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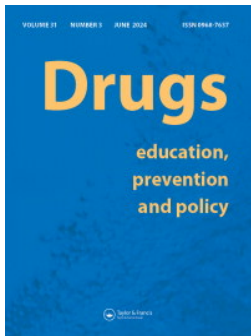
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"I would never go to the doctor and speak about steroids": Anabolic androgenic steroids, stigma and harm

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ABSTRACT

Background: This investigation explores the concept of stigma related to people who use anabolic-androgenic steroids (PWU-AAS) when accessing healthcare services. Anabolic-androgenic steroids (AAS) are used by subsections of the population and have been associated with various health harms. Responding to associated health risks, within the UK, harm reduction and healthcare service provisions have been established. Although these services provide essential support, various barriers, including stigma, exist which can limit engagement with them.

Method: Ten qualitative interviews were conducted with PWU-AAS and have accessed healthcare and harm reduction services related to their use of AAS.

Results: PWU-AAS anticipated stigma: (1) when accessing needle and syringe programs; (2) when seeking support from healthcare professionals; and (3) when experiencing specific adverse health implications. Stigma meant PWU-AAS were less likely to engage with healthcare professionals, attend harm reduction services, and were reluctant to disclose specific medical conditions.

Conclusions: Interventions and messaging tackling AAS-related stigma ought to be considered for public-facing health and harm reduction services, to better support the needs and requirements of PWU-AAS.

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1. Introduction

Stigma, according to Link and Phelan (2001) ought to be understood as, 'the co-occurrence of its components—labelling, stereotyping, separation, status loss, and discrimination—and further indicate that for stigmatisation to occur, power must be exercised.' Stigma is complex, intertwined and often personal. It can be experienced and perceived, reinforced via public perceptions. Contemporary views see stigma as a social process influenced by context, power dynamics, social, economic, and political factors (Stangl et al., 2019). It perpetuates social inequities by reinforcing divisions based on societal values (Muncan et al., 2020). Stigma has been associated with increased feelings of shame, anxiety, and apprehension (Link & Phelan, 2001, 2014). In this way stigma functions as a form of symbolic power (Bourdieu, 1989), enabling individuals and social groups to gain social power through the stigmatisation of others, more commonly understood as 'structural stigma' (Hatzenbuehler, 2016; Hatzenbuehler & Link, 2014). Structural stigma pertains to societal conditions, cultural norms, and institutional policies that restrict opportunities, resources, and wellbeing for stigmatised individuals (Hatzenbuehler, 2016).

Associated with opioid use disorder, Cheetham et al. (2022) outlines stigma does not exist in isolation, but also intersects with sociostructural factors such as race, gender, ethnicity, age, sexual orientation, and socioeconomic status. For people seeking

healthcare and treatment, stigma can adversely affect the decisions of individuals and their willingness to engage with various services (Ahern et al., 2007; Muncan et al., 2020; Treloar et al., 2016). For people who seek treatment for alcohol and drug problems, they face disproportional marginalisation within healthcare and treatment, which subsequently determines individuals' willingness to engage with such services (Ahern et al., 2007; Muncan et al., 2020; Room, 2005; Treloar et al., 2016), something that has implications for people who use drugs (PWUD), with stigma increasing the potential for drug harms to be potentiated (Latkin et al., 2019). Stigmas potential to augment drug harms spans various illicit substance categories and, thus, can affect different consumers in several ways. One less considered drug 'category' includes image and performance enhancing drugs (IPEDs), such as anabolic androgenic steroids (AAS). Recently, McVeigh and Bates (2022) outlined how stigma associated with AAS has implications when consumer health and risk reduction are considered, however, relatively little is known about AAS-related stigma.

1.1. Anabolic androgenic steroids and stigma

AAS are a commonly used sub-category of IPEDs (Sagoe & Pallesen, 2018) that are known to be used non-medically for performance-enhancement (Santos & Coomber, 2017). These

non-therapeutic uses of AAS have since grown from body-building communities to the general population, with people aiming to improve their appearance by increasing muscularity and reducing body fat (Christiansen, 2020; Santos & Coomber, 2017) as well as enhancing wellbeing (Dunn et al., 2021). Though the use of AAS were once considered exclusively as a Western issue (Christiansen, 2020; Pope & Kanayama, 2012), typically for men between the ages 19 – 35 years old (Christiansen, 2020), a growing body of evidence suggests AAS have become more of a global problem, with use said to be increasing among older men (Hearne et al., 2024) and amongst female consumers (Havnes et al., 2021; Piatkowski et al., 2024). The true scale of their use is debated; however, estimates indicate a global lifetime prevalence rate of 3.3%, (Sagoe et al., 2014), that between 2.9 and 4 million Americans had used AAS (Pope et al., 2014) and in the UK approximately 447,000 men had recently used AAS (Hope et al., 2023).

In addition to the numbers of people who use AAS (PWU-AAS), there is a significant public health concern regarding the various harms that are associated with this form of drug use (see McVeigh & Begley, 2017; Mullen et al., 2020). Responding to some of the common health risks associated with AAS (e.g. cardiovascular issues, liver toxicity) (Albano et al., 2021), drug services in the UK have adopted a harm reduction approach (Bates et al., 2019; 2021; Henning & Andreasson 2022), including needle and syringe programs (NSP). While service availability and delivery are highly variable (Kimergard & McVeigh, 2014), some guidelines exist in relation to needle and syringe provision (NICE, 2014) and clinical management of dependence (Department of Health, 2017), but there is little evidence.

Despite the legality of AAS use in the United Kingdom, PWU-AAS perceive there is considerable stigma towards them (McVeigh & Bates, 2022), something that is often associated with an experienced or expected poor experience of engagement with healthcare services (Zahnow et al., 2017). Indeed, it is the anticipation of stigma and the effect which this has on health harms, which this study seeks to explore and address, given literature is scarce in this area.

Unfavourable stereotypes within the general population (Richardson & Antonopoulos, 2019) have been fuelled by the media who demonise these drugs and the PWU-AAS (James & Wynn, 2022; Mulrooney et al., 2019; Piatkowski et al., 2024), contributing to a 'narrative of harm' (Mulrooney et al., 2019), drawing upon aggression, narcissism, and 'fragile' masculinities (James & Wynn, 2022; Piatkowski et al., 2023). Moreover, Griffiths et al. (2016) draws upon the media's portrayal of AAS use within the context of sport, doping and cheating, something that underscores and shapes the way people view and contextualise this type of drug use. The use of negatively loaded language essentially contributes towards the labelling of this behaviour and underpins perceptions and beliefs for the individual and within wider society. Harvey et al. (2020) outline that PWU-AAS fear being classified within and alongside other types of drug use, reflective of wider beliefs within society, where people are sometimes referred to as 'junkies' and which has the potential to shape and influence healthcare seeking and treatment within AAS communities.

Issues of stigma combined with a lack of confidence in health service practitioners' knowledge and understanding of AAS and associated drugs has resulted in barriers to accessing appropriate and necessary support from medical professionals (McVeigh & Bates, 2022). Though social stigma can deter people from initiating AAS (Maycock & Howat, 2005), it can also negatively impact the willingness of PWU-AAS to engage with healthcare professionals (McVeigh & Bates, 2022), with some harms exacerbated due to delays in treatment seeking (Amaral et al., 2022; Rops et al., 2022). Moreover, Yu et al. (2015) outline how healthcare providers in the USA may exhibit stigma towards PWU-AAS, looking at this population differently when compared with healthy people. Rops et al. (2022) note that healthcare providers lack knowledge and experience when AAS are considered, something that potentially feeds AAS-related stigma. Related to the stigmatisation of PWUD, some PWU-AAS drive and contribute to such perceptions of structural stigma. These perceptions not only harm PWUD, but they also give birth to the notion of 'self-stigma'. It is against this backdrop that we aim to explore the experiences of PWU-AAS, their experiences and perceptions associated with stigma (specifically anticipated stigma), and its impact on treatment seeking, engagement, and harm reduction.

2. Methods

2.1. Participants

In total ($n=10$) people took part in this investigation. All ten people identified as male and had used AAS and other IPEDs. These people lived in the UK and were aged between 28 - 38 years at the time of the investigation. Most people ($n=8$) included within the study were from Wales, whereas the remaining ($n=2$) people were from England. Age of drug onset was between 19 - 29 years. At the time of data collection, less than half ($n=4$) of the participants were 'on-cycle' (currently using AAS).

2.2. Data collection

The primary source of data collection was conducted through a purposive sampling method. This sampling was facilitated by the fact that the first author had previously worked and trained in various gyms. Drawing upon old and existing contacts, the first author shared the details of this specific research investigation with these individuals. This occurred informally when training in the gym, where discussions spanned training techniques, diet, and supplementation. Leveraging cultural knowledge and insight, the researcher was able to engage and share the study details with these people after initial rapport had been built. As the investigation progressed, a snowball sample method technique was utilised, and is commonplace in qualitative research among PWU-AAS (Piatkowski et al., 2023). As the study focused on PWU-AAS, intensive data collection was required. This meant the first author conducted semi-structured interviews which included open-ended questions, allowing for flexibility the

adaptability during the interview process, something that enabled the researcher to follow and pursue particularly interesting points of discussion. Interview guides were constructed after a selective literature review had been conducted. The review of literature focused on recent studies published between 2009 – 2020 and utilised the key words: 'harm reduction' and 'needle and syringe programs'. The words: 'anabolic androgenic steroids' and 'image and performance enhancing drugs' and 'stigma', were added to bring greater specificity to the search. Some key studies included: Bates et al. (2019); McVeigh et al. (2016); and Kimergård and McVeigh (2014). Important papers were included if they focused exclusively on AAS-related stigma or mentioned stigma at some point within the text. Interviews examined the perceptions of PWU-AAS, their beliefs and experiences of harm reduction, treatment seeking and engagement with healthcare services, specifically focusing on stigma (experienced and anticipated). Interviews questions included but were not limited to: Have you ever spoken to a healthcare professional about your AAS use? Did you ever experience any barriers when doing so? How did these barriers make you feel? Interviews were conducted face-to-face, over the phone, or on Skype. Interviews were recorded on voice-tape devices, lasted between 28 and 78 minutes and were transcribed manually by the first author and were saved separately on Microsoft Word files.

2.3. Data analysis

Data analysis and collection occurred simultaneously. This allowed the first author, as he collected the data, to recognise and reflect on the complexities of these data, and subsequently interrogate their deeper meaning. The positionality of the first author is important, having embedded knowledge of the gym, IPEDs and harm reduction. This shaped his understanding of the world and specific phenomena therewithin and impacts how researchers then attempt to make sense of it. Acknowledging this point more broadly, the research team as whole engaged in a process of research reflexivity (Fook, 1999), whereby time was given to reflect upon assumptions and actions that might subsequently influence the situation or understanding of it. The software package NVivo (QSR, v12) was used to code data and identify common themes, using stigma as analytical frame.

To analyse the data through the lens of stigma, we drew upon established theoretical frameworks, particularly those articulated by Goffman (1963). Goffman's perspective defines stigma as a social construct that is enacted through social interactions, where behaviours and attributes are deemed acceptable and expected based on societal norms (Merton, 1968). This normative foundation emphasises how differences solidified in stigma arise from these social norms, which we extend specifically to AAS consumption. Stigma is not only shaped through individual interactions but also through broader political, cultural, and social contexts that influence individual expectations, affect, values, and motivations (Pescosolido et al., 2008). These contexts are further structured by organisations and institutions (e.g. healthcare

providers) that create and reinforce norms, facilitating the marking and sharing of notions of difference. In exploring these notions, our analysis incorporated examination of how relationships and structures influence perceptions and interactions. As a result, common and reoccurring themes were identified (e.g. needle and syringe programs, medical professionals, treatment) and were related to perceptions, beliefs and behaviours associated to AAS-related stigma and willingness to engage with harm reduction services (Table 1).

2.4. Ethical approval

Ethical approval was granted by the University Ethics Committee (number: 2019/021). Informed consent was granted by all the participants prior to their participation in this study. This was achieved through the provision of information sheets which clearly outlined the study details, its aims, and objectives. Prior to their participation in this study, participants' anonymity was assured. To achieve this, interviews were conducted online or in a location whereby participants could conceal their identity. All data was stored in secure locations, with all identifiable characteristics removed. Participants were aware that they could withdraw from the investigation at any point and supporting contacts were provided to the participants should they need to access them post-interview.

3. Results

3.1. Anticipated stigma associated with needle and syringe programs

To combat harms (e.g. HIV and Hepatitis C) associated with the use of injecting drugs, NSP are seen as a vital tool to protect and preserve the health of PWUD (Allen et al., 2019; Bartholomew et al., 2020). While the importance of such interventions is also recognized for AAS communities (Kimergård & McVeigh, 2014), little research has explored the experiences and perceptions of PWU-AAS when accessing NSP. Thus, within the interviews, participants were asked about their engagement with NSP, whether they had used such services and if so, their experiences of these facilities. Participant (J) stated:

'The drug store that you would use would typically be in the back of a supermarket, you would be in line with average shoppers picking up any forms of medication. You might be next to someone asking for birth control and then you are asking for 75 needles and 50 syringes. You might be a little self-conscious about who is around you, next to you or behind you in the line. You pick up on the pharmacist's face, you might think that they are trying to read you, trying to work out why you are ordering what you are ordering. Although it is legal, I think because it is stigmatised, it can get tricky and uncomfortable at times' (J).

Participant (J) expresses apprehension when collecting injecting equipment within a standard supermarket surrounded by members of the public. Unable to conceal his identity, this individual anticipated stigma and perceived that people would judge him for collecting needles and syringes, something that stems (in part) from societal perceptions associated with the use of injecting drugs (Cama et al., 2016;

Table 1. Participant characteristics

P	Age	Use Age	Substance	Inject/oral	No. of cycles
1	29	19	Testosterone [enanthate] HCG [Human Chorionic Gonadotropin] HGH [Human Growth Hormone] Dianabol [Metandienone]	Both - orals first	4
2	28	19	Pro-Hormone [SD-matrix] Dianabol [Metandienone]	Oral	2
3	29	22	Testosterone (propionate, cypionate, enanthate) Masteron [Drostanolone] Equipoise [Boldenone] Anavar [Oxandrolone] Winstrol [Stanozolol] Dianabol [Metandienone] T-3 [Triiodothyronine] Aromatase inhibitor HCG [Human Chorionic Gonadotropin] Nolvadex [Tamoxifen] Clomid [Clomifene]	Both - injectables first	10 +
4	31	19	Pro-hormone [SD-matrix] Anavar [Oxandrolone]	Oral	3
5	29	20	Testosterone [propionate]	Injectable	2
6	28	25	Dianabol [Metandienone] Nolvadex [Tamoxifen]	Oral	2
7	29	20	Testosterone [propionate, cypionate, enanthate] Anavar [Oxandrolone] Clenbutrol Pro-Hormones T3 [triiodothyronine] Nolvadex [Tamoxifen]	Both - Oral first	10 +
8	28	20	Anavar, [Oxandrolone] Winstrol [Stanozolol]	Oral	2
9	29	28	Testosterone [enanthate]	Injectable	1
10	38	29	Testosterone [propionate, cypionate, enanthate] HGH [Human Chorionic Gonadotropin] Trenbolone [19-nortestosterone] Dianabol [Metandienone] Winstrol [Stanozolol]	Both - Injectables first	4

Lloyd, 2013). As Fomiatti et al. (2020) have noted, men who inject IPEDs are vigilant about anything which would compromise the 'purity and security' of their bodies. These data extend on this 'purity' beyond a physical setting, demonstrating these perceptions of 'purity' appear deeply internalised and beyond the physical realm, whereby a lack of privacy underscores and acutely reinforces certain destructive perceptions. Indeed, for this individual, a lack of privacy is an issue when accessing these services and is something recognised as a potential barrier within successful intervention delivery. NICE (2014) guidance asserts that staff ought to be educated so that they are competent to deliver the services they offer. At a minimum, this should include awareness for the need of discretion, the need to respect privacy and confidentiality for PWUD. With PWU-AAS unable to conceal their identity and behaviors within specific locations used as NSP, there is undeniable apprehension to go through this level of support and treatment, with fear of judgement evident and impacting harm reduction services. Below, participant (A) outlines his reluctance to engage with NSP:

'People who use needle exchange are people like crackheads and heroin addicts, I don't feel like I'm one of those. I don't want to be associated with one of those, I just rather do it myself. You don't want to be putting yourself in the same bracket as them, its not something you are proud of. Like the first time you use, you think what have I become' (P.A).

A similar response is echoed by another participant:

'When I access those facilities, I feel like I'm a heroin addict. When you go there you do get people going there for steroids, but the majority is the actual drug addicts so it's not very pleasant place' (P.C).

These responses reflect current literature (see Bates et al., 2019; Fomiatti et al., 2019; Harvey et al., 2020; Hope et al., 2020; Piatkowski et al., 2024; Simmonds & Coomber, 2009), whereby societal perceptions are underpinned by cultural understandings of other illicit injecting drugs (Cornford et al., 2014), which reinforces anticipated stigma for PWU-AAS. These perceptions are specific to the individual and are a notable barrier for the engagement of PWU-AAS related to NSP (Harvey et al., 2020), with a small number of participants making a moral distinction between different types of drugs (AAS and heroin) and their intended use. As some participants saw it, AAS are morally permissible, whereas drugs such as heroin are considered morally impermissible, labelling these people 'crackheads' and 'addicts'. By drawing this distinction, some individuals articulate that they do not want to be categorized alongside other PWUD (e.g. PWU-heroin), seeing these people as failures, dirty and weak. In doing so, PWU-AAS stigmatise other PWUD and fear this stigma returning upon themselves - something touted as '*the stigmatized stigmatizing*' (McVeigh & Bates, 2022; Simmonds & Coomber, 2009). Though much research has focused on stigma within injecting drug communities (Gibson &

Hutton, 2021; Goodyear et al., 2021; Muncan et al., 2020), far less research is evident within communities of PWU-AAS.

The complex and intertwined nature of stigma, whether it is experienced, anticipated, perceived and to which degree (subtle versus severe), appears to impinge on the extent individuals demonstrate willingness to engage with healthcare and harm reduction services. For participant (A), anticipated stigma meant he withheld from accessing NSP altogether: *'No, I order everything online'* (PA). This is a lost instance of face-to-face service and is detrimental for harm reduction efforts as it is likely individuals will miss out on important information provided through service provision. McVeigh and Bates (2022) note that NSP provide a location whereby healthcare professionals encounter PWU-AAS, the strength of which ought not be overlooked, especially when we consider that PWU-AAS are notoriously hard to reach due to the nature of these behaviors and the way these people and their behaviors have been framed by and within the media (see Mulrooney et al., 2019).

For participant (C), who decided to access NSP, the anticipated stigma stemming from public perceptions and healthcare professionals determined how he engaged with these services, *'I go every 3-4 months and stock up on needles. They give me boxes of needles and syringes, whatever I ask for and I just do not see them until I have to go back again' [...]* *'I just go in get my stuff and get out, maximum 2 minutes'* (PC). Feelings of discomfort and shame determined how this individual engaged with these healthcare services, essentially limiting his willingness to access and communicate with trained professionals. This comes as a detriment to these services, with PWU-AAS perhaps turning to uninformed and dubious sources of information and advice rather than enduring feelings of trepidation which were sparked when accessing such facilities. A final response outlines further reluctance to engage with NSP:

'There is a sense of guilt behind what I am doing. Going to the gym and spending hours trying to perfect my body is selfish when you break it down. If I were to go these places [needle and syringe programs], I would feel like I am being held accountable and exposing myself to that. It is not something I am comfortable doing and would rather keep away from if [needle and syringe programs] I am being totally honest' (B).

From this response we can reasonably assume that shame stems from the negative connotations associated with IPEDs and vanity. Christiansen (2015) previously discussed body image concerns to be associated with vanity and narcissism and these connotations appear to drive (in-part) feelings of guilt in participant (B). This underscores the importance of the language we draw upon and its potential to reinforce and create specific and sometimes destructive narratives for PWU-AAS, which, in the case of participant (B), meant he withheld from accessing NSP due to the anticipated stigma. Moreover, Henning and Andreasson (2022) highlight that muscular bodies have been stigmatised, something that partly stems from legal and anti-doping policies. These approaches associate AAS with criminality, violence and cheating, something that reinforces societal perceptions of deviancy when muscular

bodies and bodybuilding communities are considered. Indeed, increasing muscularity has been noted within female populations, driving societal perceptions (Musolino et al., 2022), that perhaps indicate gendered differences when stigma and shame is considered.

3.2. Anticipated stigma from medical professionals

Participants had a general reluctance to engage with medical professionals such as general practitioners (GPs). Reluctance appeared to stem from: (i) anticipated stigma and associated shame, (ii) a perceived lack of knowledge/understanding within the medical community; and (iii) the perception that medical professionals would act to dissuade AAS use. Participant (Q) outlines:

'The way its stigmatised, the stereotype you get, I would not want that label. I would expect a doctor to tell me not to take it, this is what happens to your body, that is why I did not ask. It is not what I wanted to hear, so I just did not ask. So really, yeh, I got all the information from unofficial sources' (P.Q)

Anticipated stigma from the medical community meant participant (Q) withheld from opening dialogue with a medical professional regarding his use of AAS, something that parallels existing literature (Dunn et al., 2023; Griffiths et al., 2016; Hope et al., 2020; Simmonds & Coomber, 2009). Due to the fear of stigmatisation, participant (Q) sought all his AAS-related information from dubious sources (e.g. online forums and the wider web, where essentially anyone can provide information and advice), rather than engaging with trained healthcare providers. This is reflective of research on internet forums (Andreasson & Henning, 2023) and more recently, social media platforms, including YouTube (see Cox & Paoli, 2023), which have been utilized for this information sharing purpose. Although important information is disseminated over these platforms, misinformation is rife within online AAS communities (Hilkens et al., 2021), something that potentially contributes to additional harm. Nonetheless, the people providing such information generally have lived experience (Piatkowski & Cox, 2024) and do not cast judgment. Thus, it is likely PWU-AAS will continue to be drawn to these types of information sources and overlook healthcare providers. This highlights the gap between PWU-AAS and those providing healthcare and support within medical settings. Drawing upon further unwillingness to engage with healthcare professionals, participant (Z) states:

'I do not know, I am quite shy talking to doctors about that sort of thing, it could be an option but I think they lack understanding. I would not want a GP telling me what I do not want to hear. I do not want to be told that I should not use them [anabolic steroids]' (P.Z).

Anticipated stigma and the perception that doctors would act to dissuade AAS use was another notable barrier for some PWU-AAS, limiting their successful engagement with healthcare services. This inclination is rooted in the fervent determination of PWU-AAS to persist in substance use, despite the

health risks, considering drug use indispensable for achieving their goals (Piatkowski et al., 2023). For participants who were concerned with stigma from healthcare professionals, stigma appears largely self-imposed, something that is anticipated and internally constructed rather than experienced. Of course, this is not to say PWU-AAS do not experience stigma from healthcare professionals (see Yu et al., 2015), but rather it underpins the notion that stigma can present itself in different ways. This aspect compounds conventional stigma considerations as it further significantly hinders potential harm reduction efforts. It also likely underscores a lack of confidence among PWU-AAS in the knowledge and understanding of medical professionals concerning these substances (Piatkowski et al., 2022), reflecting a broader skepticism toward conventional medical expertise in this domain (Chandler & McVeigh, 2014; Dunn et al., 2023; Hope et al., 2020; Pope et al., 2004; Zahnow et al., 2017). Perceived lack of understanding was enough to deter some PWU-AAS from seeking medical assistance before, during and after AAS use. Participant (C) outlines:

'Also, the understanding of a GP is extremely limited in that area. Some GP's advise people to stop using. Some GP's will not know what to check, they might not know the appropriate health markers to check. There is lack of understanding from health professionals' (C).

PWU-AAS perceived healthcare professionals to lack understanding and knowledge related to AAS, something that seemingly drove a wedge between people within each of these two communities, underscoring an 'us versus them' mentality. A lack of understanding on both sides (PWU-AAS and healthcare providers) appears to drive and underpin stigma and ought to be considered a detriment to harm reduction and healthcare approaches. A similar response is echoed below:

The doctors' surgery that I go to is typically full of female doctors who do not understand male hormones. I do not think male doctors know enough and I sure think women know less (R).

Perceptions that the medical community lacked knowledge was enough to deter a small number of participants from engaging with healthcare services altogether. These perceptions appear well founded considering an investigation of (n=134) UK-based doctors which revealed most doctors lacked understanding and had received no formal training related to AAS (Hill & Waring, 2019). While some resources exist to educate GPs (van de Ven et al., 2020), the responses documented within the current study reaffirm wider perceptions that part of the medical community lack the necessary knowledge to support PWU-AAS. This is perhaps why the profession of 'anabolic coaches' (see Gibbs et al., 2022; Piatkowski et al., 2024a) have emerged within the 'private sector' landscape of harm reduction (Turnock et al., 2023), responding to perceived and experienced gaps in healthcare services and treatment. Nevertheless, participant (C) outlined a willingness to engage with healthcare professionals if the appropriate support was available, *'but if there was a centre that you could go for all this advice and support then that would be useful'*. Driven towards the continuation of AAS use, this insight

demonstrates that interventions aligned with autonomy and seeking to reduce harm would be welcomed by some within this community.

In an additional response, participant (S) draws upon concerns related to stigma and potential future discrimination within healthcare seeking, *'I would never go to the doctor and speak about steroids because I would not want that held against me'*. Fear of future discrimination within medical settings meant this individual withheld from talking to a trained healthcare professional about his use of AAS. Again, while this response demonstrates anticipated stigma rather than experienced stigma from healthcare providers, it is clear to see how stigma acts to dissuade PWU-AAS from opening dialogue with professionals due to the fear of possible repercussions. This essentially underpins a reluctance amongst PWU-AAS from engaging with healthcare professionals and parallels research within injecting drug communities (Muncan et al., 2020). A similar point was echoed by participant (C), *'You can use a GP [general practitioner], but I do not because I would rather keep it off my medical records'*. The potential for healthcare discrimination to surface within future treatment seeking was enough to deter some individuals from accessing necessary support, care, and treatment related to their use of AAS. Instead, individuals turned to online sources to gather information, which is problematic, especially considering the various types of information found online (Cox & Paoli, 2023) and the fact that some information sources might also supply AAS and other IPEDs (Paoli & Cox, 2024; Piatkowski et al., 2024b), something that might contribute to further and additional harms.

Participant (S) goes on to draw upon an aspect of rurality where he felt he was unable to conceal his behaviour in a 'small village' where his doctor lived, *'Also, I live in a small village where my doctor also lives. I walk past my doctor on the street when I go shopping for groceries and I would not want him looking at me thinking I know what you do'*. This substantiates the work of Turnock and Mulrooney (2023) who assert that rural living contributes towards harm and limits successful harm reduction for PWU-AAS. For participant (S), anticipated shame and stigma is clear, appears to flourish with this type of environment, and meant he withheld from opening discussions with trained healthcare professionals. More broadly, this response demonstrates a certain type of reflection whereby PWU-AAS consider the various issues that might arise due to the behaviours they engage in. This response, therefore, uncovers shades of anticipated stigma which is largely self-inflicted and constructed by those within a given situation. It is this internal construction of *what might be* that underscores the complexity of reality for some PWU-AAS. While these feelings are anticipated and internalised, they highlight a perceived deviancy within AAS communities that recognises atypical norms and values that differ from that of wider society. This acute recognition of deviancy underscores personal opinions which are shared amongst AAS communities, reinforcing wider perceptions and beliefs.

3.3. Health harms

The final theme to emerge through the interviews was health harms, treatment seeking and anticipated stigma associated

with specific AAS-related harms. While some harms present themselves through physiological and psychological dimensions (Kimergård & McVeigh, 2014), it was clear during the interviews that specific harms were associated and attracted elevated feelings of anticipated stigma. Participant (J) outlines:

'I did not want to wear tight clothing, T-shirts and that, because that made the lumps more noticeable. I would wear oversized tops and double up on shirts. I did not want anyone to notice, not even my closet friends or family. I avoided certain events because I did not want to be found out, I did not want people to know. It affected who I was and it contributed to the everyday decisions I made. It was always in the back of my mind. I would not go to the beach with my friends because I did not want to take my shirt off and I did not want the questions why I was not taking it off. It just was easier not to go and avoid the humiliation.'

Gynecomastia is the formation of male breast tissue caused by an imbalance in hormones and is cited widely within the academic literature as a common, cosmetic, and transient adverse AAS-induced harm (Bonnecaze et al., 2021; Mullen et al., 2020; Vojvodic et al., 2019). Although reversible if identified and treated early through selective estrogen receptor modulators or aromatase inhibitors (Hanavadi et al., 2006; Johnson & Murad, 2009; Rahnema et al., 2014), more permanent tissue accrual will require individuals to have surgery (El wakeel et al., 2021; Gikas & Mokbel, 2007; Johnson & Murad, 2009; Vojvodic et al., 2019).

Feelings of shame are associated with the condition and this appears to stem from body image dissatisfaction and anticipated humiliation. Wassersug and Oliffe (2009) specifically investigates the psychological distress associated with Gynecomastia and claims individuals with the condition are sometimes referred to as having 'moobs' (male boobs) and 'bitch tits' by some of the general population. These terms are derogatory, reaffirm deviation from normal function and shed light on some of the potential causes of anticipated stigma and shame within the community. These labels reinforce a specific narrative which undermine harm reduction efforts and contribute towards harm. What is more, for someone culturally embedded within gym environments, where body image is central to those communities (Christiansen, 2020) and their identity (Piatkowski et al., 2020), it is likely that anticipated stigma and shame will be more burdensome. Participant (J) outlines:

'Oh, yeah. At the time I worked as a doorman at a bar, I had a few remarks, a few comments about it, that was not nice. I started doubling up on the shirts, I tried to conceal the fact that this had happened to me. I think I feared what other people might say or think, it was totally embarrassing for me.'

Perceptions of shame and anxiety were reinforced through social situations with individuals sometimes explicitly pointing out this adverse AAS-induced harm. These experiences underpinned perceptions and act towards strengthening feelings of body image dissatisfaction, shame, and embarrassment. The process of concealment supports the notion of shame, with participant (J) evidently self-conscious, attempting to cover up the changes he was experiencing. While some people might elect to have surgery for practical

reasons, participant (J) outlines the shame associated with this specific harm weighed so heavily that he decided to have corrective surgery, to remove excess breast tissue growth. This process was not easy and meant he had to disclose something he was actively attempting to coverup. Recognising the well-documented evidence of distrust of medical professionals within communities of PWU-AAS (Monaghan, 1999; Underwood, 2019), it is understandable that participant (J) demonstrates reluctance to go through this process:

'I did think about going to the doctors and going down the public health route and see if they would do it for me but there is just too much shame that I did not want to go through it. I did not want to go through that process. I think even if I could have gone the public health care route and not have to pay the £4,000, I think I would have gone through too much shame for me to go through that process. I think having to answer all those questions, see all those doctors, to determine whether those individuals would do it for me or since I did it to myself, I would have to pay for it myself' (J).

Feelings of shame, a lack of knowledge, and the notion that the condition was self-inflicted meant this participant withheld from accessing appropriate and necessary support. More generally, anticipated stigma from the medical community is recognised within wider literature concerning PWU-AAS (see McVeigh & Bates, 2022) and is a notable barrier within harm reduction efforts. Due to the delay of J's treatment, primarily attributed to anticipated feelings of shame and stigma, this may have contributed to the worsening of his condition, ultimately necessitating surgical intervention. Rops et al. (2022), previously noted that when left untreated, specific AAS harms can be exacerbated due to delays in treatment seeking. This underscores the importance of stigma-tackling interventions, to encourage people within AAS communities, to talk with healthcare providers and limit avoidable harm.

Various other harms were identified within the current investigation which demonstrate shades of anticipated stigma. For example, participant (x) drew upon the issues he had with his libido, *'since I've stopped using [AAS] my libido has come down and that is concerning, that isn't nice at all, so that's my only real concern at the moment'*. Havnes et al. (2021) reports PWU-AAS note increased libido during their use of AAS, however, this is often followed by a drop in libido (Armstrong et al., 2018) and is associated with discontinuation of AAS. For some men, this is associated with erectile dysfunction and might be a determining factor to start and restart AAS (Harvey et al., 2022; Havnes et al., 2019; Kotzé et al., 2023). A similar response was echoed by another participant, *'the pro-hormones were the worst, I almost stopped those straight away. I had really bad mood swings, completely fucked up my libido for ages, I had to take a number of different supplements just to get myself back on track, it wasn't nice at all'*. For these men to open dialogue with healthcare providers regarding these types of harms, there is clear shame and embarrassment, concerns that likely stem from the perceived loss of masculine identity. Noone and Stephens (2008) outline men are less likely compared with women, to open

discussions with healthcare providers about medical issues, something linked to hegemonic masculinity. We can, therefore, reasonably assume that these men anticipate stigma from healthcare providers and withhold from accessing appropriate and necessary support.

4. Discussion

The findings indicate there continue to be significant barriers to harm reduction and healthcare engagement among PWU-AAS in the United Kingdom, mirroring findings internationally (Grant et al., 2023; Havnes et al., 2019; Piatkowski et al., 2022). NSPs face significant challenges associated with engagement due to anticipated stigma, hindering people from accessing services and receiving vital information and support. For PWU-AAS, reluctance to engage with medical professionals arises through fear of stigmatisation, perceived lack of understanding within healthcare settings, and a desire to continue using such drugs. The direct impact of stigma for this cohort is exemplified by delayed treatment outcomes, which lead to exacerbated harms. Therefore, drawing the current evidence together against the backdrop of a continuing, ineffective public health response in the UK (e.g. Bates et al., 2021; McVeigh & Bates, 2022) and Australia (Piatkowski et al., 2022), we call for global responses in the form of stigma campaigns and healthcare literacy interventions to stem the potential harms for PWU-AAS.

4.1. Re-defining the structural barriers

Our analysis incorporated the examination of how relationships and structures influence these perceptions and interactions. By understanding these dynamics, we can better address the barriers PWU-AAS face in accessing harm reduction services and develop strategies to mitigate the impact of stigma on this population. At an individual level, PWU-AAS might create and impose self-stigma through an expression of attitudes related to illicit drug use (e.g. heroin), which other parts of society also stigmatise (Muncan et al., 2020; Stangl et al., 2019). These perceptions are negatively loaded, with PWUD seen as moral deviants by PWU-AAS – something noted within the current investigation and referred to elsewhere as ‘the stigmatized stigmatizing’ (Simmonds & Coomber, 2009). The stigmatisation of PUWD, such as heroin, by PWU-AAS, is an issue when the two populations share specific spaces (e.g. NSP), with PWU-AAS afraid that they will be categorised alongside other PWUD. In this way, PWU-AAS anticipate the stigma that they have partly constructed, returning, in what we mark as the *stigma-cycle*. This cycle consequently contributes to an individuals’ (un)willingness to engage with healthcare services and in some cases, seemingly acts to dissuade treatment seeking altogether (Harvey et al., 2020).

Further issues associated with NSP and treatment engagement can be associated with blood-borne viruses (BBV). BBV have been shown to be a public health concern within at least some populations of men who inject AAS in the UK (Aitken et al., 2002; McVeigh, 2019), and to an extent in

Australia (Hope & Iversen, 2019). However, within some sections of AAS communities, people feel that the risk of contracting blood borne viruses has been exaggerated and that the focus on this has had the unintended consequence of acting as a barrier to service engagement (Underwood, 2019). Though NSP primarily provide clean and allow for the disposal of old equipment, this ought not be the only recognised function of NSP within AAS communities, with NSP providing a location to open and begin dialogue with PWU-AAS. Interventions ought to, therefore, ensure NSP are known beyond the simple provision and disposal of injecting equipment, something Bates et al. (2021) previously called for.

4.2. Overcoming systemic issues

Interventions to challenge stigma are also necessary when considering the ‘narrative of harm’, (see Mulrooney et al., 2019), especially in relation to the media’s focus on increased aggression and violence amongst PWU-AAS. While there is an association between violence and the use of AAS, causation is far from proven (van de Ven et al., 2023). Though there appears to be a small increase in self-reported aggression following the sustained administration of 500mg+ dosages of testosterone, further research is required to better understand and evidence the negative behavioural effects associated with AAS (Chegeni et al., 2021). Despite the lack of scientific evidence to support such claims, the media continues to carve out and create dramatic headlines that are intended to shock audiences, shaping perceptions and beliefs within society that further reinforce and drive AAS-related stigma – something that comes as a detriment to harm reduction. For example, ‘Gunman violence could be linked to steroid abuse’ (Jepson, 2010), ‘Self-obsessed steroid addict stabbed girlfriend to death at Holiday Inn (Kindred, 2021) and ‘Putin has ‘roid rage’ from cancer treatment as western spies say bloated face and lust for violence down to medical [steroid] care’ (Grealish, 2022), are just a few headlines associated with this specific narrative. Collectively, these headlines underpin misinformed perceptions and contribute towards wider marginalisation of PWU-AAS.

4.3. Implications

Looking to tackle stigma, we suggest drawing upon wider fields of research (e.g. mental health, self-harm, HIV, drug, and alcohol) where stigma-reducing strategies have been implemented with proven success and efficacy (Corrigan et al., 2014; Henderson et al. 2014; Pinfold et al. 2005; Sampogna et al. 2017). AAS-related harm reduction can learn, adapt, and be developed from existing interventions tackling other public health issues (Hope et al., 2016, 2017). Kimergård and McVeigh (2014) outline that dispensing machines have been positioned in gym locker rooms as part of outreach programs, something that feasibly responds to a lack of privacy when NSP are considered. Though Islam and Conigrave (2007) state dispensing machines offer PWUD greater anonymity when accessing injecting equipment, seemingly responding to

direct concerns associated with a lack of privacy within NSP, this removes the possibility to open dialogue with these individuals – something said to be a strength of NSP (McVeigh & Bates, 2022). Thus, there is conflicting notions at play here. Building upon the existing strategies outlined, the next steps for an anti-stigma campaign in the UK specifically should involve community-driven initiatives that empower AAS consumers to share their experiences and advocate for their rights to help ‘humanise’ the issue and reduce stigma. These types of lived-experience narratives could be shared and distributed alongside educational resources to enhance uptake. These narratives could also be distributed digitally through partnered NSP programs or harm reduction organisations (e.g. Anabolic Steroids UK), to promote open dialogue and support within fitness and strength-training communities. To facilitate this, we believe fostering partnerships with academic researchers and public health agencies to gather evidence and generate data on the impact of stigma on AAS consumers’ health outcomes could inform more targeted and effective interventions in the future. This approach could leverage the growing appeal of social media (e.g. YouTube) within AAS communities (Cox & Paoli, 2023), to share important information related to harm reduction messaging. This, however, is not without problems, with variable information quality evident online and AAS and other IPEDs promoted and sold over various social media platforms (e.g., Instagram, Facebook, TikTok) (Cox et al., 2023).

5. Limitations

This study is limited to a small sample of PWU-AAS within the UK who exclusively identified as male. Thus, the narratives presented throughout this paper represent a snapshot of the experiences and perceptions of these participants. Acknowledging the complexities associated with such realities, thought ought to be given to these complex and dynamic nuances. While stigma is outlined by these individuals, it is currently unclear whether women experience and anticipate stigma differently to men and whether older PWU-AAS anticipate and experience stigma differently to younger people. The same point holds for people within different countries, who have access to different healthcare systems and must adhere to different policies and regulatory frameworks. Thus, research ought to seek to enhance our knowledge within these areas, to further strengthen harm reduction messages and better protect the health of PWU-AAS.

6. Conclusion

Stigma is a deep-rooted and multifaceted issue for PWUD, including PWU-AAS. It is partly generated through misinformed narratives which has subsequently led to the discrimination and marginalisation of PWUD within healthcare settings, through policy and within the wider public. The construction of destructive narratives contributes and determines whether and how individuals engage with healthcare services concerning their drug use. A general reluctance to engage with healthcare professionals is evidenced within the current investigation, with anticipated stigma the most

prominent factor contributing towards the escalation of specific AAS-related harms. This underscores a certain and continued vulnerability amongst this population which demands further attention. It is against this backdrop that we argue that PWUD, specifically PWU-AAS, require better protection, something academics, policy makers and healthcare professionals should advocate. Engaging with individuals who have lived/living experience is one avenue which is gathering momentum within the space of harm reduction and could feasibly help bridge gaps and tackle damaging stereotypes. Nonetheless, we recognise the ever-growing heterogeneity of the groups of PWU-AAS and other IPEDs, which underpins the importance of up-to-date research to shape and focus short and long-term policy responses and interventions. The autonomy of these people ought to be held at the forefront of these approaches and thought ought to be given to the complex sensitivities associated with drug use and the dynamic nature of the environments that these individuals find themselves in. Respect and dignity should feature heavily within future responses, with people granted the care and support they need and deserve.

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References

- Ahern, J., Stuber, J., & Galea, S. (2007). Stigma, discrimination and the health of illicit drug users. *Drug and Alcohol Dependence*, 88(2-3), 188–196. <https://doi.org/10.1016/j.drugalcdep.2006.10.014>
- Aitken, C., Delalande, C., & Stanton, K. (2002). Pumping iron, risking infection? Exposure to hepatitis C, hepatitis B and HIV among anabolic-androgenic steroid injectors in Victoria, Australia. *Drug and Alcohol Dependence*, 65(3), 303–308. [https://doi.org/10.1016/S0376-8716\(01\)00174-0](https://doi.org/10.1016/S0376-8716(01)00174-0)
- Albano, G. D., Amico, F., Cocimano, G., Liberto, A., Maglietta, F., Esposito, M., Rosi, G. L., Di Nunno, N., Salerno, M., & Montana, A. (2021). Adverse effects of anabolic-androgenic steroids: A literature review. *Healthcare (Basel, Switzerland)*, 9(1), 97. <https://doi.org/10.3390/healthcare9010097>
- Allen, S. T., Grieb, S. M., O'Rourke, A., Yoder, R., Planchet, E., White, R. H., & Sherman, S. G. (2019). Understanding the public health consequences of suspending a rural syringe services program: A qualitative study of the experiences of people who inject drugs. *Harm Reduction Journal*, 16(1), 33. <https://doi.org/10.1186/s12954-019-0305-7>

- Amaral, J. M. X., Kimergård, A., & Deluca, P. (2022). Prevalence of anabolic steroid users seeking support from physicians: A systematic review and meta-analysis. *BMJ Open*, 12(7), e056445. <https://doi.org/10.1136/bmjopen-2021-056445>
- Andreasson, J., & Henning, A. (2023). *Online doping: The digital ecosystem and cyborgification of drug cultures*. Springer Nature.
- Armstrong, J. M., Avant, R. A., Charchenko, C. M., Westerman, M. E., Ziegelmann, M. J., Miest, T. S., & Trost, L. W. (2018). Impact of anabolic androgenic steroids on sexual function. *Translational Andrology and Urology*, 7(3), 483–489. <https://doi.org/10.21037/tau.2018.04.23>
- Bartholomew, T. S., Tookes, H. E., Bullock, C., Onugha, J., Forrest, D. W., & Feaster, D. J. (2020). Examining risk behavior and syringe coverage among people who inject drugs accessing a syringe services program: A latent class analysis. *The International Journal on Drug Policy*, 78, 102716. <https://doi.org/10.1016/j.drugpo.2020.102716>
- Bates, G., McVeigh, J., & Leavey, C. (2021). Looking beyond the provision of injecting equipment to people who use anabolic androgenic steroids: Harm reduction and behavior change goals for UK policy. *Contemporary Drug Problems*, 48(2), 135–150. <https://doi.org/10.1177/0091450921998701>
- Bates, G., Van Hout, M. C., Teck, J. T. W., & McVeigh, J. (2019). Treatments for people who use anabolic androgenic steroids: A scoping review. *Harm Reduction Journal*, 16(1), 75. <https://doi.org/10.1186/s12954-019-0343-1>
- Bonnetaze, A. K., O'Connor, T., & Burns, C. A. (2021). Harm reduction in male patients actively using anabolic androgenic steroids (AAS) and performance-enhancing drugs (PEDs): A review. *Journal of General Internal Medicine*, 36(7), 2055–2064. <https://doi.org/10.1007/s11606-021-06751-3>
- Bourdieu, P. (1989). Social space and symbolic power. *Sociological Theory*, 7(1), 14–25. <https://doi.org/10.2307/202060>
- Cama, E., Brener, L., Wilson, H., & Von Hippel, C. (2016). Internalized stigma among people who inject drugs. *Substance Use & Misuse*, 51(12), 1664–1668. <https://doi.org/10.1080/10826084.2016.1188951>
- Chandler, M., & McVeigh, J. (2014). Steroids and image enhancing drugs 2013 survey results. *LJMU Centre for public health* (pp. 1–26). Public health Wales.
- Cheetham, A., Picco, L., Barnett, A., Lubman, D. I., & Nielsen, S. (2022). The impact of stigma on people with opioid use disorder, opioid treatment, and policy. *Substance Abuse and Rehabilitation*, 13, 1–12. <https://doi.org/10.2147/SAR.S304566>
- Chegeni, R., Pallesen, S., McVeigh, J., & Sagoe, D. (2021). Anabolic-androgenic steroid administration increases self-reported aggression in healthy males: A systematic review and meta-analysis of experimental studies. *Psychopharmacology*, 238(7), 1911–1922. <https://doi.org/10.1007/s00213-021-05818-7>
- Christiansen, A. V. (2015). Drug use in gyms. In *Routledge handbook of drugs and sport* (pp. 421–438). Routledge.
- Christiansen, A. V. (2020). *Gym culture, identity and performance-enhancing drugs: Tracing a typology of steroid use*. Routledge.
- Cornford, C. S., Kean, J., & Nash, A. (2014). Anabolic-androgenic steroids and heroin use: A qualitative study exploring the connection. *The International Journal on Drug Policy*, 25(5), 928–930. <https://doi.org/10.1016/j.drugpo.2014.06.002>
- Corrigan, P. W., Druss, B. G., & Perlick, D. A. (2014). The impact of mental illness stigma on seeking and participating in mental health care. *Psychological Science in the Public Interest: a Journal of the American Psychological Society*, 15(2), 37–70. <https://doi.org/10.1177/1529100614531398>
- Cox, L. T. J., & Paoli, L. (2023). Social media influencers, YouTube & performance and image enhancing drugs: A narrative-typology. *Performance Enhancement & Health*, 11(4), 100266. <https://doi.org/10.1016/j.peh.2023.100266>
- Cox, L., Gibbs, N., & Turnock, L. A. (2023). Emerging anabolic androgenic steroid markets: the prominence of social media. *Drugs: Education, Prevention and Policy*, 31(2), 257–270. <https://doi.org/10.1080/09687637.2023.2176286>
- Department of Health. (2017). Drug misuse and dependence. UK guidelines and clinical management. Retrieved from https://assets.publishing.service.gov.uk/media/5a821e3340f0b62305b92945/clinical_guidelines_2017.pdf
- Dunn, M., Mulrooney, K. J., Forlini, C., van de Ven, K., & Underwood, M. (2021). The pharmaceuticalisation of 'healthy'ageing: Testosterone enhancement for longevity. *The International Journal on Drug Policy*, 95, 103159. <https://doi.org/10.1016/j.drugpo.2021.103159>
- Dunn, M., Piatkowski, T., Whiteside, B., & Eu, B. (2023). Exploring the experiences of general practitioners working with patients who use performance and image enhancing drugs. *Performance Enhancement & Health*, 11(2), 100247. <https://doi.org/10.1016/j.peh.2023.100247>
- El Wakeel, H., Abou Arab, M. H., & Kholosy, H. M. (2021). Bodybuilder gynecomastia: Etiology, characteristics, and management. *The Egyptian Journal of Plastic and Reconstructive Surgery*, 45(3), 133–139. <https://doi.org/10.21608/ejprs.2021.183853>
- Fomiatti, R., Latham, J. R., Fraser, S., Moore, D., Seear, K., & Aitken, C. (2019). A 'messenger of sex'? Making testosterone matter in motivations for anabolic-androgenic steroid injecting. *Health Sociology Review*, 28(3), 323–338. <https://doi.org/10.1080/14461242.2019.1678398>
- Fomiatti, R., Lenton, E., Latham, J. R., Fraser, S., Moore, D., Seear, K., & Aitken, C. (2020). Maintaining the healthy body: Blood management and hepatitis C prevention among men who inject performance and image-enhancing drugs. *The International Journal on Drug Policy*, 75, 102592. <https://doi.org/10.1016/j.drugpo.2019.10.016>
- Fook, J. (1999). Reflexivity as method. *Annual Review of Health Social Science*, 9(1), 11–20. <https://doi.org/10.5172/hesr.1999.9.1.11>
- Gibbs, N., Cox, L., & Turnock, L. (2022). Anabolics coaching: Emic harm reduction or a public health concern? *Performance Enhancement & Health*, 10(3), 100227. <https://doi.org/10.1016/j.peh.2022.100227>
- Gibson, K., & Hutton, F. (2021). Women who inject drugs (WWID): Stigma, gender and barriers to needle exchange programmes (NEPs). *Contemporary Drug Problems*, 48(3), 276–296. <https://doi.org/10.1177/00914509211035242>
- Gikas, P., & Mokbel, K. (2007). Management of gynaecomastia: An update. *International Journal of Clinical Practice*, 61(7), 1209–1215. <https://doi.org/10.1111/j.1742-1241.2006.01095.x>
- Goffman, E. (1963). Embarrassment and social organization. In N. J. Smelser & W. T. Smelser (Eds.), *Personality and social systems* (pp. 541–548). John Wiley & Sons, Inc. <https://doi.org/10.1037/11302-050>
- Goodyear, T., Brown, H., Browne, A. J., Hoong, P., Ti, L., & Knight, R. (2021). "Stigma is where the harm comes from": Exploring expectations and lived experiences of hepatitis C virus post-treatment trajectories among people who inject drugs. *The International Journal on Drug Policy*, 96, 103238. <https://doi.org/10.1016/j.drugpo.2021.103238>
- Grant, B., Kean, J., Vali, N., Campbell, J., Maden, L., Bijral, P., Dhillon, W. S., McVeigh, J., Quinton, R., & Jayasena, C. N. (2023). The use of post-cycle therapy is associated with reduced withdrawal symptoms from anabolic-androgenic steroid use: A survey of 470 men. *Substance Abuse Treatment, Prevention, and Policy*, 18(1), 66. <https://doi.org/10.1186/s13011-023-00573-8>
- Grealish, S. (2022). SICK LEADER. Putin 'has "roid rage" from CANCER treatment' as Western spies say bloated face & lust for violence down to medical care. Retrieved from <https://www.thesun.co.uk/news/17931327/putin-roid-rage-cancer-treatment/>
- Griffiths, S., Murray, S. B., & Mond, J. M. (2016). The stigma of anabolic steroid use. *Journal of Drug Issues*, 46(4), 446–456. <https://doi.org/10.1177/0022042616661837>
- Hanavadi, S., Banerjee, D., Monypenny, I. J., & Mansel, R. E. (2006). The role of tamoxifen in the management of gynaecomastia. *Breast (Edinburgh, Scotland)*, 15(2), 276–280. <https://doi.org/10.1016/j.breast.2005.04.007>
- Harvey, O., Parrish, M., van Teijlingen, E., & Trenoweth, S. (2022). Libido as a motivator for starting and restarting non-prescribed anabolic androgenic steroid use among men: A mixed-methods study. *Drugs: Education, Prevention and Policy*, 29(3), 276–288. <https://doi.org/10.1080/09687637.2021.1882940>
- Harvey, O., Parrish, M., van Teijlingen, E., & Trenoweth, S. (2020). Support for non-prescribed anabolic androgenic steroids users: A qualitative exploration of their needs. *Drugs: Education, Prevention and Policy*, 27(5), 377–386. <https://doi.org/10.1080/09687637.2019.1705763>

- Hatzenbuehler, M. L., & Link, B. G. (2014). Introduction to the special issue on structural stigma and health. *Social Science & Medicine*, 103, 1–6. <https://doi.org/10.1016/j.socscimed.2013.12.017>
- Hatzenbuehler, M. L. (2016). Structural stigma: Research evidence and implications for psychological science. *The American Psychologist*, 71(8), 742–751. <https://doi.org/10.1037/amp0000068>
- Havnes, I. A., Jørstad, M. L., Innerdal, I., & Bjørnebekk, A. (2021). Anabolic-androgenic steroid use among women—A qualitative study on experiences of masculinizing, gonadal and sexual effects. *The International Journal on Drug Policy*, 95, 102876. <https://doi.org/10.1016/j.drugpo.2020.102876>
- Havnes, I. A., Jørstad, M. L., & Wisloff, C. (2019). Anabolic-androgenic steroid users receiving health-related information; health problems, motivations to quit and treatment desires. *Substance Abuse Treatment, Prevention, and Policy*, 14(1), 20. <https://doi.org/10.1186/s13011-019-0206-5>
- Hearne, E., Atkinson, A., Boardley, I., McVeigh, J., & Van Hout, M. C. (2024). 'Sustaining masculinity': A scoping review of anabolic androgenic steroid use by older males. *Drugs: Education, Prevention and Policy*, 31(1), 27–53. <https://doi.org/10.1080/09687637.2022.2132135>
- Henderson, C., Noblett, J., Parke, H., Clement, S., Caffrey, A., Gale-Grant, O., Schulze, B., Druss, B., & Thornicroft, G. (2014). Mental health-related stigma in health care and mental health-care settings. *The Lancet. Psychiatry*, 1(6), 467–482. [https://doi.org/10.1016/S2215-0366\(14\)00023-6](https://doi.org/10.1016/S2215-0366(14)00023-6)
- Henning, A., & Andreasson, J. (2022). Preventing, producing, or reducing harm? Fitness doping risk and enabling environments. *Drugs: Education, Prevention and Policy*, 29(1), 95–104. <https://doi.org/10.1080/09687637.2020.1865273>
- Hilkens, L., Cruyff, M., Woertman, L., Benjamins, J., & Evers, C. (2021). Social media, body image and resistance training: Creating the perfect 'me' with dietary supplements, anabolic steroids and SARM's. *Sports Medicine - Open*, 7(1), 1–13. <https://doi.org/10.1186/s40798-021-00371-1>
- Hill, S. A., & Waring, W. S. (2019). Pharmacological effects and safety monitoring of anabolic androgenic steroid use: Differing perceptions between users and healthcare professionals. *Therapeutic Advances in Drug Safety*, 10, 2042098619855291. <https://doi.org/10.1177/2042098619855291>
- Hope, V. D., Harris, R., McVeigh, J., Cullen, K. J., Smith, J., Parry, J. V., DeAngelis, D., & Ncube, F. (2016). Risk of HIV and hepatitis B and C over time among men who inject image and performance enhancing drugs in England and Wales: Results from cross-sectional prevalence surveys, 1992–2013. *Journal of Acquired Immune Deficiency Syndromes* (1999), 71(3), 331–337. <https://doi.org/10.1097/QAI.0000000000000835>
- Hope, V. D., McVeigh, J., Smith, J., Glass, R., Njoroge, J., Tanner, C., Parry, J. V., Ncube, F., & Desai, M. (2017). Low levels of hepatitis C diagnosis and testing uptake among people who inject image and performance enhancing drugs in England and Wales, 2012–15. *Drug and Alcohol Dependence*, 179, 83–86. <https://doi.org/10.1016/j.drugalcdep.2017.06.018>
- Hope, V. D., Walker Bond, V., Boardley, I., Smith, J., Campbell, J., Bates, G., Ralphs, R., Van Hout, M.-C., & McVeigh, J. (2023). Anabolic androgenic steroid use population size estimation: A first stage study utilising a Delphi exercise. *Drugs: Education, Prevention and Policy*, 30(5), 461–473. <https://doi.org/10.1080/09687637.2022.2070058>
- Hope, V., & Iversen, J. (2019). Infections and risk among people who use image and performance enhancing drugs. In *Human enhancement drugs* (pp. 85–100). Taylor & Francis. Routledge.
- Hope, V., Leavey, C., Morgan, G., Acreman, D., Turner, D., & Smith, J. (2020). *Facilitators and barriers to health care access amongst people using image and performance enhancing drugs in Wales*. Findings & Outcomes Report. Public Health Wales.
- Islam, M. M., & Conigrave, K. M. (2007). Assessing the role of syringe dispensing machines and mobile van outlets in reaching hard-to-reach and high-risk groups of injecting drug users (IDUs): A review. *Harm Reduction Journal*, 4(1), 14. <https://doi.org/10.1186/1477-7517-4-14>
- James, E., & Wynn, L. L. (2022). Testosterone vs. steroids: Comparing the disciplined bodywork projects of performance and image enhancing drug users in Australia. *The International Journal on Drug Policy*, 107, 103776. <https://doi.org/10.1016/j.drugpo.2022.103776>
- Jepson, K. (2010). Gunman violence could be linked to steroid abuse. Retrieved from <https://www.channel4.com/news/articles/uk/moataposs%2Bviolence%2Bcould%2Bbe%2Blinked%2Bto%2Bsteroid%2Babuse/3700487.html>
- Johnson, R. E., & Murad, M. H. (2009). Gynecomastia: Pathophysiology, evaluation, and management. *Mayo Clinic Proceedings*, 84(11), 1010–1015. (Elsevier <https://doi.org/10.4065/84.11.1010>)
- Kimergård, A., & McVeigh, J. (2014). Environments, risk and health harms: A qualitative investigation into the illicit use of anabolic steroids among people using harm reduction services in the UK. *BMJ Open*, 4(6), e005275. <https://doi.org/10.1136/bmjopen-2014-005275>
- Kimergård, A., & McVeigh, J. (2014). Variability and dilemmas in harm reduction for anabolic steroid users in the UK: A multi-area interview study. *Harm Reduction Journal*, 11(1), 19. <https://doi.org/10.1186/1477-7517-11-19>
- Kindred, A. (2021). 'Self-obsessed' steroid addict stabbed girlfriend to death at Holiday Inn. Retrieved from <https://www.mirror.co.uk/news/uk-news/self-obsessed-steroid-addict-stabbed-25427210>
- Kotzé, J., Richardson, A., & Antonopoulos, G. A. (2023). Getting big but not hard: A retrospective case-study of a male powerlifter's experience of steroid-induced erectile dysfunction. *The International Journal on Drug Policy*, 121, 104195. <https://doi.org/10.1016/j.drugpo.2023.104195>
- Latkin, C. A., Gicquelais, R. E., Clyde, C., Dayton, L., Davey-Rothwell, M., German, D., Falade-Nwulia, S., Saleem, H., Fingerhood, M., & Tobin, K. (2019). Stigma and drug use settings as correlates of self-reported, non-fatal overdose among people who use drugs in Baltimore, Maryland. *The International Journal on Drug Policy*, 68, 86–92. <https://doi.org/10.1016/j.drugpo.2019.03.012>
- Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology*, 27(1), 363–385. <https://doi.org/10.1146/annurev.soc.27.1.363>
- Link, B. G., & Phelan, J. (2014). Stigma power. *Social Science & Medicine* (1982), 103, 24–32. <https://doi.org/10.1016/j.socscimed.2013.07.035>
- Lloyd, C. (2013). The stigmatization of problem drug users: A narrative literature review. *Drugs: education, Prevention and Policy*, 20(2), 85–95. <https://doi.org/10.3109/09687637.2012.743506>
- Maycock, B., & Howat, P. (2005). The barriers to illegal anabolic steroid use. *Drugs: education, Prevention and Policy*, 12(4), 317–325. <https://doi.org/10.1080/09687630500103622>
- McVeigh, J., & Bates, G. (2022). Stigma and the use of anabolic androgenic steroids by men in the United Kingdom. In *Drugs, Identity and Stigma*. (pp. 121–146). Springer International Publishing.
- McVeigh, J., & Begley, E. (2017). Anabolic steroids in the UK: An increasing issue for public health. *Drugs: Education, Prevention and Policy*, 24(3), 278–285. <https://doi.org/10.1080/09687637.2016.1245713>
- McVeigh, J., Kimergård, A., Bates, G., Hope, V. D., & Ncube, F. (2016). Harm reduction interventions should encompass people who inject image and performance enhancing drugs. *BMJ (Clinical Research ed.)*, 353, i1889. <https://doi.org/10.1136/bmj.i1889>
- McVeigh, J. (2019). Engaging with people who use image and performance enhancing drugs: One size does not fit all. *The International Journal on Drug Policy*, 71, 1–2. <https://doi.org/10.1016/j.drugpo.2019.05.016>
- Merton, R. K. (1968). *Social theory and social structure*. Simon and Schuster.
- Monaghan, L. (1999). Challenging medicine? Bodybuilding, drugs and risk. *Sociology of Health & Illness*, 21(6), 707–734. <https://doi.org/10.1111/1467-9566.00180>
- Mullen, C., Whalley, B. J., Schifano, F., & Baker, J. S. (2020). Anabolic androgenic steroid abuse in the United Kingdom: An update. *British Journal of Pharmacology*, 177(10), 2180–2198. <https://doi.org/10.1111/bph.14995>
- Mulrooney, K. J., van de Ven, K., McVeigh, J., & Collins, R. (2019). Commentary: Steroid Madness- has the dark side of anabolic-androgenic steroids (AAS) been over-stated? *Performance Enhancement & Health*, 6(3-4), 98–102. <https://doi.org/10.1016/j.peh.2019.03.001>
- Muncan, B., Walters, S. M., Ezell, J., & Ompad, D. C. (2020). "They look at us like junkies": Influences of drug use stigma on the healthcare en-

- gagement of people who inject drugs in New York City. *Harm Reduction Journal*, 17(1), 53. <https://doi.org/10.1186/10.1186/s12954-020-00399-8>
- Musolino, E. A., O'Connor, B. P., & Cioe, J. D. (2022). Bigger isn't always better: An exploration of social perception bias against high levels of muscularity in women. *The Journal of Social Psychology*, 162(5), 523–539. <https://doi.org/10.1080/00224545.2021.1927943>
- National Institute for Health and Care Excellence (NICE). (2014). *Needle and syringe programmes NICE public health guidance*. Retrieved from <https://www.nice.org.uk/guidance/ph52>
- Noone, J. H., & Stephens, C. (2008). Men, masculine identities, and health care utilisation. *Sociology of Health & Illness*, 30(5), 711–725. <https://doi.org/10.1111/j.1467-9566.2008.01095.x>
- Paoli, L., & Cox, L. T. J. (2024). Across the spectrum of legality: The market activities of influencers specialized in steroids and other performance and image enhancing drugs. *The International Journal on Drug Policy*, 123, 104246. <https://doi.org/10.1016/j.drugpo.2023.104246>
- Pescosolido, B. A., Martin, J. K., Lang, A., & Olafsdottir, S. (2008). Rethinking theoretical approaches to stigma: A framework integrating normative influences on stigma (FINIS). *Social Science & Medicine* (1982), 67(3), 431–440. <https://doi.org/10.1016/j.socscimed.2008.03.018>
- Piatkowski, T. M., Hides, L. M., White, K. M., Obst, P. L., & Dunn, M. (2022). Understanding perspectives on harm reduction from performance and image enhancing drug consumers and health care providers. *Performance Enhancement & Health* 10(3), 100223. <https://doi.org/10.1016/j.peh.2022.100223>
- Piatkowski, T. M., Neumann, D. L., Keane, C., & Dunn, M. (2023). "More drugs means more stress on my body": Exploring enhancement and health among elite strength athletes who use performance and image enhancing drugs. *Addiction Research & Theory*, 0(0), 1–6. <https://doi.org/10.1080/16066359.2023.2271839>
- Piatkowski, T. M., White, K. M., Hides, L. M., & Obst, P. L. (2020). Australia's Adonis: Understanding what motivates young men's lifestyle choices for enhancing their appearance. *Australian Psychologist*, 55(2), 156–168. <https://doi.org/10.1111/ap.12451>
- Piatkowski, T., & Cox, L. T. J. (2024). 'Insulin is super dangerous if you don't know what you're doing': Situating the risks of insulin within the image and performance enhancing drug community. *Drug and Alcohol Review*, 2024, 857. <https://doi.org/10.1111/dar.13857>
- Piatkowski, T., Gibbs, N., & Dunn, M. (2023). Beyond the law: Exploring the impact of criminalising anabolic-androgenic steroid use on help-seeking and health outcomes in Australia. *Journal of Criminology*, 57(1), 62–82. <https://doi.org/10.1177/26338076231209044>
- Piatkowski, T., Puljevic, C., Ferris, J., Francis, C., & Dunn, M. (2023). "They sent it away for testing and it was all bunk": Exploring perspectives on drug checking among steroid consumers in Queensland, Australia. *The International Journal on Drug Policy*, 119, 104139. <https://doi.org/10.1016/j.drugpo.2023.104139>
- Piatkowski, T., Whiteside, B., Lamon, S., Robertson, J., & Dunn, M. (2024). Performance and image enhancing drug use among Australian women: The role of interpersonal relationships in facilitating use. *Contemporary Drug Problems*, 51(2), 142–159. <https://doi.org/10.1177/00914509241256002>
- Piatkowski, T., Cox, L., Gibbs, N., Turnock, L., & Dunn, M. (2024a). 'The general concept is a safer use approach': How image and performance enhancing drug coaches negotiate safety through community care. *Drugs: Education, Prevention and Policy*, 2024, 1–9. <https://doi.org/10.1080/09687637.2024.2352442>
- Piatkowski, T., Vigorous, S., Cox, L., & McVeigh, J. (2024b). "You could try this compound, but it might send you nuts": How steroid suppliers perceive the underground market and their 'hybrid' role within it. *Deviant Behavior*, 2024, 1–12. <https://doi.org/10.1080/01639625.2024.2375014>
- Pinfold, V., Thornicroft, G., Huxley, P., & Farmer, P. (2005). Active ingredients in anti-stigma programmes in mental health. *International Review of Psychiatry*, 17(2), 123–131. <https://doi.org/10.1080/09540260500073638>
- Pope, H. G., Jr., & Kanayama, G. (2012). Anabolic-androgenic steroids. In *Drug abuse and addiction in medical illness: Causes, consequences and treatment* (pp. 251–264). Springer New York.
- Pope, H. G., Jr., Kanayama, G., Athey, A., Ryan, E., Hudson, J. I., & Baggish, A. (2014). The lifetime prevalence of anabolic-androgenic steroid use and dependence in Americans: current best estimates. *The American Journal on Addictions*, 23(4), 371–377. <https://doi.org/10.1111/j.1521-0391.2013.12118.x>
- Pope, H. G., Kanayama, G., Ionescu-Pioggia, M., & Hudson, J. I. (2004). Anabolic steroid users' attitudes towards physicians. *Addiction (Abingdon, England)*, 99(9), 1189–1194. <https://doi.org/10.1111/j.1360-0443.2004.00781.x>
- Rahnema, C. D., Lipshultz, L. I., Crosnoe, L. E., Kovac, J. R., & Kim, E. D. (2014). Anabolic steroid-induced hypogonadism: Diagnosis and treatment. *Fertility and Sterility*, 101(5), 1271–1279. <https://doi.org/10.1016/j.fertnstert.2014.02.002>
- Richardson, A., & Antonopoulos, G. A. (2019). Anabolic-androgenic steroids (AAS) users on AAS use: Negative effects, "code of silence", and implications for forensic and medical professionals. *Journal of Forensic and Legal Medicine*, 68, 101871. <https://doi.org/10.1016/j.jflm.2019.101871>
- Room, R. (2005). Stigma, social inequality and alcohol and drug use. *Drug and Alcohol Review*, 24(2), 143–155. <https://doi.org/10.1080/09595230500102434>
- Rops, M. A., Smit, D. L., & de Ronde, W. (2022). Bias among health care professionals: How prejudice leads to diagnostic delay in patients using anabolic-androgenic steroids. *Androgens: Clinical Research and Therapeutics*, 3(1), 203–207. <https://doi.org/10.1089/andro.2022.0016>
- Sagoe, D., & Pallesen, S. (2018). Androgen abuse epidemiology. *Current Opinion in Endocrinology, Diabetes, and Obesity*, 25(3), 185–194. <https://doi.org/10.1007/s00213-021-05818-7>
- Sagoe, D., Molde, H., Andreassen, C. S., Torsheim, T., & Pallesen, S. (2014). The global epidemiology of anabolic-androgenic steroid use: A meta-analysis and meta-regression analysis. *Annals of Epidemiology*, 24(5), 383–398. <https://doi.org/10.1016/j.annepidem.2014.01.009>
- Sampogna, G., Bakolis, I., Evans-Lacko, S., Robinson, E., Thornicroft, G., & Henderson, C. (2017). The impact of social marketing campaigns on reducing mental health stigma: Results from the 2009–2014 Time to Change programme. *European Psychiatry*, 40, 116–122. <https://doi.org/10.1016/j.eurpsy.2016.08.008>
- Santos, G. H., & Coomber, R. (2017). The risk environment of anabolic-androgenic steroid users in the UK: Examining motivations, practices and accounts of use. *The International Journal on Drug Policy*, 40, 35–43. <https://doi.org/10.1016/j.drugpo.2016.11.005>
- Simmonds, L., & Coomber, R. (2009). Injecting drug users: A stigmatised and stigmatising population. *The International Journal on Drug Policy*, 20(2), 121–130. <https://doi.org/10.1016/j.drugpo.2007.09.002>
- Stangl, A. L., Earnshaw, V. A., Logie, C. H., Van Brakel, W., Simbayi, L. C., Barré, I., & Dovidio, J. F. (2019). The Health Stigma and Discrimination Framework: A global, crosscutting framework to inform research, intervention development, and policy on health-related stigmas. *BMC Medicine*, 17(1), 31. <https://doi.org/10.1186/s12916-019-1271-3>
- Treloar, C., Rance, J., Yates, K., & Mao, L. (2016). Trust and people who inject drugs: The perspectives of clients and staff of Needle Syringe Programs. *The International Journal on Drug Policy*, 27, 138–145. <https://doi.org/10.1016/j.drugpo.2015.08.018>
- Turnock, L. A., & Mulrooney, K. J. (2023). Exploring the impacts of rurality on service access and harm among image and performance enhancing drug (IPED) users in a remote English region. *Contemporary Drug Problems*, 50(2), 232–253. <https://doi.org/10.1177/00914509231155487>
- Turnock, L., Gibbs, N., Cox, L., & Piatkowski, T. (2023). Big business: The private sector market for image and performance enhancing drug harm reduction in the UK. *The International Journal on Drug Policy*, 122, 104254. <https://doi.org/10.1016/j.drugpo.2023.104254>
- Underwood, M. (2019). The unintended consequences of emphasising blood-borne virus in research on, and services for, people who inject image and performance enhancing drugs: A commentary based on enhanced bodybuilder perspectives. *The International Journal on Drug Policy*, 67, 19–23. <https://doi.org/10.1016/j.drugpo.2018.11.005>
- van de Ven, K., Malouff, J., & McVeigh, J. (2023). The association between the nonmedical use of anabolic-androgenic steroids and interpersonal violence: A meta-analysis. *Trauma, Violence & Abuse*, 25(2), 1484–1495. <https://doi.org/10.1177/15248380231186150>

- van de Ven, K., Zahnow, R., McVeigh, J., & Winstock, A. (2020). The modes of administration of anabolic-androgenic steroid (AAS) users: Are non-injecting people who use steroids overlooked? *Drugs: Education, Prevention and Policy*, 27(2), 131–135. <https://doi.org/10.1080/09687637.2019.1608910>
- Vojvodic, M., Xu, F. Z., Cai, R., Roy, M., & Fielding, J. C. (2019). Anabolic-androgenic steroid use among gynecomastia patients: Prevalence and relevance to surgical management. *Annals of Plastic Surgery*, 83(3), 258–263. <https://doi.org/10.1097/SAP.0000000000001850>
- Wassersug, R. J., & Oliffe, J. L. (2009). The social context for psychological distress from iatrogenic gynecomastia with suggestions for its management. *The Journal of Sexual Medicine*, 6(4), 989–1000. <https://doi.org/10.1111/j.1743-6109.2008.01053.x>
- Yu, J., Hildebrandt, T., & Lanzieri, N. (2015). Healthcare professionals' stigmatization of men with anabolic androgenic steroid use and eating disorders. *Body Image*, 15, 49–53. <https://doi.org/10.1016/j.bodyim.2015.06.001>
- Zahnow, R., McVeigh, J., Ferris, J., & Winstock, A. (2017). Adverse effects, health service engagement, and service satisfaction among anabolic androgenic steroid users. *Contemporary Drug Problems*, 44(1), 69–83. <https://doi.org/10.1177/0091450917694268>