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Body image and condomless anal sex among sexual minority men living with HIV

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Abstract

The interaction of body dissatisfaction and appearance investment (importance and effort ascribed to appearance) in relation to condomless anal sex has not previously been examined. Body dissatisfaction in the context of varying degrees of appearance investment may yield divergent sexual risk outcomes. Sexual minority men living with HIV ($N=105$) completed a battery of self-report measures. A generalized linear model identified a significant interaction ($b = .08$ [95% CI: .01, .16], $p = .033$) such that when appearance investment was low, body dissatisfaction was associated with fewer condomless anal sex acts; when appearance investment was high, body dissatisfaction was associated with increased condomless anal sex.

Keywords

HIV/AIDS; Body Image; Body Dissatisfaction; Appearance Investment; Sexual Risk Behaviors

INTRODUCTION

Body dissatisfaction (a negative evaluation of one's appearance) is common among sexual minority men (1–2), and may be a particular concern among sexual minority men living with HIV. Reasons for increased body dissatisfaction in HIV include the presence of lipodystrophy (change in body fat distribution), a common side effect of antiretroviral therapy and the disease process (3), and the high proportion of the HIV population that

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All procedures performed in studies were in accordance with the ethical standards of the Massachusetts General Hospital and Fenway Health Institutional Review Boards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

includes sexual minority men, who have been found to have high rates of body dissatisfaction (1). Body dissatisfaction has been associated with a host of negative outcomes in sexual minority men living with HIV, including increased psychological distress (3), poor adherence to antiretroviral therapy (4), and increased HIV sexual transmission risk behaviors (1).

The precise nature of how body image is associated with sexual risk behaviors is still not fully understood given conflicting findings in the literature. While there is some evidence that individuals with greater body dissatisfaction refrain from sexual behaviors to avoid distress from displaying their bodies, there has also been support for a relationship between body dissatisfaction and increased sexual behaviors (5); having sex may temporarily assuage intrusive thoughts of being unattractive. Among those individuals with body dissatisfaction who do engage in sex, body dissatisfaction can affect condom use negotiations given that conversations regarding condom use may be seen as opportunities for anxiety and negative feedback (i.e., rejection) from sexual partners; this could result in reduced condom use (6).

Moreover, empirical evidence has provided inconsistent findings regarding the role of body dissatisfaction and sexual transmission risk behaviors among sexual minority men. While some studies suggest that sexual minority men with higher body dissatisfaction are more likely to participate in sexual transmission risk behaviors (1, 7), there has also been evidence for the contrary (8). For example, one study with 106 sexual minority men living with HIV found a positive association between elevated body dissatisfaction and increased sexual transmission risk behaviors (1). Similarly, a study with 481 Black sexual minority men found that men with elevated body dissatisfaction were less likely to use condoms during anal intercourse as compared to men with lower body dissatisfaction (7). However, another study with 92 sexual minority men found that body dissatisfaction was associated with fewer sexual transmission risk behaviors (8). Moreover, there are conflicting findings regarding sexually transmitted infection (STI) rates and body dissatisfaction (9). One possible explanation for these inconsistent findings is the dearth of research examining potential moderators of the association between body dissatisfaction and sexual health.

Appearance investment (the importance and effort that individuals place on their appearance [10]) has rarely been studied in the context of body dissatisfaction and condomless anal sex in sexual minority men living with HIV. This is a notable limitation, as body dissatisfaction in the context of high appearance investment may yield divergent sexual risk outcomes compared to body dissatisfaction coupled with low appearance investment (10). Specifically, individuals who both evaluate their appearance negatively and place great importance on and invest tremendous effort in it may be more motivated to engage in behaviors that reduce these negative appraisals of appearance, such as engaging in sexual behaviors, including those that carry higher risk such as condomless anal sex. It has been hypothesized that individuals who are dissatisfied with their bodies may actively look for sex, as sex itself is seen as positive feedback about one's body (5); this relationship may be more pronounced for those who are not only dissatisfied with, but also highly cognitively and behaviorally invested in their appearance. In contrast, individuals with high body dissatisfaction but low investment in their appearance may be less concerned about reducing their dissatisfaction, as

dissatisfaction in the context of low investment likely results in limited to no distress/impairment.

To date, there are no known studies that have examined the interaction of body dissatisfaction and appearance investment in relation to sexual transmission risk behaviors. Thus, the aim of the current study was to examine the potential moderating role of appearance investment in the relationship between body dissatisfaction and condomless anal sex. Specifically, we hypothesized that sexual minority men living with HIV with elevated body dissatisfaction and high appearance investment would report increased condomless anal sex compared to those with elevated body dissatisfaction and low appearance investment.

METHODS

Participants were 105 sexual minority men living with HIV who reported having sex with a man within the previous 12 months. Participants completed a battery of self-report measures. Recruitment was conducted at the Massachusetts General Hospital Infectious Disease Clinic and Fenway Health, a community health center. Inclusion criteria were: 1) HIV-positive, 2) engaged in anal sex with men in the prior 12 months, 3) male gender (at time of survey), 4) age 18 to 65, and 5) prescribed antiretroviral therapy for the past two months or longer. Participants completed electronic questionnaires in privacy, and received \$25 for their time and effort. The Massachusetts General Hospital and Fenway Health Institutional Review Boards approved all study procedures.

MEASURES

Body Dissatisfaction

The Muscle Dysmorphic Disorder Inventory (MDDI; 11) is a 13-item scale covering three domains: drive for size (concerns about being less muscular or smaller than desired and motivation to increase size), appearance intolerance (negative body cognitions and associated anxious or avoidant behaviors), and functional impairment (preoccupation with exercise routines and avoidance of social situations because of appearance concerns). Respondents rate statements on a 1 (*never*) to 5 (*always*) scale. Total scores range from 13 to 65, with higher values indicating greater body dissatisfaction. Internal consistency reliability in the present sample was $\alpha = .76$.

Appearance Investment

The 12-item Appearance Orientation subscale of the Multidimensional Body-Self Relations Questionnaire (MBSRQ-AO) assesses the importance and investment given to appearance-related aspects in one's life (12). Responses are given on a five-point scale ranging from 1 (*Definitely Disagree*) to 5 (*Definitely Agree*). The score is a mean of the items, ranging from 1 to 5. Higher scores indicate greater investment in one's appearance. Internal consistency reliability in the present sample was $\alpha = .72$.

Condomless Anal Sex

Sexual transmission risk behavior was operationalized as a count of the number of condomless anal intercourse acts with HIV-negative or HIV-unknown status male partners in the past three months.

Body Mass Index (BMI)

Height was measured via a stadiometer and weight was recorded with an electronic scale. BMI was calculated using the formula: $(703 * \text{weight in pounds}) / (\text{height in inches} * \text{height in inches})$.

ANALYTIC PLAN

A generalized linear model with a Poisson distribution (to account for the count outcome of condomless anal sex) was tested, with the main effects of body dissatisfaction (focal predictor), appearance investment (focal moderator), and the body dissatisfaction by appearance investment interaction (variables were mean-centered prior to analysis) entered as independent variables. Unstandardized coefficients were reported.

RESULTS

Cisgender male participants ($N = 105$) had mean age of approximately 37 years ($SD = 7.58$), were predominantly White (73.3%), and had at least some college/college education (56.2%). The mean years since diagnosis of HIV was 13.15 years ($SD = 8.21$) and the mean number of years taking HIV medication was 10.18 years ($SD = 6.75$). The mean BMI was 27.96 ($SD = 4.67$). The mean appearance investment (MBSRQ-AO) and body dissatisfaction (MDDI) scores were 3.61 ($SD = 0.55$; range in sample: 2.33–4.75) and 31.35 ($SD = 8.17$; range in sample: 13.00 – 54.00), respectively. The mean number of condomless anal sex acts was 3.02 ($SD = 6.36$; range in sample: 0–48). The median CD4 count was 672.00 (Interquartile range: 394.00), and the majority of the sample had undetectable viral loads ($n = 95$; 92.2% of sample). The overall model, including the main effects and interaction of body dissatisfaction and appearance investment as predictors of number of condomless anal sex acts, was statistically significant ($\chi^2 [3] = 80.36, p < .001$). The main effects of body dissatisfaction ($b = .02$ [95% CI: $-.03, .06$], $p = .46$) and appearance investment ($b = -.07$ [95% CI: $-.58, .43$], $p = .78$) were not significant. However, the appearance investment by body dissatisfaction interaction ($b = .08$ [95% CI: $.01, .16$], $p = .033$) was significant.

Simple slope analyses were conducted to probe the significant interaction, setting values of appearance investment at ± 2 SD from the mean in order to capture the extreme ranges of appearance investment where the interaction was observed. Results from the simple slopes analysis suggested that body dissatisfaction was negatively associated with condomless anal sex at low levels of appearance investment ($b = -.07, p = .06$) and positively associated with condomless anal sex at high levels of appearance investment ($b = .11, p = .05$) (See Figure 1).

Thus, consistent with the stated hypothesis, when appearance investment was low, elevated body dissatisfaction was associated with fewer condomless anal sex acts; when appearance

investment was high, however, elevated body dissatisfaction was associated with more condomless anal sex acts. Sensitivity analyses were also conducted to examine whether including age and BMI as covariates would impact the results, however patterns of findings were identical across all the models.

DISCUSSION

The purpose of this study was to examine, in sexual minority men living with HIV, under what conditions body dissatisfaction was associated with condomless anal sex in the context of appearance investment. The mean body dissatisfaction scores were much higher in this sample of sexual minority men as compared to a sample of heterosexual males recruited from gyms described in the development study of the MDDI (31.35 [$SD = 8.17$]) in the present sample vs. 18.79 ($SD = 6.73$) [11]. The mean appearance investment scores were also higher as compared to those in a sample of gay men (HIV status not specified; 3.61 [$SD = 0.55$]) in the present sample vs. 3.10 ($SD = 0.80$) [2]).

The results suggested that the relationship between body dissatisfaction and condomless anal sex varied at different levels of appearance investment. Body dissatisfaction was associated with fewer condomless anal sex acts for men with low appearance investment (i.e., among men who place less importance on physical appearance). However, body dissatisfaction was associated with increased condomless anal sex acts for men with high appearance investment (i.e., among men who place high importance on physical appearance). Importantly, the interactions were observed at extreme (i.e., more than two SDs from the mean) appearance investment scores; thus the identified relationship was most salient for individuals who were highly invested or highly un-invested in their appearances. Moreover, this intersection between body dissatisfaction and high appearance investment may be a marker for clinical levels of body disturbance, akin to body dysmorphic disorder or eating disorders. Although the majority of participants (92.2%) had undetectable viral loads, which limits the risk of HIV transmission, condomless sex remains a risk factor for transmitting other STIs (13).

The results of the present study may inform future research as well as clinical practice and public health endeavors, such as screening and treatment, in HIV positive or at risk populations, by integrating appearance investment in efforts aimed at body dissatisfaction. Body dissatisfaction has been previously associated with sexual transmission risk behaviors, such as condomless anal sex (1), however appearance investment has not been examined as a factor that may change the relationship between body dissatisfaction and risk behavior. This omission in the research is problematic given the theoretical arguments for the enhanced meaning of body dissatisfaction in the context of appearance investment (10) and speaks to the importance of examining body dissatisfaction in the context of appearance investment (i.e., considering evaluative cognitions and behaviors within the context of values) in future research endeavors. Examining one specific component of body image in isolation (e.g., body dissatisfaction) in research may not accurately represent the relationships between body dissatisfaction and health behaviors.

Given the increased risk associated with high appearance investment, identifying individuals high in both body dissatisfaction and appearance investment may be a more focused

approach for interventions aimed at reducing condomless anal sex and may inform focused efforts for recruitment. Additionally, the findings of the present study have implications beyond HIV. In addition to the risk of HIV transmission for serodiscordant sexual partners, there is also a risk of STI transmission for both partners with increased condomless anal sex. Moreover, the concomitance of HIV and STIs can contribute to amplified adverse health impacts for individuals living with HIV (13). The results of the present study suggest the need to address both body dissatisfaction and appearance investment in screenings and treatments aimed at reducing sexual transmission risk behaviors in sexual minority men living with HIV. Although investment in one's appearance may not be an easy target for change, awareness of the heightened risk associated with the combination of high body dissatisfaction and high appearance investment can inform clinical and research endeavors. Interventionists may wish to incorporate combined psychological theoretical frameworks that include both cognitive-behavioral therapy and values-based approaches, such as acceptance and commitment therapy, to address not only maladaptive cognitions about one's appearance, but also the value that one affords one's appearance in relation to other valued domains of life (e.g., health) and the decision to engage in behaviors (in)consistent with those values. Additionally, interventions aimed at reducing sexual risk in HIV may consider an integrated approach that includes psychosocial problems associated with body image. One plausible reason that traditional behavioral interventions aimed at reducing HIV sexual transmission risk behaviors yield modest effect sizes may be the absence of psychosocial factors (e.g., body image) from such efforts (1). A meta-analysis of HIV interventions for people living with HIV identified that one characteristic associated with the significant reduction of HIV sexual transmission risk behaviors was the combination of psychosocial factors (e.g., coping) with sexual risk prevention (14).

The results of the present study should be interpreted in the context of relevant limitations. First, the study was cross-sectional and thus the current results cannot be interpreted as causal, or as a prediction regarding future sexual risk behavior. Future research using longitudinal designs can examine body image as a temporal predictor of subsequent sexual risk behaviors. Second, the outcome in the present study was self-reported number of instances of condomless anal sex. It is possible that responses were skewed due to social desirability or memory errors. Third, the sample was predominantly White and college educated, limiting generalizability of the findings. Additionally, setting values of appearance investment at ± 2 SD captured the most extreme segments of the sample, potentially isolating those with body image disturbance akin to clinical elevations and comparing them to those individuals with the absolute lowest levels of disturbance; thus the findings may only be relevant to individuals with clinical elevations.

In this study, appearance investment moderated the relationship between body dissatisfaction and condomless anal sex, underscoring the differential impact of body dissatisfaction on condomless anal sex in the context appearance investment. The present findings suggest that future research should include appearance investment as a moderator when body dissatisfaction is included a predictor for sexual health outcomes. For clinicians engaged in screening or interventions aimed to reduce sexual transmission risk behaviors, such as condomless anal sex, knowledge of the heightened risk for individuals high in body

dissatisfaction and appearance investment is important in developing appropriate screening materials and intervention aims.

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Figure 1.

Two-way interaction effects for simple Poisson regression analysis for body dissatisfaction (MDDI) and appearance investment (MBSRQ-AO) predicting condomless anal sex. *Note.* High and Low appearance investment values correspond to ± 2 SD from the centered mean corresponding to values of 2.51 and 4.71. High and low body dissatisfaction values correspond to ± 1 SD from the centered mean corresponding to values of 23.18 and 39.52.