



Research Paper

Identifying a typology of men who use anabolic androgenic steroids (AAS)

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ABSTRACT

Background: Despite recognition that the Anabolic Androgenic Steroid (AAS) using population is diverse, empirical studies to develop theories to conceptualise this variance in use have been limited.

Methods: In this study, using cluster analysis and multinomial logistic regression, we identify typologies of people who use AAS and examine variations in motivations for AAS use across types in a sample of 611 men who use AAS.

Results: The cluster analysis identified four groups in the data with different risk profiles. These groups largely reflect the ideal types of people who use AAS proposed by Christiansen et al. (2016): Cluster 1 (*You Only Live Once (YOLO)* type, $n = 68$, 11.1%) were younger and motivated by fat loss; Cluster 2 (*Well-being* type, $n = 236$, 38.6%) were concerned with getting fit; Cluster 3 (*Athlete* type, $n = 155$, 25.4%) were motivated by muscle and strength gains; Cluster 4 (*Expert* type, $n = 152$, 24.9%) were focused on specific goals (i.e. not 'getting fit').

Conclusion: The results of this study demonstrate the need to make information about AAS accessible to the general population and to inform health service providers about variations in motivations and associated risk behaviours. Attention should also be given to ensuring existing harm minimisation services are equipped to disseminate information about safe intra-muscular injecting and ensuring needle disposal sites are accessible to the different types.

Introduction

The use of anabolic androgenic steroids (AAS) for muscular gain, performance and image enhancement is not new. The use of AAS for athletic purposes was first noted among the United States bodybuilding community in the 1950s and soon after appeared in other sports (Kanayama & Pope, 2017). Use of AAS was largely restricted to the elite sporting community until the 1980s when images of Arnold Schwarzenegger in Conan the Barbarian (following his mainstream media launch in the bodybuilding cult classic Pumping Iron) and Sylvester Stallone in Rambo and the Rocky series, among others, propelled the bodybuilder physique into mainstream idealised depictions of the male body. AAS use among recreational gym goers and non-athletes wanting to gain muscle and strength increased over the ensuing decades. Most recently, technological advances have resulted in new ways of gaining information and discussing the use of AAS and associated drugs. This may account, in some ways, for the diversity of motivations and patterns of AAS use observed in the contemporary AAS using population;

social media and online forums have provided new ways of sharing information about the use of substances and displaying their effects on the body. The growth of the internet and developments in global transportation combined with low cost manufacturing has increased availability, ease of access and affordability of these drugs (Brennan, Wells, & Van Hout, 2016; Evans-Brown, Kimergård, & McVeigh, 2009; Evans-Brown, McVeigh, Perkins, & Bellis, 2012).

While household surveys suggest lifetime prevalence of AAS use has probably remained relatively low and stable since the 1990s, at least in western world countries (Vinther & Christiansen, 2017), there is increasing public health concern about the associated harms, particularly among those injecting AAS. Data indicate a recent increase in the number of individuals accessing needle and syringe programs (NSPs) for steroid injection equipment in a number of countries including Australia (Jacka et al., 2017), the UK (McVeigh & Begley, 2016) and USA (Rich, Foisie et al., 1999; Rich, Dickinson, Feller, Pugatch, & Mylonakis, 1999). In the UK, the number of syringes dispensed per individual has also increased over the last decade (McVeigh & Begley,

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2016). While these data provide some evidence of a possible increase in steroid injection, further evidence is needed to establish if overall use of steroids has increased in the general population. They do, however, highlight the need to consider the capacity of current specialist services for people who inject drugs to address the needs of those using steroids and for the development of harm minimisation initiatives specifically targeted towards this group. In order to develop appropriate, targeted harm minimisation initiatives it is necessary to identify typical patterns of steroid use and their associated risk behaviours.

Given the heterogeneity evident in steroid use, attributable to the complexity of drug regimens, high levels of polypharmacy and variation in training goals and motivations, it is exceedingly difficult to describe the ‘typical’ person who uses or pattern of use. Indeed, evidence suggests the possibility of multiple subgroups of people who use steroids with different patterns of drug use and related risks (Evans, 1997; Hildebrandt, Langenbucher, Carr, & Sanjuan, 2007; Wilkinson, 1987). The use of typologies to identify distinct subgroups within drug using populations is not new. This approach has been applied within groups of people who use cocaine (Schönnesson et al., 2008); opioids (Bennett, Golub, & Elliott, 2017; Flórez et al., 2015) and alcohol (Peacock et al., 2016). These studies employ empirical classification techniques (e.g. cluster analysis; latent class analysis) to address issues associated with the multidimensionality of drug use by grouping individuals who use substances into ‘types’ based on core defining features that characterise their drug use and influence risk and required intervention. Empirical classification techniques quantitatively identify relatively homogenous subgroups within heterogeneous samples (Clatworthy, Buick, Hankins, Weinman, & Horne, 2005). These techniques can capture multiple variables and simultaneously consider individual characteristics (age, gender, ethnicity), patterns of drug use (frequency, dosage and administration), severity of use and effects (physical, social and psychological) and/or motivations for use (Bennett et al., 2017). They identify certain ‘sets’ of characteristics and behaviours that tend to co-occur and can be used to inform interventions that are tailored to the risk profile of different ‘types’ of people who use drugs. For example, latent class analysis was employed by Bennett and colleagues (Bennett et al., 2017) to identify common combinations of behaviours among people using opioids that were associated with greater risk of overdose. Similarly, Florez and colleagues (Flórez et al., 2015) applied cluster analysis to classify people seeking treatment who had recently started using opioids to better understand treatment service engagement and demands in Spain.

To date, only one study has applied this type of analysis to steroid use. Hildebrandt et al. (2007) employed latent class analysis, latent trait analysis and factor mixture models to examine patterns of steroid use in a sample of 400 men recruited through internet discussion forums. They found evidence to support the existence of a four-class factor mixture model; inter-group distinctions were related to combinations of substances and training goals (Hildebrandt et al., 2007). Each class was associated with a different level of risk. Class 1 (10.75%) was associated with the greatest level of risk. This group engaged in high levels of polypharmacy and used a range of steroids in addition to various licit and illicit IPEDs. Class 2 (16.75%) were primarily motivated by fat burning and had the greatest probability of using illicit thermogenics and stanozolol (a steroid used to maintain leanness). Class 3 (20.75%) was primarily concerned with muscle building and tended to use steroids associated with adding muscle mass. Class 4 (51.75%) demonstrated the lowest level of risk and was referred to as the normative group. This was the largest group and was characterised by the use of common forms of steroids (testosterone, methandrostenolone) along with legal, over the counter supplements associated with fat burning (Hildebrandt et al., 2007).

Other efforts to distinguish distinct subpopulations of people who use steroids have adopted a qualitative approach and categorised individuals who use steroids according to primary motivation for use (Christiansen, Vinther, & Liokaftos, 2016; Hakansson, Mickelsson,

Wallin, & Berglund, 2012; Hanley Santos & Coomber, 2017; Kanayama & Pope, 2012). For example, research conducted in the United Kingdom during the 1990s (Korkia & Stimson, 1993; Lenehan, Bellis, & McVeigh, 1996) identified categories of people who use IPEDs comprising ‘competitive sports participants’, ‘occupational users’ and ‘aesthetic users’ (and a potential fourth group of ‘young or novice user’) (Dawson, 2001). This work provided a framework based on motivations for anabolic steroid use in the United Kingdom at the time. However, these broad categories of use were unable to capture the complexities of individual ‘drivers’ for using AAS (Evans-Brown & McVeigh, 2008) or specific risk profiles of each use category.

More recently, Christiansen et al. (2016) proposed a typology of four ideal types of people who use AAS: the *Expert* type; the *Athlete* type; the *Well-being* type and the *YOLO* type. Drawing on international literature and indepth interview data with 37 men, the authors developed a typology that conceptualises variations in AAS use along two dimensions; risk and effectiveness. The resulting typology proposes four ideal ‘types’ of people who use AAS, each characterised by a particular set of traits and patterns of engagement with AAS.

The *expert* type is described as taking controlled risks, they have high levels of knowledge about AAS and associated drugs and are often a source of information and advice for other people using AAS. The *athlete* type primarily use AAS for performance enhancement purposes and are engaged in competitive bodybuilding or sports. The *wellbeing* type are concerned with looking and feeling good and typically their use of AAS involves low levels of risk (e.g. low/moderate dosages for long term wellbeing). The final group is the *YOLO* type. YOLO is an acronym for ‘You Only Live Once’ and this group typifies people who use AAS who engage with AAS in a ‘haphazard’ manner and whose use tends to be largely unplanned and driven by the desire to achieve quick improvements in their physique (Christiansen et al., 2016).

Some attention has also been given to examining patterns of IPED use and risk behaviours among subpopulations identified as having a greater propensity to engage in steroid use including young men, adolescents (Dunn & White, 2011; Mattila, Parkkari, Laakso, Pihlajamäki, & Rimpelä, 2010; Thorlindsson & Halldorsson, 2010), recreational athletes and gym attendees (Baker, Graham, & Davies, 2006; Cohen, Collins, Darke, & Gwartney, 2007; Evans, 1997) and elite athletes and bodybuilders (de Siqueira Nogueira, de Freitas Brito, de Oliveira, Vieira, & Beniz Gouveia, 2014; Lindqvist et al., 2013; Parkinson & Evans, 2006; Trenton & Currier, 2005). Among a sample of adolescents using steroids, Miller and colleagues found inter-group variation in risk taking delineated by gender and athleticism (Miller, Barnes, Sabo, Melnick, & Farrell, 2002). Other studies have noted that patterns of steroid use displayed by those aged under 24 years, are associated with higher levels of risks than those exhibited by older people who use steroids (Chandler & McVeigh, 2014; Cohen et al., 2007).

Understanding different types of AAS use is important for identifying risks and developing targeted policies and interventions. In this study we employ cluster analysis to quantitatively assess typologies of people who use AAS in a sample of 611 men using AAS predominantly recruited through needle and syringe programs and gyms in England and Wales. We then examine variations in motivations for AAS use across different typologies. The aim of this research is twofold: to establish empirical support for the existence of different types of people who use AAS and to better understand how motivations for use are associated with different patterns of use and potential for risk. Identification of differing patterns of AAS use by particular subpopulations and how these patterns are related to factors motivating use is important for the development of effective, targeted responses to AAS use.

Methods

This study draws on data from the 2015 National IPED Info Survey, an annual survey exploring the use of image and performance

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