variables (e.g., insurance status, income, and CD4 count) by applying a standard Markov Chain Monte Carlo (MCMC) method using the SAS PROC MI v9.1.3. The MCMC method was applied because the missing data pattern was non-monotone and the variable distribution was assumed to be multivariate normal. For imputation of ordinal discrete data, we used the nearest integer value after imputing continuous values. The effect of such rounding was trivial since the proportion of the missing data was minimal at less than 2% of most variables, and on the one variable with more missing data, the proportion remained less than 10%. We additionally examined alternative models that excluded imputed data and found very similar results.

Results

Table 1 shows the distribution of HIV health care services utilization, background demographic characteristics, socio-

economic and behavioral characteristics, and attitudes toward the health care system and providers for women and men. In accordance with our hypothesis, women were less likely than men to use HIV primary care service (>2 HIV primary care visits/6 months: 40.6% versus 54.3%, $p < 0.05$), more likely to have at least one emergency department visit (>1 emergency department visit/6 months: 65.3% versus 48.2%, $p < 0.005$), and more likely to be hospitalized (>1 hospitalization/6 months: 41.6% versus 32.6%, $p < 0.10$) although this last finding did not reach statistical significance. Table 2 shows that, in addition to gender, education, insurance status, mistrust of the health care system, and trust in health care providers were statistically significantly associated with at least one of the HIV health care utilization outcomes at $p < 0.05$. Additionally, having an SRO hotel room in one's own name, heroin/nonprescription opioid use, and both measures of perceptions of illness control showed trend ($p \leq 0.20$) associations with at least one of the health care utilization variables. Cocaine/crack use, perceptions of access to care, nor engagement with one's provider were associated with any of the health care utilization outcome measures.

Table 3 shows the regression results that tested whether observed gender differences in use of HIV primary care services, emergency department visits, and hospitalizations

TABLE 1. USE OF HIV HEALTH CARE SERVICES, DEMOGRAPHIC CHARACTERISTICS, SOCIOECONOMIC AND BEHAVIORAL FACTORS, AND ATTITUDES OF FOUR HUNDRED FOURTEEN HIV-INFECTED WOMEN AND MEN

Characteristic	Women (n = 101) N (%)	Men (n = 313) N (%)	p-value ^a
Health care utilization in past 6 months			
Optimal HIV primary care (≥2 visits/6 mos)	41 (40.6%)	170 (54.3%)	0.016
≥1 Emergency department visit/6 mos	66 (65.3%)	151 (48.2%)	0.003
≥1 Hospitalization/6 mos	42 (41.6%)	102 (32.6%)	0.099
Demographic characteristics			
Race/Ethnicity			
Non-Hispanic Black	65 (64.4%)	167 (53.4%)	0.067
Hispanic	23 (22.8%)	110 (35.1%)	
Non-Hispanic Other	13 (12.9%)	36 (11.5%)	
Age <45 years	57 (56.4%)	151 (48.2%)	0.152
CD4 count (in cells/mm ³)			
≤200	20 (19.8%)	128 (40.9%)	0.001
201–500	57 (56.4%)	136 (43.5%)	
>500	24 (23.8%)	49 (15.7%)	
Socioeconomic and behavioral factors			
High school graduate/GED	54 (53.5%)	193 (62.0%)	0.129
Has health insurance	81 (80.2%)	270 (86.3%)	0.140
Has SRO hotel room in own name	80 (79.2%)	270 (86.3%)	0.088
Drug use behaviors in past 30 days			
Current heroin/nonprescription opioids	15 (14.9%)	71 (22.7%)	0.092
Current cocaine/crack	54 (53.5%)	148 (47.3%)	0.280
	<i>mean, SD</i>	<i>mean, SD</i>	p value ^b
Attitudes: health care system and providers			
Perceived access to health care (range: 1–5)	3.66, 0.97	3.72, 0.89	0.549
Mistrust in health care system (range: 1–5)	3.39, 1.07	3.26, 1.03	0.245
Trust in provider (range: 1–5)	3.80, 0.86	3.81, 0.85	0.996
Engagement with one's provider (range: 1–4)	3.43, 0.72	3.31, 0.73	0.140
Perceptions of treatment control (range: 1–5)	3.66, 0.75	3.79, 0.70	0.100
Perceptions of personal control (range: 1–5)	3.65, 0.82	3.93, 0.67	0.001

^aBivariate comparisons based on χ^2 test, one degree of freedom.

^bBivariate comparisons based on t tests.

SD, standard deviation.

TABLE 2. DEMOGRAPHIC CHARACTERISTICS, SOCIOECONOMIC AND BEHAVIORAL FACTORS, AND ATTITUDES OF FOUR HUNDRED FOURTEEN HIV-INFECTED WOMEN AND MEN BY HIV HEALTH CARE UTILIZATION IN PAST SIX MONTHS

Characteristic	Primary Care			Emergency Department			Hospitalization		
	≥2 visits N (% of 211)	<2 visits N (% of 203)	p-value	≥1 visit N (% of 217)	No visits N (% of 197)	p-value	≥1 hosp N (% of 144)	No hosp N (% of 270)	p-value
Gender									
Women	41 (19.4%)	60 (29.6%)	0.02	66 (30.4%)	35 (19.8%)	0.003	42 (29.2%)	59 (21.9%)	0.10
Men	170 (80.6%)	143 (70.4%)		151 (60.6%)	162 (82.2%)		102 (70.8%)	211 (78.1%)	
Demographic characteristics									
Race/Ethnicity: Non-Hispanic black	122 (57.8%)	110 (54.2%)	0.32	127 (58.5%)	105 (53.3%)	0.21	78 (54.2%)	154 (57.0%)	0.53
Hispanic	69 (32.7%)	64 (31.5%)		70 (32.3%)	63 (32.0%)		51 (35.4%)	82 (30.4%)	
Non-Hispanic other	20 (9.5%)	29 (14.3%)	0.24	20 (9.2%)	29 (14.7%)	0.55	15 (10.4%)	34 (12.6%)	0.78
Age: <45 years	100 (47.4%)	108 (53.2%)		106 (48.8%)	102 (51.8%)		71 (49.3%)	137 (50.7%)	
≥45 years	111 (52.6%)	95 (46.8%)	0.36	111 (51.2%)	95 (48.2%)	0.95	73 (50.7%)	133 (49.3%)	0.99
CD4 count ≤200	73 (34.6%)	75 (36.9%)		76 (35.0%)	72 (36.5%)		51 (35.4%)	97 (35.9%)	
201–500	105 (49.8%)	88 (43.3%)		102 (47.0%)	91 (46.2%)		67 (46.5%)	126 (46.7%)	
>500	33 (15.6%)	40 (19.7%)	0.13	39 (18.0%)	34 (17.3%)	0.02	26 (18.1%)	47 (17.4%)	0.63
Socioeconomic and behavioral factors									
Education: High school/GED	134 (63.5%)	114 (56.2%)	0.13	118 (54.4%)	130 (66.0%)	0.02	84 (58.3%)	164 (60.7%)	0.04
<High school	77 (36.5%)	89 (43.8%)	0.01	99 (45.6%)	67 (34.0%)	0.42	60 (41.7%)	106 (39.3%)	0.35
Insurance	188 (89.1%)	163 (80.3%)		181 (83.4%)	170 (86.3%)		115 (79.9%)	236 (87.4%)	
Uninsured	23 (10.9%)	40 (19.7%)	0.20	36 (16.6%)	27 (13.7%)	0.49	29 (20.1%)	34 (12.6%)	0.12
SRO hotel room in own name	183 (86.7%)	167 (82.3%)	0.97	186 (85.7%)	164 (83.2%)	0.99	125 (86.8%)	225 (83.3%)	0.72
in else's name	28 (13.3%)	36 (17.7%)		31 (14.3%)	33 (16.8%)		19 (13.2%)	45 (16.7%)	
Heroin/opioid use, past 30 days	44 (20.9%)	42 (20.7%)	0.99	45 (20.7%)	41 (20.8%)	0.54	36 (25.0%)	50 (18.5%)	
no use, past 30 days	167 (79.1%)	161 (79.3%)		172 (79.3%)	156 (79.2%)		108 (75.0%)	220 (81.5%)	
Cocaine/crack use in past 30 days	103 (48.8%)	99 (48.8%)	0.99	109 (50.2%)	93 (47.2%)		72 (50.0%)	130 (48.1%)	
no use, past 30 days	108 (51.2%)	104 (51.2%)		108 (49.8%)	104 (52.8%)		72 (50.0%)	140 (51.9%)	
Attitudes: healthcare system and providers									
Perceived access to health care (range: 1–5)	3.37,0.9	3.76,0.9	0.33	3.62,0.9	3.81,0.9	0.30	3.70,0.9	3.72,0.9	0.87
Mistrust in health care system (range: 1–5)	3.31,1.0	3.27,1.1	0.66	3.41,1.0	3.17,1.0	0.02	3.41,1.1	3.23,1.0	0.09
Trust in providers (range: 1–5)	3.84,0.9	3.77,0.8	0.38	3.69,0.8	3.93,0.9	0.004	3.73,0.8	3.8,0.9	0.15
Engagement with provider (range: 1–4)	3.38,0.7	3.30,0.7	0.30	3.31,0.7	3.38,0.7	0.31	3.34,0.7	3.34,0.7	0.92
High perceptions of treatment control (range: 1–5)	3.81,0.7	3.71,0.7	0.16	3.72,0.7	3.81,0.7	0.24	3.75,0.7	3.77,0.7	0.79
High perceptions of own control (range: 1–5)	3.92,0.7	3.80,0.7	0.10	3.81,0.7	3.92,0.7	0.14	3.79,0.7	3.90,0.7	0.15

SRO, single-room occupancy; SD, standard deviation.

TABLE 3. DO SOCIOECONOMIC AND BEHAVIORAL FACTORS OR ATTITUDES ABOUT HEALTH CARE AND/OR PROVIDERS EXPLAIN GENDER DISPARITIES IN HIV HEALTH CARE UTILIZATION IN A SAMPLE OF FOUR HUNDRED FOURTEEN HIV-INFECTED WOMEN AND MEN?

	<i>≥2 HIV Primary Care Visits vs <2 Visits Gender OR (95% CI)</i>	<i>≥1 Emergency department Visit vs. no Visits Gender OR (95% CI)</i>	<i>≥1 Hospitalization vs. no Hospitalizations Gender OR (95% CI)</i>
Socioeconomic and behavioral characteristics			
Gender alone ^a	0.56 (0.35,0.90)	2.13 (1.31,3.46)	1.56 (0.97,2.52)
Gender + Education ^a	0.58 (0.36,0.93)	2.05 (1.26,3.34)	1.56 (0.96,2.52)
Gender + Insurance ^a	0.59 (0.36,0.94)	2.11 (1.30,3.43)	1.57 (0.97,2.52)
Gender + SRO hotel room in own name ^a	0.57 (0.36,0.92)	2.17 (1.34,3.53)	1.60 (0.99,2.59)
Gender + Cocaine/crack ^a	0.56 (0.35,0.90)	2.12 (1.31,3.44)	1.56 (0.97,2.52)
Gender + Heroin/prescription opioids ^a	0.56 (0.36,0.90)	2.14 (1.32,3.37)	1.61 (0.99,2.60)
Gender + All socioeconomic/ behavioral variables ^a	0.61 (0.37,0.98)	2.07 (1.27,3.40)	1.59 (0.97,2.60)
Attitudes: health care system and providers			
Gender alone ^a	0.56 (0.35,0.90)	2.13 (1.31,3.46)	1.56 (0.97,2.52)
Gender + Access to care ^a	0.55 (0.34,0.89)	2.08 (1.28,3.38)	1.56 (0.97,2.52)
Gender + Mistrust in health care system ^a	0.56 (0.34,0.90)	2.07 (1.28,3.37)	1.53 (0.94,2.47)
Gender + Trust in providers ^a	0.57 (0.35,0.91)	2.09 (1.28,3.40)	1.54 (0.96,2.49)
Gender + Engagement with a provider ^a	0.56 (0.35,0.89)	2.19 (1.34,3.55)	1.56 (0.97,2.53)
Gender + Treatment control ^a	0.58 (0.36,0.93)	2.09 (1.28,3.39)	1.57 (0.97,2.53)
Gender + Personal control ^a	0.60 (0.37,0.97)	2.05 (1.25,3.34)	1.49 (0.92,2.43)
Gender + All attitude variables ^a	0.57 (0.35,0.93)	1.97 (1.20,3.26)	1.42 (0.87,2.33)

^aAdjusted for race (Non-Hispanic black vs. Hispanic and non-Hispanic other vs. Hispanic), age (<45 years vs. ≥45 years), and health status (≤200 vs. >500 and 201–500 vs. ≤500).

Odds ratios for gender when each socioeconomic/behavioral and attitude measure is included in the model predicting each of the three health care utilization outcomes.

OR, odds ratio; CI, confidence interval; SRO, single room occupancy.

were explained by socioeconomic and behavioral characteristics or by attitudes toward the health care system and/or providers. Although we selected variables based on evidence provided in our detailed literature review, and several variables were associated with gender and the health care services outcome variables, none of the hypothesized measures explained the gender associations with any of the three health care services utilization outcomes. The initial odds ratio associated with female versus male gender did not shift substantially even when all of the hypothesized variables from each of the two categories were included in a single model.

Discussion

In this study, we examined gender-related disparities in HIV health care utilization patterns among severely disadvantaged men and women and had two main findings. First, compared with men, women were significantly less likely to have optimal utilization of HIV health care services, including use of HIV primary care services and the emergency department. These findings were highly statistically significant, even after adjusting for race, age, and severity of illness.

Second, although we identified several factors that were associated with suboptimal patterns of HIV health care services utilization in addition to female gender, we were unable to identify factors that could explain the gender disparities that we observed. Even after adjusting for women's lower education level, lower likelihood of having health insurance, and lower likelihood of having in an SRO hotel room in her own name (that she controlled), women remained less likely

to have optimal HIV health care utilization patterns. We therefore firmly expected that differences between women and men in attitudes about health care and their providers would explain (or at least partially explain) women's suboptimal HIV health care utilization patterns. Adjusting for women's attitudes toward the health care system and providers did not substantially reduce the coefficient (odds ratio) associated with gender that predicted each health care utilization outcome. Therefore, these attitudes cannot be considered independent explanatory factors for gender disparities. Notably, even though women felt statistically significantly lower control over their HIV illness, this measure did not mediate the association between HIV health care utilization and gender.

We considered several possible explanations for our inability to identify factors that explained gender-related disparities in HIV health care utilization patterns. Despite the fact that children are not allowed to live in the SRO hotels where our study participants resided (implying that most women in our sample had lost legal custody of their children), an important difference between women and men that might substantially influence their health care utilization patterns is likely to be their caregiving responsibilities.⁵⁴ Such measures were unfortunately notably absent from this study. While the present study cannot provide data to support this hypothesis, our clinical experiences with this population leads us to believe it is possible that HIV-infected, disadvantaged women are likely to prioritize their care of minor and adult children, aging parents, and partners ahead of their own health care, even if they do not officially reside with them. Men in this population are likely to have fewer caregiving responsibilities.

ties. Some support for this hypothesis comes from research on caring for people with severe disabilities, which indicates that caregivers, especially elderly caregivers, often neglect their own health in order to fulfill this responsibility.^{55–57} Research also shows that such caregivers are predominantly female.⁵⁸ In addition to caregiving responsibilities, it is likely that the deep losses felt due to role changes associated with their many disadvantages, such as loss of legal custody of children, death of loved ones due to AIDS, and separations from loved ones due to drug use,^{59,60} are also likely to make it more difficult for severely disadvantaged women than men to take steps to improve their living situations and health behaviors.^{59,61} If these hypotheses are true, it might also explain why women in our study have lower perceptions of personal control over their illness. That is, it is possible they feel they must spend more effort to control other aspects of their lives first. It is likely that qualitative research would best address the question of whether women with HIV are similarly likely to neglect their own health if they have caregiving responsibilities.

There are several limitations to this study that should be noted. First, while we included a large number of measures that covered a wide range of constructs associated with barriers to HIV health care utilization, there are obviously other constructs that might have been considered. Additionally, while our sample was relatively large and heterogeneous, it was a volunteer sample of convenience, and therefore may not be generalizable to the broader population of disadvantaged HIV-infected women and men either in New York City or elsewhere in the United States.

Despite these limitations, we believe our study substantially adds to the health services literature that addresses HIV health care disparities between women and men. First, our data clearly indicate the HIV-infected women who are severely disadvantaged are less likely than men to receive optimal HIV health care services. Second, when developing interventions to help these women, providers and policy makers must note that women in this population are less likely to have graduated from high school, have health insurance, have a stable place to live, and feel in control over their treatment and illness compared with men. Even though these factors did not explain why women have suboptimal HIV health care utilization patterns as measured in this study, they may be important to the success of behavioral interventions. Finally, attitudes about the health care system and providers (including perceived access to care, mistrust in the health care system, trust in health care providers, and perceptions of control over one's HIV disease) are associated with poor HIV primary care utilization and use of acute health care services. Thus, theory-based strategies to improve HIV health care utilization that address these constructs should be considered when addressing gender and other health/health care disparities.

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