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Research Article

Using A Range Of Recruitment Strategies To Recruit Those Who Use Anabolic Androgenic Steroids

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Abstract
Collecting data from people who use substances can be challenging. As many now have communities in the digital realm, recruitment via online networks has become a popular method with hard-to-reach participants. This paper seeks to share the pros and cons of different types of recruitment (both online and non-virtually) for those who choose to use androgenic anabolic steroids. **Method**: This case study highlights positive and negative factors to consider for questionnaire design and dissemination via social media platforms and traditional methods. **Findings and Results**: Key lessons with regards to online dissemination via social media include the benefits of using specialist hashtags, access to specialist online fora with respite gatekeeper endorsement, awareness of the impact on reputation for those asked to share, and anonymity. Questionnaire design findings emphasise the importance of piloting the questionnaire, giving consideration to how participants from specific populations may react to the way questions are phrased, and the need for awareness of specific sensitivities of topic of the targeted demographic sub-group. This paper will help sociologists and other social and behavioural science researchers who wish to consider and evaluate their own distribution methods for data collection when it comes to seeking out more hard-to-reach groups.

Keywords: *recruitment, social media, anabolic androgenic steroids, hard-to-reach populations*

Introduction

One way to evaluate a subject is via a reflective case study (Creswell, 1998), consequently this paper seeks to explore the effectiveness of using different methods of recruitment of a hard-to-reach population. It details the different strategies taken and reflects on the success of each strategy.

Hard-to-reach, also known as hidden populations, is a term that encompasses a myriad of reasons and circumstances and refers to those who are perceived as difficult to engage in public participation (Brackertz, 2007). The authors recognise that hard-to-reach is a contested concept (Flanagan & Hancock, 2010) as it can be stigmatising and suggests a level of homogeneity amongst groups (Cook, 2002). It is often used in the context of substance use due to associated stigma (Atkinson, Flint, & Gilbert, 2001). It includes people who choose to use Anabolic Androgenic Steroids (AAS) (Maycock & Howat, 2005; Yu, Hildebrandt, & Lanzieri, 2015) due to the combination of its legal status and AAS-users' experience of stigma (Aycock & Howat, 2005; Yu et al., 2015) which makes them reluctant to disclose their use (Settanni, Prino, Fabris, & Longobardi, 2018; Thorlton, McElmurry, Park, & Hughes, 2012).

There are a range of methods for reaching out to participants from such populations. Questionnaire

surveys are commonly used for data collection across a range of academic fields (Regmi, Waithaka, Paudyal, Simkhada, & van Teijlingen, 2017). There is a wealth of literature discussing the development of online questionnaires (Lumsden, 2007; Regmi et al., 2017; Reynolds, Woods, & Baker, 2007; Whitaker, Stevelink, & Fear, 2017). As early as 2003, Andrews et al. (2003) note that internet questionnaires presented challenges not found in conventional research and predicted that communities were likely to become protective of their online spaces. To address some of the challenges, Joesph et al. (2016, p. 81) suggest the following recruitment approach for smaller projects:

1. Leverage Existing Social Networks And Personal Contacts,
2. Identify And Foster Collaborations With Community Gatekeepers,
3. Develop A Comprehensive List Of Potential Recruitment Platforms And Venues,
4. Create Recruitment Materials That Succinctly Describe The Purpose Of The Study,
5. Build Respectful And Trusting Relationships With Potential Participants.
6.

Several of these strategies were used in this case study, and by sharing their experiences of using a range of communication channels for recruitment the authors hope to add to the knowledge base. Therefore, this article presents a case study on using a range of recruitment methods to seek the experiences, aligned to support needed, for people who choose to use AAS via a questionnaire, with the aim that this may be of benefit to researchers also seeking to recruit from similarly hard-to-engage populations.

Method

Research should be blended in a way that gives the optimal opportunities for achieving the research aims (Johnson & Onwuegbuzie, 2004). The use of one type of data collection is often "inadequate to address the complexity" (Creswell, 2009, p.203) of a topic. A mixed-methods approach uses quantitative and qualitative data collection in parallel (Tashakkori & Teddlie, 2003) and is beneficial when looking for practical implications as it can enhance the interpretation of the results (Bergh, Corley, & Ketchen, 2017). This research project aimed to explore the motivations and experiences of use and how these relate to the support wanted for people who choose to use AAS (Harvey, Parrish, Teijlingen, & Trenoweth, 2020). Therefore, given the complex nature of the varied motivations driving use of AAS across a broad demographic group, one effective way of answering the research questions on support and motivation, was a mixed-methods approach. A quantitative approach would enable the comparison of attributes aligned to motivations and support accessed and test out participants' perspectives aligned to what was already stated in the literature and qualitative data is a way of exploring the richness and complexity of a phenomenon (Burns & Grove, 1999), which can lead to a deeper understanding. Incorporating these two types of data should lead to greater insight into individuals' underlying motivations for use as well as their perceptions and experiences of support services. It was decided not to exclude participants based on nationality, and inclusion criteria were based on age and AAS-use. Ethical approval was gained for this study to be conducted through Bournemouth University Ethics Committee.

Questionnaire Design

The questionnaire itself can impact on recruitment with regard to whether it is deemed credible to complete and share. Consideration was given to the length of the questionnaire, as people are more likely to complete questionnaires of a shorter length (Markstedt & Vernersdotter, 2013; Rolstad, Adler, & Rydén, 2011). However, it can be difficult to separate the impact of content from length (Markstedt & Vernersdotter, 2013); therefore, the length of the questionnaire was determined by the objectives of the study. The ordering of questions is important, as precedent questions can affect how people consider subsequent questions (Fan & Yan, 2010). The participant information sheet and consent check box were placed first to ensure informed consent. The item placement was based on guidelines by Siniscalco et al. (2005) with topics of major interest to the participant such as questions about how they use AAS placed early on, as completing topic-related questions may encourage participants to be more open about

more generic personal questions (Regmi et al., 2017). Questions on behaviour and demographic questions were placed towards the end as behavioural change could be a sensitive subject, due to the societal perceptions relating to 'roid rage', and sensitive questions can provoke resentment or influence responses to other questions (Siniscalco et al., 2005). Views of AAS-users could vary dependent upon their demographics such as gender, age, or motivation for use. Collecting such demographic characteristics would enable the testing of participants' perspectives aligned to what had previously been identified in the literature (Harvey, Keen, Teijlingen, & Parrish, 2019).

The consideration of how questions of gender and sexuality are asked is an important consideration in questionnaire design (Eisenberg, Gower, Brown, Wood, & Porta, 2017). AAS-use is found within homosexual, heterosexual, transgender and genderfluid communities (Guss et al., 2016; Ip et al., 2015, 2017), consequently advice was sought from a nurse practitioner from a local sexual health clinic for lesbians, gays, bisexuals, transsexuals, queers, intersex and asexuals (LGBTQIA+) and an LGBTQIA+ researcher on the phraseology of questions on gender and sexuality. Use of self-describe options can be more empowering and inclusive (Stonewall, 2016) and labelling people can be disempowering (Eisenberg et al., 2017). Therefore, we included a self-describe question on gender and a three-choice question on sexual orientation with a self-describe option (Table 1).

Table 1

Questions On Gender And Sexual Orientation

With what gender do you identify?	**Self-description:**
What is your Sexual Orientation? *(Please tick one)*	Straight/Heterosexual Gay Prefer to self-describe Self-description:…..

Sensitive questions are likely to receive higher nonresponse rates or inaccuracy rates (Olson, 2010). We identified that the question on aggression may be sensitive and therefore juxtaposed this with a question on the benefits of use. One advantage of a web-based questionnaire is that it can be designed to include compulsory questions, i.e., participants must provide an answer before moving on and consideration was given to including such mandatory questions. However, mandating questions can put up a barrier with the respondent, particularly when dealing with a sensitive subject, and may lead the participant to leave the questionnaire (Stieger, Reips, & Voracek, 2007). Therefore, most questions were optional, as use can be emotive due to societal stigma, however, questions on consent eligibility, and support; where a lack of data would limit the potential of the questionnaire to address the primary study question, were mandated. Wright (2005) suggests that you can foster goodwill by offering participants the study results, therefore, therefore, participants could share contact details if they wanted a results summary. In times of data privacy infractions, people might be put off participating in online surveys around sensitive subjects such as AAS use for fear of being outed (Settanni et al., 2018), therefore, the questionnaire was anonymous.

Piloting the questionnaire

Pilot studies are crucial to the design process as they can identify such elements as: assessment of the likely success of research approaches and the identification of any logistical or data analysis problems. When used with questionnaires they can assist in understanding the length of time for completion and identifying any ambiguous or unnecessary questions (van Teijlingen & Hundley, 2001). Expert reviews can identify question problems, which could impact on the gathering of meaningful quality data (Olson, 2010) and visual presentation can strengthen response rates (Dillman, 2007). Therefore, the draft questionnaire was critiqued by a Needle and Syringe Programme (NSP) keyworker, and several

professionals with expertise in substance use, statistics and a visual questionnaire design. It was also piloted on three AAS-users and an ex-user.

Recruitment and Distribution Strategies

This case study used several different non-random sampling methods: opportunity, self-selected (Patton, 2013; Rees, 2011), time-location space and snowballing, which is useful in sensitive areas of research (Shaghaghi, Bhopal, & Sheikh, 2011). Snowballing refers to the method of having a gatekeeper share the questionnaire within the community (Biernacki & Waldorf, 1981). Table 2 outlines the recruitment strategies used with their strengths and limitations.

Table 2

Recruitment and Distribution Strategies

Strategy	Description	Application in this study	Strengths	Limitations
Opportunity	Uses the knowledge of the researcher to identify potential participants (Jupp, 2006)	Contact support organisations for substance users to share survey link. Using own network to share link in their networks. Local supplement shops.	Useful for hard- to-reach populations such as drug users (Goode, 1999). Allows the researcher to define who and where to study (Jupp, 2006)	Perceived from a positive perspective as weak data as it may produce a representative sample of the population (Jupp, 2006).
Self-selected	Participants self-select to undertake the survey (Lavrakas, 2008)	Distribution of the survey link through social media networks and online for a	Useful to reach secretive populations such as drug-users (Lavrakas, 2008)	Introduces self-selection bias which limits data being generalisable to wider population (Lavrakas, 2008).
Time-location space	Identifiable locations which population uses (Karon & Wejnert, 2014)	Contacting NSPs, muscle gyms and online bodybuilding fora	Useful for data collection hard-to-reach populations (Karon & Wejnert, 2014)	Can be difficult to validate. Bias towards those who attend venues, leaves out those who do not attend (Raymond, Ick, Grasso, Vaudrey, & McFarland, 2007).
Snowballing	Gatekeepers share questionnaire (Biernacki & Waldorf, 1981).	Contacting professionals in NSPs and Admin for online user fora, and owners of muscle gyms.	Access participants with rare characteristics and sensitivities (Fielding, Lee, Blank, & Fricker, 2012; Shaghaghi et al., 2011)	Can lead to a more homogenous set of participants (Zahnow et al., 2018) as it relies on referrals from initial respondents to their network (Fielding et al., 2012).

A range of distribution strategies were used to dissemination the questionnaire (Table 3).

Table 3

Summary Of Distribution Methods For Questionnaire

Distribution Channel	Type of Medium
UK NSPs and substance use service providers (non-NHS)	Emailed questionnaire (to allow for paper-version to be completed), poster with online questionnaire link plus business card handouts with questionnaire link
Overseas substance use services: Canada, Australia, USA, Ireland, Jersey	Emailed online questionnaire link.
Work colleagues	Emailed poster and questionnaire link.
Pro-muscle gyms	Emailed poster and questionnaire link.
Friends	Emailed poster and questionnaire link.
Local health food shops & other businesses e.g. library, cafes	Handed out a poster, small business card handouts with questionnaire link.
Twitter	Pinned tweet and sent direct tweets to people who used the hashtag #steroids and substance use services.
Online muscle and bodybuilding fora	Contacted administrators to ask to create a post with questionnaire link
LinkedIn contacts	Sent individual messages to connections with online questionnaire link.
Facebook (FB)	Post of online questionnaire link
Instagram	Posted link alongside pictures of AAS relevant material, used relevant hashtags
Reddit webpage	Posted questionnaire link and study details
YouTube	Created video presentation with link to questionnaire: https://www.youtube.com/watch?v=iOsX1us3-O8

There is a range of different ways to select a non-random sample population (Mason, 2002) and when researching this acknowledged hard-to-reach population (Smith, Hale, Rhea, Olrich, & Collier, 2009), successful engagement can depend upon the researchers' knowledge of the participants in question (Shaghaghi et al., 2011). Support services such as NSPs and gyms are often key recruitment localities (Iversen, Hope, & McVeigh, 2016; Kimergård, 2015), therefore these were included in the strategy. However, as with many hard-to-reach populations, there is a need to understand this sub-group in a wide range of situations and not just limited to those who access support services (Hope et al., 2015). To reduce homogeneity, access non-NSP using members, and attract as diverse a sub-population as possible the researchers targeted muscle gyms, supplement shops and the internet. Previous papers have addressed practical and ethical issues when collecting data using social media (Hennell, Limmer, & Piacentini, 2019; Zindel, 2022). One challenge when distributing questionnaires online, compared with face-to-face in service-led environments, is that researchers are reliant on the integrity of participants regarding such demographics as age, gender and ethnicity as there is no opportunity to verify these.

AAS-use has been linked to the idea of masculinity within Western cultures (Kanayama, Hudson, & Pope Jr., 2012), therefore some targeting of selected high-income countries via emails to NSPs, social media and online muscle fora was undertaken. When considering questionnaire distribution online, it is necessary to consider the potential open global access as, dependent on the population being surveyed there may be different cultural, legal and social contexts. In this case example specifically laws and policies on use. However, evidence from the literature suggested that the AAS-using community sought information on online and studies across Western nations have shown similar motivations (Sagoe,

Andreassen, & Pallesen, 2014). Moreover, it would have been difficult to control the location of the respondents.

Online distribution

The internet can be a valuable resource for recruiting participants from hard-to reach populations, as the anonymity of cyberspace and help encourage people to participate (Rodham & Gavin, 2006) and previous studies have used special interest (bodybuilding) online discussion fora to seek participants (Jennings, Patten, Kennedy, & Kelly, 2014; Papangelis, Chamberlain, & Liang, 2016) as these spaces often have threads and discussion boards devoted to questions on AAS-use.

Due to the immediacy and transient nature of social media, the distribution was an ongoing process and steps were taken to re-share the questionnaire over a range of channels during the recruitment period. People who use AAS often do not discuss their use publicly, except within their own sub-culture networks; therefore, it was difficult to know who within the first author's own networks might know people who used AAS. Therefore, working on the philosophical notion of degrees of separation in social networks (Bakhshandeh, Samadi, Azimifar, & Schaeffer, 2011), an assumption that even if they did not know someone personally, they might share the questionnaire link via their social media, the study was posted on the first and third authors' LinkedIn (a professional networking site). The first author's FB and LinkedIn contacts were direct messaged to ask if they would share the questionnaire link on their social networks.

Twitter, Instagram, YouTube, Reddit

The research team developed a strategy to promote the questionnaire via Twitter (Table 4), including key participant inclusion criteria and a link and QR code to allow for easy access.

Table 4

Promotion Strategy

Step	Description
1	Tweeted the questionnaire link to the first author's Twitter profile.
2	Regularly tweeted AAS-related material using specific hashtags.
3	The third author shared the study on their profile.
4	Searched Twitter for terms such as "steroids" and "roids" to find people interested in AAS. Used direct "@" tweets to ask them to retweet.
5	Used a range of specialist interest hashtags to increase recognition (e.g., #ripped). Examples include: #muscles #muscleworship #bodybuilder #bodybuilding #biceps #abs #pecs #posing #pumped #flex #steroids #shredded #ripped #physique #enhancement #roids #gym #actor #sculpting #roids #gains #harmmin #support #IPED #bodyimage #enhancement #muscleworship #beard #abs #posing #flexing
6	Contacted specific individuals and organizations to ask them to retweet, including: • Substance use agencies, charities, and academics in related fields • People who promoted bodybuilding • Celebrities with significant followership (only one responded: an engineering academic, @markmiodownik) • First author's Twitter followers with large followerships
7	Translated the Tweet into several languages (Bulgarian, Finnish, German, Norwegian, Swedish, Icelandic, French, Danish, Russian, Spanish, Polish, Lithuanian, Hungarian, Greek). Used hashtags such as: #anabola #steroider #muskel #spieren #músculos #esteroides #bodybuilding #steroiden

	#culturismo #steroidy #mięśnie #kulturystyka #lamusculation #stéroïde
8	Translated "Anabolic Androgenic Steroids" into multiple languages and searched for that phrase on Twitter. Directly tweeted users who had used the phrase, asking them to retweet.

Note. Hashtags were used to connect topic-specific online communities ('bubbles') and improve questionnaire visibility within the Image and Performance Enhancing Drugs (IPED) online ecosystem. The strategy involved multilingual engagement, hashtag diversification, and targeted outreach to amplify participation.

Hashtags connect people (Buarki & Alkhateeb, 2018) and topic specific hashtags can be useful to access groups on social media, and in this case making use of twitter 'bubbles' (Teodorowski, Rodgers, Fleming, & Frith, 2022) with sharing by like-minded users. The first author searched Twitter for the types of hashtags that came up when searching for the term 'steroids' and regularly retweeted using relevant hashtags (Table 5). The research team was advised by an NSP worker to use Instagram. Therefore, the first author set up an account and promoted the questionnaire by adding relevant Image and Performance Enhancement Drugs (IPED) related stories to the feed, using hashtags (Table 7) to draw people to the posts.

Table 5

Instagram Hashtags Utilized

Platform	Content
Instagram: Instagram hashtags	#aesthetic #ripped #roids #gym #gymlife #steroids #muscle #powerbodybuilding #strength #physique #fitness #actor #power #fitfam #sculpting #workout #gymrat #gains #bodybuilding #bodybeautiful #workout #instafit Use Anabolic steroids: Share your experiences: Survey link – https://goo.gl/w8N5A1

A pre-recorded PowerPoint on AAS use and harm reduction, which included information about the questionnaire, was posted on a YouTube channel. The first author regularly searched for the most recent posts on YouTube about AAS and, where possible, shared the questionnaire link in the comment sections. No interactions were observed. The questionnaire was also posted on Reddit under the PhD academic study forum, in line with Reddit's guidelines.

Online fora

When it came to Joseph et al's (2016) recommendation regarding using existing social networks and utilising gatekeepers, the researcher contacted moderators of online muscle fora to ask for permission to post, in line with ethical research practice (Rodham & Gavin, 2006). Initially, fora mentioned in previous studies were targeted e.g., UK-muscle and MesoRX.com (Papangelis et al., 2016). A Google search was undertaken to seek out other pro-muscle fora. Papangelis et al. (2016) suggest that one challenge with approaching fora is a possible negative attitude towards researchers, who could be seen as opportunistic outsiders, and invading their safe space. However, another researcher found that some online forums actively welcome research studies and emphasised the need for a level of courtesy by seeking permission to post (Wright, 2005). Moreover, one characteristic of AAS- users is their familiarity with the academic literature (Underwood, 2019), therefore, it seemed reasonable that fora would accept the requests. Wright (2005) suggested researchers could post directly with an apology in advance for an unwanted posting, and notes that concerns have been raised about the length of time it takes gatekeepers to respond. This was discussed by the research team, and was felt to be unprofessional, potentially violating safe spaces and could negatively impact the credibility of the research.

Consequently, permission from moderators was sought to help ensure that privacy was not invaded, and the post was framed as a request focussing on seeking opinions and getting the voices heard.

Specialist Facebook Groups

Several specialist FB groups were directly messaged.

Non-internet distribution routes

UK NSPs and substance use service providers (non-NHS)

Previous studies have sought participants via substance use services (McVeigh & Begley, 2016; Rowe, Berger, Yaseen, & Copeland, 2017) and there has been an increase in recent years in AAS-users accessing NSPs (ACMD 2010). This was a challenge, as in the UK such services are delivered by many different providers and the FRANK website alone had 157 pages of substance use support services (FRANK, 2018). These pages were hand-searched, and a list of potential agencies created and contacted to see if they would share the questionnaire. This was a potentially beneficial route for accessing participants as professionals' relationships with the AAS-users could aid engagement with the questionnaire (Spacey, Harvey, & Casey, 2020). One of the problems with using a service provider is the power imbalance in relationships with clients. This was a concern, however; the questionnaire was anonymous and service users were not being asked to complete it as part of the service provided. As the study had not included NHS ethics, only services not run by, or commissioned by, the NHS could be contacted. As this was a potentially sensitive and stigma-inducing topic, posters with study details, survey link and QR code for discreet and easy phone scanning were created and a business-card sized version that could be slipped discreetly into a pocket.

Clark (2011) argues that it can be challenging to gain the cooperation of gatekeepers and often offering benefits in return, such as training, can help relationship-building as the organisation will get a clear benefit from supporting the research. Three service providers asked the research team to visit their organisation, to talk to the professionals about AAS-use and this opportunity was taken up. Another benefit to an organisation emerged in that one charity who held a number of NSP contracts, offered to promote the study and their support for it on their website. A final benefit was that the research team was able to offer organisations was a summary of the research findings.

Overseas substance use services

To find services overseas in English-speaking countries such as USA, Canada, Ireland, and Australia, the research team searched the internet for websites that listed substance use services.

Local businesses

The researcher visited two local shops selling supplements, as these are often used by AAS-users (Antonopoulos & Hall, 2016; Cafri et al., 2005) and both agreed to take business cards. Posters were put up around the university and in the local town library, as an attempt to reach a broad spectrum of people locally.

Pro-muscle gyms

The research team undertook a Google search of phrases such as: 'hard-core' 'power' and 'muscle' gym to identify potential gyms to target. Some UK gyms that focussed on strength and conditioning were contacted to request if they would share the link.

Results

Questionnaire Design

We received some very emotive responses to the question on aggression, for example:

> *This is bullshit, pure and simple. … I've been around this shit for years and I have never seen mood swings aka 'roid rage', that's just the bad publicity that the newspapers / media keeps feeding us (Rasmus/35/Sweden)*

Even though we had identified that it may be sensitive and had juxtaposed it with a question on the benefits of use. Despite, the care taken with the gender questions (Table 2), these also proved to have an aspect of sensitivity for this group that we had not foreseen, exemplified by these replies from the gender option: 'I'm a fucking man', 'I have a penis' and the self-describes for sexual-orientation (Table 6).

Table 6

Answers To Self-Describe Options For Sexual-Orientation

Sexual Orientation: Self-Describe
– Lean toward gay but minimally involved
– Confident man in his prime
– Happy healthy husband and father of three.
– Entrepreneurial, dedicated, quizzical, ambitious and pursuer of truth and education.
– Bicurious
– Married gay male, 53 years old, HIV+ 22 years
– Software engineer, intelligent, psychology grad

We had only one participant who started the questionnaire but then only completed the consent aspect, however not all participants chose to answer all questions. Eighty-two (61%) respondents ticked the 'yes' to the question on receiving a results summary and gave an email address.

Of the 82 participants who wanted a copy of the results, only 19 of their email addresses had a potentially identifiable surname and first name as part of the address. Many were clearly using pseudonyms designed to help the participant retain their anonymity such as 'johndoe', 'swedishbodybuilder', 'envy'.

Piloting the questionnaire

The feedback from testing the questionnaire with experts prior to the pilot suggested the need for the design style to be more aesthetically pleasing, the answer format to be consistent, the use of language to be less academic and more concise. There was some specific feedback around the question format including discussion on use of 'other' and using 'please describe' instead of 'please explain'. This led to changes in layout to improve usability and flow, fixing errors in the online questionnaire design, and simplifying language to improve clarity and ensure that the questionnaire was pitched correctly. Advice from a mental health practitioner led to the removal of clinical terms when describing psychological effects and this critique also identified that the researcher had missed a potential support group. There were no changes recommended from the pilot with the AAS-users.

Recruitment and Distribution Strategies
Online distribution

Out of 307 people who were directly targeted to retweet, 37 (12%) shared, and 23 people (who followed the researcher) retweeted our tweets without being asked. A basic snapshot of the social media communication and impressions is in Tables 4 and 7.

Table 7

Summary Of Distribution Channels of AAS Questionnaire

Communication Tool	Targeted Populations: questionnaire distribution	Number Contacted	Number Shares Known*	Other known sharing of info or additional steps needed
Email or Phone	UK Support Services for people who use recreational drugs	76	26	2 required to see Ethics approval
Email	Support Services for people who use recreational drugs in US, Canada, Ireland, Australia, New Zealand	72	4	1 required their in-house ethics process
Email	UK Gyms (Pro muscle)	46	1	
Email	Muscle Forum Admins	32		5 allowed Forum posts
In person	Shops selling Supplements	2	2	
Via personal friends with membership of pro-muscle gyms	Local gyms	2	2	
LinkedIn	Personal contacts messaged	213	40	
Facebook	Personal contacts directly messaged	117	29	
Facebook	Posted on personal FB page			7 people re-posted
Facebook	Messaged closed AAS / Testosterone groups to see if they would share		2	Accessed a key gatekeeper
Twitter	People directly tweeted to using @.... and asking them to share questionnaire link	306		37 retweet
Twitter	Unsolicited retweets Twitter users			23 retweets
Instagram	Instagram Users			98 likes in total for posts, and 65 followers gained on the basis of the posts.
Youtube	Narrated PowerPoint Presentation with survey link			27 views

*It is possible that people shared the survey without confirming or telling researchers they were sharing

Use of personal social networks and wider social media channels

Contact through direct messaging was met with a mixed response; 213 contacts were sent a direct message via LinkedIn and 40 (18.7%) agreed to share the link in their personal networks. Of the 117 personal connections contacted via FB messenger, 29 (24.7%) agreed to share the link.

Twitter, Instagram, YouTube, Reddit

Using specific, topic related hashtags was a benefit. There was a distinct difference noted regarding impressions (in that the number doubled) when comparing a tweet without hashtags and one utilising them (Figure 1.).

Figure 1. *Tweet Impression Example: August and September 2018*

Directly targeting celebrities also increased the impact of individual tweets (see Figure 2).

Top media Tweet earned 1,654 impressions **@markmiodownik** Would you be kind enough to share this Study into Anabolic Steroids and Support needed? goo.gl/w8N5A1 pic.twitter.com/k8I09r5VEY

Oct 2017 • 31 days **Top Tweet** earned 926 impressions **@KeirIrwinRogers** Hi, I wonder if you would be kind enough to share this for me? many thanks pic.twitter.com/CWY1S6P0rs

Figure 2*:* Top Tweets

The posting on YouTube of a pre-recorded PowerPoint on AAS use and harm reduction received only 27 views and no interactions were observed in relation to links posted in the comments of any YouTube video thread. There was no engagement on Reddit.

Online for a

Only five fora administrators agreed to the survey being posted (Table 8)

Table 8: Muscle fora that agreed for the questionnaire to be posted in a thread

Muscle Fora:
– UK-Muscle.co.uk
– Tmuscle.co.uk
– Muscle Talk https://www.muscletalk.co.uk/Testosterone-Other-Steroids-f10.aspx
– Forum.bodybuilding.nl
– https://thinksteroids.com/community/threads/please-assist-aas-survey.134390001/

The forum posts generated few comments, although one member endorsed the survey and encouraged others to share (Dec, 21,17), and from this several comments were generated: e.g. '*Nice Survey, I got to say'. A*nother forum member 'bumped' the survey and one member wrote *'Pretty straightforward survey BTW LMAO @ 'take steroids to take part in crime' option'*. Posting in certain fora can impact the participant demographics as the higher number of participants from the Netherlands may be as a result of posting on Forum.bodybuilding.nl (see Figure 3).

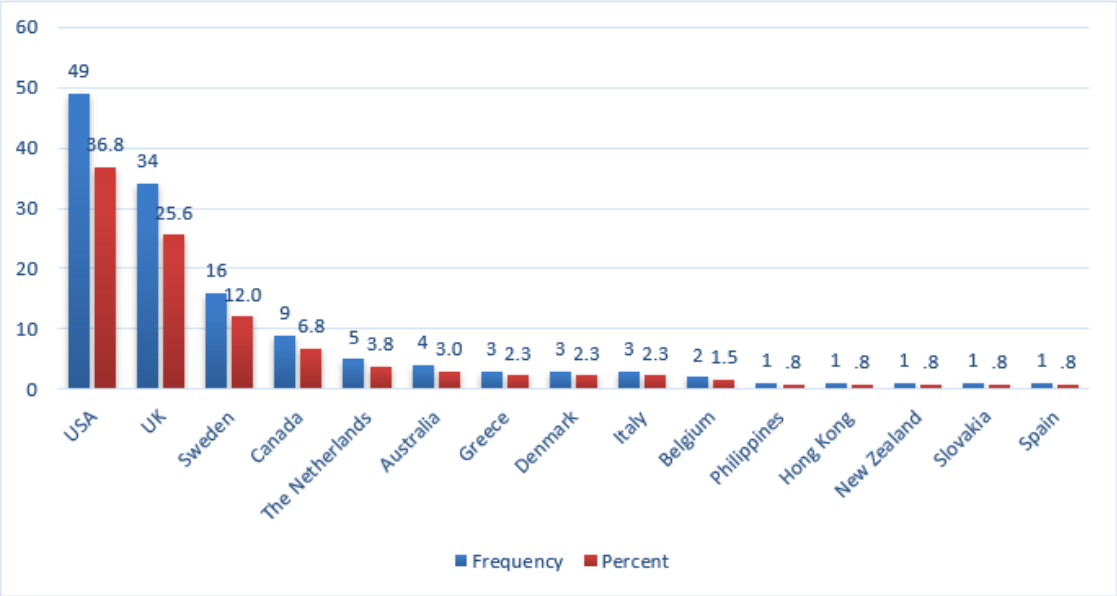

Figure 3*:* Participants by country of residency

Specialist Facebook Groups
Only two closed FB groups agreed to share the post and allowed the researcher to join the group. One group proved beneficial for although the questionnaire did not ask respondents to say where they had found the survey link a number of the those who agreed to be interviewed referenced that they had confidence in the study as it had been posted by someone they respected i.e. the administrator of the FB group.

Non-internet distribution routes

UK NSPs and substance use service providers (non-NHS)

In total, 76 services were contacted, and 26 agreed to share the questionnaire in some format. It was noted that responses from NSPs were heightened when the person working in the service had a particular interest in supporting people who used AAS. No paper copies of the questionnaire was completed.

Overseas substance use services

Approaching services overseas countries did not prove as fruitful as the UK search, as only four

organisations agreed to share the questionnaire.

Local businesses

It is unknown if people accessed the service from seeing it on a poster in a local business, but we suspect not, *as* Figure 3 shows the geographical residence of participants. It is notable over one third came from the USA and the aforementioned closed FB group had a large number of American subscribers.

Pro-muscle gyms

Of the 46 gyms that were emailed, only one responded that they would display a poster.

Discussion, Conclusion and Recommendation

The feedback from experts on questionnaire design and professionals working in the field was valuable, as is evidenced by the fact that no changes were recommended by pilot participants. However, it was not foolproof and on reflection, when it comes to sensitive questions based on our knowledge of AAS use relating to hegemonic masculinity (Börjesson et al., 2021), the answers to the question on gender could potentially have been predicted. This highlights then precarious balance in questionnaire design in terms of being inclusive but also not wanting to offend different diverse subcultures within a sub-group. The offer of a summary of results did appear be a factor in motivating participants to complete the study as 61% respondents shared their contact details, and in line with previous studies anonymity was clearly of importance to this group (Settanni et al., 2018) with many adopting a pseudonym in their personal contact details This is not surprising bearing in mind the stigma that this group experiences and the legal status of AAS use.

Of Joseph et al.'s (2016) recommendations for this participant group the first three steps were all useful with the exception of leveraging personal networks. In terms of commenting on the success of the online distribution, it is difficult to compare this with other studies on this hard-to-reach population to ascertain as to whether this was a positive or typical engagement as although papers on AAS-use report recruitment strategies for online surveys via forums, and websites e.g.(Bonnecaze, O'Connor, & Aloi, 2020; Ip, Barnett, Tenerowicz, & Perry, 2011) the authors could not find one that reported on the efficiency of each of the recruitment different methods.

The least useful method was via personal networks. It is not possible to ascertain how many participants accessed the survey via these methods, and the professional network contacts were less likely to share the link. Using personal networks with such a controversial and sensitive subject, meant that some professional contacts were unwilling to share, with one noting a reputational concern and another not believing they would have any users in their network. Another consideration here is that the authors were not part of the sub-culture. The lack of engagement on Reddit may have been because their rules only allow for research studies to be posted in one area and not targeted at specific groups. Whereas, for YouTube it might have been down to the lack of credibility of the researcher amongst the target population as a more recent study by Bonnecaze et al. (2020) which utilised the one of the authors' YouTube channel had over 2000 participants. Their YouTube channel for the Anabolic Doc (O'Connor, 2021) had 41k of views (as at 7/4/2021) and 408k of subscribers, thus evidencing the influence of those who have already built credibility within the subgroup.

Although use of hashtags and celebrity endorsement of tweets increased the impressions, it was not necessarily an indicator that people accessed the questionnaire. However, the online fora and closed FB groups did seem to be more effective as participants did post that they had completed the questionnaire or commented on the wording of questions. This highlights the importance of peer advocacy. Some of the interviewees commented on being happy to be involved as it was endorsed by the gatekeeper of the

FB group, thus reinforcing the importance of endorsement from key well-respected members of these hard-to-reach communities.

The lack of support from gyms could again be in part that the researcher was not an insider. However, there could also be other reasons for this, for example other studies have found that cold calling via an email, not having a personal connection with the gatekeepers (Spacey, Harvey & Casey., 2020) can impact as could reputational considerations by the managers of the establishments.

Limitations

One key limitation caused by not wanting to add potential unnecessary questions to the survey, was not asking participants where they accessed the survey. This makes it difficult to evaluate the reach and usefulness of some channels. A second is that the research budget did not include funding for Twitter analytics therefore, the research team had to reply on Twitter's basic analytics which are limited in duration and depth. However, the authors hope that these basic statistics will allow novice researchers to reflect on their own methods and consider ways to measure the reach of their own distribution routes. Raymond et al. (2007) note that space/time/location sampling leaves out people who do attend venues, and this could also apply to those who do not use online communities. Pozzar et al. (2020) observed that data from online questionnaires can be compromised by opportunistic individuals who fraudulently complete research surveys for profit, this was not something that had been considered by the research team, and therefore it was unlikely that this would have been an issue, as the research team had consciously decided not to offer any incentives for completion of the survey to discourage those under 18 from taking part, and dissembling about their age and drug use.

Conclusion

Careful consideration at the questionnaire design phase is important. Overall, the most effective recruitment strategy was via online fora and closed FB groups hosted by gatekeepers with credible reputations within the community. Key lessons include the benefits of using specialist hashtags to target specialist interests, the need to continually be promoting tweets using hashtags, seeking out retweets from 'celebrities' with large numbers of followers, access to specialist online fora with respite gatekeeper endorsing the study, an awareness of the nature of the subject and the potential impact on reputation for people or companies being asked to share or endorse, and the need to be aware of specific sensitivities of topic of the demographic hard-to-reach sub-group being targeted. The time take to follow all these different routes to get research participants was time consuming and use of social media was particularly labour intensive. This exploration of using different recruitment strategies can be applied to a wide range of academic disciplines and may be of relevance to researchers seeking information from hard-to-reach populations.

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