



Research Paper

Not what the doctor ordered: Motivations for nonmedical prescription drug use among people who use illegal drugs

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ABSTRACT

Background: Nonmedical Prescription Drug Use (NMPDU) is common among people who use illegal drugs. NMPDU is particularly problematic among this population however, as medications such as benzodiazepines and gabapentinoids can potentiate the harmful effects of opioids. Despite these harms, there is some evidence that NMPDU can have harm reducing and therapeutic potential for some people who use illegal drugs. This study provides further evidence of the harm reducing motives for NMPDU among people who use illegal drugs in community and prison settings in Wales, UK.

Methods: In depth, semi-structured interviews were conducted with 60 interviewees recruited from statutory and third sector drug treatment providers operating in five towns and cities in Wales, and from two Welsh prisons. Eligibility was based primarily on whether the person was currently (or previously) a user of illegal drugs and had recent experience of NMPDU.

Results: NMPDU was found to be largely driven by insufficient access to certain prescription medications and treatment. In this context, NMPDU played an important role in alleviating legitimate medical concerns and overcoming logistical and regulatory barriers associated with Opioid Substitution Therapy. NMPDU also had everyday practicality and mitigated many of the everyday harms experienced by people who use drugs, including opioid withdrawal and stimulant comedowns.

Conclusion: Results suggest that NMPDU has the potential to mitigate a number of legitimate medical concerns in the absence of treatment. Finding nuanced ways of responding to patient need whilst reducing the potential for NMPDU are therefore needed, and harm reduction strategies that harness the knowledge and expertise of people who use drugs should be encouraged. Additional policy measures that attend to the inequities and social-structural factors that produce and maintain the need to consume prescription medications in ways that are not intended are also required.

Background

Nonmedical prescription drug use (NMPDU) typically involves the consumption of a prescription-only medication without a doctor's prescription, or in a way not in accordance with prescription guidelines (Bennett, Holloway, & May, 2018; Cicero & Ellis, 2017; Hulme, Bright, & Nielsen, 2018). This could include the consumption of a medication at a higher or more frequent dose, prolonged duration of use, altering of administration routes, and/or concurrent or consecutive use of other medications or illicit substances (Lankenau et al., 2012; Schepis, 2018). Medications with potential for nonmedical use include prescription opioids (e.g. methadone, buprenorphine, oxycodone, tramadol) (Allen & Harocopos, 2016; Dertadian, Iversen, Dixon, Sotiropoulos, & Maher, 2017), benzodiazepines (e.g. alprazolam, diazepam), (Mateu-

Gelabert et al., 2017; Weaver, 2015), prescription stimulants (e.g. amphetamine, methylphenidate) (McCabe, Veliz, Wilens, & Schulenberg, 2017; Weyandt et al., 2016) and gabapentinoids (e.g. pregabalin, gabapentin) (Lyndon et al., 2017). Motivations for NMPDU often relate to self-medication (Bennett & Holloway, 2017; Rigg & Ibanez, 2010), to prolong the intensity and duration of other substances (Jones, Mogali, & Comer, 2012; Silva, Kecojevic, & Lankenau, 2013) and/or to alleviate the severity of withdrawal symptoms or adverse effects of other substances (Chen et al., 2011; Mateu-Gelabert et al., 2017).

There is some evidence to suggest that NMPDU now exceeds the use of most illicit drugs in some countries (UNODC, 2019). Among the general population in the United States, the nonmedical use of prescription painkillers and tranquillisers are behind only the illicit use of

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cannabis, with 3.3 and 2.0 million people aged 12 or older currently (past month) using them nonmedically (SAMHSA, 2017). In England and Wales, 6.4% of adults aged 16 to 59 (approximately 2.2 million people) reported that they had used prescription painkillers that had not been prescribed to them in the last year (Home Office, 2019).

These trends are a concern due to the unintended health and social consequences often associated with NMPDU, including rapid tolerance, dependency and fatal and non-fatal overdose, particularly when used in combination with other substances (Hulme et al., 2018; Lyndon et al., 2017; Macleod et al., 2019; Schepis, 2018). Indeed, mortality rates linked to prescription medications used either alone or as a component of poly-drug use have increased over the last decade in Australia, Canada, the United States and the United Kingdom (Bennett et al., 2018; Hulme et al., 2018). In England and Wales, noticeable increases in drug-related deaths have occurred in relation to prescription opioids, benzodiazepines, antidepressants and gabapentinoids (ONS, 2019). Given the potential health and social harms associated with the practice, NMPDU is now an important public health issue worldwide (ACMD, 2016; EMCDDA, 2018; UNODC, 2019).

Prevalence and harms of NMPDU among people who use opioids

NMPDU is particularly widespread among people who use opioids (Jones et al., 2012; Lyndon et al., 2017). Data on those in specialised drug treatment in Europe for example, found that 12% of entrants for opioid-related problems reported benzodiazepines as a secondary problem drug (EMCDDA, 2018).¹ Higher figures for the concomitant use of benzodiazepines among individuals in receipt of Opioid Substitution Therapy (OST) have been found elsewhere, ranging from approximately 40% in the United States (Chen et al., 2011; Stein, Kanabar, Anderson, Lembke, & Bailey, 2016) to 70% in Germany (Specka, Bonnet, Heilmann, Schifano, & Scherbaum, 2011). Darke and colleagues have also consistently identified the nonmedical use of benzodiazepines alongside heroin (Darke & Hall, 1995; Darke et al., 2010): in one study, 2 out of 3 heroin users reported nonmedical benzodiazepine use within the last year (Ross & Darke, 2000). More recently, Mateu-Gelabert et al. (2017) reported a high prevalence (93%) of concurrent nonmedical benzodiazepine use among a sample of 464 opioid users.

NMPDU is problematic among this population as medications such as benzodiazepines and gabapentinoids can potentiate the respiratory depressant effects of opioids, thereby increasing the likelihood and lethality of overdose (Jones et al., 2012; Lyndon et al., 2017; Macleod et al., 2019). In many European countries, benzodiazepines are commonly implicated in overdose deaths attributed to the use of opioids (EMCDDA, 2018), whilst between 2004 and 2015 opioids were involved in 79% of gabapentinoid deaths in England and Wales (Lyndon et al., 2017).

The harms associated with NMPDU are one influence on current prescription medication regulations worldwide (Harris & Rhodes, 2013; Mateu-Gelabert et al., 2017; McNeil et al., 2015). The daily consumption of OST medications (e.g. methadone, buprenorphine) under the supervision of a pharmacist or healthcare professional remains the recommended best practice for reducing NMPDU (Clinical Guidelines on Drug Misuse & Dependence Update 2017 Independent Expert Working Group, 2017).² Prescription Drug Monitoring Programmes (PDMs)

¹ Figure based on treatment data from 22 EU countries (Austria, Belgium, Cyprus, Czech Republic, Denmark, Finland, France, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, United Kingdom). Figure is considered an underestimate as problems with secondary drugs are not always recorded or reported (EMCDDA, 2018).

² The need for supervised consumption can be relaxed, however, should individuals in receipt of OST show evidence of clinical progress, including compliance with treatment and recovery care plans, changes in drug-taking behaviours (e.g. cessation of injecting) and abstinence (Clinical Guidelines on Drug

have also been introduced in the United States to collect, analyze and monitor practitioner and patient habits in order to detect the inappropriate or illegal prescribing of medications (Pardo, 2017). In England and Wales, the Advisory Council for the Misuse of Drugs has also recommended that medical practices establish data collection systems to identify patients who are, or are suspected of being, dependent on prescription medications (ACMD, 2016), and there have been recent calls for doctors to avoid co-prescribing benzodiazepines to opioid dependent patients due to the increased risk of overdose mortality (Macleod et al., 2019). Finally, in response to concerns regarding the misuse and diversion of gabapentinoids, in April 2019 the UK government reclassified pregabalin and gabapentin as Class C substances under the Misuse of Drugs Act 1971 and as Schedule 3 controlled substances under the Misuse of Drugs Regulations 2001. Under these regulations, pharmacists are prohibited from repeat dispensing, and prescriptions are limited to 30 days' treatment. Electronic prescriptions are also no longer accepted, but instead must be hand signed by a doctor and received and dispensed by a pharmacist within 28 days (Mahase, 2020).

The harm reducing potential of NMPDU

Whilst the majority of research has investigated the various harms associated with NMPDU alongside opioids (e.g. Macleod et al., 2019), an emerging yet underdeveloped body of research has also acknowledged the functions and pragmatic reasons for the nonmedical use of prescription medications (Harris & Rhodes, 2013; Koester, Anderson, & Hoffer, 1999; Mateu-Gelabert et al., 2017; Richert & Johnson, 2015). This includes how people who use opioids, in the context of restrictive prescribing regimes, adapt and reconfigure treatment to meet their immediate priorities. For example, Harris and Rhodes (2013) detailed the harm reduction potential of diverted methadone among people who inject drugs. This included the ways in which participants enacted various protective practices associated with the phenomena, including the strategic stockpiling of doses to safeguard against withdrawal and the trading and sharing of doses to assist other persons in need. Diverted methadone thus functioned as an 'indigenous harm reduction strategy' that enabled participants to manage their drug use, avoid withdrawal and cement social relationships with other people who use drugs (Harris & Rhodes, 2013, p. 49).

Similarly, Mateu-Gelabert et al. (2017) noted how the risks associated with concomitant benzodiazepine use were often rationalised and offset by the more immediate priorities experienced by people who use drugs on a daily basis. This included enhancing the effects of one's high or managing withdrawal in situations where opioids were unobtainable. Finally, Richert and Johnson (2015) examined the motives for non-prescribed methadone and buprenorphine use among people who use opioids. It was found that self-medication with OST medications began as a result of barriers to legitimate OST, including difficulties in accessing and remaining in treatment and a reluctance to engage in OST due to fear of stigmatization or disciplinary action (for example, involuntary discharge). The findings led the authors to recommend the expansion of OST provision to reduce the illicit demand for these substances. Hence, despite the evident harms associated with the NMPDU, these qualitative studies demonstrate how people who use drugs are consciously able to adapt treatment and medication to their immediate needs and concerns, a capacity rarely acknowledged alongside the well-established harms associated with the practice (Harris & Rhodes, 2013).

Despite these studies producing several important findings, there is still more to be learned on this topic (Mateu-Gelabert et al., 2017). Prior

(footnote continued)

Misuse and Dependence Update 2017 Independent Expert Working Group, 2017).

research has focused on the nonmedical use of individual medications such as methadone (Harris & Rhodes, 2013) and benzodiazepines (Mateu-Gelabert et al., 2017) alongside opioids, meaning the various functions and motives for the nonmedical use of other medications (e.g. gabapentinoids and Z-drugs) are less well understood. Additionally, much of the existing research on NMPDU and its relationship with opioid use has been conducted in the United States (Koester et al., 1999; Mateu-Gelabert et al., 2017; Rigg & Ibanez, 2010), a country where localised prescription regulations and controls have contributed to unique prescription drug use trends among its population (Bennett et al., 2018). Accordingly, there is a need for further insight into the motivations for NMPDU among people who use opioids in the UK, and how this population negotiates their use of certain medications in a context of increased regulation and control on medicines (e.g. gabapentinoids).

To these ends, this study aimed to investigate further the motivations for NMPDU - including its harm reducing and therapeutic potential - among people who use opioids in Wales, UK. Understanding the motivations for NMPDU within this setting has the potential to optimize treatment and service provision, and lead to the creation of effective and pragmatic interventions that reduce the harms associated with NMPDU.

Methods

Context

In 2018, the year this research was conducted, drug-related deaths in Wales were the highest on record, and Wales was second only to the North East of England for the highest mortality rate for drug-related deaths across England and Wales as a whole (ONS, 2019). Although drug-related deaths across Wales (7.2 deaths per 100,000 population) remain higher than deaths recorded in England (4.9 deaths per 100,000 population), these are most acute in the South Wales region, particularly in the health board areas of Abertawe Bro Morgannwg (an area including the towns of Swansea, Neath and Port Talbot) at 12.7 deaths per 100,000 and Cwm Taf (covering Rhondda Cynon Taf and Merthyr Tydfil) at 10 deaths per 100,000 (Public Health Wales, 2019a). In 2018, Swansea had the highest rate of drug-related deaths in the country and the second highest number of deaths in England and Wales (ONS, 2019). Data recorded from individuals accessing needle and syringe programmes (NSPs) across Wales suggests South Wales also has a high number of opioid users who are street homeless (Public Health Wales, 2017), particularly in Cardiff where for many years there has been a visible population of street-based injectors (Rhodes et al., 2007).

Recruitment

The research draws upon data from a Welsh Government funded research project investigating the motives for NMPDU use among people who use illegal drugs. The studies were conducted in statutory and third sector drug treatment organisations operating in five towns and cities across Wales, and two Welsh prisons.

Convenience sampling was used to recruit eligible interviewees. In practice, this involved recruiting interviewees through a combination of methods including: advertising the research via bespoke posters and fliers within agency and prison settings; using key stakeholders working in the field to promote the research to eligible interviewees on our behalf; and members of the research team promoting the research verbally to potential interviewees in OST dispensing settings. Eligibility was based primarily on whether the person was currently (or previously) a user of opioids and had recent or current experience of NMPDU.

Data collection

Using Bryman's (2016) typology of research designs, the study was based on a cross-sectional design, which involved the collection of data from a sub-set of the population of interest at a point in time (Allen, 2017). A predominantly qualitative strategy was used although a small amount of quantitative data were collected for comparison purposes, including information on demographic characteristics and drug use. The data were collected using semi-structured interviews, which enabled the collection of in-depth data based on personal experiences of NMPDU from the interviewees' perspective (Wincup, 2017). While cross-sectional designs are often linked with quantitative methods, the use of a qualitative cross-sectional design is a useful way of enabling researchers to understand and explain personal motivations for different phenomenon and it is therefore not uncommon in social or medical research (Bryman, 2006; Dulmage et al., 2018; Ekanayake, Ahmad, & McKenzie, 2012).

Data collection comprised 60 in-depth interviews with people who use drugs from July 2018 to February 2019. Most interviewees were recruited through HMPPS, including 29 prisoners and nine offenders under criminal justice supervision within the community. The remaining interviewees were recruited through third sector drug treatment providers ($n = 11$) and statutory NHS services ($n = 11$). Interviews, averaging 50 min, were conducted in rooms within the treatment facility or prison using a pre-prepared interview schedule that posed questions about the interviewee's drug use history and experiences of using prescription medications. The semi-structured nature of the interview allowed for the ordering of questions on the schedule to vary depending on the priority given to each topic by the interviewee (Barbour, 2007). No monetary compensation was offered to interviewees.

Analysis

With the permission of interviewees, all interviews were digitally recorded and subsequently transcribed securely by Avonlea Services Ltd. Audio recordings were deleted once this process was completed. Written transcripts were printed out for each member of the research team and electronic versions were uploaded to NVivo version 12 software to enable computerised data analysis. Initially, the hard copy transcripts were read independently by the four researchers, who highlighted and discussed any emerging codes that were of potential significance to the research objectives (e.g. treatment history and experiences, use of non-prescribed medication). A preliminary coding framework was subsequently developed and this was used to guide the coding of the electronic transcripts in NVivo. During the second stage of the data analysis, one member of the research team (TM) used the preliminary framework to code the transcripts electronically with a view to uncovering motivations for NMPDU. This included a focus on specific barriers to formal treatment and medication. The coding process was subsequently checked by two other members of the team (KH and MB). Any new themes emerging from the second stage of data analysis were discussed among the four team members and new codes were subsequently developed and utilised. This eventually led to the identification of two broad motivations for NMPDU, as discussed in the findings chapter. This process helped to ensure that the final extracted themes were not just the personal interpretation of one team member.

Ethics

Ethical approval was obtained from three organisations: (1) the Faculty of Business and Society Research Ethics Committee at the University of South Wales, (2) Her Majesty's Prisons and Probation Service (HMPPS), and (3) the NHS Research and Development Committees of participating Health Boards in Wales (following centralised NHS Research Ethics Committee (REC) approval). Participation

in the research was voluntary and all interviewees were provided with details verbally and in writing about the nature and purpose of the research and what their participation would involve. It was also explained that their responses would be kept confidential, unless they expressed an intent to harm themselves and/or someone else. All interviewees were asked to sign a consent form to indicate their agreement to participate. From the outset, interviewees were advised that they could stop the interview at any point and withdraw from the study at any time up until the point that we began data analysis.

Sample characteristics

Like most people engaged in substance misuse treatment in Wales, most of the interviewees were male (90%), white (90%) and in their mid-30s (Public Health Wales, 2019b). All interviewees had histories of illegal drug use and most were currently using heroin and/or other illegal drugs. Furthermore, all interviewees reported histories or current nonmedical use of medicines, including: gabapentinoids, anticonvulsants commonly used for a range of neurological, rheumatic and psychiatric conditions which at high doses can induce euphoria and relaxation (Schifano, Chiappini, Corkery, & Guirguis, 2018); diazepam, a benzodiazepine useful for the short term treatment of anxiety disorders, muscle spasms, seizures and alcohol withdrawal which, if consumed concurrently, can intensify the effects of opioids (Orsolini et al., 2020); zopiclone, a Z-drug approved for the short-term management of sleep disorders which can produce similar sedative and hypnotic effects to benzodiazepines (Schifano, Chiappini, Corkery, & Guirguis, 2019); and mirtazapine, an antidepressant medicine used for the treatment of anxiety disorders and insomnia which has sedative and anxiety-relief properties.

Findings

Although interviews generated a rich body of data covering a wide range of issues related to NMPDU, including: treatment history and experiences, motives and methods of diversion, and the social value of sharing prescription medication among peer groups, the data presented here focus on one particular issue, namely, motivations for NMPDU. This broad theme relates to the following two specific issues, which will be discussed in turn below: (1) barriers to treatment and medication, and (2) everyday survival.

Motivations for NMPDU

Self-medication

Many interviewees reported a number of physical and mental health conditions requiring medication. The most commonly disclosed health issues included long-term mental health problems, insomnia and chronic physical pain or injury. Most of these interviewees were able to obtain medications legitimately (i.e. from a doctor) and reported using them as intended. A minority of interviewees, however, spoke of having prescriptions for gabapentinoids or benzodiazepines terminated or changed to alternative medications due to concerns surrounding misuse or diversion. Some interviewees also stated that doctors had become increasingly reluctant to prescribe these medications to individuals engaged in OST. As one long-term OST patient explained:

[B]ut now it is changing because the doctors are taking everybody off the diazepam. They will not f**king prescribe them no more for some reason, you cannot get a Valium script and all, they've stopped that (Community 2)

This issue was particularly acute in prison settings where additional security requirements coexist alongside the medical requirements of prisoners. As a result, some interviewees reported adjustments in medication upon arrival at a custodial facility. This included the

switching of certain medications to alternatives, the daily provision of medications under supervision, and in some cases the discontinuation of medications with high abuse potential. One OST patient described how his prescription for gabapentin was reduced and subsequently terminated at a private prison³ within six weeks of arrival:

It was fine, prescribed. It dealt with all my anxiety issues, all the problems that I'm suffering with now, it dealt with it all. I got here on the promise that I'd be on maintained meds and inside of six weeks I was battling. I'd already been halved the dose and they slowly but surely... they've taken it from me (Prison 2)

Nearly all interviewees indicated that, within this context, they had initiated their own treatment with illegitimately sourced medication. In the above example, the interviewee later explained how the removal of his medication had 'forced me into self-medicating, and using all the bullshit and all the other things that are causing major problems in the system' (Prison 2). This included the use of Novel Psychoactive Substances (NPS) belonging to the benzodiazepine class, often marketed as counterfeit versions of 'controlled' benzodiazepines (e.g. alprazolam and diazepam) and sold illicitly (often online) under the names of 'street valium', 'MSJs' or 'blues' ('I couldn't get the Valium off a doctor, so I was buying the MSJs', Community 1). For many interviewees, stricter prescribing practices prompted the use of these counterfeit benzodiazepines:

They've reduced the amount of Valium prescriptions, benzo prescriptions that they give out. Most of these kind of medications are difficult to get anyway, certainly in any kind of quantity, but then on the flipside what normally happens is, as with the reduction in benzo prescriptions then the counterfeit medications and the black market medications start coming in (Community 6)

Fellow peers made up a network of care and support that could be drawn upon in situations where medications were unavailable. Many interviewees stated how it was unethical to leave a peer stranded or unattended in these situations ('We take care of each other. We try to. If they know I'm bad, they won't leave me out', Prison 10). Key to these relationships was a sense of mutual obligation. Interviewees were open to helping someone, but this was usually only on the basis that this help was reciprocal ('If I was on a script of Valium or anything like that, yes, I'd give people because they give me', Prison 5). As such, it was often practical to enter into a cooperative relationship with a group of peers who would be willing to share or trade their prescription medications. Although evident in community settings, these relationships were particularly effective in prison settings where prescription medication was often hard to come by. One interviewee detailed how he would share his medication with his neighbor to help alleviate his medical problems:

My next door neighbor does it because he's got sleeping problems as well, he's on sleepers but his aren't as affective as mine... I won't sell them to him, I'll say, here you go, hack on that because I get them every week and I can forget to take them sometimes (Prison 4)

Overcoming regulatory and bureaucratic OST processes

The majority of interviewees were enrolled in OST programmes at the time of interview, and had achieved reductions in illicit heroin use over the course of their treatment. However, nearly all interviewees described how a number of bureaucratic and regulatory processes linked to OST prompted NMPDU. For example, although Welsh

³In private prisons in Wales, primary healthcare rests with the National Offender Management Service (NOMS) and is ultimately delivered by the main operator of the prison. This in contrast to public sector prisons where, under the NHS (Wales) Act 2006, Local Health Boards are responsible for healthcare provision (NHS Wales, n.d.).

treatment data suggests that 90% of referrals to substance use treatment are seen by a key worker within three weeks (Public Health Wales, 2019b) interviewees reported longer waiting lists for OST medication prescriptions, often in excess of three- to four-months. Some interviewees described how they would therefore initiate their own self-treatment with illicitly sourced opioids. One interviewee decided to purchase Subutex (buprenorphine) rather than wait for treatment:

[T]hey said to me there's a year and a half waiting list so I was like, what! I had my mum down my ear going, you can't carry on like this, blah, blah, blah, everyone on my back and I was like, I've gone to these places! Then my mum just said, well if you're serious, you'll do it...so I bought them [Subutex] myself (Community 2)

Several interviewees also spoke of how OST rules and regulations often facilitated NMPDU. Methadone dosing usually begins at an initial daily dose of 10–30 mg, before titration onto an optimal stabilization dose (Clinical Guidelines on Drug Misuse & Dependence Update 2017 Independent Expert Working Group, 2017). Consequently, there is a potential for initial under-dosing which may induce withdrawal symptoms. During these periods, 'using on top' (i.e. using an illicit substance on top of a prescribed medication) was understood to be largely motivated by the need to supplement insufficient doses of methadone. Although participants maintained a preference for opioids in these situations, several participants also highlighted how gabapentinoids and benzodiazepines could be used to enhance the effects of methadone. Gabapentinoids were often favoured due to a perception that they would not show up in urine tests. Pregabalin was particularly sought after due to its more rapid absorption, increased potency and faster onset of effect compared to gabapentin (Schifano et al., 2018). One interviewee, who frequently supplemented insufficient doses of methadone with both diazepam and pregabalin, said:

I had extra methadone and Valium and I still didn't feel right. So thought, what's in these pregabalin because they don't show up in your test, and if I take four 300mls [of pregabalin] it'd stopped me clucking from my methadone. So I thought there's got to be something strong in them to do all that. But gabapentin, say you didn't have any pregabs, and gabapentin would take the edge off but nowhere near as good as pregabalin (Community 13)

Barriers to treatment and medication also existed beyond these formal regulations and protocols. For some interviewees, the stigma associated with illegal drug use made them reluctant to seek medical help due to the perception of being viewed and treated differently as a drug user. These interviewees chose instead to initiate their own treatment using illicitly sourced medication. One interviewee relayed how he had not sought medical advice from a doctor for this reason, and it was only because of arrest that he was forced to eventually visit a healthcare professional. Even then, he felt that it was unlikely that the doctor would provide him with the medication he required due to the stigma attached to heroin use:

It took me years and years to actually present as a heroin addict, and even then the decision was forced on me by police raiding the house, but I'd never been to the doctor, to my GP, for any help because of a fear of being perceived as drug seeking....Also it probably would have been an exercise in futility because I wouldn't have gotten anything (Community 6)

Everyday survival

As well as addressing the unmet medical needs of many interviewees, NMPDU also had everyday practicality. This included lessening the effects of opioid withdrawal, potentiating the effects of poor-quality heroin, and suppressing harmful side effects associated with stimulant use.

Withdrawal protector and heroin booster

Preventing opioid withdrawal was most interviewees' *raison d'être* and a key motivation for NMPDU. Interviewees described how they would often procure and stockpile excess doses of prescription medications that could then be used as a 'safeguard' in the event of withdrawal (see also Harris & Rhodes, 2013). Whilst the majority of participants maintained a preference for methadone or other opioids during these situations ('it was knocking at the door but it wasn't coming through because the Tramadol was holding it', Community 14), a smaller number of participants reported stockpiling non-opioid prescription drugs to also help 'keep the rattle at bay' (Community 14). Pregabalin was often favoured due to its sedative-like effects that helped alleviate the onset of withdrawal ('It's like you're drunk. It's like you're walking on the moon, and it takes away the cold turkey of the heroin', Prison 16). For one interviewee, pregabalin was therefore an inexpensive⁴ and readily available back-up during periods when heroin was unavailable:

Well, if I couldn't find heroin pregabs are quite a big painkiller, and heroin is a painkiller. I always had pregabs on me, it was something I always carried around... for emergencies, and they were cheap as well. They were cheap to buy, cheap to get hold of (Community 16)

Other interviewees described occasional occurrences of low quality heroin that would either prolong withdrawal symptoms or increase the risk of them occurring. During these periods, interviewees described various ways in which prescription medications were used to potentiate the effect of heroin. Several interviewees reported reverting to opioid-based medications to simulate the effects of heroin during these periods:

I've known there to be months and months where the heroin was so weak that you didn't feel anything, so it was like wasting your money. So during those times people would look for something stronger, which usually would be methadone or other opiate based substances that could be flying around. (Community 7)

Other interviewees stated that they often supplemented poor-quality heroin with benzodiazepines or gabapentinoids to enhance its effect. Some participants spoke of taking diazepam prior to injecting heroin, often 'seven, eight Valium at a time and then using heroin on top' (Community 16). One interviewee, who had recently moved to South Wales from London, described how 'the gear up here is not strong enough to see you through the day'. He therefore consumed diazepam to intensify its effect:

C13: In London you can get shit gear I suppose, it's just that I knew people with the good gear. But since I've come here, I've found people even with the good gear is probably about as good as the shit gear I got in London, it doesn't matter who you go to. If you get shit gear here, it's proper shit!

TM: How much are you using per day?

C13: Double what I was using in London if I use. Even when my using was at its smallest here I'd have to do half a gram minimum. In London I wouldn't have done more than a 0.2. As a matter of fact, in London I didn't even inject, I didn't need to, I got enough off of smoking it. Then when I came here and was smoking it, it weren't doing it, I was having to eat Valiums on top and I never used to do all that. I only started when I came here because I weren't getting what I was looking for from the gear (Community 13)

Although intensifying the high of low-quality heroin was common in the region, some interviewees were long-term opioid users who

⁴ Interviewees reported that pregabalin could be purchased for, on average, £2.50 per 300 mg capsule, and as little as £1 per 300 mg capsule in some areas.

reported a tolerance to the effects of heroin. The concurrent use of prescription medications was therefore a relatively common component of their drug-use repertoire. For the majority of interviewees, heroin use was motivated by both the need to suppress withdrawal (and thus feel 'normal') and reach a state of incapacitation or sedation, commonly known as 'nodding' or 'gouching'. Some long-term opioid users therefore described how they would enhance heroin with different medications to achieve this effect. One interviewee used a combination of diazepam and heroin to produce a sedative effect that could only be achieved through a mixture of the two: 'when I've done the Valium and the heroin it's like a little glow all round me' (Community 15). Another interviewee reported using a combination of the antidepressant amitriptyline and diazepam 'to get further on heroin' and reach a desired level of intoxication:

Maybe you want to get further on heroin so you're using Amitriptyline, I found for me, taking three or four of them and a Valium could get me in a comatose state (Community 16)

Comedown helper

Finally, a smaller number of interviewees frequently used stimulants such as crack cocaine and amphetamine, and highlighted how the use of certain prescription medications counteracted the after-effects of stimulant highs. In these situations, both benzodiazepines and gabapentinoids were commonly used to offset the discomfort of the experience. One interviewee reported that he would only use diazepam in circumstances where he needed to suppress the after effects of a crack cocaine binge:

I take it (diazepam) only if I take an amount of crack, just to cool me down [...] there has to be crack and then I have to use tablets to come down. Otherwise if there's no crack I don't use them (Community 9)

Comedowns from crack cocaine and amphetamine were often cited as a source of harm. Interviewees would often forego sleep and food during binges, and experience agitation and immediate cravings for the drug ('You would just get into a terrible state of anxiety, you would just feel awful, feel anxious, depressed, don't want to go out, lose your appetite, your sleep goes all to pot. It's not a very nice feeling at all', Community 10). To induce sleep and prevent harm from occurring, some interviewees reported using zopiclone ('I'd misuse that a lot when I was taking speed and I did a lot with crack as well, because then I couldn't get to sleep and then I'd smoke some weed and then I couldn't go to sleep and then I'd take a zopiclone', Community 16). Many interviewees detailed existing co-occurring sleep problems that were often exacerbated by stimulants. As such, most participants stated a preference for zopiclone in these circumstances due to its perceived superiority in inducing sleep when compared to benzodiazepines:

I have a bad proclivity for zopiclone[...]. It seems to be the only sleeper that works with me. I've had ongoing sleep problems since I was a kid, and the doctors now are all reluctant to give it me anyway. It's about the only thing that seems to really work, because benzos and that seem to wear off quickly (Community 4)

Discussion

The majority of academic and political discussion surrounding NMPDU has largely focused on the negative consequences and risks associated with the practice. In many countries, this is understandable given that medications (e.g. benzodiazepines and gabapentinoids) are increasingly implicated alongside opioids in drug-related deaths (Macleod et al., 2019; ONS, 2019). Although it would be unwise to deny the health and social harms caused by NMPDU in some cases, a body of qualitative research has emerged that seeks to understand the

complexity of this phenomenon, including the functions and pragmatic reasons for concomitant use (Harris & Rhodes, 2013; Koester et al., 1999; Mateu-Gelabert et al., 2017; Richert & Johnson, 2015). Drawing on this literature, we extend these arguments to include the use of prescription medications beyond methadone and buprenorphine, and the capacity and function that NMPDU can serve in many of the everyday scenarios experienced by people who use drugs in both prison and community settings.

Our findings illustrate that, among people who use drugs, NMPDU is largely driven by insufficient access to prescription medications and treatment. These barriers exist within a socio-political environment characterised by concerns surrounding the co-prescribing of medications – in particular gabapentinoids, benzodiazepines and Z-drugs – to opioid dependent individuals (Mateu-Gelabert et al., 2017). Indeed, recent studies urge caution in prescribing benzodiazepines and gabapentinoids to this population and recommend the use of alternative medications for managing opioid dependent individuals with chronic pain (Lyndon et al., 2017; Macleod et al., 2019). Amid these concerns, more stringent regulations on prescription medications have emerged. This includes the enhanced surveillance, monitoring and supervision of certain medications and treatments with potential for nonmedical use (Pardo, 2017; Schepis, 2018). In England and Wales, a recent example is the rescheduling of gabapentinoids as Schedule 3 controlled substances under the Misuse of Drugs Regulations 2001 and Class C substances under the Misuse of Drugs Act 1971.

Whilst supply-side initiatives aimed at restricting access to medications, either through re-classification or strengthened law enforcement, can lead to sustained reductions in the use of medications among opioid dependent individuals (e.g. in response to the up-scheduling of alprazolam (Deacon et al., 2016; Sutherland, Peacock, Nielsen, & Bruno, 2020) and codeine (Middleton & Nielsen, 2019) in Australia), there are concerns of unintended consequences resulting from regulatory changes, including replacement with other drug types and/or the use of non-prescribed or counterfeit medications (Horyniak, Reddel, Quinn, & Dietze, 2012; Mateu-Gelabert et al., 2017; McLean & Kavanaugh, 2019; Silverstein, Daniulaityte, Miller, Martins, & Carlson, 2020). Our findings align with this body of qualitative work and suggest that stricter prescribing practices can inadvertently result in NMPDU. Indeed, interviewees reported the widespread use of various medications obtained from the illicit market in the absence of prescribed medication. This also included the use of counterfeit benzodiazepines, which offered an attractive alternative to pharmaceutical benzodiazepines due to their accessibility and affordability (EMCDDA, 2018). A major concern with counterfeit benzodiazepines, however, is their potential for misuse and subsequent harm, particularly as their pharmacological quality and potency are not subject to the same regulation as controlled versions.⁵ Consequently, the use of these substances entails a number of significant risks, especially when used in combination with opioids where there is an elevated risk of poly-drug toxicity and subsequent respiratory depression (Orsolini et al., 2020).

Further, our findings document the instrumental use of non-prescribed medications in mitigating many of the regulatory and bureaucratic processes associated with OST, including long waiting lists and insufficient methadone doses. The fact that recent studies have documented similar findings – including how illicit buprenorphine is used to counter many of the logistical nuisances associated with buprenorphine treatment (Silverstein et al., 2020) – underscores the need for a more nuanced understanding of this issue to help assist in the development of effective strategies for managing NMPDU use among this population.

In addition, our findings also affirm the functions and pragmatic reasons for NMPDU among people who use drugs. For example,

⁵ Whilst some benzodiazepine derivatives possess a pharmacological profile similar to controlled versions, others represent completely new compounds (i.e. pyrazolam, flubromazepam) (Orsolini, 2020).

pregabalin was widely sought out among interviewees to alleviate the pains of withdrawal if opioids were unavailable. Benzodiazepines and gabapentinoids were also used to complement or replace heroin of low purity and strength to achieve a desired level of intoxication (Harris, Forseth, & Rhodes, 2015). Sedatives such as zopiclone also tempered the highs induced by stimulants and reduced the harm and discomfort associated with subsequent comedowns. Our results therefore provide further evidence of the pragmatic and harm-reducing motivations for NMPDU, despite the potential harms of the practice (Carlson, Daniulaityte, Silverstein, Nahhas, & Martins, 2020; Harris & Rhodes, 2013; Mateu-Gelabert et al., 2017).

NMPDU may therefore function as a 'pragmatic response' in scenarios where access to medication for a legitimate need is curtailed (Mateu-Gelabert et al., 2017, p. 14). In theory, a laxation of these regimes, including lowering barriers to treatments and improving access to certain prescribed medications, may reduce the demand for prescription drugs on the black market and limit the harms associated with NMPDU (Johnson & Richert, 2019; Richert & Johnson, 2015). However, we recognize that proponents of more restrictive prescribing protocols may question calls for greater flexibility, particularly as a large evidence base currently exists reporting the benefits of such regimes. The up-scheduling of alprazolam in Australia to a Schedule 8 controlled drug, which places greater regulatory controls on prescribing to certain populations (e.g. opioid users), has resulted in sustained reductions in alprazolam use/misuse among people who use drugs (Deacon et al., 2016; Sutherland et al., 2020). Meanwhile, US states with more robust PDMPs were found to have fewer prescription opioid overdose deaths than states with weaker PDMPs (Pardo, 2017). The positive capacities of NMPDU documented both here and in similar studies should also not detract from the risk of harm posed by concomitant NMPDU (Macleod et al., 2019; ONS, 2019). Balancing legitimate patient demands with the need to prevent misuse could therefore prove challenging and requires further consideration before we can find a solution that is both safe and acceptable.

This predicament underscores the importance of drawing on innovative and evidenced-based approaches to reducing the harms associated with NMPDU. It is therefore necessary for future initiatives to draw on the knowledge and expertise of people who use drugs, if effective and pragmatic solutions to NMPDU are to be created. This includes an acknowledgement of the various practical 'hacks' outlined in both this study and previous research (Harris & Rhodes, 2013; Koester et al., 1999; Mateu-Gelabert et al., 2017; Richert & Johnson, 2015), and the harm reducing potential these tactics may offer. Our findings also affirm the social and therapeutic functions of prescription medications in the 'moral economy of sharing' that exists among people who use drugs (Bourgois, 1998; Bourgois & Schonberg, 2009; Johnson & Richert, 2015). Given that interviewees have the capacity and willingness to respond and act effectively to situations of peer need (Holloway, Hills, & May 2018), equipping them with pragmatic harm reduction strategies (e.g. take-home naloxone, overdose management training) can be instrumental in producing 'cultures of care' that 'enhance resiliency and reduce the experience of harm' (Duff, 2009, p. 207). Harnessing the support and knowledge of these social networks has the potential to therefore reduce harms associated with NMPDU, particularly among those unwilling or unable to access treatment (Wagner et al., 2014).

Lastly, our findings regarding treatment gaps for people who use drugs emphasises the need for a deeper consideration of the relationship between barriers to health care and treatment and the broader social-structural inequalities experienced by this group (McNeil et al., 2015). For example, both Bourgois (2000) and McNeil et al., (2015) have considered how regulatory frameworks and changes linked to the provision of OST (including daily supervised consumption) can exacerbate structural disadvantage and vulnerability. Our findings similarly reveal how health care for this population is undermined by regulatory changes and barriers to treatment, leading to an increased

position of risk and subsequent harm. This includes how stricter prescribing practices can increase harm (through the use of counterfeit medications, for example) and subject an already vulnerable group to further marginalization (if they are penalised or denied treatment for the concurrent use of prescribed medications).

Providing accessible and holistic interventions are therefore necessary to reduce harm. This includes the provision of stigma-free treatment that does not penalize people who continue to use prescription medications concurrently. Indeed, the concurrent use of prescription medications among those in OST is not uncommon (Jones et al., 2012), and a more nuanced understanding of this complex phenomenon is warranted in attempts to optimize treatment and service provision for this group. Additional support that attends to the social-structural vulnerability of this population is also required, including sufficient and appropriate housing, shelter, food and transport (McNeil et al., 2020). These measures may address, in some part, the need to consume prescription medications in ways that are not intended.

Limitations

These findings should be considered in light of a number of limitations. Like most cross-sectional studies that rely on people self-reporting their use of drugs, the research is limited by issues of accuracy of recall and honesty (Neale & Robertson, 2005). Accuracy of recall is particularly problematic in scenarios where respondents may be intoxicated (Bennett & Higgins, 1999). Nevertheless, in spite of these weaknesses, self-report is widely used in research on people who use drugs and there is evidence to suggest that it can produce reliable results (Dietze, Jolley, Fry, & Bammer, 2005). This study is also limited by the fact that the sample is biased in favor of interviewees who were willing to participate. It is possible that unwilling and unavailable interviewees engaged in NMPDU do so in different and potentially more harmful ways that are not documented in this study. This includes overdose and death. Generalizing the findings beyond the current sample therefore needs to be done with caution. Finally, although our sample is representative in terms of the age and ethnic group of the population of people referred into substance misuse treatment in Wales, in terms of gender the proportion of men in our sample is considerably higher than the proportion within the Welsh treatment population (90% compared with 67%) (Public Health Wales, 2019b). In part, this over-representation of men in our sample reflects the Welsh context of our research and the inclusion of interviewees recruited from two Welsh prisons: there are no prisons for women in Wales. However, it is also likely to be a product of convenience sampling and the limited opportunities this gave us to select female interviewees. Purposeful sampling of a fully representative sample of interviewees was not an option largely because (a) we had limited funding for the project and we were unable to spend extended periods of time within services, and (b) because pre-arranged appointments were not attended by potential interviewees, which was not entirely unexpected given that people in receipt of OST often lead chaotic lives. Conclusions drawn from the research must therefore be made with caution and considered within the context of these sampling limitations.

Conclusion

The current paper provides new evidence on the motivations for NMPDU among people who use opioids in community and prison settings in Wales, UK. These motives were found to be consistent with previous research exploring NMPDU, including methadone (Harris & Rhodes, 2013) and benzodiazepines (Mateu-Gelabert et al., 2017) alongside opioids. We affirm the position of these scholars on the need to understand and acknowledge an alternative side of NMPDU that is rarely investigated in the literature. This includes how (1) rigid protocols can act as barriers to treatment and motivate some individuals to engage in NMPDU, and (2) how NMPDU offers protective potential

from many of the everyday risks people who use drugs are often exposed to. An understanding and acknowledgement of the harm reducing and therapeutic potential of NMPDU can enable the insertion of pragmatic solutions into treatment that respond to the immediate needs and priorities of some individuals (Harris & Rhodes, 2013). Whilst these measures may go some way to optimizing treatment and service provision, we also emphasize the need for additional policy measures that attend to the inequities and social-structural factors that produce and maintain the need to consume prescription medications in ways that are not intended. This includes the provision of accessible, stigma-free and holistic interventions that seek to address the root causes of NMPDU.

The views expressed in this article are those of the authors and not necessarily those of Welsh Government

Declaration of Competing Interest

None.

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