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Body image in older men with or at-risk for HIV infection

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Abstract

We performed a cross-sectional analysis of factors associated with negative body image among 550 older men with or at-risk for HIV infection, including demographics, depression, illicit drug use, and antiretroviral therapy adherence. Overall, 31 per cent of participants reported negative body image, which was independently associated with increased BMI, self-rated fair/poor health, depression, and erectile dysfunction, but not HIV status. Screening for and treating depression, sexual dysfunction, and obesity in older men should be considered.

Background

Body image is a multidimensional concept, defined as ‘a loose mental representation of the body's shape, form, and size’ (Slade, 1994). Body size satisfaction is instrumental in determining whether weight loss is a concern for individuals (Anderson et al., 1997; Anderson et al., 2002). Most studies of body image have examined eating disorders among women, and in men have focused primarily on muscularity in adolescents; limited data suggest that adult men may be more focused on losing weight and increasing muscle tone (Cafri et al., 2005; McCabe & Ricciardelli, 2004).

Several studies investigating body image among HIV-infected individuals have focused on weight loss and wasting among homosexual men (Tate & George, 2001; Wagner & Rabkin, 1999). HIV-infected individuals with self-reported lipodystrophy have described erosion of self-esteem, social and sexual problems, anxiety related to privacy, and depression (Chapman, 2002; Collins et al., 2000). Two-thirds of patients were willing to give up ≥ 1 extra year of life to avoid living with lipodystrophy in one study (Lenert et al., 2002). Poor adherence to HIV medications may result from perceived body shape changes attributed to HIV medications (Ammassari et al., 2002; Duran et al., 2001).

To address the paucity of information on body image among older HIV-infected men, we studied the prevalence of and factors associated with negative body image in older men with or at risk for HIV infection.

Methods

Study participants

We performed a cross-sectional analysis of factors associated with negative body image among participants in the Cohort of HIV At-Risk Men's Prospective Study (CHAMPS), an ongoing longitudinal study of select medical and psychosocial outcomes in men ≥ 49 years old with or at-risk for HIV infection. Details of the CHAMPS study design have been reported previously

(Klein et al., 2005). The current analysis includes data from men interviewed between June 2003 and February 2004. The study was approved by the Institutional Review Board, and all participants provided written informed consent.

Interview

A face-to-face interview elicited information on sociodemographics, medical history, and antiretroviral treatment (ART) history. Participants rated their health as excellent, good, fair, or poor. ART during the prior six months was classified as non-mutually exclusive categories of highly active ART (HAART) (DHHS 2002), protease inhibitor (PI)-containing regimen, and any ART. Adherence was calculated as the percentage of self-reported medication doses taken as prescribed during the previous three days.

Depressive symptoms, assessed using the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977), illicit drug use, sexual history, and body image were assessed using audio computer-assisted self-interviewing (A-CASI), which enhances collection of sensitive information (Metzger et al., 2000). The CAGE questionnaire was administered to screen for alcohol dependence (Mayfield et al., 1974).

Self-reported sexual orientation was recorded as heterosexual/straight, bisexual, homosexual/gay, none of these, or refuse/don't know. Erectile dysfunction was defined as difficulty achieving or maintaining an erection within the prior two weeks.

Body image was assessed by responses to, 'Overall, I feel satisfied with the shape of my body' using a five-point Likert scale (strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, strongly agree), dichotomized into: positive body image (strongly agree, somewhat agree, and neither agree nor disagree) and negative body image (strongly disagree and somewhat disagree).

Self-perception of weight was assessed by response to, 'Overall, I think that I am ...' with possible responses of: much too heavy, slightly too heavy, about right, slightly too thin, or much too thin. Responses were dichotomized as: too heavy (much too heavy, slightly too heavy,) and not heavy (about right, slightly too thin, and much too thin).

For participants taking ART within the prior week, its perceived effects on body shape were assessed, by asking participants if their ART caused an increase or decrease in the size of their face, arms, thighs, buttocks, breasts, or abdomen; responses were classified as central gain or loss respectively for breasts or abdomen, and peripheral gain or loss respectively for face, arms, thighs, or buttocks.

Physical measures

Height and weight were measured to calculate body mass index (BMI) (kg/m^2), and categorized according to established criteria (NHLBI 2005). Only 11/541 participants were underweight, so underweight and normal weight categories were combined ($\text{BMI} < 25$).

Laboratory analysis

HIV antibody status was determined; CD4⁺ cell count and HIV-1 viral load were assessed for HIV-infected subjects. In analyses, CD4⁺ count was used as an ordinal variable (≤ 200 , 200–499, and ≥ 500 cells/ mm^3), and viral load as both $\log_{10}$ viral load and as a dichotomous variable: undetectable (≤ 50 RNA copies per ml) vs. detectable.

Data analysis

Simple and multiple logistic regression models evaluated associations between independent variables and negative body image. Additional models determined factors associated with perceived heavy body weight, and separate models for HIV-infected men examined the effects of CD4+ count, duration of HIV infection, HIV viral load, and HAART use on negative body image and perceived body weight.

Results

Participant characteristics

The body image questionnaire was completed by 550/643 (86 per cent) CHAMPS participants. Participant characteristics are listed in Table I. HIV-infected men were less likely than uninfected men to be sexually active in the prior six-months (63 per cent vs. 73 per cent, $p=.012$) despite similar rates of erectile dysfunction in the prior two-weeks (36 per cent of HIV-infected vs. 32 per cent of HIV-uninfected, $p=.20$.) Selected characteristics of HIV-infected men are shown in Table II.

Body image

Among men with lean/normal weight, 24 per cent reported negative body image, compared with 30 per cent of overweight men and 49 per cent of obese men ($p\leq.001$), with no differences by HIV status and an overall prevalence of negative body image of 31 per cent. Factors associated with negative body image are shown in Table III. On multivariate analysis, higher BMI, depressive symptomatology, fair or poor self-rated health, and erectile dysfunction were associated with negative body image. Among HIV-infected men, BMI, fair or poor self-rated health, and attribution of peripheral weight loss to ART were associated with negative body image. Negative body image was not associated with sociodemographic characteristics or illicit drug use, with HIV viral load, CD4+ count, AIDS diagnosis, PI use, HAART use, or duration of ART among HIV-infected men, nor between self-reported adherence to ART and negative body image, self-perception of heavy body weight, or ART-attributed body shape changes. The prevalence of perceived body changes attributed to ART by BMI category in HIV-infected men is shown in Figure 1.

Self-perception of weight

Among men in the lean/normal weight category, 50.4 per cent (118/234) perceived themselves as too thin, despite only 2 per cent being underweight. Among overweight men, only 26 per cent (52/200) considered themselves too heavy. Most HIV-infected and HIV-uninfected overweight men described their weight as 'about right' (69.0 per cent and 65.5 per cent, respectively, $p=.72$). Among obese men, 71 per cent (76/107) men perceived themselves as too heavy and 27.1 per cent (29/107) as 'about right', with no difference by HIV serostatus.

After adjustment for BMI, non-heterosexual orientation and dissatisfaction with life were independently associated with self-perceived heavy body weight; among HIV-infected men, only non-heterosexual orientation remained associated (Table IV).

Discussion

In this cohort of older HIV-infected and at-risk men, nearly one-third reported a negative body image, with no difference by HIV serostatus. The factors associated with negative body image included higher BMI, depressive symptomatology, erectile dysfunction, and low self-rated health.

Sexual dysfunction had been reported in patients with advanced HIV disease before the HAART era, (Dobs et al., 1988; Jones et al., 1994; Tindall et al., 1994), and PI therapy was associated with erectile dysfunction (Colson et al., 2002; Martinez et al., 1999; Schrooten et al., 2001; Sollima et al., 2001). Older HIV-infected men have reported adopting celibacy due to sexual dysfunction and negative feelings about their aging bodies (Siegel & Schrimshaw, 2003.) Sexual dysfunction has also been linked to lipodystrophy in individuals on PI containing therapy (Schrooten et al., 2001), however such studies have been limited by an absence of HIV-uninfected controls. We found no difference in prevalence of erectile dysfunction by HIV status, nor an association with severe body shape changes attributed to ART. Further investigation into behavioural consequences of negative body image and erectile dysfunction in men with or at-risk of HIV is warranted.

Despite the high prevalence of overweight and obesity, most overweight and about one quarter of obese participants described their weight as 'about right'. Regardless of HIV status, men who self-described as other than heterosexual were more likely than heterosexuals to feel they were too heavy, after adjustment for BMI. Some (Beren et al., 1996; French et al., 1996) but not all (Hausmann et al., 2004; Herzog et al., 1991) studies have suggested that homosexual men have a higher incidence of body dissatisfaction and eating disorders, presumably attributed to an emphasis on physical appearance and a possibly higher valuation of thinness. One report found few differences in body image as a function of sexual orientation, although more homosexual men believed that their partners preferred a thinner figure (Boroughs & Thompson, 2002). There have been few studies of sexual orientation in relation to body image in HIV-infected men. A qualitative study in homosexual men with HIV-related weight loss of at least 10 per cent revealed concerns about weight loss predicting disease progression and being a visible sign of HIV, resulting in avoidance of social activities and self-consciousness in sexual situations (Tate & George, 2001). In contrast to that study, comprised exclusively of Caucasians, most with at least one AIDS-defining diagnosis, our study sample consisted predominantly of overweight racial and ethnic minority men at various stages of HIV disease.

Our study had limitations including the lack of information about antidepressant use, possibly confounding the relationship between negative body image, depressive symptoms, and erectile dysfunction.

In conclusion, we found that depressive symptoms, erectile dysfunction, and elevated body mass index were associated with negative body image in older men with or at risk of HIV infection. Although causality cannot be determined from a cross-sectional analysis, screening for and treating depression, sexual dysfunction, and obesity may improve body image.

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Figure 1.
Prevalence of perceived body changes attributed to antiretroviral therapy by body mass index category in HIV (+) men.

Table I

Characteristics of CHAMPS participants.

Characteristic	HIV-uninfected N=228	HIV-infected N=322	p value
Age (y)			0.03
Mean±SD	56.1±5.3	55.2±4.5	
Range	50.0–81.0	49.0–74.0	
Race- No. (%)			0.08
White	43 (18.9)	40 (12.4)	
Black	113 (49.6)	190 (59.0)	
Hispanic	54 (23.7)	72 (22.7)	
Other	18 (7.9)	19 (5.9)	
Marital status- No. (%)			<0.001
Single/never married	45 (19.7)	123 (38.2)	
Married/living with partner	80 (35.1)	71 (22.0)	
Divorced/Separated from spouse or partner	71 (31.1)	95 (29.5)	
Widowed	22 (9.6)	23 (7.1)	
Other	10 (4.4)	10 (3.1)	
Sexual orientation- No. (%)			<0.001
Heterosexual	175 (76.8)	205 (63.7)	
Bisexual	6 (2.6)	26 (8.1)	
Homosexual	15 (6.6)	73 (22.7)	
None of these	26 (11.4)	13 (4.0)	
Education level			0.47
High school graduate/GED- No. (%)	157 (68.9)	231 (71.7)	
Self-rated financial hardship- No. (%)			0.001
Very hard	63 (27.6)	55 (17.1)	
Somewhat hard	108 (47.4)	141 (43.8)	
Not very hard	54 (23.7)	121 (37.6)	
Current Employment >20hr per wk- No. (%)	44 (19.3%)	34 (10.6%)	0.01
Lifetime history of incarceration- No. (%)			0.06
No	71 (31.1)	125 (38.8)	
Yes	157 (68.9)	197 (61.2)	
Lifetime history of homelessness- No. (%)			0.75
No	113 (49.6)	164 (50.9)	
Yes	115 (50.4)	158 (49.1)	
CAGE score- No. (%)			0.03
0–1	189 (82.9)	285 (88.5)	
≥2	28 (14.5)	28 (8.7)	
Injection drug use- No. (%)			0.77
Never	83 (36.4)	125 (38.8)	
Former	122 (53.5)	169 (52.5)	
Recent	23 (10.1)	28 (8.7)	
Weight status classification- No. (%)			<0.001
Lean/Normal	74 (32.5)	160 (49.7)	
Overweight	87 (38.2)	113 (35.1)	
Obese	64 (28.1)	43 (13.4)	
Perception of health- No. (%)			0.18
Excellent	15 (6.6)	13 (4.0)	
Good	89 (39.0)	116 (36.0)	
Fair	90 (39.5)	152 (47.2)	
Poor	28 (12.3)	38 (11.8)	
CES-D score- No. (%)			0.008
<16	102 (44.7)	181 (56.2)	
≥16	126 (55.3)	141 (43.8)	

Table II

Characteristics of 322 HIV-infected participants.

	Number (per cent)
Ever use of antiretroviral therapy	
No	40 (12.4)
Yes	278 (86.3)
DK/refuse	4 (1.2)
HAART use in prior 6 months	
No	55 (17.1)
Antiretroviral use not meeting HAART criteria	15 (4.7)
HAART	249 (77.3)
PI use among ARV users, in prior 6 months	
No	104/264 (39.4)
Yes	160/264 (60.6)
Duration of HIV diagnosis, yrs-median [IQR]	11 [7–15]
Duration of antiretroviral use, yrs-median [IQR]	6 [5–11]
Duration of PI use, yrs-median [IQR]	1.5 [0–6]
Clinical AIDS	11 (3.4)
CD4+ cell count in cells/mm ³	
<200	78 (24.2)
200–499	156 (48.2)
≥500	87 (27.0)
Undetectable HIV viral load (≤50 copies/ml)	133 (41.3)

Table III

Characteristics Associated with Negative Body Image, among Participants in the CHAMPS Study.

Characteristic	Crude		Adjusted	
	OR	CI	OR	CI
Overall Cohort				
HIV serostatus			—	—
HIV negative	1.00	—		
HIV positive	1.15	(0.79, 1.66)		
Body Mass Index (kg/m ²)	1.06	(1.02, 1.10)	1.05	(1.01, 1.09)
Self-rated Health				
Excellent/good	1.00	—	1.00	—
Fair/poor	3.02	(2.02, 4.51)	2.07	(1.34, 3.20)
CES-D score				
CES-D score <16	1.00	—	1.00	—
CES-D score ≥16	2.13	(1.47, 3.08)	1.64	(1.08, 2.48)
Erectile dysfunction	2.25	(1.53, 2.29)	1.85	(1.23, 2.80)
HIV-infected men only				
Body Mass Index (kg/m ²)	1.06	(1.00, 1.12)	1.07	(1.00, 1.14)
Self-rated Health				
Excellent/good	1.00	—	—	—
Fair/poor	2.46	(1.47, 4.12)	2.28	(1.26, 4.14)
ARV attributed peripheral weight loss	2.62	(1.51, 4.54)	2.57	(1.45, 4.55)
Overall body shape change attributed to ARV				
Not severe	1.00	—	—	—
Severe	4.95	(2.39, 10.25)		
CES-D score				
CES-D score <16	1.00	—		
CES-D score ≥16	2.05	(1.28, 3.29)	—	—
Erectile dysfunction	2.00	(1.22, 3.28)		
Satisfaction with life in prior month				
Very satisfied	1.00	—	—	—
Somewhat satisfied	1.84	(0.96, 3.52)		
Somewhat dissatisfied	2.69	(1.25, 5.76)		
Very dissatisfied	6.77	(1.75, 26.19)		
Self-rated financial hardship				
Not very hard	1.00	—	—	—
Somewhat hard	1.57	(1.20, 4.61)		
Very hard	2.35	(0.91, 2.69)		

Table IV

Characteristics associated with self-perception of heavy body weight.

Characteristic	Crude		Adjusted	
	OR	CI	OR	CI
Overall Cohort				
HIV serostatus				
HIV negative	1.00	—		
HIV positive	0.55	(0.37, 0.81)		
Body Mass Index (kg/m ²)	1.46	(1.35, 1.57)	1.48	(1.37, 1.60)
Race				
White	1.00	—		
Black	0.44	(0.26, 0.73)		
Hispanic	0.49	(0.27, 0.90)		
Other	0.44	(0.18, 1.08)		
Erectile dysfunction	1.60	(1.06, 2.39)		
Satisfaction with life in prior month				
Very satisfied	1.00	—	1.00	—
Somewhat satisfied	1.99	(1.10, 3.61)	2.44	(1.10, 5.42)
Somewhat dissatisfied	2.48	(1.28, 4.81)	3.12	(1.29, 7.59)
Very dissatisfied	4.67	(2.02, 10.79)	5.60	(1.83, 17.16)
Sexual orientation				
Heterosexual	1.00	—	1.00	—
Non-heterosexual	1.18	(0.77, 1.80)	2.31	(1.31, 4.07)
<i>HIV-infected men only</i>				
Body Mass Index (kg/m ²)	1.45	(1.31, 1.60)	1.55	(1.33, 1.80)
Overall body shape change attributed to ARV				
Not severe	1.00	—	—	—
Severe	2.52	(1.17, 5.42)	2.54	(0.94, 6.86)
Sexual orientation				
Heterosexual	1.00	—	—	—
Non-heterosexual	1.62	(0.92, 2.84)	3.80	(1.42, 10.18)
Central weight gain attributed to ARV	3.01	(1.60, 5.68)	—	—
CD4+ cell count				
≥500	1.00	—	—	—
200–499	0.76	(0.41, 1.42)		
<200	0.44	(0.19, 0.99)		
HAART use in prior 6 months	1.01	(0.52, 1.95)		
PI use in prior 6 months	0.73	(0.42, 1.26)		
100% Adherence to ARV	1.32	(0.60, 2.94)		
Clinical AIDS diagnosis	0.40	(0.50, 3.14)		