



Full length article

Anabolic steroid use among gay and bisexual men living in Australia and New Zealand: Associations with demographics, body dissatisfaction, eating disorder psychopathology, and quality of life



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ABSTRACT

Background and aims: Gay and bisexual men may be at heightened risk for using anabolic androgenic steroids (AAS). Few studies, however, have examined AAS use among gay and bisexual men living in countries outside the United States. In addition, few studies have explored the potential associations of AAS use with body image concerns beyond muscularity, including height and genitals, or with eating disorder symptoms and quality of life. Thus, we examined the associations of AAS use, and of thoughts about using AAS, with body image, eating disorder symptoms, and quality of life among gay and bisexual men living in Australia and New Zealand.

Methods: A sample of 2733 gay and bisexual men completed an online survey promoted by paid nationwide advertisements to users of geosocial-networking smartphone applications.

Results: The prevalence of AAS use, and of thoughts about using AAS, were 5.2% (95% confidence interval [CI]: 4.4%, 6.1%) and 25.4% (95% CI: 23.8%, 27.1%), respectively. Multivariate analyses revealed that more frequent thoughts about using AAS were associated with being older, taller, and experiencing greater dissatisfaction with muscularity and height, less dissatisfaction with body fat, greater eating disorder symptoms, and lower subjective quality of life. Actual AAS users were more likely to be older, from a non-Australian/New Zealander cultural background, experiencing less dissatisfaction with body fat, and experiencing greater eating disorder symptoms.

Conclusions: Psychopathology related to body image and eating disorders are associated with AAS use among gay and bisexual men living in Australia and New Zealand.

1. Introduction

International research shows that gay and bisexual men report disproportionately higher rates of alcohol and illicit substance use compared to their heterosexual counterparts (McCabe et al., 2009; Ritter et al., 2012; Roxburgh et al., 2016; Saxton et al., 2017). As Roxburgh et al. (2016) note, this discrepancy may reflect the role that alcohol and illicit substance use has in gay and bisexual male communities (e.g., a higher level of acceptance and ‘normalisation’; to maximise pleasure in the context of sexual activity), or the elevated social stress in gay and bisexual communities due to stigmatisation from the broader community. These reasons, however, may not fully account for other types of substances such as anabolic androgenic steroids (AAS), for which evidence suggests gay and bisexual men also report

higher levels of use, and which are typically used for aesthetic-related purposes.

AAS are synthetic derivatives of testosterone with various medical uses, including the treatment of male hypogonadism and muscle wasting related to HIV/AIDS. They are also misused along with other and image and performance enhancing drugs (IPEDs) to improve physical appearance by increasing muscle size and muscle mass (Cohen et al., 2006; Hildebrandt et al., 2010; Ip et al., 2011). The global epidemiology of AAS use has been estimated at 3.3%, with the prevalence rate for men significantly higher than for women (Sagoe et al., 2014). Despite the positive physical benefits afforded by AAS use, there is now a good body of evidence linking AAS use with increased risk of death and a wide variety of harms and aberrations to cardiovascular, cognitive, endocrine, neurologic, and hepatic systems (Pope et al., 2014;

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Westlye et al., 2017). In addition, AAS use has been associated with a number of psychological harms, including eating disorder and muscularity-focused body image psychopathology (Cafri et al., 2008; Hitzeroth et al., 2001; Olivardia et al., 2000; Murray et al., 2016; Pope et al., 2005). Whether, and to what extent, AAS users' body image psychopathology extends beyond muscularity to other body domains salient to men, including, for example, height and genitals (Ridgeway and Tylka, 2005; Tiggemann et al., 2008), is presently unknown.

Gay and bisexual men have traditionally been thought to be at higher risk for AAS use than their heterosexual counterparts. Early studies from the United Kingdom and Australia showed high levels of AAS use among samples of gay and bisexual men recruited from gyms and fitness centres. Bolding et al. (1999) found that 13.5% of their sample of gay men were current AAS users, while their later study found that 15.2% had used AAS (Bolding et al., 2002). More recent research from the United States using a similar sampling methodology found that 10% of gay men reported AAS use (Ip et al., 2017). Data from adolescents are even more striking. In a representative sample of 17,250 U.S. high school students, Blashill and Safren (2014) revealed a lifetime AAS use prevalence of 21% among gay and bisexual adolescent boys compared to 4% among heterosexual boys. It has been suggested that sociocultural factors within the gay and bisexual community may generate intragroup pressure to obtain an idealized muscular figure (McCreary et al., 2007), and this pressure may lead to men engaging in AAS use. Other research has examined whether outgroup pressures may contribute to higher rates of AAS use among gay and bisexual men. For example, Parent and Bradstreet (2017) hypothesised that bullying based on being labelled gay or bisexual would be associated with an increased likelihood of AAS use among adolescent boys, but found this pattern only amongst heterosexual boys.

To date, there has been little research exploring AAS use within gay and bisexual men, and little research that explores use within a sample recruited from the broader community. Furthermore, there has been little research exploring AAS use outside the context of injecting or other blood-borne virus risk behaviours. As such, the aim of this study was to assess predictors of AAS use among a sample of community-based gay and bisexual men, focusing on associations with body image and eating disorder psychopathology.

2. Material and methods

2.1. Procedure

Paid advertisements that requested unpaid volunteers for “a study of body image and body change behaviours” were disseminated nationwide to users of a popular geo-social networking smartphone application (‘app’) that caters exclusively to gay and bisexual men. The advertisements appeared on four non-consecutive days in March and April 2017 to users located in Australia and New Zealand. Participants who clicked the app advertisement were directed to an online survey. Median survey completion time was 11 min. All participants provided informed consent and the study procedures were approved by an accredited ethics committee at the University of Melbourne.

2.2. Measures

2.2.1. Demographics

Participants were asked to provide their gender, age, cultural background, sexual orientation, and relationship status. Response options for the cultural background question were reproduced from the Australian Standard Classification of Cultural and Ethnic Groups (Australian Bureau of Statistics, 2016). Response options for sexual orientation comprised a 5-point Kinsey-like scale anchored at “exclusively gay” (1) and “exclusively heterosexual” (5) with “bisexual” (3) as the midpoint. Response options for relationship status included “single”, “in a casual relationship (e.g., “friends-with-benefits””, “in a

serious relationship”, “in a civil union, civil or domestic partnership”, and “married.” Free-text data-fields were available for participants to clarify their responses.

2.3. Anthropometrics

Self-reported height and weight data were collected. We anticipated that participants might differ in their preferred metric for reporting height data (i.e., feet-and-inches versus centimetres). Thus, we asked participants about their preference, and the height question was dynamically updated to collect data using their chosen metric. Most participants chose centimetres (79.3%). All height data were transformed into a single height variable measured in centimetres for the purposes of statistical analysis. All weight data were collected in kilograms.

2.4. Anabolic steroids

Two questions assessed AAS. Verbatim, the questions were “How frequently do you think about using anabolic steroids?” and “How frequently do you use anabolic steroids?” No timeframe was specified. The wording of the questions about AAS were based on recommendations made in previous research (Kanayama et al., 2007). First, we used the term “anabolic steroids” rather than the more nebulous term “steroids”, and second, we provided participants with the names of three types of AAS commonly used in Australia and New Zealand: testosterone enanthate, dianabol, and clenbuterol. Provision of this information was intended to reduce the potential impact of false positives by helping participants distinguish illicit anabolic (i.e., muscle-building) steroids from legal non-anabolic (i.e., non-muscle-building) steroids, including, for example, corticosteroids used to treat skin conditions. Response options were anchored at “never” (1) and “always” (6).

2.5. Body image

Dissatisfaction with four male body image subdomains were assessed, namely, muscularity, body fat, height, and genitals. Dissatisfaction with the first three subdomains were measured using the 15-item Male Body Attitudes Scale – Revised (MBAS-R; Ryan et al., 2011). The MBAS-R includes three subscales that assess dissatisfaction with muscularity (7 items), body fat (5 items), and height (3 items). Responses are given on a 5-point response scale anchored at “never” (1) and “always” (5). In previous studies, Cronbach's α of 0.88, 0.91, and 0.88, for the muscularity, body fat, and height subscales, respectively, were reported (Ryan et al., 2011). In our study, Cronbach's α were 0.88, 0.92, and 0.76, for the muscularity, body fat, and height subscales, respectively.

Further, we created a measure of genital dissatisfaction by adapting the item wording of the height dissatisfaction subscale. We chose to adapt the height dissatisfaction subscale because genitals and height are both mostly immutable. Unlike muscularity and body fat, the size and shape of one's genitals as well as one's height are near-exclusively genetically determined and cannot be altered through dieting or exercise. Verbatim, the item wordings for the adapted genital dissatisfaction subscale were “I wish I had a larger penis”, “I am satisfied with the size of my penis” (reverse scored), and “I feel ashamed of the size of my penis.” Response options for the genital dissatisfaction measure were identical to the MBAS-R. In our study, Cronbach's α was 0.87.

2.6. Eating disorder symptoms

Eating disorder symptoms were measured using the 12-item, single-factor Eating Disorders Examination Questionnaire Short (EDE-QS; Gideon et al., 2016). Scores on the EDE-QS distinguish individuals with and without clinical eating disorders and demonstrate sound test-retest

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