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Internet sourcing and unsafe use of controlled drugs (opioids, sedatives and GABA drugs) in the UK: An in depth case study of consumer dynamics during COVID-19

Alice Hillis^a, Jennifer Germain^b, Mark Whitfield^b, Devina Halsall^c, James McVeigh^d, Yasir Abbasi^e, Marie Claire Van Hout^{b,*}

^a London School of Hygiene and Tropical Medicine, London, United Kingdom

^b Public Health Institute, Faculty of Health, Liverpool John Moore's University, 3rd Floor, Exchange Station, Tithebarn Street, Liverpool L2 2QP, United Kingdom

^c NHS England and NHS Improvement Northwest, United Kingdom

^d Substance Use & Associated Behaviours, Department of Sociology, Manchester Metropolitan University, United Kingdom

^e Cheshire West and Chester, Westminster Drug Project, London, United Kingdom

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ABSTRACT

The Internet offers increased availability and accessibility of medicinal pharmaceuticals including those containing opioids, sedatives and gamma-aminobutyric acid (GABA) drugs through both legal and illegal routes. Sourcing concerns have been further heightened due to the current severe acute respiratory syndrome coronavirus 2 (COVID-19) pandemic which reduced face-to-face access for non-COVID-19 related health conditions and to drug treatment services. This study is the second of a two stage study comprising interviews with three key stakeholders who were policy makers, health care professionals or police, and three individuals who sourced medicinal products online (ISOs). An in-depth case study approach was adopted. Thematic analysis of in-depth case narratives revealed the following key themes; *Motivations, initiation, and making the move online; Process of sourcing online; Supply issues and COVID-19; Perception of control; Quality of medications; and Public health recommendations.* Motivations for purchasing online are complex and methods to divert and control the supply of medicinal pharmaceuticals are equally complex and difficult to navigate. Novel routes to access now include Telegram, a cross-platform messaging service with enhanced encryption and privacy. Whilst stakeholders and ISOs had similar views on the prevalence and ease of access to medication, there were also some substantial differences primarily in terms of perceptions of risk. This study highlights the need for enhanced pharmacovigilance of non-regulated online vendors and the imperatives of continued health messaging around the potential self-directed use of these controlled drugs and the dangers of using websites purporting to be regulated pharmacies.

Introduction

Rising trends in the purchasing and self-medication of pharmaceuticals sourced online is a serious public health concern in Europe (European Monitoring Centre for Drugs and Drug Addiction, 2013, Casati et al., 2012, Foley et al., 2015, European Monitoring Centre for Drugs and Drug Addiction, 2016). Key pharmaceuticals under surveillance by the European Monitoring System for Drugs and Drug Addiction (EMCDDA), and the European Medicines Agency (EMA) early warning system include opioids; sedatives and gamma-amino butyric acid (GABA) drugs (Casati et al., 2012, European Monitoring Centre for Drugs and Drug Addiction, 2016). The 2021 World Drug Report highlighted the breadth and depth of online drug markets which operate

across both the surface and dark web (United Nations Office on Drugs and Crime, 2021) and the online presence and interest in pharmaceuticals has continued to flourish during and since the COVID-19 pandemic (Whitfield et al., 2021).

The role of the Internet in the legal supply of such pharmaceuticals on prescription and their potential for diversion, and in the illegal supply via retail websites often located on the dark web by offering direct retail to the general public and circumventing regulatory controls for medicinal pharmaceuticals, has broadened the market to a much wider audience (European Monitoring Centre for Drugs and Drug Addiction, 2013, European Monitoring Centre for Drugs and Drug Addiction, 2016). To date, research activity has primarily focused on the misuse of prescription and over-the-counter opioids (such as codeine),

* Corresponding author.

E-mail addresses: Alice.Hillis@lshtm.ac.uk (A. Hillis), J.S.Germain@ljmu.ac.uk (J. Germain), M.Whitfield@ljmu.ac.uk (M. Whitfield), devina.halsall@nhs.net (D. Halsall), J.McVeigh@mmu.ac.uk (J. McVeigh), m.c.vanhout@ljmu.ac.uk (M.C. Van Hout).

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both in community pharmacy, and online settings (Van Hout, 2015, Carney et al., 2018, Norman et al., 2016, Van Hout and Norman, 2016). There is now a strong Internet trend interest in opioids (particularly fentanyl) (Socias and Wood, 2017, Hadland and Beletsky, 2018)), as well as in sedatives and GABA drugs. These are used for self-medication of pain, anxiety, depression and insomnia, at the same time as for intoxication and the management of withdrawal purposes (Van Hout and Hearne, 2017, Novak et al., 2016). There was a distinct need to undertake research on these medicines as accessed on the Internet, given the rising prescription trends, street diversion, illicit manufacture, and implications in poly substance deaths in the United Kingdom (UK) and Europe (Office for National Statistics, 2017).

This work was conducted in the UK where medications including opioids, sedatives and GABA drugs are controlled under the *Misuse of Drugs Act (1971)* restricting access and unlawful possession and supply of controlled drugs whilst the *Misuse of Drugs Regulation (2001)* permits use if prescribed, by a regulated professional and supplied by a General Pharmaceutical Council regulated pharmacy, an NHS hospital, or a UK Home Office regulated setting. UK prescriptions of opioids stand at approximately 13% of the UK adult population (Hockenfull et al., 2021); a report by Public Health England estimated in 2017/18, 5.6 million adults in England (13% of the adult population) had been prescribed an opioid pain medication. Furthermore 1.5 million had been prescribed gabapentinoids, 1.4 million benzodiazepines and 1.0 million z-drugs (Taylor et al., 2019). Whilst this work examined prescription medication only, it did recognise that excessively prescribed medications are subsequently diverted to the illicit market.

This research spanning public health and the safe use of medicines aimed to understand online purchasing of habit-forming pharmaceutical medicines in the UK; namely opioids, sedatives and GABA drugs. It benefited from multidisciplinary expertise in public health, medicines safety and digital communications and is intended to lay the foundation for further efforts into pharmacovigilance, digital health and public well-being. The work ultimately aims to strategically inform national UK and European regulatory medicines and health care policy by advancing knowledge on the extent of public accessing of information on habit forming medicinal products, consumer sourcing, motives, health awareness, and purchasing experiences and trends. Furthermore, this research develops academics', policy makers' and health professionals' understanding around public sourcing of such pharmaceuticals on the Internet, and the self-medication for pain, anxiety, depression, insomnia, withdrawal and stress management.

Materials and methods

Qualitative descriptive approach

Due to the hidden nature of online sourcing of pharmaceuticals, an in-depth case study approach was adopted. The study used a qualitative descriptive method to allow for greater focus on the research question, objectives and wider context of the study (Creswell et al., 2003). This approach meant that the research was 'not guided by an explicit or established set of philosophical assumptions' (Creswell et al., 2003 pg 2) but rather used a combination of generic qualitative techniques such as deploying iterations of data collection and analysis, constant comparison of data, analytic induction, generalisations and theory formation (Sandelowski, 2000).

Sample and recruitment

The study formed part of a larger piece of research exploring online UK sourcing of drugs (Whitfield et al., 2021). For this stage, stakeholders (such as policy makers, health care professionals, community workers or police) and individuals who source online (ISOs) and have purchased opioids, sedatives or GABA drugs, from North West England were recruited using purposive (participants selected on characteristics align-

ing with the study criteria), snowball sampling (referrals from existing sample), and response-driven (similar to snowball sampling and led by specific themes emerging from the interviews) techniques. In order to allow for maximum variation of data, the inclusion criteria for ISOs were any person over 18 years old who had sourced opioids, GABA drugs or sedatives online. Stakeholders must have held a role such as a policy maker, health care professional, community worker or member of the police, and have direct experience of working with ISOs or the wider phenomenon.

Posters were created to advertise the research to potential participants. These were shared on Twitter and online communities. A number of online communities and web forums, where discussion relating to the use of opioids, sedatives and GABA drugs were identified and contacted. Once approval was obtained from the forum administrator, an overview of the research, alongside the poster, was posted on the online forum and those on the communities were asked to approach the research team if they would like to take part in an interview either by private message on the forum or via email. Participants were also identified using existing professional networks of the research team, particularly regarding drug monitoring networks, addictions policy and practice, and drug control, pharmacy and primary health care.

ISOs that volunteered to take part in an interview emailed the research team and in response, were provided with a Participant Information Sheet and asked to sign and return a Consent Form ahead of the interview. For stakeholders, the research team contacted potential participants through an introductory email, which they could respond to if they were interested in an interview.

Data collection

In depth, semi-structured interviews were conducted with participants over Zoom video conference software by authors one and two. The interview schedules were informed by previous publications by the research team (Whitfield et al., 2021). The schedule was tested within the research team and after each interview, the schedule was amended as required. Questions related to the complexities of ISOs regarding opioids, sedatives and GABA medicines, participants' views on health outcomes in risk populations of patients, potential contraindications and complications around counterfeit products, and mechanisms to raise patient awareness around risks and harms. For ISOs, their questions related to online and offline sourcing, motivations for use, experiences of purchasing online and effects and side effects of drugs.

At the beginning of each interview, the researcher reaffirmed that the participant (ISO or stakeholder) remained in agreement with the Consent Form and reiterated that they were able to skip any question and leave the interview at any time if needed. The researcher also ensured that as the interviews were held over Zoom, the participant was in a safe, quiet and private environment. As mentioned, the interviews were recorded through Zoom and immediately transcribed. All transcripts and data were anonymised with the use of pseudonyms and stored on password protected computers.

In terms of sequence, the first interview was held with ISO#1, followed by the three stakeholder interviews and then a further two ISO (#2 and #3) interviews. The stakeholder interviews posed additional questions that the research team wanted to answer, so a follow up interview was held with ISO#1 for clarity.

Data analysis

The in-depth case narratives were analysed using thematic analysis in order to illustrate the novel insights into the process, lived experience, and risk of sourcing drugs online. The first ISO interview (ISO#1) was a unique story of online sourcing, which covered broader topics of sourcing on social media, supply issues, risk, COVID-19 and wider public health implications. Due to this, a single case study was written using an informal, short-story style that included excerpts of the

interview, with additional supporting narratives from the other two ISO interviews, stakeholder interviews, and in-depth descriptive detail that would not have been provided through thematic analysis (Ellet, 2007, Radley and Chamberlain, 2001, Riessman, 2003).

Thematic analysis seeks a description from the participant of the phenomenon which they have experienced and lived, and which will triangulate perspectives across stakeholders. In order to ensure scientific rigour, a quality framework in analysis was used (Braun and Clarke, 2006). This involved several key steps: (1) reading and re-reading the transcription, individually and in pairs to note early ideas; (2) coding in a systematic and logical manner using a data-driven approach supported by QSR NVivo 12, and paying attention to interesting concepts and ideas within the data; (3) organisation of codes into corresponding groups using an iterative process in developing themes and subthemes; (4) refining and reviewing of themes by the team as a collective in terms of internal homogeneity and external heterogeneity, examination of coherence of patterns across themes and development of a thematic map; and (5) a final clear definition and naming of themes, with data extracts representing and articulating the essence of the theme, and overall analysis.

Ethical approval

Ethical approval was obtained by Liverpool John Moores University Research Ethics Committee (reference: 20/PHI/024). The research team has considerable experience regarding the methodological and ethical implications of online methods in drugs research (Van Hout, 2015; Van Hout and Hearne, 2017; Whitfield et al., 2021), qualitative research methodologies with hidden drug user populations, and surveillance systems and drug related death research. It included team members with professional expertise in medicines control, and treatment of drug use disorders.

Results

Three stakeholders and three ISOs were recruited for the study, with a total of six interviews. The interviews lasted between 20 minutes and an hour and 18 minutes. All stakeholders were male: two worked for NHS England and one was from the police force. All ISOs were male. See Table 1 for participant details. However, based on the experience of stakeholder #2, 70% of his cases related to women, which was not reflected in this study’s sample. For the purpose of the case study, the ISOs will be referred to as ISO#1, ISO#2, and ISO#3; whilst the stakeholder perspectives supplementing the narratives will be referred to as ST#1, ST#2, and ST#3.

Motivations, initiation, and making the move online

The first interview with ISO#1 was conducted in April 2021, and the second in June 2021, as a follow up to answer questions that had arisen from the subsequent interviews with ISO#2 and #3 and all stakeholders. The first interview lasted 30 minutes and the second 47 minutes.

Table 1
Participant details.

Participant details			
Participant	Role	Remit	
ST#1	NHS England	North West region	
ST#2	NHS England	North West region	
ST#3	Detective Sergeant	Merseyside	
Participant	Age	Ethnicity as stated	Highest level of education
ISO#1	29	White British	First Class Degree
ISO#2	45	White	BTEC National
ISO#3	27	White Caucasian	Level 2 Diploma

Both interviews were conducted on Zoom video conferencing software. ISO#1 was in his late twenties, a highly educated, white British male. He first started taking opioids when he was 16 years old, ‘and ever since then...it’s sort of been going on for a long time.’ He reported currently taking prescribed antidepressant, citalopram, for anxiety whilst also regularly using tramadol, and occasionally oxycontin and codeine. ‘It’s like a crutch for me to be honest. Just self-medication really more than anything...Dealing with stress, stuff like that. I find it does help with depression as well.’ All three ISOs acknowledged that they were self-medicating for anxiety and depression by sourcing online.

Initially, ISO#1 was able to access opioids through friends or colleagues that were willing to share their medications, even via his mother’s dog, who was prescribed tramadol by the vet. He became increasingly dependent on tramadol and searched for ways to increase his access. However, ‘in the last, I would say, three or four years, it’s becoming easier and more convenient to get it online.’ ISO#1 mentioned that he did not use the forum Reddit to source opioids, however, this is where he had been recruited from indicating he was at least observing conversations on the site. Other routes were mainly through social media, and he reported having ‘sourced [opioids] from Instagram; and then from Instagram onto Telegram. You know, the messaging app Telegram.’ If he needed to find an alternative source, he said: ‘My first port of call would be to go back to Instagram and try and find something else. Or failing that, I’d maybe set up a fake Facebook profile or something like that.’ ST#2, in his role at NHS England, confirmed that counterfeit and legitimate drugs are ‘sold online through those non-lawful routes, i.e. WhatsApp groups or Facebook groups, or Instagram pages’, by the likes of the ‘Rochdale Cowboy’ who ‘sold online via his Facebook connections.’

In ISO#1 and ISO#2 experiences, they were initially prescribed medication by healthcare professionals but then moved themselves onto higher doses, through online sourcing. This route was extensively corroborated by ST#1 (NHS England) and ST#2 (NHS England), with emphasis on lack of knowledge transfer between online doctors or pharmacists and general practitioners (GPs). According to ST#1 (NHS England), at the same time, ‘people have abused those types of systems to obtain supplies and different people’s names or utilise different aliases to [obtain] multiple supplies from different pharmacies’ (ST#1). In reference to online pharmacies, ISO#1 stated that he did not use them as ‘they charge a lot of money. They don’t seem trustworthy...I just don’t trust the online pharmacies and deliveries.’ ISO#3 took a different route and initially sourced diazepam from street dealers who would supply the drugs in bags. He then moved online as he found the supply more legitimate and would be delivered in blister packs, with an ‘all round better experience.’

Process of sourcing online

When sourcing online, ISO#1 explained that he firstly typed ‘Tramadol UK’ into the Instagram search bar. The search results showed profiles ‘and they all say “not for sale”, which obviously means for sale. You know, it doesn’t take a genius’. Then, he described sending a direct message on Instagram and receiving a reply from someone situated elsewhere in the UK, who would request that they continue the conversation on Telegram ‘because Telegram is secure, it’s encrypted like WhatsApp, but it’s a really safe messaging app.’ ST#3 (Detective Sergeant) clarified this dynamic,

‘Telegram is like a message board so it’s used a lot by Extinction Rebellion [global environmental movement] and drug groups and things like that. It’s private. It’s hidden. It can be challenging to access. So again, it’s just another method...’cause it’s more of a message based as opposed to announcement based, like Instagram and Facebook. It’s an ideal platform for people wanting to do things because they can push their messages on there.’

According to ST#3 (Detective Sergeant) Telegram’s encryption differs from WhatsApp, Facebook and Instagram, and is hosted in the United Arab Emirates, where British law enforcement cannot exert ju-

ridiction. From a law enforcement perspective, ST#3 reiterated that these types of social media platforms, with the addition of Snapchat, are 'masked behind privacy settings...privacy [has become] default as a standard...So the whole privacy thing though drives the whole market.' The Telegram group looks the same as Facebook Messenger or WhatsApp, with multiple conversation threads operating simultaneously.

ISO#1's Telegram group was described as containing over 100 users, who are mainly between 25 and 45 years old, White British, with more men than women. 'The women in the group, most of them are mothers. A lot of them are single mothers and I can't speak on their behalf, but I'm guessing a lot of its kind of relief from that kind of, you know, everyday stress.' ST#2 (NHS England) described a similar demographic and observed multiple cases of health care professionals accessing online routes to medicines,

'cases of nurses with back pain, [as] it's an occupational risk...They've got to bring up the family, you know, a number of nurses are single mums, they've got to be a full time worker. They've got to, you know, it's a stressful job...and they struggle with shift patterns...You know, I can't count the number of times I've had this same scenario rollout. They'll see their GP, be prescribed 10 days' worth of diazepam to help them sleep, or some pregabalin to help with their pain, and it starts from there.'

He concluded that 'it's never been so easy to find an online prescriber who will give you GABA drugs or benzo drugs. It's, it's remarkably easy to find them' (ST#2, NHS England).

None of the ISOs were required to answer any (health) screening questions, provide a prescription, doctor's note or identification to join the group. On the Telegram group, ISO#1 described being able to ask other group members their experiences or advice, for example 'how much to take, what not to mix it with, tips for people with withdrawals if you have been using it too much...It's almost like a small social network.' The group was observed to operate as essentially a support network, and in some cases, users even sought advice for quitting. ISO#1 illustrated how the process works. Once a week, the host of the group, sends a price list and pictures of the stock on offer, sometimes with descriptions of the reasons for use, for example 'muscle relaxant.' 'You let him know what you want, kind of a range of price whatever; send the money into his bank account; and you get it next day signed for, first class postage. And that's the same for everyone on there.' If there is a new group member, their first order is free. When an order arrives, there are normally 'freebies' also included, 'presumably just to try and, you know, get [people] using them.' While ISO#1 believed that the host is the one that obtains the drugs 'from one of the pill manufacturers in India or some pharmaceutical supplier', he was under the impression that there is a 'small admin team' who process all the orders each week. This role also comprises of placing eBay or dog paw stickers on the parcel, or even rattles inside them, so that they are not searched in transit. Once received, the host 'appreciates it if you put a picture on [the group] of your order when it arrives, so that if anyone new is coming, trying to buy stuff, he's got proof that it's legitimate...that he's not going to take the money and not send anything. And generally everyone does that. They post, you know, "another delivery, great service".'

While ISO#1 reiterated that he mainly orders tramadol, he confirmed that the other Telegram group members order a variety of prescription drugs including valium, gabapentin, Xanax, Zopiclone, sleeping pills and many more. The price list, which ISO#1 displayed on his phone over video to the researcher, showed options such as 10mg of diazepam, 2mg Xanax bars for £125 each, 200mg of modafinil (anti-narcoleptic, commonly used as a cognitive enhancer), a bottle of Oramorph (liquid morphine) for £59, co-codamol, amoxicillin, codeine phosphate, pregabalin, tapentadol and tramadol.

ISO#1 insightfully explained that this type of online drug supply group was able to successfully operate as 'there's a certain loyalty.' The 'people who are buying it, and [the] people that are selling it, want the same thing. They want stability and they want dependability, and that's how it keeps going. It's a lot more profitable.' A mutual, reciprocating relationship between the vendor and the user was described by ISO#1. In his

view, those on the group have 'quite a lot of evidence' that would make it 'relatively easy for law enforcement' at the same time, the host has the users' billing information and delivery address. The host therefore 'needs to be able to trust the people that are in the group.' These same sentiments were shared by ISO#2 and his relationship with specific online pharmacies.

Taking a slightly different approach, ISO#2 initially conducted his research into benzodiazepines on Wikipedia. Although wary of poor-quality websites, he found one that received 'five-star reviews on Trustpilot', ordered Etizolam and 'everything went really smoothly', which increased his confidence in self-sourcing online. His main hesitancy derived from knowing that the source was from outside the UK; he later switched to a UK based vendor, where the supply arrived in two days. Following this, ISO#2 used Google and found a social anxiety forum (possibly on Reddit) to source phenibut (analogue of GABA), where he successfully paid for a bottle of ninety pills in Bitcoin. He described that the online sourcing via Reddit was a very positive experience, largely due to the customer service, which was even 'better than real retailers.'

ISO#3 also had similar experiences to ISO#1 and #2. He found a website on the surface web that looked like it belonged on the dark web. He ordered a supply, which arrived 'scarily quick' with Royal Mail's 48-hour track and sign delivery service. He only had to provide his phone number, email address and delivery address, and 'contact someone on WhatsApp and ask for the bank details'. He 'presume[s] that's because [the bank details] change quite a lot...So the bank details always seem to be different every time you order.'

Supply issues and COVID-19

At the time of the first interview, ISO#1 explained that the host had been unwell, so the opioids had not been available for a few weeks. He explained,

'I'm quite happy just to wait until they're back and have something to look forward to. If I was deeper into a habit like some of the people are, I suspect they probably have been elsewhere to source online. I would guess most of them probably found it the same way I did. Just go in on Instagram or Facebook. I know that...I know that there is a Facebook group for them as well.'

However, in ISO#1's second interview, he explained how, since the previous conversation, he had been unable to access tramadol through the Telegram group. The host sent a video message to the group clarifying the situation. According to ISO#1, the message described how,

'the Indian government had cracked down massively on exports. I think it's because there's been political influence from certain African countries that are really struggling with tramadol...COVID was mentioned as well, obviously India, I think they're still struggling really badly with it...He [the host] still had access to certain things, diazepam, stuff like that. He was also starting to get it in from America.'

Due to these supply issues the group members began to take other drugs, mainly Oxycontin, codeine and a combination of codeine and promethazine (an antihistamine), or they experienced severe withdrawal effects. These effects ranged from restless leg syndrome to many having to take sick leave from work. Another group member reached out to ISO#1 to offer a different supply of tramadol. Contrary to what ISO#1 stated in the first interview, that he would be 'quite happy just to wait until [his supply was] back' in the case of a shortage, ISO#1 accepted this offer. The host had unusually said, 'Look while it's unavailable, I don't mind if you get it from other places if you can get it.' Again, ISO#1 reiterated how the group became a support hub for the members. The strength of the community in the Telegram group was felt throughout both interviews.

Aside from social media, online doctors and pharmacists were thoroughly discussed across the interviews. ST#2 explained that complaints regarding online pharmacists largely dealt with quantity issues for dis-

pensed medications. For example, *'I've ordered a pot of 100 codeine tablets. And only 70 were in the tub when [it] got here...In which, the pharmacy turns around and says, "Nope, we supplied them with 100".'* ST#2 implied that this situation is evidence that the patient filing the complaint is drug dependent. In the same interview, it was also reported that some individuals who source through Facebook have commented that *'you can never be sure what might turn up from online'* but deem online doctors and pharmacies as *'safe'* as they have the knowledge, they are interacting with a (online) healthcare professional. Furthermore, ST#1 (NHS England) detailed how many use this route due to the *'anonymity'*.

Perception of control

All ISOs held the same perception that they were in control of their substance use and were able to minimize risks if needed. Firstly, ISO#1 articulated how he is acutely aware of his situation and opioid use. *'I'm probably one of the – they all probably say this – but one of the more sensible users on there. I'm very aware of how quickly things can, you know, spiral into things that you can't control, so I've always been very cautious of what I take, what dosages I take, how frequently.'* According to ISO#1, he maintained a healthy lifestyle consisting of exercise, clean eating and not smoking, and remains hyper-vigilant regarding his opioid use. He did not discuss his opioid use with his GP, primarily as *'it's not something that [he] want[s] on [his] records'* and in order to maintain the option of legitimate sourcing *'if they have it on the record that you have drug seeking behaviours...then there's no chance...I want that back up to be available should I ever really want or need it.'*

As ISO#1 had been using opioids for many years, he believed he was in control of the potential risks. After experiencing side effects from taking codeine and tramadol at the same time when he was 17, although he did not explicitly detail the outcome, he stated that his knowledge of the risks is the reason he keeps his consumption *'to a minimum'*, *'rather than forming habits'*. However, he went on to describe how when he was furloughed in 2020 during the COVID-19 pandemic, he became dependent.

'I ended up taking them every day for a couple of weeks, maybe three weeks, and went through the withdrawals and then thought, yeah, that was a really stupid idea and then thought when I take them from now on, [I] need to make sure that I do spread it out evenly so that you don't get that habit forming. You don't have to go [through] withdrawals.'

ISO#1 described accumulating his knowledge of risks from online sources, such as the NHS website, but predominately learning from his and others' experiences, and tailoring his usage as required. *'Although the information that's out there is great, I don't think you can rely on it too much because it is a case-by-case basis.'* He appeared unaffected by observations on the Telegram group, *'one person having withdrawals and describing it doesn't really change another person's course of action.'*

The same sentiments were shared by ISO#2 and ISO#3; *'fortunately I was never physically dependent. I never went through any harsh withdrawals'*. However, ISO#3's use of diazepam, tramadol and codeine over three or four years began to affect his mental health. Due to cost and because he *'didn't want to become physically dependent'*, he quit a year ago. Like ISO#1, ISO#3 admitted experiencing *'rebound anxiety'* and depression when he stopped taking diazepam and tramadol as well as stating that he experienced *'psychological dependency.'*

ISO#3 also stated that he was *'not like the average person that is using these drugs'*. Although he acknowledged the potential harm, which was also noted on the forum he sourced them from, he continued to purchase phenibut. He later described purchasing Xanax through a website that advertised a *'genuine Pfizer'* drug. They arrived quickly in a *'loose bag'* and *'you could tell they were crumbly and [poorly] pressed'*. He tried them and described the effect as *'weird'*. He proceeded to send them to WEDINOS, a company that tests substances and provides users information to reduce harms (WEDINOS, 2022), who confirmed that there was no active substance in the drugs. ISO#3 concluded that *'you have no guarantee that there [are] not even different pills within a batch'...**'I've had ones that*

appear to be nothing, and I've had ones that have blown my head off'. He described himself as a hypocrite and admitted that he had a dependency *'to some degree'* by self-managing and controlling his consumption.

In contrast to the ISOs, the stakeholders painted a bleaker picture, as ST#2 (NHS England) described drug related deaths they were aware of where patients had moved from GP prescriptions to sourcing online. However it should be noted that a direct link between drug related deaths and online sourcing cannot be currently substantiated through available literature and data.

Quality of medications

On occasion, ISO#1 received different brands of drugs, varied in strength, dose, release time (into the bloodstream) and physical attribute of the drug (capsule as opposed to tablet form). He emphasised that none of the drugs are substandard, and in his view that the difference lies in the branding. When this is the case, the group provides the information required.

'There are people if they're used to the fast release, what they'll do is, they'll crush up the slow release ones and put it in a drink or something like that...it's mostly in the coating that makes them slow release, but you can, you can remove some of the coating.' (ISO#1)

Although ISO#3 did not have negative experiences when taking the drugs, he stated that the information leaflets were in a different language or not included and so he questioned their authenticity and if they were counterfeit. Regardless, he consumed the substances with the knowledge that *'a lot of it probably wasn't made to the standard of, you know, the drugs that the NHS prescribe. I guess I never really knew if I was taking 100mg of something, it could have been a bit more, I don't know'*. His main issues related to the dosing as opposed to the constitution of the drug. ISO#3 obtained the dosing regimen from websites such as Psychonaut (Psychonaut, 2022) and Bluelight (Bluelight, 2022) as he was, at the time, using a recreationally high dose.

Public health recommendations

The overarching recommendation across all interviews was;

*'Prevention, all day long, is the key. Prevention and education'...**'Prevent; because prevent[ion] far outweighs trying to detect it down the line, but getting that message across in a way that people are going to read and believe'* (ST#3, Detective Sergeant).

ISO#1 and #2 both believed that public health programmes should take an inclusive approach, accepting that individuals will continue to take opioids regardless of the known risks. Future recommendations should therefore be *'about limiting that danger'*. ISO#1 provided educational examples, such as teaching those who are initiating opioid use, to familiarise themselves with the correct branding of the packaging and the look of the drug itself. Additionally, ST#2 (NHS England), ISO#1 and #3 added that it would be useful if websites and forums (similar to Psychonaut, (Psychonaut, 2022) Bluelight, (Bluelight, 2022) and EROWID (EROWID, 2022)), *'talked about routes of administration and the different effects'* (ISO#1), both of which were accessible on his Telegram group. These recommendations also equate to improving or tailoring messaging around the inevitable consumption of opioids. ISO#1 suggested that websites should pose and answer questions such as *'how much, if you are going to do it anyway, how much of one [drug] should you do? How much stronger will it be? How much quicker will it come on? How much of a health risk is it in terms of respiratory compared to taking it, you know the damage it might do to your stomach?'* For ISO#2, the public health communications should step away from *'fear-based'*, *'hysteria'*, and anti-drug messaging, as it is counterproductive to those already consuming substances. Therefore, taking a harm reduction approach would be more effective, as ISO#3 described was available on websites such as Bluelight or through posters in pharmacies or on billboards in communities. ST#3 (Detective Sergeant) insightfully added that messages must

'go with the medium that people are using...it's got to be on Snapchat, or WhatsApp...it's got to be at that level that people are reading as well'. 'You can't just push stuff under the carpet. It's got to be really upfront... "if you do it this way, you may die"'. ISO#3 and ST#2 (NHS England) supported both these methods, requesting an online warning campaign that explained the dangers at the same time as providing appropriate messaging and information. In ISO#2's search for online medication, he found a website that had been shut down, with a notice displayed on the original homepage by a government agency. However, '[the company] just changed their url and it was on a different website the next day; exactly the same site'. Finally, while SP#3 agreed that campaigns are needed to combat online sourcing of drugs, 'you need one central authority to push one single set of messages, to then be followed by other forces of bodies', otherwise 'you're diluting everything that has been said'... 'a 100% single message'.

Interestingly, ST#2 (NHS England) believed that while online sources are a significant phenomenon, private practice require the same attention and response. 'A lot of patients also go to the bricks and mortars providers.' Furthermore, by closely controlling prescribing rates in front-line care, the system could in turn minimise addiction development, thus fuelling the need for individuals to move to online sourcing of drugs (ST#2, NHS England). One way this could be achieved was through verification of the patient's registered GP practice on online doctor and pharmacy websites as well as 'ma[ke] it mandatory for [private practices] to do that and to write to the patients' GP' (ST#2, NHS England). If the GPs cannot be associated with the patient, then the system should activate a warning to NHS England.

Discussion

This study provides insight into online purchasing of habit-forming pharmaceutical medicines in the UK; namely opioids, sedatives and GABA drugs from both stakeholder and ISO perspectives. Despite using an in-depth case study approach due to the inherent difficulties in recruitment of ISO's willing to speak, there were other limitations to this research in that all interviewees were male, and there was a small sample size. Despite this small sample size, however data saturation was reached with no emerging themes from ISO#2 and #3. The range of stakeholders was also relatively narrow, covering only two sectors. This was partly affected by organisational pressures during the COVID-19 pandemic. As the stakeholders were recruited through word of mouth, there may be a source of bias from these data. However, due to the richness of data garnered, the study presents unique insights into the world of online drug sourcing, particularly on new media such as Telegram, which to date has not been researched. Further research is warranted to accommodate these limitations.

While there were some similarities between stakeholders and ISOs in their views on both the prevalence and ease of access to medication, there were substantial differences (despite the caveat of small samples) primarily in terms of perceptions of risk, but also indicative of the difference between ISOs and STs, with STs focusing on prevention of use, and ISOs intent on safer more educated use of these drugs. The three ISOs interviewed believed – to differing degrees – that their own sourcing and use, was a safe way of self-medicating, and were reflective on times when they felt their use might have been moving towards a harmful state of dependence. Their confidence was partly based on very common mainstream mechanisms attached to online sales such as customer feedback and vendor rating, and all believed themselves to be knowledgeable around the effect of substances, potential adulteration and the importance of dosing. It appeared particularly from the experience of the three ISOs that online sourcing of medications offered a more consistent and higher quality route of supply than other means and that reflects this societal move towards peer feedback which websites such as Trustpilot or Tripadvisor are based upon. Moreover, and reflecting on the reciprocal relationship between vendors and customers, there is an interest in ensuring that the product sold is not knowingly danger-

ous, despite the uncertainty around levels of active ingredients in some products. However, there was some evidence that ISOs held conflicting beliefs about the potential for drug dependence, since they did not view themselves as one participant described as being 'like the average person using drugs'. Conversely though, participants did describe the negative impact of medication use on their mental health, with withdrawal and psychological dependency both noted. Although at least one interviewee was keen to differentiate physical and psychological dependency, this was self-perceived and overlooked the commonalities between both types of dependency, where more of a substance is required in order to feel the same effects (Newlin, 2008).

This study, although focusing on opioids, sedatives and GABA drugs, has also drawn attention to wider issues relating to the general online supply of pharmaceutical products, with the Internet remaining largely unregulated, the demand continues to increase due to the ease of access from online sources (Fittler et al., 2021, Vida et al., 2020). For example, there was detailed knowledge and awareness around utilising technology which made the transactions more difficult to trace, some of which, for example Bitcoin, requiring a reasonable level of knowledge which not all interested consumers might have, particularly those who do not have high levels of Internet proficiency (Warmke, 2021). One participant described how this might be made easier by cryptocurrency machines based within city centres; however, none of the ISOs mentioned these and it is not clear the extent of their use in sourcing online medication.

While there were some commonalities in the country of origin for some products, this still varied considerably and this highlights the difficulties of trying to shut down routes of distribution which are increasingly global. We further recognise that there are no guarantees that the purported country of origin is necessarily accurate. Many dark web marketplaces have been shut down, only to be replaced with new ones which sell the same products and often from the same vendors (Martin et al., 2019). It is easy for vendors to contact previous customers via Telegram or other secure means in order to share details of new stores or methods of ordering. The lack of identification requirements or health screening for any identified online vendors is of concern and is evidently an indicator of those who are prepared to sell medication to customers outside of normal safety guidelines. However, it is questionable how much enforcement would prevent sales when vendors could, as one interviewee noted, just open up again under a slightly different name, and when sales can also take place away from the surface web.

The focus on safe transit of goods and materials within the UK is around items which might potentially harm delivery personnel, rather than the consumer, such as batteries and aerosols, and although it is forbidden to supply controlled drugs without a prescription, the chances of packages being intercepted appear to be very low. Although local police sometimes have campaigns against ordering illicit substances through the post, warning people that they know where they live, it is not a criminal offence for someone to order them, only to receive them, and given the lack of checks on domestic mail, it may be viewed as a risk worth taking by individuals who are not able to obtain medications through traditional channels.

There are serious remaining questions around the issue of privacy, which have become a key area of focus for both the United States and Europe in recent years, with General Data Protection Regulation (GDPR) in the latter being introduced in response to concerns around data sharing and security online, particularly pertaining to that held by large social media companies such as Facebook. Regulations to reduce harm are blocked by policies such as the Electronic Frontier Foundation¹ and the Freedom Foundation² in America, condemning such approaches as 'a breach of privacy', while in Europe there are exceptions to rules around sharing information under GDPR if there is considered to be potential

¹ <https://www.eff.org/>.

² <https://www.freedomfoundation.com/>.

serious harm to individuals (Information Commissioner's Office, n.d.). Since social media plays a key role in online purchasing, there are questions to be asked around privacy for individuals using these online forums. Mirroring the difficulties of monitoring online websites based around the world, the most common social media entities such as Facebook and WhatsApp are based outside of the UK and beyond the jurisdiction of UK authorities. This makes it very difficult to receive regular reliable intelligence on potentially harmful activity, although it could be argued that this would be a potentially invasive overreach anyway. There has been some discussion in recent years of reducing anonymity within social media in order to promote more courteous discourse and reduce hate speech online; however relatively little progress has been made on this due to privacy concerns.

While the sourcing of controlled drugs outside of official channels is so prevalent and commonplace in the UK, there is a balance to be had between managed GP prescribing which does not over-prescribe medications with abuse liability, but also does not restrict access to them when use is warranted. Following a harm reduction approach, medications should be prescribed in a managed way whereby practices have full knowledge of what medications patients are taking, and patients are able to source them without resorting to potentially adulterated or unsafe products which may cause more harm than a legitimate prescription. This creates the opportunity for a more open dialogue between patient and health care professionals, patient centred communication, shared decision making and reducing the need for purchasing via riskier routes. Unregulated online vendors offering "free" medication is clearly riskier environment in which to start using a new substance without an accompanying health review. Furthermore, there is an enhanced risk for individuals who are prescribed medication from GPs but being denied others due to potential contraindications who may go on to source that medication elsewhere. The high levels of multi-substance drug related death from poisonings (Office for National Statistics, 2021) highlights the dangers of health care professionals only having partial information on a patient's medication consumption. At the least, posters and leaflets in health care settings along with face to face conversations highlighting the dangers of online sourcing should be a priority, particularly in areas with higher rates of prescribing of potentially addictive medications.

There are opportunities too, with the recent increases to funding of drug treatment in England for treatment providers to identify dedicated roles which specialise in online outreach within communities sourcing controlled drugs. However, we would recommend that these roles follow harm reduction principles as opposed to abstentionist models. In the absence of this, online communities do appear to provide some protective effect to their members by highlighting concerns around specific substances or vendors, sharing of harm reduction information and providing a level of support which potentially makes those sourcing the substances feeling less isolated, despite the lack of professional knowledge in many cases. While beneficial, these communities cannot replace the oversight of a GP or other primary care giver although they are arguably safer environments than anonymous online vendors with little to no community elements and where the primary focus is financial sales as opposed to public welfare.

Conclusion

Online sourcing of controlled medication is a thriving and largely unregulated market which presents considerable risk to those sourcing the products from various online means. While the global nature of online marketplaces through the surface web, social media or dark web makes it difficult to monitor, there are opportunities for both health and social care professionals and law enforcement to provide advice and support to those sourcing medications online. Whilst this would not condone the practice, its ultimate aim would be to reduce harm. Finally, there is an opportunity too for drug treatment providers to make use of existing online communities where membership and discussion is plentiful via online outreach.

CRedit authorship contribution statement

Alice Hillis: Conceptualization, Data collection, Formal analysis, Writing – original draft, Writing – review & editing. **Jennifer Germain:** Conceptualization, Data collection, Formal analysis, Writing – original draft, Writing – review & editing. **Mark Whitfield:** Conceptualization, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing. **Devina Halsall:** Conceptualisation, reviewing and editing. **James McVeigh:** Conceptualisation, reviewing and editing. **Yasir Abbasi:** Conceptualisation, reviewing and editing. **Marie Claire Van Hout:** Grantholder, Conceptualization, Methodology, Project administration, Supervision, Writing – review & editing.

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