

Support for non-prescribed Anabolic Androgenic Steroids users: A qualitative exploration of their needs

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3 **Title: Support for non-prescribed Anabolic Androgenic Steroids users: A qualitative**
4 **exploration of their needs**
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12 **Abstract**
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16 Anabolic Androgenic Steroids (AAS) are used by the general population (particularly male
17 gym users) for their anabolic effects (increased muscle mass). Few studies have sought AAS
18 users' views on what information and support they need. This study focuses on ideal support
19 wanted by people who use AAS. Interviews were conducted with 23 self-declared adult AAS
20 users. Using thematic analysis, six themes were identified aligned to support and information
21 wanted by AAS users: (1) specific types of information wanted: managing risks, (2)
22 mechanisms for communication of advice, (3) specific types of support wanted: medical and
23 emotional, (4) stigmatisation of people who use AAS, (5) paying for support services, (6)
24 legality of AAS use.
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38 Integral to the support was that it should be considered within the context of use and identity.
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40 Support needs to be specific, targeted towards AAS users ensuring that balanced and
41 evidenced-based advice is given. Sensitivity to AAS users' perceptions of their drug-use and
42 the stigma of being classified in the same sub-set as other illicit drug users is relevant to
43 facilitating successful engagement. Furthermore, there is a need to consider the emotional
44 issues surrounding AAS use and how to meet these needs.
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53 **Keywords:** Androgenic Anabolic Steroids (AAS); Image and Performance Enhancing Drugs
54 (IPEDs); Support; Harm Minimisation; Testosterone Replacement Therapy; Information
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Introduction

Anabolic-Androgenic Steroids (AAS) are synthetic derivatives of testosterone that mimic male sex hormones, and are used to build muscle mass (Pope Jr. & Kanayama, 2012). A meta-analysis of AAS use indicates a global lifetime prevalence of 3.3% (men: 6.4%, women: 1.6%) (Sagoe, Molde, Andreassen, Torsheim, & Pallesen, 2014). The use of AAS has roots in sports, however, in recent years they are increasingly used by the general population (particularly male gym users) for their anabolic effects (Bojsen-Møller & Christiansen, 2010; Nutt, 2012). The benefits of AAS use are increased muscle and strength (Kicman, 2008) with a wide range of motivations for use (Greenway & Price, 2018). There are also potentially physical and psychological side-effects including: testicular atrophy, liver toxicity, gynaecomastia, myocardial injuries, infertility, depression, aggression and anxiety (Pope Jr. & Kanayama, 2012). AAS users access a range of professional services including support from medical professionals, pharmacies, and Needle and Syringe Programmes (NSPs), but mainly rely on peers/online fora for advice (Kimergård & McVeigh, 2014; Tighe, Dunn, McKay, & Piatkowski, 2017). The legal status of AAS use differs from country to country (Van de Ven, Mulrooney, & McVeigh, 2019). Much of the support in the UK, New Zealand and Australia comes through public health initiatives to combat blood borne viruses (BBVs) (Kimergård & McVeigh, 2014) and is prevention focussed (Bates et al., 2019) with little such support in the USA.

In the UK there has been a drive towards harm reduction support, which rather than focusing on abstinence, seeks to minimise the harmful effects of substance use (Karoll, 2010). Such an approach focuses on the consequences of choices, recognising abstinence as an ideal whilst accepting alternatives as reducing harm, and considering whether behaviours are beneficial or detrimental to users and the wider society (Karoll, 2010) and academics have seen that harm

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3 reduction services include AAS users (McVeigh, Kimergård, Bates, Hope, & Ncube, 2016).
4
5 However, AAS users can be wary of using such services, for a variety of reasons including
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7 stigma, more faith in the knowledge of experienced users (Glass et al., 2019; Harvey, Keen,
8
9 Teijlingen, & Parrish, 2019), or not perceiving the service is for them, e.g. why go to a needle
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11 exchange if using only oral steroids (van de Ven, Zahnnow, McVeigh, & Winstock, 2019)?
12
13 Salina and colleagues (2019) argue that there is a need to review the public health response to
14
15 AAS use and the potential associated harms. For a start, public health initiatives should utilise
16
17 more innovative methods of dissemination via peer networks, or involve AAS users in the co-
18
19 production of harm minimisation messages and materials, (Bates, Tod, Leavey, & McVeigh,
20
21 2018; Glass et al., 2019; Griffiths, Henshaw, McKay, & Dunn, 2016; Van de Ven et al.,
22
23 2019). The AAS users' voice is often missing (Harvey et al., 2019) and it could be argued
24
25 that a way to increase engagement would be, where possible, to merge what users want
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27 within the public health approach. Consequently, the aim of this qualitative study was to
28
29 ascertain the types of support needed by people use non-prescribed AAS.
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36 **Method**

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39 We conducted an online questionnaire aimed at predominantly recreational AAS users. The
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41 survey used three sampling methods: convenience, self-selected (Patton, 2013; Rees, 2011)
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43 and snowball sampling (Shaghghi, Bhopal, & Sheikh, 2011). Internet distribution can help
44
45 reach hard-to-reach populations (Rodham & Gavin, 2006), but it makes geographically
46
47 controlling the location of the respondents difficult. Options for support and information may
48
49 be impacted by location, both in terms of laws and policies on provisions of service, but
50
51 evidence suggests that AAS users spend a lot of time online, where they access and tap into
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53 knowledge from experienced users and share research and information (Andreasson &
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55 Johansson, 2016). Moreover, the focus is on *ideal* support AAS and so despite the different
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3 laws and services in different countries, each interviewee can still offer something relevant.
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5 Consequently, it was decided not to exclude on the basis of nationality, but only age and AAS
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7 use. The first author contacted each person who had completed the questionnaire and who
8
9 was willing to be interviewed about their in-depth experience of support (or lack thereof).
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13 **Interviews**

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17 Semi-structured interviews, covering several topics including: side-effects experienced,
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19 advice sought, and support wanted, were conducted (Darlington & Scott, 2002). Participants
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21 were adults (age 18+) who were currently using or used non-prescribed AAS in the last six
22
23 months. Ethical Approval was gained from the Institutional Review Board and from the
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25 Addictions Services as required.
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29
30 A video interview was conducted with a current AAS user as a pilot (van Teijlingen &
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32 Hundley, 2001) as no changes were made as a result of this the pilot interview was included
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34 in the final dataset. A wide range of methods for undertaking the interview was offered to the
35
36 participants, including via the internet (Rodham & Gavin, 2006), and by telephone (Holt,
37
38 2010). By offering a choice of method the researchers were hopeful that this would
39
40 encourage this hard-to-reach population to participate as it allowed them control over the
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42 level of anonymity i.e. through the use of pseudonyms and typed answers. However, typed
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44 live chat interviews may not allow for the same level of questioning as the verbal interviews,
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46 as they are constrained by the medium of typing (Opdenakker, 2014) . Participants'
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48 interviews lasted between 45 to 110 minutes. The interviews were transcribed (except for two
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50 done via live typed 'chat'). Participants were offered the opportunity to review the
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52 transcripts.
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Data analysis

Thematic Analysis was applied using NVivo (Braun & Clarke, 2012). The interview data were coded both deductive and inductive and a coding framework was developed. Three interviews were coded independently by the third author and a secondary coding framework was created to improve the reliability of coding (De Wever, Schellens, Valcke, & Van Keer, 2006). The second author used the framework to code three different transcripts for quality assurance, and no revisions were made as a result of this procedure. To ensure the voice of the AAS user is at the fore, spelling, grammar and wording has not been changed in the ‘chat’ text or interviews. Moreover, direct quotes are accompanied by participants’ pseudonyms, age, and country.

Findings

The study entailed in-depth semi-structured interviews with 23 self-declared AAS users. Participants were male, aged 20 – 53, with the majority being white, employed and having a college level or higher of education (Table 1), with 87% (20/23) describing themselves as straight/heterosexual. Six participants competed in weightlifting or bodybuilding, the rest were recreational users, and all bar one trained regularly at the gym.

Table 1 near here

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3 Figure 1 identifies six themes and a number of sub-themes on support and information
4 wanted by AAS users.
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9 **Figure 1 near here**
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11 **Theme 1: specific types of information wanted: managing risks**

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16 Theme one identifies the specific types of information wanted based on three sub-themes (see
17 Figure 1). This theme was sub-titled ‘managing risks’ as interviewees acknowledged both
18 risks and ways to mitigate for them:
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27 *We all know that what we do can damage us, but we're not going to stop. Instead, it*
28 *would make more sense for people to be educated on how to lessen the side-effects*
29 *and the damage. People will take them irrespective of whether the advice is there or*
30 *not... Me being one of those people (Clinton,20,UK)*
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42 The advice on types of substances to use was considered important as many had strong
43 feelings that some substances were more harmful than others. A good example of this was
44 ‘Trenbolone’ as many felt it had too many negative effects. Nine participants talked about the
45 pros and cons of Trenbolone; pros being the dramatic muscle change effects, and the cons
46 included night sweats, shortness of breath and behavioural changes, such as quick to enrage
47 and loss of empathy:
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3 *(Trenbolone) made me so indifferent about ...my relationship with the people around*
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5 *me. It ...was almost like a sense of arrogance that no one else really mattered around*
6
7 *me. (Peter,24,UK)*
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15 Some had stopped using it as a result of severe side-effects, but this was not so easy for
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17 others:

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24 *that's why I like doing Tren (=Trenbolone) so much, because it, it just sucks*
25
26 *everything down really well ... I don't know if I'm gonna keep doing it because ... it*
27
28 *makes me, I'm not empathetic to stuff (Joel,34,USA)*
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32 The authors did not specially set out to investigate the impact of individual brands of AAS,
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34 however, as this substance was referenced numerous times with significant side-effects it
35
36 might be useful for those working in the field and AAS users to read the quotes included
37
38 (Supplemental material 1).
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42 Participants wanted information on long-term effects, such information needed to be
43
44 balanced, knowledgeable and evidenced-based:
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48 *where I could actually get some evidence-based advice on it, like from somebody who*
49
50 *knows what they're talking about not some guy who used to be a heroin addict in the*
51
52 *needle exchange. Cos, he clearly doesn't know about steroids... break that down and*
53
54 *say, look what you take matters a hell of a lot when it comes to the side-effects you're*
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56 *...going to get and also the results that you're going to get from it (Peter,24,UK)*
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3 Moreover, information needed to be backed up by evidence and academic studies were
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5 needed to provide this:

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9 *to be clinical trials and moderated usage of it under the supervision of a health*
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11 *professionals... we wouldn't have to rely on these forums and people using their own*
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13 *bodies to experiment (Paul,29,USA)*
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16 17 **Theme 2: mechanisms for the communication of advice**

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24 Several channels were suggested as to how information on AAS should be communicated
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26 (Figure 2).
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29 30 **Figure 2 near here**

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33 One participant suggested a YouTube channel sponsored by a health authority, but others
34
35 raised concern that such services were often prevention focussed. The confidence that
36
37 many participants put in 'broscience'; i.e. online advice from experienced users ('brothers')
38
39 was pronounced and participants had a number of ways of identifying those who were to be
40
41 trusted:
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46 *I am very selective with who I get my information from and I'll make that decision on*
47
48 *who I think is credible and based on you know are they referencing studies, have they*
49
50 *got sort of testimonials of people that they've worked with, are they like an authority*
51
52 *in that area (Peter,24,UK)*
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56 There was a call to consider this harm reduction message in a balanced way:
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3 *I live in the United States and they refuse to even admit that steroids will put on*
4 *muscle mass (Paul,29,USA)*
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9 Without resulting to the use of scare tactics:
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12 *...the federal government says a drug, 'a joint is a pill, is a needle, is a grave', and by*
13 *saying that all drugs are equally harmful... that's the problem about, ...being*
14 *hysterical, is that you lose all credibility for a public health intervention, if your*
15 *messages are informed by moralism as opposed to public health... take a scientific*
16 *fact-based, evidence-based approach to these topics and take the moralism out of it*
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24 *(Hugo, 53,USA)*
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27 Moreover, there was a concern that information should be targeted at young people, as they
28 are more vulnerable. For one participant this was the key motivation for taking part in the
29 study:
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35 *I was actually ecstatic to participate ... you should see the amount of kids that scare*
36 *me, that are just dumping all these hormones in their body and they don't give a crap*
37 *about their health. So anything that'll, that'll help people understand ...and possibly*
38 *contribute to harm reduction I'm all about. (Lewis,37,USA)*
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46 **Theme 3: types of support wanted**

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49 The third theme with associated sub-themes identified the specific types of practical support
50 wanted:
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- 54
55 I. Medical & practical support
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57 a. Access to harm reduction items e.g. needles
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59 b. Access to blood panel tests
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3 c. Able to give blood
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5 d. Access to someone knowledgeable on AAS-related side-effects and refer
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8 e. Treatment for side-effects
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10 f. Support to stop using
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12 g. Need for Testosterone Replacement Therapy (TRT)
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15 II. Support for the emotional impact of AAS use
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18 **Theme 3 - Subtheme 1: medical & practical support**

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21 When talking about AAS side-effects and support needed no-one expressed concern about
22
23 BBVs. However, some, including US participants, wanted more access to NSPs but more for
24
25 convenience than harm minimisation:
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29 *needle services would probably be a good thing, I don't think it is as necessary as*
30
31 *someone that is using heroin or something like that ...there is this sort of connotation*
32
33 *all steroid users are sharing needles which is really not the case even in the medical*
34
35 *literature. (Asi,28,USA)*
36
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40 One person was less concerned with obtaining free needles and more in having a place to
41
42 easily dispose of needles safely:
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46 *during my first cycle they had sharps bins, but it was very convenient, I used to take*
47
48 *them to the gym in a bag and drop them off, but not now (De1,35,UK)*
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51 In the UK, NSPs offer this drop-off service but many felt a certain stigma attached NSPs:
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55 *it would be ideal if that was more available but ...once I tried to ask for needles at a*
56
57 *needle exchange ...they thought I was on heroin... I just don't want to deal with the*
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3 *system ...I'd rather just go and pay for the needles rather than deal with that sort of...*
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5 *judgement. (Powel,34,UK)*
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9 Participants also referenced the need for some sort of service to test the quality of products,
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11 raising concerns about using safely and minimising risk.
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15 Most stated that getting blood panel tests done was important and ideally this would include
16
17 an opportunity to discuss the results with medical professionals. Such support also potentially
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19 acting as a preventative measure:
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23 *Somewhere you could get your bloods done and actually get someone to tell you what*
24
25 *it means, what you need to do...I think it would put a lot of people off for definite if*
26
27 *they realised, like your liver toxicity ... kinda telling people, look this can have these*
28
29 *effects in the long term. (Andrew,25,UK)*
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33 One participant argued that if heroin users had a right to free needles then AAS users had a
34
35 right to blood tests for harm minimisation purposes:
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39 *a government large scale public health problem because from a policy standpoint,*
40
41 *...whether it's heroin users having a right to clean needles or ...bodybuilders having a*
42
43 *right to medical monitoring of their blood (Hugo,53,USA)*
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47 Three people expressed a desire to be able to give blood and felt there were more risks from
48
49 doing this yourself:
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53 *taking steroids in general is not overly harmful when taken in the correct way but if*
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55 *you had something like trying to drain your own blood to bring health markers into*
56
57 *range that's whenever harm really starts to happen (Asi,28,USA)*
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3 And one participant's solution raised a potential public health risk:
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6 *to be on the safe side, I donate every few months just to reduce the haemoglobin and*
7 *haematocrit. ...obviously I have to lie on the form because they won't take the blood if*
8 *you have taken steroids. If there was a way ... to give blood in an official way then*
9 *that would be a good idea. (Del,35,UK)*
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17 Many would seek support from a medical professional, including specialists such as
18 endocrinologists, and wanted substances prescribed to mitigate side-effects both whilst on
19 cycle but also for Post Cycle Therapy (PCT). For others the concern was not stopping use but
20 ways to safely reduce usage, continue to use safely long-term and be able to openly talk about
21 issues with a doctor:
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30 *I would like to talk to my doctor about this stuff and make sure, I just want to be safe.*
31 *I don't want my liver, or my kidneys to get destroyed from these drugs. I wish there*
32 *was a proper, there was a right steps medically [sic]. (Joel,34,USA)*
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38 However, participants were clear that professionals needed more specialist knowledge on
39 AAS. This perceived lack of knowledge was seen as a barrier, even for participants who said
40 they would be willing to seek professional help to stop:
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46 *GPs and whatnot are super busy anyway, but ...somewhere to get stuff from ...to help*
47 *counteract stuff, like clomid ...If the help was totally anonymous, and also very high*
48 *in knowledge. This is not the case now. (Andrew,25,UK)*
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54 The anonymity was also important, as some had heard stories about AAS use recorded on
55 medical records impacting on insurance policies and this was also a concern.
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3 There was a request for medical professionals, particularly in the UK, to recognise the need
4 for support for low testosterone, and many users cited TRT as a reason for continuing use.
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6 Often describing their frustration with the medical profession's reliance on set ranges and not
7
8 taking into account the psychological impact on the individual:
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12
13 *I can't stop everything that is not an option, because I have low testosterone*
14 *naturally, I need to be taking something. I was hoping to do this with the NHS,*
15 *...they're really useless... if the NHS don't want to help, I will have to buy that myself*
16 *online, and take that possibly for the rest of my life (Del,35,UK)*
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27 **Theme 3 - Subtheme 2: support for emotional impact of AAS use**

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34 Some participants felt there was a need to consider the wider emotional impact of using AAS,
35 both in terms of reasons for starting use:
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40 *People go on steroids for the other reasons so these root causes should be treated*
41 *first. (Powel,34,UK)*
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46 and the impact of the emotional side-effects experienced on and off-cycle.
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49 The side-effects of PCT were often related to low mood and increased anxiety. There were
50 mixed views on benefits of PCT with some identifying emotional side-effects of using
51 substances to mitigate side-effects:
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57 *...is PCT protocol ... and I noticed that the clomid had an effect on me actually made*
58 *me feel quite anxious and it made me feel quite depressed. (Peter,24,UK)*
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3 and others choosing not to use PCT but instead drop to a lower continual dose to avoid the
4
5 emotional side-effects:
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10 *either people are going to use them and go through what is called PCT...or what you*
11 *can do is TRT and have times when you're going to use more and that is the choice*
12 *that I made because it's generally healthier choice and because you don't go through*
13 *these huge swings. (Johan,36,Hong Kong (French))*
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20 However, thoughts were different when it came to mitigate emotional side-effects when on-
21
22 cycle, in relation to those around increased irritation and anger. The predominant message
23
24 was that AAS users were responsible for recognising and managing these themselves.
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27 Meditation was referenced by one participant as a useful tool to help with this:
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30 *I am quite self-aware you see I meditate every day. So, I notice things about myself*
31 *very, very easily. So, I'll notice that my patience is a little bit more thin.*
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(Peter/UK/24)

In terms of types of support, participants recommended a need for specialised counselling,
and suggested: education, managing side-effects, dedicated phone lines, psychotherapy,
someone to talk to, cognitive-behavioural therapy, and peer support groups.

In terms of overall access to information and support, one participant advocated for specialist
centres:

specialist clinics which offer a confidential service are a must when it comes to
steroid users. The clinics that I have noticed that operate very well do three things.
First of all, they are staffed by highly knowledgeable people who know the effect that
steroids have on the body so they're very quick to identify which side-effects may very

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3 *well be steroid related and where referrals are appropriate. They offer full panel*
4
5 *hormone blood tests which, again, are very useful at identifying potential problems*
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7 *and they are also run by non-judgmental people who are very good at putting people*
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9 *at their ease. (Isaac,40,UK)*
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13 Isaac's quote highlights the importance of having non-judgemental professionals and this
14 leads into the fourth theme of stigma.
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18 **Theme 4: stigmatisation of AAS use**

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23 Several participants had experienced stigma, mainly at the hands of professionals:
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33 *I had a falling out with my one doctor ...I was always open and honest ... And instead*
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35 *of ... talking to me about it, ... he would more, more or less berate me about it, you*
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37 *know, so, I never felt that if I did have a problem..., I would have been able to bring it*
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39 *to him comfortably. (Lewis,37,USA)*
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43 Moreover, it was clear that this was a subject discussed openly amongst users who shared
44 stories. This then influenced people who had no negative personal experiences:
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49 *the experiences my sort of friends and team-mates have had, with healthcare*
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51 *professionals have been, ... entirely negative... I feel like going to a healthcare*
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53 *professional with anything you know would be a last resort. (Alvin,36,UK)*
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57 Others talked about stigma in relation to using NSPs. They felt these services stigmatised
58 them by classing them in the same group as other substances users who used dependence-
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3 inducing drugs such as opiates, often themselves reflecting societies' stigma of such people
4 referring to them as 'junkies', and as a result often chose not to use such services.
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12 **Theme 5: paying for support services**

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19 The fifth theme was a clear willingness to pay for support services, although this was
20 caveated that the cost would need to be reasonable. Many purchased their AAS-use
21 paraphernalia online (and preferred doing so), paid to get blood-tests done privately and one
22 even made it clear he used to donate whenever he got needles from an NSP. One participant
23 felt that although it would be good to have free bloodwork that this might make people's
24 decision to start using an easier one and felt therefore that payment for bloodwork was an
25 important part of the decision-making process. Another saw AAS use as his choice, and
26 therefore managing the side-effects were his responsibility, and should be at his own cost:
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39 *it is my choice to take these steroids ... it's my responsibility, it's my body...morally I*
40 *don't think it's right for me to put that demand on the NHS.* (Peter,24,UK)
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48 **Theme 6: legality of AAS use – a change in the law**

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55 The legal status of AAS impacted on support in relation to harm minimisation as people were
56 using them anyway. Some felt that if AAS use was legalised, people would feel more able to
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3 seek advice from medical professionals and be able to buy from pharmacies which would
4
5 reduce risk, as products would be of a good quality and not adulterated:
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9 *I would like to see it legalized so there would be like a standard, for example because*
10
11 *I know a lot of people have fucked themselves up using somebody's homebrew that*
12
13 *they gave them infections. (Lewis,37,USA)*
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16
17 *Your advice and your support and your sources and your education is driven*
18
19 *underground and that is a problem. (Peter,24,UK)*
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22
23 It is worth noting that AAS users may have an ulterior motive in that by using AAS they may
24
25 put themselves on the wrong side of the law. Moreover, not all participants agreed and one
26
27 suggested that AAS should not be legalised:
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31 *I just think there should be a way where it can remain, I guess banned to the public*
32
33 *but at least allow there to be clinical trials and moderated usage of it under the*
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35 *supervision of a health professionals (Paul,29,USA)*
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39 It was acknowledged that the legal situation affects public health polices, and here it was
40
41 clear that few felt that the policies in place provided the necessary support for people who use
42
43 AAS. The idea that people's experiences were unique and could not be applied generically to
44
45 use was referenced throughout the interviews. One participant summed up individualisation
46
47 as a need to understand the motivations and circumstances of the individual:
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51 *when we talk about anabolic steroids, I think we have to say, 'in what context, by*
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53 *whom and from whom, and for what purpose, ... and under what circumstances?'*
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55 *... We need to get the right on a policy level, we need to get the right kind of help, for*
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3 *the right kind of sub communities and not have a one size fits all approach.*

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5 (Hugo,53,USA)

6 7 8 9 **Discussion**

10 11 12 **Harm minimisation**

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16 Many of the wishes for support services in this study are aligned to some of the services
17 already supplied in a range of western countries, and others have been recommended by
18 previous studies e.g. need for PCT advice (Griffiths, Henshaw, et al., 2016), and specialised
19 harm reduction interventions for AAS users (Kimergård & McVeigh, 2014). A number of
20 concerns raised in this paper have been previously raised in the literature including: risks of
21 self-phlebotomy (Brennan, Wells, & Van Hout, 2018), stigma from health professionals
22 (Griffiths, Murray, & Mond, 2016; Simmonds & Coomber, 2009), a risk of poor quality
23 substances (Abbate et al., 2015; Cho et al., 2015; Coomber et al., 2014). The current public
24 health focusing on harm minimisation treats AAS users as ‘another drug user’ which could be
25 another reason as to why AAS users prefer to avoid public health services. This study echoes
26 previous studies highlighting that AAS users are reluctant to engage with health services
27 (Zahnow, McVeigh, Ferris, & Winstock, 2017) but wish to do so. Desires such as to discuss
28 the effects of use with medical professionals; to see more research-led studies and evidenced-
29 based advice, alongside the willingness to pay for services potentially does set them apart
30 from the more traditional users of such services. This desire for evidence-based advice is not
31 surprising as this population has a high level of ethnopharmacological knowledge
32 (Monaghan, 2002). This also goes some way to explain why participants were advocating for
33 more human-based scientific research.
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3 The public health focus on BBV risk aligned to AAS use is not something that the
4 participants recognised, which raises the question why this focus? Participants talked about
5 accessing NSPs and receiving information and needles; however, participants also spoke of
6 stigma attached to this. Moreover, AAS users' practices when injecting differ from those who
7 inject illicit substances (e.g. heroin); the former tend to use swabs, do not share needles or
8 vials and rarely re-use needles (Underwood, 2019). The majority of harm minimisation
9 advice tends to be through NSPs and van de Ven and colleagues (2019) argue that this may
10 miss an entire group of people who only use AAS orally. It could be argued that those
11 working in this field, know that they are only likely to be funded if the focus is on wider
12 public health issues i.e. BBV prevention, however, this is not helpful, if that very focus then
13 is a barrier for some people accessing the service, and in this study less than half of the UK
14 participants had accessed NSPs.

31 **Support services**

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35 Based on the wishes of the participants from this study the authors have outlined the services
36 that it might be useful for a specialised steroid clinic to provide in order to meet the wide
37 range of potential needs for people who use AAS (Figure 3).
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43 **Figure 3 near here**

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47 This study highlights that first and foremost AAS users wanted medical support for side-
48 effects and previous studies have shown that access to medical examinations can help AAS
49 users feel safer (Kimergård & McVeigh, 2014) and consequently it is worth including this
50 provision as part of any specialised steroid service. Another potentially useful addition would
51 be access to advice on nutrition and exercises, as some participants acknowledged that they
52 started too young, and with the right advice on diet and exercise may not have started using
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3 AAS so early. Furthermore, offering courses or sessions in mindfulness and meditation might
4
5 be beneficial as some participants stated they already used such techniques to manage some
6
7 of the emotional side-effects. Users wanted professionals to have personal experience, which
8
9 is an unrealistic expectation; however, such wishes could in part be met by the setting up of
10
11 peer-support groups. Services could require service users to make a donation, as this could
12
13 provide services with a way of funding potential outreach services e.g. peer-led needle
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15 distribution (Kimergård & McVeigh, 2014), reduce stigma, and align with their value of
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17 taking responsibility for their use.
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23 Considering the recommendations for steroid clinic services (Figure 3), potentially the most
24
25 controversial of these could be offering testing for quality of substance. However, evidence
26
27 shows that much of the AAS sold is adulterated (Coomber et al., 2014) and testing of illicit
28
29 recreational drugs is now part of many modern harm minimisation strategies (Brunt, 2017).
30
31 AAS users were understandably concerned about drug quality and some even paid for testing
32
33 through online companies as part of their personal harm minimisation strategy. This study
34
35 also found evidence of AAS users not only wishing to give blood as a harm minimisation
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37 technique but also using blood donor services, and not disclosing their AAS use. Self-
38
39 phlebotomy is something that health professionals need to be aware of (Brennan et al., 2018),
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41 but it is also relevant to note there could be risks from public blood donation too.
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47 Interventions should be targeted at people who use AAS to improve their health outcomes
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49 (Bates et al., 2018) and the majority of interviewees supported this perspective, feeling that a
50
51 focus on stopping use was not only unhelpful but also unrealistic. This is relevant as users
52
53 noted that stopping use would not be possible due to their concerns about the negative effects
54
55 of having low testosterone levels (due to age or AAS-use). The concerns around low
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57 testosterone causing depression and impacting on quality of life, appear to be one area within
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3 this sub-community that deserves further attention. It is important for medical professionals
4 to be well informed about IPED use not just to support physical health issues but also those
5 experiencing low mood when off-cycle (Griffiths, Henshaw, et al., 2016). The idea that
6 medical practitioners are not taking the impact of low mood among men seriously regardless
7 of the cause is relevant because research suggests that there is a disparity with diagnosis of
8 depression in gender, with medical practitioners less likely to diagnose depression in men
9 (Salk, Hyde, & Abramson, 2017). The time is right to focus support services on psycho-social
10 aspects of use as there is a wider societal movement to de-stigmatise mental health issues for
11 men. Thus, further research into the emotional experiences coming off-cycle and behavioural
12 changes such as increased irritation or anger, and loss of empathy when on cycle would be
13 useful to inform the provision of effective support services.
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33 Timing of intervention is important and it is key to consider transitions in people's lives
34 (Bates et al., 2018), such as reaching an age where testosterone levels fall naturally or
35 deciding to change your body shape and/or joining communities where AAS use is
36 normalised. This supports participants' calls for credible youth intervention, understanding
37 that saying no is unrealistic. Any intervention needs to be tied to motivation (Boardley, Grix,
38 & Dewar, 2014) and this study found that there was a notion that users wanted to be
39 understood in relation to their personal motivations for use. Therefore, the authors suggest a
40 need for further research into how motivations for use might impact on the type of support
41 AAS users want across the lifespan.
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54 **Mechanisms of communication**

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3 In relation to the provision of information and support, the ‘one-stop-shop’ service suggested
4 could be an answer but does not address all the issues raised (possibly due to funding or
5 policy issues). To do that it would need to be provided in conjunction with a range of other
6 services via other sources, such as the online communities. Improving the provision of
7 information through modern media is important to prevent harms and reduce the influence of
8 those with vested interests (e.g. suppliers) (McVeigh, Evans-Brown, & Bellis, 2012) and
9 using social media and online networking has been recommended (Glass, Hope et al. 2019).
10 The authors add their voice to many before us (Bates et al., 2018; Glass et al., 2019; Griffiths,
11 Henshaw, et al., 2016; Kimergård & McVeigh, 2014; Salinas et al., 2019; Underwood, 2019;
12 van de Ven et al., 2019) who are advocating for a review of public health initiatives with a
13 view that they look to utilise more innovative methods of dissemination via peer networks.

14 Underwood (2019) advocates engaging the experienced users, the social influencers, to
15 promote harm-reduction services, and reminds us that when we publish research on AAS we
16 are often speaking directly to the community, as users seek out evidence-based knowledge
17 and this was clearly evidenced in our interviews. Furthermore, it was not just the channels
18 that were seen as important, but that the advice was balanced. Previous studies have
19 advocated the need for professionals to acknowledge the efficacy of steroids (Griffiths,
20 Murray, Mitchison, & Mond, 2016) and this was something that was desired and a more
21 individualised approach is needed ‘based on thorough assessment of risk behavior, lifestyle
22 and underlying health’ (Zahnow et al., 2018, p111). Our interviews highlight the broader
23 necessity to reconsider the current support approaches, moving away from conversations
24 about needle sharing and stopping use; to conversations about wider long-term harm
25 minimisation and practical advice including ‘how to inject’. In this study most participants
26 were self-taught and used online instructions or videos to support this. There are videos by
27 professionals on safer injecting (Public Health Wales, 2019). Perhaps increasing the publicity
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3 of such resources and involving experienced users in such initiatives might help ensure that
4 the ‘right’ information is being shared to help people minimise risks, with NSPs also offering
5 this guidance.
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11 **Removing barriers**

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14 Removing barriers to access is key. The AAS users readily shares information and stories,
15 and therefore if one person has a poor experience with a professional that this is shared
16 widely within the community. Professionals need to be aware of both this network and also
17 acknowledge how harmful their judgements can be with regards to people accessing support.
18
19 What is surprising around the concept of medical professionals needing to be both credible
20 and non-judgemental is that this information has been available in the academic literature for
21 a long-time (Grogan, Shepherd, Evans, Wright, & Hunter, 2006; Simmonds & Coomber,
22 2009). This raises the question of what more needs to be done by the academic community to
23 help encourage the academic evidence to be incorporated into policies and practice.
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40 **Identity as an AAS user**

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43 One central idea integral to each of the six individual themes identified, is *identity*. It is clear
44 from this study that AAS users do not identify themselves as ‘illicit drug-users’ in the sense
45 they clearly want to distance themselves from people who are dependent on heroin or
46 cocaine, which echoes the findings of other studies (McVeigh et al., 2012), and although
47 there is evidence of poly-drug use within this community (Begley, McVeigh, & Hope, 2017;
48 Cornford, Kean, & Nash, 2014), only one interviewee talked of using any other illicit drugs
49 and participants were clear that they saw their use as different to that of other users.
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51 Moreover, some of those who saw their use as TRT, no longer saw themselves as AAS users
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3 but instead just saw it as a form of self-prescribed medication. There is a need to develop
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5 ‘better understandings of the health and wellbeing issues’ for AAS users in order to ‘design
6
7 more credible and engaging policy responses’ (Moore, Hart, Fraser, & Seear, 2019, p15) and
8
9 with the ‘one-size-fits-all’ attitude of public health information literature being inadequate, as
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11 it does not acknowledge the diversity of people who use AAS (Underwood, 2019).
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15 16 **Strengths and limitations**

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19 To our knowledge this is the first study to directly ask AAS users about the ideal types of
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21 information and support they want. This study may not represent all types of AAS users;
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23 however, there were similarities found across geographical regions and the age ranges
24
25 suggests a level of diversity and consequently sheds light on the types of information and
26
27 support wanted. Participants may have under-reported the severity of side-effects or need for
28
29 support because of shame or fear that such studies may mean an increase in attention from
30
31 authorities into steroid use, which could negatively influence the legal situation. This study
32
33 acknowledges that there may be geographical/legal differences dependent on country of
34
35 residence. The study also did not look at the specific information and support needed for each
36
37 of the different substances and associated brands, however, it did find that one AAS, namely
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39 Trenbolone, was referenced as having problematic side-effects and this is a potential area for
40
41 further research. This study also recommends that specialised steroid clinics are potentially a
42
43 good way of providing support to AAS users, however in line with previous studies
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45 (Kimergård & McVeigh, 2014; Tighe et al., 2017), a limitation is the lack of evidence-base
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47 concerning the impact of such services (often due to policy changes or funding limitations on
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49 such services) and therefore there is a need for evaluation of the effectiveness of such
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51 services particularly aligned to harm minimisation for this population.
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59 **Conclusion**

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3 There is a need to encourage professionals to share good practice not only with other
4 professionals but more widely within the AAS community and we advocate that any
5 approach be person-centred. Moreover, governments need to take note of the wealth of
6 building evidence for such a personalised approach within both the AAS user and academic
7 communities. We would advocate that professionals continue to take a harm minimisation
8 approach and investigate ways to engage influencers within the community with harm
9 minimisation activities, as well as try to measure the impact of any specialised AAS services.
10 We advocate for more consideration being given to the types of support for men who are
11 experiencing depressive symptoms and those with psychological complications surrounding
12 AAS use. We support the development of specialized steroid services as part of public health
13 initiatives and suggest they consider ways for AAS users to give voluntary donations or be
14 charged a nominal fee for specialist harm minimisation paraphernalia. Emphasis needs to be
15 placed on ensuring services are delivered by knowledgeable, non-judgemental professionals
16 who take a neutral view of AAS use and understand the complex motivations for use and the
17 benefits.
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39 **Conflicts of interest:** none
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3 **Table 1: Demographics of participants**
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6 **Figures:**
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10 Figure 1: Themes: information and support wanted by AAS users
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13 Figure 2: Mechanisms for communication
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16 Figure 3. Suggested services for specialist IPED/AAS Clinics
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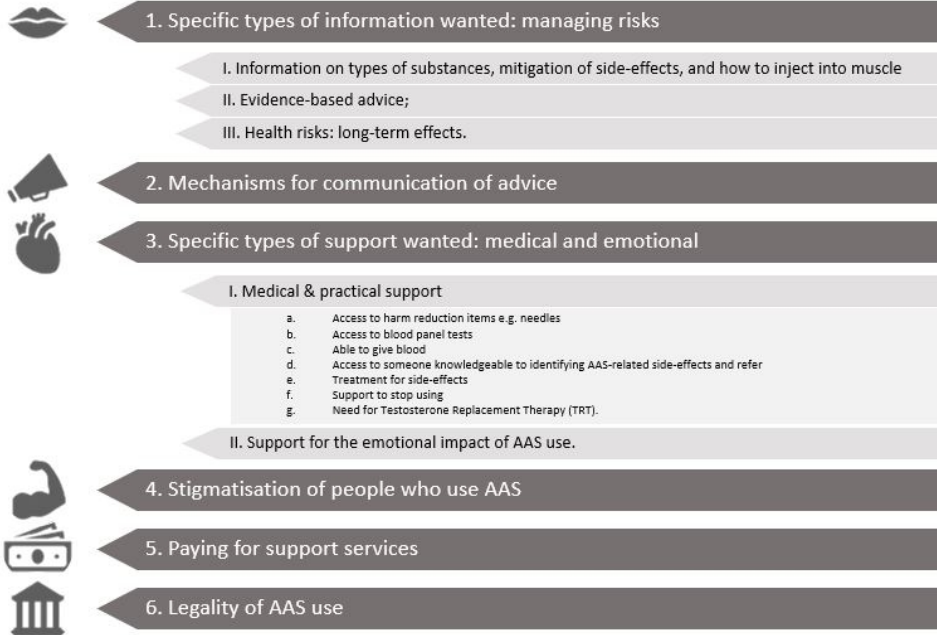
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Table 1– Demographics of Participants

Pseudonym	Country of Residence	Age	Gender GF= Gender fluid	Highest level of education	Employed
Clinton	UK	20	Male	College/University	Employed/Student
Peter	UK	24	Male	College/University	Student
Andrew	UK	25	Male	College/University	Student
Lawrie	UK	27	Male	College/University	Employed/Student
Asi	USA	28	Male	College/University	Employed
Paul	USA	29	Male	College/University	Employed
Theo	Denmark	30	Male	College/University	Student
Lev	Canada	32	Male	College/University	Employed
Powel	USA	34	Male	College/University	Student
Joel	USA	34	Male	Primary/Secondary	Employed
Robert	Spain	34	Male	College/University	Employed
Del	UK	35	Male	College/University	Employed
Alvin	UK	36	Male	College/University	Student
Johan	Hong Kong	36	Male	College/University	Employed
Lewis	USA	37	Male	College/University	Employed
Don	UK	39	GF	College/University	Student
Milton	UK	40	Male	Primary/Secondary	Retired
Tomaz	Belgium	40	Male	College/University	Employed

Isaac	UK	42	Male	College/University	Student
Han	UK	42	Male	Primary/Secondary	Other
Lee	USA	43	Male	College/University	Employed
Harry	UK	52	Male	College/University	Employed
Hugo	USA	53	Male	College/University	Student

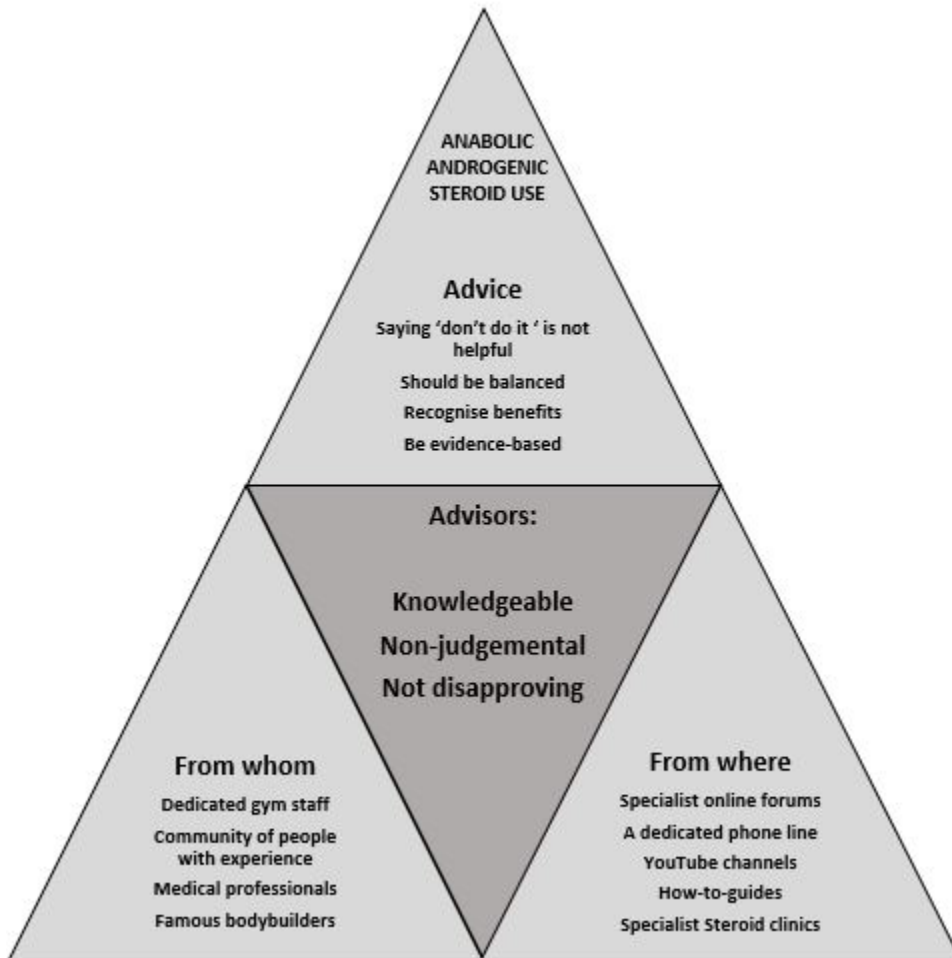
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Themes: information and support wanted by AAS users

210x137mm (96 x 96 DPI)

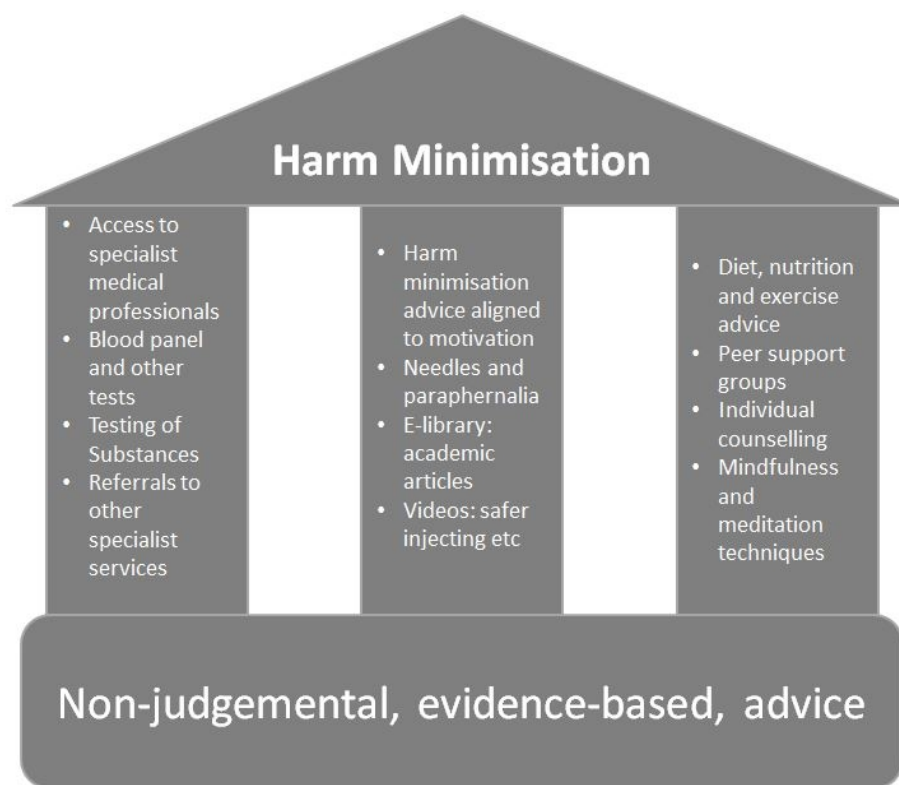
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Channels for advice

127x137mm (96 x 96 DPI)

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Suggested services for specialist IPED/AAS Clinics

207x174mm (96 x 96 DPI)

Self-reported effects of using Trenbolone

This study did not seek to find out the individual effects of specific brands or types of AAS however, one substance 'Trenbolone' did stand out as something that could have very beneficial effects but was also particularly problematic to use, in relation to unwanted behavioural side effects.

Use	Quote
Effects on Cycle	'compounds cause behavioural changes like Trenbolone so I no longer use that steroid' (Nick/USA/50)
	'Tren has caused heightened aggression. If estrogen [sic] spikes I can get moody but knowing my dosages and blood levels I can actually manage moods more' (Rod/Australia/39)
	'Trenbolone makes me very short tempered, aggressive and my mind is filled with viscious [sic] and violent thoughts' (Don/UK/39)
	'that is the one compound that does make me raise an eyebrow, but just because of the people that have come back to me after using it, and said, that I can't ever use that again, I went crazy' (Robert/Spain/34)
	'I never got on with Trenbolone. Trenbolone was one steroid that did make me irritable and did make me agitated.' (Isaac/UK/42)
	'I did use one compound: trenbolone, for a while and I had every negative side effect with it imaginable with that; I had shortness of breath, I had flushing, I had night sweats, I had quick, quick to enrage.' (Hugo/USA/53)
	it made me so indifferent about like my relationship with the people around me. It's like it was almost like a sense of arrogance that no one else really mattered around me' (Peter/UK/24)
	'I'm running Tren right now, and you know I get the full nightmares, I get the extreme sweats, the insomnia is pretty bad... I don't forget a single bit of the, the terror of the nightmare.' (Lewis/USA/37)
	'Tren is not the best drug to take, ...I am not emotional but Tren's not a good drug if you are not very in control of your impulses and your emotions and I am on Tren right now but very small doses of it because I've taken it before, and like man it just, it just makes you so depressed for no reason... I'm terrified of getting fat again... so that's why I like doing Tren so much, because it, it just sucks everything down really well ...I don't know if I'm gonna keep doing it because ...I'm not empathetic to stuff... I don't like the person that I am, when I'm doing it.' (Joel/USA/34)
	'I am on trenbolone and that could cause, actually that could cause problems right now. Definitely it's easier to get angry and Yeah, lose control that's for sure. Especially on trenbolone because that's a very specific compound, lots of friends and guys at the gym would say the same thing' (Lev/Canada/32)
	'I used it for a period of around eight weeks and I didn't get any sort of heightened aggression which some people find I didn't you know I got night sweats, it reduced the amount of sleep I needed it seemed and but it made me so indifferent about like my relationship with the people around me. It's like it was almost like a sense of arrogance that no one else really mattered around me' (Peter,24,UK)
	'I am having occasionally light night sweats, occasionally, slight er acid reflux, but no problem at all. It is very easy...um, with the Tren, I noticed initially a slight increase in irritability when I am driving, so you know, swearing at other drivers, you know, in my head sometimes, but that has passed now' (Del,35,UK)
'Very low mood after using trenabol' (Grant/UK/29)	
After a Cycle	'First cycle, off Tren I was very insecure' (Jason/UK/40)

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