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Understanding harm reduction perspectives of performance and image enhancing drug consumers and health care providers

Abstract

Research has documented the harms associated with performance and image enhancing drug (PIED) use and lack of disclosure of use to healthcare providers (HCPs). Given that the relationship between HCPs and PIED consumers plays an important role in harm reduction, research is required to understand the barriers and facilitators for consumers to engage in help-seeking. This qualitative study explored the attitudes around current harm reduction frameworks for PIED consumers in Australia. Interviews were conducted with identified key stakeholders, who included a variety of PIED consumers as well as HCPs who come into frequent contact with PIED consumers. All participants were asked questions regarding the key barriers and facilitators for PIED consumers to help-seek, and how to best increase engagement among PIED consumers with HCPs. HCPs in Australia are calling for education around PIEDs, which is reflected as a 'therapeutic barrier' by consumers. This barrier represents an ongoing need to upskill HCPs in working with PIED consumers. Our data also showed a 'safe space' dynamic among peer-consumers in this space. Optimising harm reduction frameworks requires more synergy between peers and needle and syringe programs (NSPs), which remain safe and trusted environments for PIED consumers. We recommend harm reduction frameworks be strengthened through an increase in, and leveraging of, peer-led education programs.

Keywords: Harm reduction, health care provider, injecting, needle and syringe program, performance and image enhancing drugs, steroids.

Words: 6760 (inc. quotes)

1.0 Introduction

Performance and image enhancing drug (PIED) use is an increasing public health concern in many countries. PIEDs comprise a range of hormones, peptides, and substances, with anabolic-androgenic steroids (AAS) currently the most popular (van de Ven et al., 2018). The associated physical and psychological health issues of PIEDs depend on the types of substance used and their forms of administration (Pope et al., 2014). Research has shown that using supra-physiologic doses of AAS in an effort to increase muscle size and strength is often accompanied by negative impacts to physical and psychological health (Goldman et al., 2019). These effects are mediated largely by patterns of AAS dose and drug combinations which are generally dependent on the ambitions of the user (Hildebrandt et al., 2007). The use of these compounds has strong ties to an elevated drive for muscularity (Parent & Moradi, 2011), and is strongly associated with body image issues (Harris et al., 2016). Using these substances does not guarantee underlying body concerns will be resolved and PIED consumers commonly report increased body dissatisfaction (Kimergård, 2015).

The evidence for the growing use of PIEDs in Australia is drawn from various sources. For example, Australian Customs and Border Protection Service interceptions of PIEDs doubled at the turn of the decade (from 2696 in 2009/10 to 5559 in 2010/11) (Australian Crime Commission, 2011). This number increased to 6814 PIEDs seized in 2012–13, after which the number of seizures remained for constant for a few years (Australian Crime Commission, 2013), until a small decrease in steroid seizures and arrests from 2016-17 (Australian Crime Commission, 2018). During this time, the prevalence of PIEDs as the drug last injected increased nationally from 2% to 7% over the period 2010 to 2016 (Memedovic et al., 2017). Further, among new initiates to injection, one in four reported last injecting PIEDs. Newer users may be at risk of experiencing higher rates of harms in comparison to older and more experienced users (Rowe et al., 2017). The negative

harms related to PIED use include physiological issues such as urogenital problems, insomnia, injection site pain, liver disease, and cardiovascular disease (van Amsterdam et al., 2010) and adverse mental health effects which include rapid alterations of mood, aggression, and depression (Kanayama et al., 2008). PIED consumers often continue using due to percieved inability to get help, anxiety regarding muscle loss, and fear that sudden cessation will cause more harm (Griffiths et al., 2017). Continued use of these substances can be linked not only to lack of help seeking (Dunn et al., 2016) but also lack of treatment options (van de Ven et al., 2018) and poor understanding of the harms associated and how to address them (Tighe et al., 2017).

Despite experiencing harms, treatment seeking is low among PIED consumers due to distrust of medical establishment (Jacka et al., 2020; Zahnow et al., 2017), and consequently this group seeks to self-diagnose and treat any harms by seeking advice from others within their community (Tighe et al., 2017). Less understood is the trajectory of people who are experiencing harms and wanting to stop use, and there are two clearly attributabe factors for this knowledge gap. Both these factors relate to the workforce which most commonly interacts with PIED consumers, which is defined as a combination of workers within the alcohol and drug (AOD) sector (e.g., harm reduction workers at needle service provider (NSP) outlets; Dunn et al., 2014), and health care providers (HCPs; Atkinson et al., 2021) which refers predominantly to general practitioners (GPs). Firstly, the workforce which PIED consumers turn to for assistance is not adequately trained (Dunn et al., 2016; Harvey et al., 2019). Additionally, due to the nature of PIED use, the workforce that comes into contact with them see them so infrequently that there is an inability to build foundational knowledge required to engage and assist this group. This infrequent contact stems from the cyclical nature of needle collection for PIEDs alongside reported low levels of knowledge by NSP staff around these compounds (Dunn et al., 2014). Further, PIED consumers' irregular nature

of contact with GPs (Rowe et al., 2017) or HCPs (Atkinson et al., 2021) stems from a reluctance to engage due to stigma (Dunn et al., 2016) specifically among people who use AAS where only 35% report they visited a doctor when experiencing adverse effects (Zahnow et al., 2017).

The lack of harm reduction response to PIEDs among Australia's health sector may be due to the health effects of PIEDs being outside the focus of the traditional harm minimisation response to injection drug use. The majority of research on injecting drug use and public health initiatives targeting safe injecting practices have tended to focus on illicit drugs (e.g., heroin, methamphetamine; Seear et al., 2015), with the focuses largely on being preventing harm that can be caused through injection (e.g. abscesses) as well as preventing the spread of blood-borne viruses. For blood-borne virus infections specifically, some researchers have asserted that PIED consumers have a risk profile which is substantially lower than other people who inject drugs (van Beek & Chronister, 2015) although some authors (Hope et al., 2013; van de Ven et al., 2018) have provided evidence to the contrary. Hope et al. (2013) found HIV prevalence among PIED injectors to be similar to that among injectors of psychoactive drugs. Among recent PIED injectors, almost 60% had recently used psychoactive substances and were significantly younger, less educated and more likely to have experienced redness at an injection site in the previous 12 months (van de Ven et al., 2018). Within the public health sphere, the harms related to PIEDs are thought to be less severe and less immediate than the harms related to alcohol, tobacco, and other illicit substances (Rowe et al., 2017) which lends itself to PIEDs not receiving as much attention. More recently, however, research has demonstrated that some common practices which lend themselves to increased harm among PIED consumers include polysubstance use, risky sexual practices, and instances of violent or criminal behaviour (Piatkowski et al., 2020, 2021a). Atkinson et al., (2021) have suggested that, at least in Australia and the UK, effective

public health responses are lacking, and this includes the training of HCPs who work with people who use PIEDs in primary and secondary care settings. There are several reasons why this may be the case. Firstly, PIED consumers do not tend to engage with HCPs. For example, Zahnow et al. (2017) found that only 35% of PIED consumers reported visiting a general practitioner (GP). Secondly, and relatedly, PIED consumers do not place much trust in health practitioners' knowledge of and harms related to the use of these substances (Dunn et al., 2016), which may explain this low engagement. Recently, online resources for HCPs who have clients using PIEDs have been developed (e.g., https://www.snhn.net/steroid-harm-minimisation/) although no data currently exist evaluating these resources or their uptake.

The common points of entry to the healthcare system for PIED consumers are through general practice and needle service providers (NSPs) – the two most common HCPs for this group. This group of substance consumers differs dramatically from traditional groups that access harm reduction services and thus pose unique challenges to the alcohol and other drug workforce. In contrast to traditional drug users accessing NSPs, PIED consumers are younger, have better general health, use different substances, and have entirely different motivations driving their substance use (Dunn et al., 2016). Further, this group do not see themselves as substance users which may lead to resistance in accessing harm reduction services traditionally based around drawing in people who are dependent on other substances such as opioids or methamphetamine (Dunn et al., 2016). PIED consumers accessing NSPs take a larger volume of equipment than other NSP clientele (e.g., heroin), most likely due to the cyclic nature of PIED use (requiring a large volume of equipment to last for several months) and peer distribution (Dunn et al., 2014). Workers report feeling out of depth which has led to concerns that the Australian workforce is poorly equipped to deal with the rising PIED use (Dunn et al., 2014) – an issue yet to be resolved.

Presently, there are few educational programmes that focus on people who use PIEDs outside of athletes who play professional sport, with few evaluated for their effectiveness specifically (Barkoukis et al., 2016; Bates et al., 2019). In the health field there has been a growth in the availability and use of digital interventions (McKay et al., 2019), as well as in the substance use field generally (e.g. Hoch et al., 2016; Moore et al., 2011). For PIED consumers specifically there have been recent development in the form of an e-learning module (Atkinson et al., 2021) which is emerging among Europe and Australia in an aim to increase knowledge of PIEDs among HCPs. As such, and outside of recent developments, current harm minimisation materials on PIED use in Australia commonly include 'steroid' and safe-injecting booklets (Campbell & Preston, 2019; QuIHN, 2015) as well as a concise 1-page poster-type material which provided a condensed form of these booklets (Campbell et al., 2019). In scoping the feasibility of extending present provisioning for harm minimisation for PIED consumers, such as moving towards accessible digital resource options, we believe consumer advice on the current resources available is warranted.

The increase of PIED consumers in Australia is facing a workforce that acknowledges it is unprepared and has significant gaps in its knowledge. Therefore, this qualitative study attempts to give voice to the perspectives PIED consumers and the workforce who comes into contact with them in Australia regarding the present barriers and facilitators of help-seeking in this space. A more integrated approach which incorporates 'both sides' of stakeholder perspectives could potentially increase engagement with this marginalised group and offset the higher workforce load as shown in extant literature. The feasibility of this approach was scrutinized through assessing the state of harm reduction frameworks for PIED consumers presently available through a form of data triangulation involving consumer advice and HCPs needs. By presenting and integrating the needs asserted by key stakeholders for this issue, we hoped to provide practical implications moving forward at a national level.

2.0 Materials and methods

2.1 Sampling and recruitment

All participants in the study had an informal conversation with the first author regarding their adherence to the inclusion criteria. For PIED consumers, these included (1) an age range of 16-30 years: (2) weight training >3 times per week, (3) daily ingestion of supplements, and (4) use of PIEDs such as AAS (criteria which have been employed in previous investigations; Piatkowski et al., 2020, 2021a, 2021b). For the service providers, this conversation included a brief discussion around their experience and interactions with PIED consumers. Given the first author's involvement in workforce provision of services to PIED consumers, they were well placed to assess those who had adequate insight. Hence, the sample was drawn through snowballing from the first author's personal and professional networks (see Statement of Positionality) which likely assisted in overcoming this potential fear of disclosure and increased the likelihood of open and honest responses.

Sixteen interviews with key stakeholders from Australia were conducted. There were eight male PIED consumers (Mean age = 27.87 years, *SD* = 0.67). The PIED consumers had all used a form of AAS such as testosterone and oral and injectable testosterone-derivates such as drostanolone, nandrolone, oxymetholone, and trenbolone. Some consumers had used or were currently using other PIEDs such as somatropin, clenbuterol, and insulin, as well as other peptides. There were also service providers (2 female and 6 male) who worked at services PIED consumers frequented. Five were harm reduction workers from NSPs in Queensland and three were GPs at clinics in Queensland and Victoria. This workforce sample was chosen to give weight to the respective representations of how frequently these services came into contact with PIED consumers. NSPs and GPs are important links to this particular community and, therefore, warrant the most exploration. The mean length for the interviews was 38 minutes (Range: 19-57 minutes).

2.2 Materials and data collection

The study was approved by the University's Human Research Ethics Committee. Each interview was conducted at a location of the participant's choosing. The interview guides drew broadly on existing literature to inform the types of questions being asked of young men. Interviews were conducted covering themes identified from the previous literature on PIED consumers (Dunn et al., 2014, 2016; Griffiths et al., 2017; Piatkowski et al., 2020) as well as those which have emerged through research with men who use bodybuilding supplements (Piatkowski et al., 2022). These interview guides were created with due consideration given to extant work in this area as well as consultation with members of each group drawn from the first author's personal and professional networks.

The development included creation of questions based on extant literature, with confirmation of the relevance of interview questions through informal piloting and discussions with relevant stakeholders. Similar questions were asked of all stakeholders, for example: What are the biggest obstacles for accessing accurate information for young men who use steroids and performance and image enhancing drugs at the moment?, and "What ideas do you have for types of information/messages that you think people who use steroids and/or other performance and image enhancing drugs would find useful?". Semi-structured interview guides differed slightly based on what type of stakeholder was being interviewed. For example questions such as "Do you disclose your steroid and/or body image drug use with your GP? If yes, why, if no, why not?" were asked of PIED consumers. For HCPs, questions were more aligned with their role, for example: "How do you interact with PIED consumers currently? In what way do you come into contact with them?". Some questions were followed up with more specific questions depending on the answers of the participants. The interviews were audio recorded and transcribed verbatim by the interviewer with

removal of personal identifiers. All participants were offered a list of relevant health services (e.g., local counselling) at the end of the interview.

Participants were also presented with current harm reduction materials on PIED use. These resources acted as a discussion prompt and participants were also invited to offer their perspective on the utility of the information contained. These included: 'steroid' booklets with information on how initiates should approach using these compounds and common side effects that could be experienced (Campbell & Preston, 2019; QuIHN, 2015); safe-injecting booklets which were tailored specifically for intramuscular and subcutaneous injection methods in line with PIED use (QuIHN, 2015); and a concise 1-page poster-type material which listed out common PIEDs, typical dosages, half-life, toxicity as well as common terminology, and injecting essentials information (Campbell et al., 2019). These resources are typically available at urban NSP outlets in Queensland and Victoria.

2.3 Data analysis

Preliminary impressions and reflections were noted following the interviews for consideration during research meetings and during the analytic process. This was the first step in the process of the first author reflecting on the research experience. The first author transcribed all interviews. Once the transcribing process was complete, the finalised transcripts were checked by the first authors prior to analysis. The transcripts were then analysed using reflexive thematic analysis methodology (Braun & Clarke, 2019). This recent conceptualisation acknowledges that 'themes' represent analytic outputs developed through creative coding. As such themes reflect considerable analytical work and are actively created by the researcher at the intersection of data, analytic process and subjectivity (Braun & Clarke, 2019).

The first author generated codes, then further organised and conceptually supported these codes by relevant examples from more than one transcript – a reflexive process where

themes were developed through re-engaging with the written transcript and the recordings available. This process is representative of another step in the process of the first author reflecting on the research experience. Research team meetings were held to scrutinize the results of coding decisions and reflect upon themes and patterns emerging in this process. These meetings represent a coding approach which is collaborative and reflexive, designed to develop a richer more nuanced reading of the data, rather than seek consensus on meaning (Braun et al., 2018). Throughout this process, a list of verbatim quotations illustrating each theme was compiled and a list of theme titles and representative extracts was created. Lastly, hard copy or electronic resources were used as a prompt for participants in reference to what is currently available and, therefore, provided interviewees with examples to refer to when discussing harm reduction. Overall, the analytic process adopted is in line with reflexive thematic analysis where themes represent creative and interpretive stories about the data, produced through reflective and thoughtful engagement with data as well as thoughtful engagement with the analytic process (Braun and Clarke, 2019). All 16 transcripts were reviewed again in light of the most recent set of themes. Specifically, the constructed themes were reconsidered in light of the overarching narrative with input from the fifth author. Thus, the analysis was audited at various stages to enhance reliability of the coding process.

In addition to reflexivity, Smith and McGannon (2018) have argued that a ‘critical friends’ methodology represents an opportunity to enhance qualitative rigour. This process involves the dialogue between two people, with researchers voicing their interpretations to others who actively listen and may offer feedback or suggestions. This role is not related to achieving consensus but rather an opportunity to encourage reflexivity by challenging the construction of knowledge (Cowan & Taylor, 2016). The critical friend provides an opportunity to inspire reflection and the possibility of varied and multiple explanations and interpretations (Smith & McGannon, 2018). A critical friend met with the first author after

coding a subset of the interviews, to give potential insight into the adequacy of the first authors depth of interpretation. Through discussions with critical friends, the author was exposed to different meanings of each data set. In this way, discussions with critical friends acknowledged there are other interpretations that can be inferred from data that are also defendable but are not necessarily being utilised.

2.4 Statement of Positionality

The first author conducted all interviews for this study and has been an active member of Queensland's bodybuilding and powerlifting communities. He completed undergraduate studies in exercise and applied sciences prior postgraduate study in behavioural science. Although he is still an active member of these communities, his focus has shifted to community engagement through Podcasts and other activities related to harm reduction among these groups, with particular attention to men's wellbeing and prosocial behaviours. The author acknowledges his significant lived experience and provides professional training to organisations in Australia who engage regularly with PIED consumers, particularly general practitioners, harm reduction workers, and prison workers. He maintains professional and personal networks with a variety of individuals involved in the AOD space. The paper's co-authors also reflect upon their experiences with fitness industries/communities, as well as perceptions of illicit drug users, in their approach to providing critique and feedback for data.

3.0 Results

There were three overarching themes developed from the stakeholder perspectives. The generated themes are presented for participants as well as several example quotes.

Theme 1: The dynamics of 'Safe Space' for PIED consumers

The PIED consumers identified peers as the group which they trusted and felt comfortable with, particularly in contrast to HCPs such as GPs. Firstly, the PIED consumers interviewed were vocal about stigma being a barrier to help-seeking behaviours, for example:

Interviewer: "And in terms of the biggest obstacles for seeking psychological help and medical help in terms of steroids and PIEDs"?

Px02[PIED Consumer]: "Oh like I said before stigma. Definitely stigma. Yeah.".

The judgement they feared they would face from people in their life was an obstacle, for example:

Px08[PIED Consumer]: "I think people can't be open about steroid use a lot of the time. Because it reflects very badly on them".

We believe this stigma likely serves to strengthen relationships between peer-consumers. Although men's social identity has been linked with group identity among Australian muscular subcultures (see Piatkowski et al., 2020, 2021b), these data provide more specific relevance to those men who choose to use PIEDs. The data demonstrated that there was a social identity associated with going to gym and using PIEDs, and that this was also a factor in perpetuating risky body enhancement strategies. Choosing to use PIEDs is an important component of the identity of the PIED consumer and can continue to play a role in their lives for some time. Participants voiced how deeply PIED use can tie in with their identity and due consideration should be given to this as a potential barrier for cessation of use, for example:

Px01[PIED Consumer]: "Yeah I dunno I think as much as it is a phase it's normally pretty long term live. If you think that a phase of something would be like 18 months or 2 years there's some of these guys doing this for like 5-10 years and like even me I

thought that I wanna be massive and I wanna do powerlifting for the rest of my life…”.

Px02[PIED Consumer]: “…But this gave me a very clear identity although that was like extremely problematic (pause) it was like a clear, I felt like it was a clear identity, I felt like yeah I'm this person. You know. I go to a gym. I get big. I get strong. I use recreational steroids um and repeat basically (laughs)”.

Alongside the deeper meaning of the peer-consumer identity, there were very pragmatic benefits of peer-consumer bonds. Specifically, peers were often consulted regarding health information and advice. This type of peer relationship occurred through sharing similar interests and likely, an element of representative lived experience. The fact that a peer had used gave significant weight to the information and advice which they offered. Assumptions that peers were a good body of knowledge may have come about from the peer having started use earlier than them, for example:

Interviewer: “So where do you or your mates currently get information regarding PIEDs?”

Px02[PIED Consumer]: So I get my, probably got it from like work colleagues that were also using um I guess I assume that they were good bodies of knowledge and they were well versed in using in using steroids so I think I picked up a lot from them.

In extending on the notion of social identity and representative lived experience, the interplay of these factors likely creates the concept of ‘safe space’. Given the potential for stigma and judgement from others, having shared interests as well as shared experience in illicit drug consumption likely strengthens the bonds among this group and elevates trust. An example of this dynamic is exemplified in the following quote:

Px07[PIED Consumer]: Yeah yeah, because it is very hard to ask someone that yeah that yeah I guess 'cause you're doing something wrong for starters and then you go asking questions then they start asking questions too. So I just that's the biggest reason why I just you're looking at who you actually can actually trust which is mates. Cause they have just done it before."

Theme 2: The barrier to a therapeutic relationship

In contrast of the 'safe space' dynamic between peer-consumers, participants using PIEDs expressed low trust in GPs which, in turn, meant they did not usually disclose their PIED use to them – an idea rarely entertained. This concept fits with extant literature and is a long-standing historical context for the relationship between these groups, for example:

Interviewer: "So did you disclose any of the steroid use or associated stuff with your GP?"

Px02[PIED Consumer]: "No (laughs) definitely not. He'd asked me a few times just at like (pause) and every time he'd ask me um you know are you using steroids you know you're looking big [name] (laughs) are you using steroids. And I'd say nah I just I didn't feel comfortable talking to him about that".

Participants expressed that the lack of disclosure was likely linked with the inadequate knowledge that GPs had regarding PIEDs. The lack of knowledge potentially acted as a barrier to what could be a beneficial therapeutic relationship:

Interviewer: "What about obstacles for seeking psychological or medical help for people using steroids or PIEDs?"

Px03[PIED Consumer]: "Ah the well (pause) the biggest issue is like going to a GP they they don't know what they're talking about."

The lack of PIED consumers' linkage with GPs is reflected by the stakeholder perspectives of those interviewed who worked as HCPs. HCPs working within a general practice were, themselves, vocal regarding the lack of education they had when dealing with PIED consumers. They expressed concerns for a complete lack of education for GPs in working with this specific group, or with these compounds, for example

Px13 [GP]: "I think it's all self-education you know. As you know there's really no education for doctors or anything".

Px14 [GP]:" In general very little education about PIEDs in the general practice setting".

These HCPs also expressed concern about the specific type of education in this area they required. Participants who were HCPs expressed, particularly, a need for a universal and holistic program of information about this topic, for example:

Interviewer: "How would you describe your personal, as well as the service's level of training in terms of that area of performance and image enhancing drugs?"

Px13 [GP]: "I don't think we get any significant training specifically about those drugs or how to deal with the people that might use them, or to deal with complications, or any comprehensive knowledge about risks or effects or side effects. I think it's a bit of a vacuum in general training."

Theme 3: Strategic linking for harm reduction

There was agreement among PIED consumers about the need for strategies targeting harm reduction and education. Stakeholders who were PIED consumers voiced concerns around health-related information moving beyond safe-injecting and giving more specific practical harm reduction, which focuses on health-related and psychosocial consequences of use, for example:

Px06[PIED Consumer]: "I think like definitely some sort of support system 'cause a lot of people think that you know they're going to go from X to Y overnight and there's this huge misconception that you know you're only going to look like that if you're doing this. So what happens is a lot of people they just start using more and more and more and more and they just lose control."

Px07[PIED Consumer]: I'd be highlighting the the part where you know aggression and the emotional things.

Px08[PIED Consumer]: Safe injecting stuff is pretty easy to find online. I think it's more like everything else. Stuff like, have you considered this. Like a lot of people want to use steroids… but have you considered having kids in 5 years, have you considered what you're going to be doing in 15 years with your life.

Services commonly utilised by PIED consumers which are free and easily-accessible are NSPs. NSPs represent a site which consumers need to traverse as a first-time user, and which they revisit regularly. In this way, NSPs represent a frequently trafficked area by PIED consumers which have potential to provide a wider variety of harm reduction services than simply sharps (i.e., a collective term for the equipment required to inject PIEDs):

Interviewer: Okay. So do you think in terms of overcoming those obstacles, is it more important to place educational resources and training at more centralised places like needle exchanges?

Px03[PIED Consumer]: Yeah definitely like the needle exchange would be the easiest because that's where I go to get all my sharps.

In line with the potential for a larger scope of service provision, both PIED consumers and HCPs at the NSPs identified that there was potential for improvement. For example:

Interviewer: OK, and what about the lady at the needle exchange? Was she helpful?

Px07[PIED Consumer]: Yeah, she was pretty straightforward, she knew.. a few things. Like, when I went in there for the first time and had no idea at all. I didn't know what to do anything. I just grabbed the vials and then I was like oh what do I do. You know when I went and got them and started up you know.

HCPs working within NSPs were vocal regarding the lack of education they had when dealing with PIED consumers. This lack of education tended to become a barrier in spite of the benefits of rapport and trust they felt they built with this particular group. HCPs within NSPs voiced concerns specifically around confidence in provisioning support for PIED consumers. for example,

Px15 [NSP]: "I still feel like people even volunteers and stuff still feel really uncertain about the interventions, especially and about what to give them. But also about if someone wants something different, you know. They're not necessarily feeling confident to be able to give people good advice".

One of the HCPs who worked within an NSP setting prompted the idea of increasing peer alignment. They direct future harm reduction efforts towards utilising peer-experiences more strongly, for example:

Px11 [NSP]: "Yeah. I mean I think education is the key really. I think education's the key and I think also having a really good understanding like a bit of a timeline of the steroids use. Like how you may be feeling when you, cause I don't know, but someone who's used steroids would. Like how you might be feeling once you're on a 12 week cycle and how like if you're stopping your 12 weeks cycle what the best way is to, like you know, reduce your use, and some things you might experience while going down like having the downer".

NSP workers voiced concerns specifically around engagement strategies for PIED consumers. These reflections direct attention toward training and education for service providers encompassing strategies of communicating with PIED consumers more effectively, for example:

> *Px12 [NSP]: "I think that the nature of testosterone, when you put testosterone into a person's body they (pause) it's just an observation but they tend to have a lot on the exterior almost like they have this armour on. So to encourage somebody to go and see a psychologist or a counsellor can be really difficult. Especially given the time that we have."*

Given the time restraints available, resources in hard-copy and online formats are one mechanism through which harm reduction is offered to PIED consumers. These resources provide an avenue of education which may supplement instances of service provision at NSPs which act as face-to-face interaction opportunities for harm reduction. HCPs were familiar with the resources but aware of the limitations in terms of engagement. This group were more interested in education and training in how to provide individualised support.

These resources assisted in generating direct feedback from the PIED consumers regarding the resources' effectiveness. Among PIED consumers, there was a consensus that the information contained in the resources was fairly appropriate, for example,

> *Px03[PIED Consumer]: "Uhh so the bits and pieces you showed me before would be awesome (referring to resources)".*

Further, PIED consumers indicated concise resources were beneficial particularly for new users. This indicates that short information presented in a poster format tends to appeal to this particularly group. For example,

Interviewer: "So things like the table [poster], short sort of stuff or more like the booklets?"

Px03[PIED Consumer]: "Yeah the table [poster] for one definitely".

In terms of accessing the resources themselves, PIED consumers did prefer receiving them at NSPs, as this was where they collected sharps. Dissemination of resources at a site where PIED consumers have practical needs provisioning available tends to be favourable for reaching the target audience, for example,

Interviewer: "Where do think is the best place to deliver or to fit these kinds of resources? So the point of collection of needles and things like that?"

Px01[PIED Consumer]: "Absolutely like if you're if you're able to give them at least like some skerrick of information where they're already in a place where it's going to be beneficial to their health…Like I've had ladies there [NSP] hand me a book."

4.0 Discussion

This qualitative investigation sought to understand key stakeholder perspectives on the harm reduction frameworks which exist for PIED consumers. Stakeholders were asked about the key barriers and facilitators for PIED consumers to help-seek, and how to best increase engagement among PIED consumers with HCPs. The overarching findings of this study reveal a deeply entrenched and complex social dynamic which accompanies PIED use. The dynamic results in 'safe spaces' among PIED consumers being driven by group identity and defined by shared experience (e.g., lifting weights at the gym, and using illicit substances). Our findings also indicate the Australian HCP workforce continue to be thoroughly unprepared to meet the needs of PIED consumers which, when considered alongside the perspective of the consumers themselves, indicates what we have termed a 'therapeutic

barrier'. In drawing together the perspectives of both consumers and the HCP workforce who serve them, harm reduction strategies should consider representation of peers with lived experience. Given that PIED consumers frequent NSPs for face-to-face occasions of service, we believe these sites represent an underutilised resource and are contextually relevant for peer-led programs. Although resources available presently meet some PIED consumer's needs, the implementation of enhanced accessibility (i.e., digital platforms) options may prove inadequate to decrease harm alone.

The 'safe space' dynamic for PIED users is often underscored by the trust they place in peers contrasting directly with the lack of trust they place in GPs. This theme was developed through triangulation of 'both sides' of stakeholder perspectives on this multifaceted phenomenon. Essentially, data highlights the role of stigma and judgement which consumers feel is associated with their use of PIEDs as a driver of group membership through group identity (Turner, 1985). This peer-group identity is strengthened through the shared experiences of PIED consumers around a number of activities which include going to the gym together and using illicit substances. Research has shown that PIED consumers engage in a number of activities together including weight lifting, dieting, supplement use, violent behaviour, and other recreational drug and alcohol use (Piatkowski et al., 2020; 2021a). Representation as a peer-group member immediately gives a PIED consumer credibility, with longer term use indicating to others that they are a 'good body of knowledge' and can be 'trusted'. The data suggests that this type of experience serves as a 'safe space'. There is potential for misinformation and lack of evidence-based approaches in peer-led spaces such as forums (Tighe et al., 2017). We propose that providing peer-mentors with adequate support and training may circumvent these issues somewhat.

A 'therapeutic barrier' is highlighted by PIED consumers expressing their frustration with the lack of GPs' knowledge about PIEDs, a perspective shared by the GPs themselves.

Consumers described feeling judged by GPs, resulting in resistance to disclose PIED use in many cases, which fits with extant work (Rowe et al., 2017). Due to inadequate knowledge there appears to be a roadblock to open channels of communication between consumers and HCPs such as GPs. These types of relationships, where communication and learning is bidirectional, have been described recently in the literature as a desirable next-step between HCPs and PIED consumers (Fraser et al., 2020). Given this discrepancy, PIED consumers reporting turning to their peers or the internet to obtain information or to seek help, instead of educational programmes or health providers, findings supportive of previous work (Tighe et al., 2017). Without addressing this 'therapeutic barrier', the notion that peers are a potential gateway to providing PIED consumers with accurate health-related information and support (Greenway & Price, 2018; Tighe et al., 2017) becomes an increasingly salient model.

Extant literature (Dunn et al., 2014; 2016; van de Ven et al., 2018) alongside the present data indicate that PIED consumers frequent NSPs regularly. We believe these sites are strategically relevant for linking peer-led programs. Peer-based approaches in this area are not new (Harris et al., 2021) and researchers have acknowledged the role of these programmes among people who inject drugs (PWIDs) for HCV (Henderson et al., 2017) and BBVs in general (Newland et al., 2016). The steroid peer education programme (SPEP) in Victoria is the only peer-led government-funded initiative addressing PIED use in Australia (Aitken et al., 2002). This exploratory study provides encouraging findings for other states in Australia to consider adopting a peer-led approach in engaging with PIED consumers. The NSP staff interviewed indicated they did, at times, struggle to build rapport with PIEDs users and open up dialogue regarding harm reduction. They also acknowledged their shortcomings regarding comprehensive knowledge. In drawing together the stakeholder perspectives, practical application of the findings indicate that PIED consuming peers could, therefore, be

embedded into NSPs with high PIED consumer traffic, and act as a channel for harm reduction information and referral.

In directing further practical outcomes of this study, consumers were particularly interested in resources which added to their knowledge about health-related consequences of PIEDs with some focus on safe injecting practices. This health-centred interest is likely why the participants responded well to the resources and materials they were shown during the interviews, resources which focused on these themes. Participants identified a short and concise poster, with a list of compound names, common dosages, half-life times, liver toxicity, as well as common phrases, and a summary of safe injecting as the resource to be most likely well-received by the PIED using community. Given that PIED consumers reported lack of engagement with GPs due to their perceived lack of knowledge and feeling stigmatised, we direct initial trust-building strategies towards a focus on health information on how to use PIEDs more safely. The findings suggest providing GPs with these resources detailing well-documented side-effects of PIED use may begin to overcome the 'therapeutic barrier'. When PIED consumers are engaged in patient-centred care that can be associated with specific, well-documented side effects of PIED use, such as safe-injecting and common side effects such as liver toxicity, this shows the user the GP is knowledgeable, non-judgmental, and willing to monitor and manage their health (Zahnow et al., 2017).

A barrier for PIED consumer engagement with health services which did not arise from the present data but is, nonetheless, present in extant literature is related to the criminality surrounding these compounds. In Queensland particularly, in response to tougher legal measures, PIEDs are aligned with other illicit drugs like heroin, amphetamine and cocaine in terms of seriousness of offence, penalty (Crime and Corruption Commission, 2016) and reflecting the overall potential for user and community harms (van de Ven et al., 2020). For example, for AAS specifically, these are legitimate, well-established

pharmaceutical products with genuine therapeutic uses (e.g., testosterone replacement therapy; Dunn et al., 2020). AAS are manufactured and sold through regulated supply chains, in which a prescription from a medical authority is required in order to access the drugs (Dunn et al., 2020). However, many individuals who use these compounds do so for non-medical reasons and, therefore, their use is generally facilitated through illegal means. In line with proliferation of online markets (van de Ven et al., 2020), some authors have suggested these offer a pseudo-protective effect by allowing PIED consumers to maintain cruising (i.e., testosterone-replacement level) doses of AAS and, thus, place less pressure on consumers to restructure their compound use based on supply chain fluctuation (Dunn & Piatkowski, 2021).

A limitation of this research is the small sample size of sixteen interviews; however, it does serve as a preliminary exploration of the issue. The use of semi-structured questions and the materials provided to participants may have guided responses as compared to open-ended questions without prompts. Future research would benefit from a larger sample. Longitudinal research which tracks users' interaction with services is needed to inform intervention strategies and provide evidence for best practice, perhaps with addition of ongoing consumer advisory groups. Given the 'therapeutic barrier' for HCPs, there is an ongoing need to upskill GPs in working with PIED consumers. Educational resources may present a temporary and easily-accessible avenue through which to overcome initial gaps in knowledge for GPs. However, specific training initiatives should be considered for the future, given the growing number of PIED users and the implications this has for general practice. The current stakeholder perspectives direct strategic linkage between NSPs and peers to leverage the 'safe space' dynamic. Peers could be drawn from experienced users with an interest in working to reduce harm in the PIED using community. Moving forward nationally, more programmes

may consider raising awareness and building trust with PIED communities through ongoing commitment to lived experience of all types of PWIDs.

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