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The Association Between Body Image and Smoking Cessation Among Individuals Living with HIV/AIDS

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Abstract

Lower smoking cessation rates are associated with body image concerns in the general population. This relationship is particularly important to study in individuals living with HIV/AIDS due to alarmingly high smoking rates and considerable bodily changes experienced with HIV disease progression and treatment. The association between body image and smoking cessation rates was examined among individuals living with HIV/AIDS participating in a smoking cessation intervention. Body image concerns were significantly associated with depression, anxiety, stress, and social support, all variables known to affect cessation rates. However, reduced quit rates were found among individuals reporting elevated and low levels of body image concerns at the end of treatment. These findings suggest a unique relationship between smoking and body image among individuals living with HIV/AIDS. Further research is needed to examine these effects and whether moderate levels of body image concerns in this population reflect realistic body perceptions associated with positive mental health.

Keywords

body image; smoking; smoking cessation; HIV; AIDS

Previous studies have established an association between body image concerns and lower smoking cessation rates in the general population (King, Matarin, White, & Marcus, 2005; Meyers et al., 1997). Body image concerns related to postcessation weight gain are specifically identified as predicting negative outcome in smoking cessation studies. As such, attention has been given to including a weight concerns treatment component to improve smoking cessation rates (M. M. Clark et al., 2005; Perkins et al., 2001). While the negative effects of weight concerns on abstinence rates tend to be more pronounced for women, recent studies have also focused on the weight concerns of male smokers. A significant negative association has been found between motivation to quit smoking and weight concerns among men enrolled in a smoking cessation trial (M. M. Clark et al., 2004). Limited research has also been conducted to examine potential racial/ethnic differences in weight concerns among smokers in the general population. Although it is widely known that African American women are more likely to be satisfied with their body shape and size than Caucasian women, one study found comparable rates of concerns about postcessation weight gain between groups

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(Pomerleau, Zucker, Namenek Brouwer, Pomerleau, & Stewart, 2001). Approximately 40% of women in each group expressed strong concerns about gaining weight following cessation. Collectively, these findings suggest that a wide range of smokers in the general population experience body image concerns that may subsequently affect their success in quitting smoking.

With the prevalence of smoking among individuals living with HIV/AIDS reported to 2–3 times higher than in the general population, (Burkhalter, Springer, Chhabra, Ostroff, & Rapkin, 2005; Gritz, Vidrine, Lazev, Amick, & Arduino, 2004) factors influencing cessation rates in this patient group must be given proper attention. Body image concerns are widely recognized among individuals living with HIV/AIDS as HIV treatment and infection can significantly alter physical appearance and bodily functioning. There is extensive variation in the types of bodily changes experienced in this patient population, much of which has been recognized among individuals receiving highly active antiretroviral therapy (HAART). Lipodystrophy syndrome has been coined to describe the constellation of morphologic changes associated with HAART, which can include fat accumulation in the abdomen, breasts, and dorso-cervical region as well as localized fat loss in the face, buttocks, and extremities (Chapman, 2002; Collins, Wagner, & Walmsley, 2000). Links between lipodystrophy syndrome, poor body image, problems in social functioning, and depression have all been documented (Collins, Wagner, & Walmsley, 2000; Power, Tate, McGill, & Taylor, 2003).

Limited research has been conducted on body image issues among individuals living with HIV/AIDS outside of the specific context of lipodystrophy syndrome. HIV infection, presence of symptomatic disease, and AIDS diagnosis have all been independently associated with poor self-perceived body image (Martinez, Kemper, Diamond, & Wagner, 2005). Chapman (2002) found that HIV/AIDS has a significant impact on feelings of body contamination. We are aware of only one study to evaluate potential ethnic differences in body image attitudes and perceptions in this patient population. Results from this study correspond to those in the general population as non-African-American women (mostly Caucasian) were more likely to desire a thinner body size while African-American women tended to be satisfied with their body or desire a larger body size (R. A. Clark, Niccolai, Kissinger, Peterson, & Bouvier, 1999). These findings suggest the importance of considering cultural and ethnic factors in body image within this patient population, just as within the general population.

The purpose of this study was to examine the relationship between body image concerns and smoking behaviors among individuals living with HIV/AIDS following smoking cessation treatment. Body image concerns in this patient group are likely to extend beyond or possibly not even involve post cessation weight gain considering the host of bodily changes associated with disease and treatment-related conditions (e.g., wasting, lipodystrophy syndrome). It is also important to consider the influence of psychosocial variables such as depression, anxiety, and low social support which have been previously linked to both body image concerns (Thompson, 1990) and smoking behaviors (Fiore et al., 2000). We expected to find lower cessation rates among individuals with the highest body image concerns after controlling for key psychosocial variables.

Method

Study participants were individuals participating in a smoking cessation trial at a primary care clinic within a large, inner-city HIV/AIDS center. The present study involves secondary analysis of the data obtained from the clinic trial and was conducted on information collected following completion of the intervention, at the 3 month follow-up study visit.

Our patient sample was recruited from a clinic which serves an ethnically/racially diverse patient population primarily comprised of economically disadvantaged HIV-positive individuals. The purpose of the larger smoking cessation trial was to assess the feasibility and efficacy of a cell phone-delivered smoking cessation program. Participants were randomized to either a usual care intervention (i.e., brief physician advice plus targeted written materials) or a cell phone intervention (usual care components, 2 months proactive cellular phone counseling, hotline access). Participants receiving the cell phone intervention were significantly more likely to be abstinent at the 3-month follow-up compared to participants in the usual care condition (36.8% vs. 10.3%). Further details on the two-group randomized clinical trial comparing these interventions have been reported elsewhere (Vidrine, Arduino, Lazev, & Gritz, 2006).

Demographic, health behavior, and psychosocial variables were collected at baseline and at 3-month follow-up. Analyses for this study were conducted on 3-month follow-up data as body image concerns were only evaluated at this time point. Smoking status was a primary outcome variable, and expired CO levels were collected to verify smoking status biochemically. Body image concerns were evaluated with the Body Image Scale (BIS), a self-report scale assessing body image/appearance dissatisfaction. This measure was originally developed for use with breast cancer patients ($\alpha = 0.93$, demonstrated discriminant validity, test-retest reliability, and sensitivity to change), and was selected because of its specific focus on body image relating to disease and treatment (Hopwood, Fletcher, Lee, & Al Ghazal, 2001). We modified this instrument for the present study and reduced the scale to 8 items (see Table 1). Self-reported weight gain and weight loss concern were assessed with two questions from the 20-item HIV symptom status index developed for use within the Adult AIDS Clinical Trials Group. This scale has been validated and correlates with measures of functional status and HIV disease stage (Justice et al., 2001). Depressive symptoms were assessed with the Centers for Epidemiologic Studies Depression Scale, a well-validated 20-item self-report measure of depressive symptoms (Radloff, 1977). Anxiety was assessed using the State/Trait Anxiety Inventory, a 40-item scale that provides information about a person's general and current level of anxiety (Spielberger, Gorsuch, & Lushene, 1970). The 20-item Medical Outcomes Study-Social Support was used to measure social support (Sherbourne & Stewart, 1991), and the 4-item Perceived Stress Scale was used to measure stress (Cohen, Kamarck, & Mermelstein, 1983).

Descriptive statistics were examined for all study variables. Simple logistic regression analysis was used to assess the unadjusted association between smoking status at the 3-month follow-up and body image distress. Multiple logistic regression was then used to examine this relationship while controlling for the effects of other variables (i.e., treatment group, depression, anxiety, perceived stress, and social support). All statistical analyses were performed with Stata, version 8.2.

Results

Ninety-five participants were recruited and randomized to smoking cessation treatment. Three month follow-up data were collected on 77 participants (60 men, 17 women), demonstrating an 81.1% follow-up rate. Participants' ages ranged from 27 to 64 years ($M = 43.48$, $SD = 7.77$). Regarding ethnic/racial background, 75% of participants were African-American, 20% were Caucasian, and 5% were Hispanic. Self-reported mode of HIV transmission was diverse with 32.5% reporting male to male sexual contact, 39% heterosexual contact, 22% injection drug use and 6.5% other.

Body Image Scores

The 8-item BIS was found to be internally consistent and unidimensional ($\alpha=0.88$). Data from the two intervention groups were combined to evaluate the relationship between body image, smoking and other psychosocial variables as there were no significant group differences in BIS scores. BIS scores ranged from 8 (not at all concerned with body image) to 32 (very concerned with body image) with a mean of 13.75 ($SD=5.57$). Data were significantly skewed and reflective of relatively low overall reported levels of body image concerns at the end of smoking cessation treatment. Body image concerns were significantly associated with both weight gain concerns ($r=0.39, p<.001$) and weight loss concerns ($r=0.30, p<.01$). Sex differences were not found on BIS scores ($t=.98, p=.33$). Significant positive correlations were found between body image concerns and depression ($r=.41, p<.001$), body image concerns and anxiety ($r=.33, p=.003$), and body image concerns and perceived stress ($r=.26, p=.02$). A significant negative correlation was found between body image concerns and social support ($r=-.35, p=.002$).

Quit Rate as a Function of Body Image

Across both intervention groups, the total smoking abstinence rate at 3-month follow-up was 23.4%. As can be seen in Figure 1, which depicts quit rates based on BIS scores, the highest quit rates were found for those reporting moderate levels of body image concerns (i.e., scoring in the 2nd and 3rd quartiles). Using simple logistic regression models, quit rates were not specifically affected by weight gain or weight loss concerns at baseline or 3 month follow-up (all p values >0.35).

We performed logistic regression analyses to examine the differences in smoking status based on BIS scores. Analyses comparing quit rates based on BIS scores separated into quartiles were non-significant. Because of the elevated quit rates found for participants reporting moderate levels of body image concerns compared to participants reporting either high or low levels of body image concerns, we conducted a direct comparison between these two groups (moderate vs. high/low BIS scores). We found a significant effect of body image on smoking status at 3-month follow-up, $OR_{BIS_moderate}=3.54$, 95% CI 1.12–11.21, $p=.03$. This association remained significant even after controlling for depression, anxiety, social support, perceived stress, and treatment group ($OR=7.13$, 95% CI 1.54–33.15).

Discussion

In this preliminary study, body image concerns at the end of smoking cessation treatment were significantly associated with a number of psychosocial variables known to affect cessation rates in the general population: namely, depression, anxiety, perceived stress, and social support. Further analyses supported a curvilinear relationship between body image concerns and smoking cessation in this population. Reduced quit rates were found among individuals reporting elevated and low levels of body image concerns at the end of treatment. Overall, these findings are suggestive of a unique relationship between smoking and body image among individuals living with HIV/AIDS that differs from the relationship found in the general population.

Consistent with our hypotheses, there was some evidence to suggest that body image concerns extending beyond body shape and weight gain issues were associated with cessation rates. Quit rates were not affected by weight concerns, and the effects of body image did not change even when weight gain concern was added to the statistical models. These findings are better understood when one considers: a) the multidimensional nature of body image and b) the host of bodily changes associated with HIV illness and treatment. Weight concerns are only one

aspect of body image, and for individuals living with HIV/AIDS, this sole facet does not appear to explain the relationship between body image and smoking behaviors.

We did not anticipate finding an association between reduced quit rates and low reported levels of body image concerns. The lack of sex differences in body image scores was also surprising, as women are widely recognized to have more body image concerns compared to men in the general population as well as other clinical populations. It is important to consider the unique characteristics of our participant sample as it included a large proportion of males relative to females, a significant percentage of African-Americans, and individuals with varying sexual orientations, most of whom are economically-disadvantaged. Thus, a complex clinical picture emerges with limited research to draw upon that can help explain our findings. In particular, data are lacking on body image issues in African American men. Homosexual orientation among men has been associated with high rates of body dissatisfaction particularly involving muscularity issues (Kimmel & Mahalik, 2005; Rothblum, 2002). Levasque and Vichesky (2006) recently found that gay men endorsed similar levels of body dissatisfaction when compared to a normative sample of women. Because we did not specifically evaluate the sexual orientation of our participants (only self-reported mode of HIV transmission), we cannot investigate the manner in which this variable may have influenced our findings.

Several potential explanations can be offered for our findings regarding an association between elevated quit rates and moderate levels of body image concerns. Within the context of HIV disease and treatment, it seems possible that individuals with moderate levels of body image concerns may have more accurate perceptions and realistic expectations for their body image compared to individuals reporting no body image concerns or severe body image concerns. Body image is widely recognized as an important psychosocial variable among individuals living with HIV/AIDS due to the variety of changes in physical appearance and bodily functioning resulting from illness and treatment. Individuals attuned to these bodily changes may experience a certain degree of concern over these alterations and may generally be more conscious of health behaviors and health status. As such, they may be more motivated to quit smoking and remain abstinent.

In contrast, individuals who report high levels of body image concerns may have inaccurate perceptions or unrealistic expectations of their body image. These individuals may experience high levels of distress as a result of bodily changes, which subsequently impede efforts to quit smoking. Psychological distress is widely regarded as a barrier to smoking cessation and a trigger for relapse to smoking. Regarding individuals with low levels or no reported body image concerns, it seems possible that these individuals may have no expectations about body image and may feel apathetic not only about bodily changes, but other health behaviors as well. As such, both low and high levels of body image concerns may be associated with negative mental health, which would impede smoking cessation efforts.

We acknowledge that our study is based on a secondary analysis of a relatively small sample, and consider our findings to be preliminary and in need of replication. The primary limitation of the study is the lack of body image assessment at baseline which precludes examining whether body image concerns are predictive of cessation. Although we did not find an association between weight concerns and cessation rates in this study, data on actual post-cessation weight changes were not obtained. Additional limitations of the study include potential measurement issues with our self-report body image instrument and questions about generalizability to other patient samples with different demographic characteristics. Although the Body Image Scale used here specifically focuses on body image related to disease and treatment, additional research is needed to see if this scale must be further modified/tailored to be effectively used as a research and clinical tool with this population. Future research should

also attend to the manner in which comorbid alcohol and/or illicit drug among smokers living with HIV/AIDS influences body image concerns.

Our sample included individuals who are more economically disadvantaged and ethnically diverse than typical samples used in clinical research. As such, it will be difficult to compare our findings with those from existing studies. However, our sample is seemingly well representative of the HIV/AIDS population in the U.S. Moreover, our data contribute to knowledge on important health and psychosocial variables for an underserved population.

References

- Burkhalter JE, Springer CM, Chhabra R, Ostroff JS, Rapkin BD. Tobacco use and readiness to quit smoking in low-income HIV-infected persons. *Nicotine & Tobacco Research* 2005;7:511–522. [PubMed: 16085522]
- Chapman, E. Body image issues among individuals with HIV and AIDS. In: Cash, TF.; Pruzinsky, T., editors. *Body image: A handbook of theory, research, & clinical practice*. New York: The Guilford Press; 2002. p. 395-404.
- Clark MM, Decker PA, Offord KP, Patten CA, Vickers KS, Croghan IT, et al. Weight concerns among male smokers. *Addictive Behaviors* 2004;29:1637–1641. [PubMed: 15451131]
- Clark MM, Hays JT, Vickers KS, Patten CA, Croghan IT, Berg E, et al. Body image treatment for weight concerned smokers: a pilot study. *Addictive Behaviors* 2005;30:1236–1240. [PubMed: 15925132]
- Clark RA, Niccolai L, Kissinger PJ, Peterson Y, Bouvier V. Ethnic differences in body image attitudes and perceptions among women infected with human immunodeficiency virus. *Journal of the American Dietetic Association* 1999;99:735–737. [PubMed: 10361540]
- Cohen S, Kamarck T, Mermelstein R. A Global Measure of Perceived Stress. *Journal of Health and Social Behavior* 1983;24:385–396. [PubMed: 6668417]
- Collins E, Wagner C, Walmsley S. Psychosocial impact of the lipodystrophy syndrome in HIV infection. *The AIDS Reader* 2000;10:546–550. [PubMed: 11019453]
- Fiore, MC.; Bailey, WC.; Cohen, SJ.; Dorfman, SF.; Goldstein, MG.; Gritz, ER., et al. Clinical practice guideline. U.S. Department of Health and Human Service; Public Health Service: 2000. Treating tobacco use and dependence.
- Gritz ER, Vidrine DJ, Lazev AB, Amick BC 3rd, Arduino RC. Smoking behavior in a low-income multiethnic HIV/AIDS population. *Nicotine & Tobacco Research* 2004;6:71–77. [PubMed: 14982690]
- Hopwood P, Fletcher I, Lee A, Al Ghazal S. A body image scale for use with cancer patients. *European Journal of Cancer* 2001;37:189–197. [PubMed: 11166145]
- Justice AC, Holmes W, Gifford AL, Rabeneck L, Zackin R, Sinclair G, et al. Development and validation of a self-completed HIV symptom index. *Journal of Clinical Epidemiology* 2001;54(Supplement 1):S77–90. [PubMed: 11750213]
- Kimmel SB, Mahalik JR. Body image concerns of gay men: the roles of minority stress and conformity to masculine norms. *Journal of Consulting & Clinical Psychology* 2005;73:1185–1190. [PubMed: 16392992]
- King TK, Matacin M, White KS, Marcus BH. A prospective examination of body image and smoking cessation in women. *Body Image* 2005;2:19–28.
- Levesque MJ, Vichesky DR. Raising the bar on the body beautiful: An analysis of the body image concerns of homosexual men. *Body Image* 2006;3:45–55.
- Martinez SM, Kemper CA, Diamond C, Wagner G. Body image in patients with HIV/AIDS: assessment of a new psychometric measure and its medical correlates. *AIDS Patient Care and STDS* 2005;19:150–156. [PubMed: 15798382]
- Meyers AW, Klesges RC, Winders SE, Ward KD, Peterson BA, Eck LH. Are weight concerns predictive of smoking cessation? A prospective analysis. *Journal of Consulting & Clinical Psychology* 1997;65:448–452. [PubMed: 9170768]

- Perkins KA, Marcus MD, Levine MD, D'Amico D, Miller A, Broge M, et al. Cognitive-behavioral therapy to reduce weight concerns improves smoking cessation outcome in weight-concerned women. *Journal of Consulting & Clinical Psychology* 2001;69:604–613. [PubMed: 11550727]
- Pomerleau CS, Zucker AN, Namenek Brouwer RJ, Pomerleau OF, Stewart AJ. Race differences in weight concerns among women smokers: results from two independent samples. *Addictive Behaviors* 2001;26:651–663. [PubMed: 11676376]
- Power R, Tate HL, McGill SM, Taylor C. A qualitative study of the psychosocial implications of lipodystrophy syndrome on HIV positive individuals. *Sexually Transmitted Infections* 2003;79:137–141. [PubMed: 12690137]
- Radloff L. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement* 1977;1:385–401.
- Rothblum, ED. Gay and lesbian body images. In: Cash, TF.; Pruzinsky, T., editors. *Body image: A handbook of theory, research, & clinical practice*. New York: The Guilford Press; 2002.
- Sherbourne CD, Stewart AL. The MOS social support survey. *Social Sciences & Medicine* 1991;32:705–714.
- Spielberger, CD.; Gorsuch, R.; Lushene, RE. *STAI manual for the Stait-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press; 1970.
- Thompson, JK. *Body image disturbance: Assessment and treatment*. New York: Pergamon Press; 1990.
- Vidrine DJ, Arduino RC, Lazev AB, Gritz ER. A randomized trial of a proactive cellular telephone intervention for smokers living with HIV/AIDS. *Aids* 2006;20:253–260. [PubMed: 16511419]

Note. Level of Body Image Concern measured by the Body Image Scale (BIS). BIS scores were broken down into quartiles: low group BIS $M = 8.35$ ($N = 20$), moderately low group BIS $M = 11.23$ ($N = 22$), moderately high group BIS $M = 14.75$ ($N = 16$), high group BIS $M = 21.53$ ($N = 19$).

Figure 1.

Quit Rate (Percentage Quit) as a Function of Body Image Scores

Table 1

Items from the Body Image Scale

1	Have you been feeling self conscious about your appearance?
2	Have you felt less physically attractive as a result of your disease or treatment?
3	Have you felt dissatisfied with your appearance when dressed?
4	Have you been feeling less feminine/masculine as a result of your disease/treatment?
5	Did you find it difficult to look at yourself naked?
6	Have you been feeling less sexually attractive as a result of your disease or treatment?
7	Did you avoid people because of the way you felt about your appearance?
8	Have you felt dissatisfied about your body?

Note. Items adapted from Hopwood et al., (2001)