Participation with online recovery specific groups - findings from the UK Life in Recovery survey 2015

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Abstract

As the concept of recovery has expanded, and become embedded in drug and alcohol policy, so too has the proliferation of online recovery support. This paper explores data from the UK Life in Recovery survey (Best et al., 2015), focusing on online recovery methods categorised as: Online Groups, Websites, and Smartphone Applications. While 301 people (39.30%) reported involvement with at least one online recovery method, chi-square tests reveal significant associations between people in stable recovery (five years or more) and the use of recovery applications (Cramer's V= 0.114), as well as between people in full-time employment and the use of online recovery websites or recovery applications. Having dependent children was not associated with use of any online recovery method, yet gender was (Cramer's V= 0.088). This study extends the relatively limited literature and knowledge base of online recovery methods. While the evidence points to higher engagement of recovery websites and apps for people in stable recovery, encouraging online recovery methods for individuals in early recovery may support recovery efforts when the risk of returning to substance misuse and active using social networks remains high. Further research should investigate the mechanisms of recovery change, with a focus on gender differences.

Keywords: Online Recovery Methods, Recovery, Employment, Gender, Dependent Children

Introduction

In Great Britain, 29.2 million people aged 16 years and over drank alcohol. According to the Office of National Statistics (2017), England has the highest proportion of drinkers (57.8%) compared to Scotland (53.5%) and Wales (50%). Drug use among 16 to 34 year olds is declining - cannabis remains the most popularly used illicit drug, with powder cocaine and 3,4-Methylenedioxy-methamphetamine (MDMA) / Ecstasy being the second and third most popular drugs of choice for this age cohort (European Monitoring Centre for Drugs and Drug Addiction [EMCDDA], 2017). Despite declining usage, drug related deaths are at record levels in England and Wales (*N* = 3,744; Office of National Statistics, 2017), and in Scotland (*N* = 867; National Records of Scotland, 2017). Across Europe the EMCDDA reports that in 2017 there were 8,441 opiate and heroin deaths. Excessive alcohol consumption causes 5.9% of deaths worldwide (World Health Organization [WHO], 2014), with 8,416 alcohol-related deaths in the UK in 2013 (Office of National Statistics, 2016).

Against this backdrop of substance-related mortality, the last decade has witnessed a shift from formal treatment toward more recovery oriented models of treatment with a focus on a more person-centered delivery of drug treatment policy in the United Kingdom Drug Policy Commission (UKDPC, 2008a), Scotland (Scottish Government, 2008), Northern Ireland (Northern Ireland Executive, 2011) and Wales (Welsh Assembly Government, 2008). The term 'recovery' has become an embedded and central component in the transformation of drug treatment policy (Duke, 2013; Duke, Herring, Thickett & Thom, 2013; Laudet & Best, 2015; McKeganey, 2014; Wincup, 2016). The policy goal was to move drug users and drug treatment services from an acute model of care to a recovery model that recognised the chronicity of addiction, thereby maximizing each person's opportunities for recovery over time. McKeganey (2014) observed that the UK Government's *Reducing demand, restricting supply, building recovery:*

Supporting people to live a drug free life (HM Government, 2010) contains no mention of 'harm reduction'. Read in conjunction with the updated UK drug strategy, *Putting full recovery first* (HM Government, 2012), these two documents set out more ambitious goals such as overall wellbeing and citizenship and were in part a response to the failure of existing strategies to move people from the "methadone parking lot" (Duke et al., 2013, p. 966). The UK's new Drug Strategy (HM Government, 2017) continues in a similar vein; the policy goal remains to reduce illicit drug use and promote recovery.

Definitions of Recovery

Recovery "is best described as a contested concept" (Wincup, 2016, p. 39). Thus, whilst there is *some* agreement to what the term 'recovery' refers to, definitional variations abound (Betty Ford Institute Consensus Panel, 2007; Substance Abuse & Mental Health Services Administration, 2012; UKDPC, 2008a). Despite such ambiguities, there are elements which bind the definitions; namely the individual seeking help are envisaged to become an active participant, connecting to the wider social structure in terms of citizenship and community participation. The desired outcomes from recovery also include better physical and psychological functioning. Recovery includes notions of 'hope, choice, freedom and aspiration' (Best & Laudet, 2010, p. 2). Further, recovery has been conceptualised as a journey taking place over time and as involving three stages – early recovery (the first year), sustained recovery (between one and five years), and stable recovery (five years or more) (Betty Ford Institute Consensus Panel 2007, p. 224). Recovery therefore has temporal dimensions - evidence suggests that relapse risk reduces after five years of continuous abstinence and that it plateaus after this point (Best et al., 2010).

Employment

Neale et al. (2014) report an emerging agreement that recovery means more than a reduction in substance misuse or abstinence, and that across practitioners, policymakers and service users, achieving improvements in housing, health care and employment are regarded as desirable

outcomes for a person's recovery. Gómez, Jason, Contreras, DiGangi & Ferrari (2014) state that people aged 18 and over in receipt of some form of employment income had less illicit drug using rates than unemployed individuals. Further, Gómez et al. (2014) assert that being employed was a positive outcome for substance dependency and treatment. Employment opportunities have become an embedded component of recovery capital (Cloud and Granfield, 2001; 2008). Later work by Best and Laudet (2010) suggests that an important pillar of recovery capital includes, community capital; the resources that can be accessed by an individual in the community such as housing and healthcare, also includes employment opportunities. Further work, Cano, Best, Edwards & Lehman (2017) conceptualised lack of employment as a key barrier to recovery, finding that time spent developing recovery capital through engagement with meaningful activities predict better recovery outcomes. Employment continues to feature strongly in the new HM Government (2017, Chapter 3) drug strategy; where recovery oriented services are encouraged to collaborate with Job Centre Plus and the new Work and Health Programme, promoting employment for those in recovery. Given the continuing focus on employment and recovery, we further explore the effects of work and engagement with online recovery methods.

The Recovery Stages Framework

White & Kurtz (2006) state that stable recovery is usually only achieved after four to five years of continuous recovery. Dennis, Scott, Funk & Foss (2005) describe the management of addiction as a chronic condition often requiring multiple episodes of treatment following relapse to achieve and sustain recovery (Anglin, Hser, Grella, Longshore, & Prendergast, 2001; Anglin, Hser, & Grella, 1997; Dennis, Foss & Scott, 2007). More recently Dennis and colleagues (Dennis, Scott, Funk & Nicholson , 2015) asserted that after a year of continuous sobriety, chances of recovery significantly improve and that after five years recovery can be sustained with minimal supports. The notion of chronicity lends itself to the argument that recovery must therefore also be temporal. In particular, the Betty Ford Institute Consensus Panel (2007) drew together a panel

of experts from the field of addiction treatment and inter alia proposed the tripartite model of recovery (see Definitions of Recovery). McLellan (2010) describes this model as having been derived at via the development of concepts and language found in the Diagnostic and Statistical Manual of Mental Disorders - IV (American Psychiatric Association, 1994). These time frames were suggested to promote clinical research in order to assess functioning and resistance to relapse.

Dependent Children and Recovery

The relationship between having children and recovery is complex one (Wincup, 2016). Galaif, Nyamathi & Stein (1999, p. 808) hypothesised that inter alia, 'impoverished women in our study were vulnerable to numerous risk factors (e.g., less education, unemployment, minority status, mental illness, dependent children)', concluding the complexity of comorbid conditions may result in children being placed at risk. In later work, Falkin & Struass (2003) found that children could enable both recovery and drug use. Assessing the effects of children on the recovery process, Legler et al. (2012) suggested that designated parent and child residential homes report encouraging results; children were found to have a positive effect on substance user's recovery. Other studies (Flynn et al., 2006) assessed the combined effect of living with children in residential treatment and attending Narcotics Anonymous, eliciting similar positive results. Children or parents were reported as being significantly helpful, providing social support and motivation for staying sober.

Gender Differences in Recovery

Thom (2010) focussed on the unique needs and experiences of women, concluding that the systematic barriers women face create further challenges for women to overcome than their male counterparts. Best et al. (2015) demonstrated that males and females often have differing recovery pathways; particularly, men favor Alcoholics Anonymous more than females (Alcoholics Anonymous, 2012; Kelly & Hoeppner, 2013). Sinclair, Chambers & Manson (2017) surveyed members of *Soberistas* (Rocca, 2016), a social network site primarily aimed at women

trying to resolve alcohol problems, finding that of the 438 women taking part in the cross-sectional survey, 46.5% reported they had not tried any other forms of support, suggesting that for these women the flexibility that this platform offered in terms of engagement and anonymity helped foster alcohol free identities. Feminist research (Staddon, 2005) supports the notion that offline groups such as AA merely reflect the patriarchal structure of society in micro, which partially explains the attraction of *Soberistas* for some women. Grella (1999), suggested that women only programs were better suited to encouraging and fostering a sense of empowerment that may enable them to move away from substance using patterns of behaviour. Furthermore the complexity of needs presented by some women necessitates a nuanced understanding, particularly when substance use is associated with other comorbidities (Grella, Greenwell, Mays & Cochran, 2009). However, Grella (2018) cautions that there is still a paucity of knowledge regarding how gender shapes choices for treatment services. Therefore in this paper we explore gender based choices made for online recovery methods.

Evidence for Mutual Help Group

As White (1998) notes, mutual help organisations have supported persons with alcohol or drug problems in the community for over two hundred years, but Alcoholics Anonymous (AA) is by far the largest 12 Step mutual-help group (Kelly, Stout, Magill, & Tonigan, 2011). In terms of effectiveness, studies have found that AA confers better recovery outcomes upon attendees (Emrick, Tonigan, Montgomery, & Little, 1993; Karriker-Jaffe, Klinger, Witbrodt, & Kaskutas, 2018; Tonigan, Toscova & Miller 1996). Regarding the effectiveness of Narcotics Anonymous (NA), Christo and colleagues (Christo & Franey, 1995; Christo & Sutton, 1994) found a reduction in levels of anxiety as well as drug use in their cohorts, while Toumbourou, Hamilton, U'Ren, Stevens-Jones, & Storey (2002) found that decreased usage of drugs and alcohol was strongly associated with meeting attendance and 12 Step 'work'.

Offering an alternative to 12 Step Fellowships, SMART Recovery eschews a reliance on spirituality and instead explicitly regards itself as a scientifically led approach (Horvath & Yeterian, 2012). Brooks & Penn (2003) compared AA to SMART, finding that SMART members had better outcomes regarding employment and medical issues, conclusions supported by later work by Beck et al. (2017).

Findings from the UK Life in Recovery survey (Best et al., 2015) found that from a specific UK based sample of 766, AA was the most attended mutual aid group (*N* = 297), followed by NA (*N* =180), SMART (*N* =116) and Cocaine Anonymous (*N* =36). Qualitative data suggests that some people attend all three mutual-help groups, a finding that has been supported elsewhere (Horvath and Yeterian, 2012).

Whether one is attending mutual help groups in person by joining AA, NA, or SMART groups, or supplementing one's recovery by accessing online support, one key element binds both of these approaches is the sharing of experience. Whether one is seeking support online or offline, for people new to recovery, it is the knowledge and the 'know-how' of these common experiences as to staying in recovery which is sought (e.g., Savic, Best, Rodda & Lubman, 2013).

Evidence for Online Groups

Twenty-two years ago, Finn (1996) noted the potential for computer based support groups. The internet in its then nascent form was recognised to have an attraction and characteristics that 'real-world' support lacked, such as widening inclusion for reluctant members, transcending geographical boundaries, enhancing communication for those with interpersonal difficulties, and meeting the needs of those with specific support needs, such as physical limitations (Stewart-Loane & D'Alessandro, 2013) and stigmatisation (AIDS sufferers) (Bargh & McKenna, 2004). Merolli, Gray & Martin-Sanchez (2013) examined health related outcomes from engagement with social media, finding positive psychosocial benefits with few adverse consequences stemming from such engagement.

A further motivation for choosing to access support online is that the expectation to reciprocate support has also been found to be less incumbent upon members of online support groups; the ease with which one can disengage without fear of face to face chastisement is attractive for some seeking support (Takahashi et al., 2009). Chung (2013) investigated the factors that lead to preferential engagement with online rather than offline support groups, finding similar motivations for online engagement but offering a cautionary discussion focusing on potential negative harms that may arise from an over reliance with online communities; namely, people spending more time online were found to eschew time spent with family and friends. Other research (i.e., Esquivel, Meric-Bernstam & Bernstam 2006) concluded that while some online support groups may post inaccurate or misleading information, misinformation was rapidly corrected by better informed participants in subsequent postings. In more recent work, Best, Bliuc, Iqbal, Upton, & Hodgkins (2018) analysed Facebook posts for a specific cohort of users connected with Jobs, Friends and Houses (JFH), a UK addiction recovery community. Using linguistic and social network analysis, findings demonstrated that over an eight month period, there was an increase in the use of positive identity markers. This online activity increases the likelihood of adopting a positive social identity, which in turn increases the chance of maintaining successful recovery (Best, Beswick, Hodgkins & Idle, 2016). Participation in online recovery groups and forums further loosen the moorings an individual has with older drug and alcohol using identities, while promoting the engagement with meaningful activities, such as the acquisition of new employability skills and pro-social/abstinent groups.

Savic et al. (2013) note the rise and ubiquity of smartphone ownership, reporting that smartphone recovery apps provide functions such as meeting locator and motivational texts directed at the user. Overall Savic et al.'s (*ibid*) study demonstrated that recovery apps are found to be helpful in supporting positive behaviour change, avoiding a return to problematic substance use and helping sustain recovery oriented goals, while some of the apps assessed also

encouraged offline social network expansion. While it is argued that the lived experience of persons in recovery is still little known (Timpson, Eckley, Sumnall, Pendlebury & Hay, 2016), the field of online recovery methods is still revealing itself in constantly changing forms, with new additions emerging apace. Academic work aiming to assess the efficacy, varieties of online recovery methods and levels of engagement are only just being sketched out and this paper adds to this limited knowledge base.

Purpose

First, we explored the extent of participants' engagement with Online Recovery Methods (ORMs; i.e., online recovery groups, online recovery websites, and smartphone apps), as well as their perceived helpfulness to support people's recovery journey. Second, we investigated whether such engagement varied by recovery stage (early, sustained or stable). Third, we assessed two key life domains in relation to ORM usage, namely employment status and having dependent child care responsibilities, as well as we explored whether gender was related to the use of different ORMs.

In line with the Australian Life in Recovery (Best, 2015), this U.K. survey categorised / defined online recovery groups as; social media sites (Facebook groups), recovery focused message board / forum, as well as a group that provided mutual aid meetings (online) etc. The recovery websites can be described as a resource for obtaining useful information, whereas smartphone recovery apps may also provide interactive functions.

RQ1: *How widely are people engaged with each ORM and what is their perceived helpfulness?*

RQ2: *Is the use of ORMs related to people's recovery stage?*

RQ3: *Are key life domains (i.e., employment status and having dependent children) associated with the use of ORMs?*

RQ4: *Is the use of ORMs related to gender?*

Method & Measures

The 2015 UK Life in Recovery (LiR) survey was based on previous LiRs. Faces and Voices of Recovery, a U.S. advocacy group, organised, designed and disseminated the first in a series of LiR surveys (Faces and Voices of Recovery, 2013). In addition to the UK survey, similar surveys have been carried out in Australia (Best, 2015), Canada (McQuaid, Malik, Moussouni, Stargardter, & Morrisey 2017) and South Africa. The central analytic structure and focus for all the previous LiR surveys follows an 'In active addiction' and 'In recovery' oriented design, eliciting self-reported improvements and changes as a person progresses through his or her recovery. Capturing key life domains, the UK LiR used open-ended and dichotomous questions, as well as utilising Likert scales. These were used to measure and assess psychological and physical health, education and employment, contact with the criminal justice system and family relationships. The website Survey Monkey was used to create an online version of the U.K. survey which was also convertible into a printed out version where needed. Various recovery groups (both online and face-to-face) helped to disseminate the survey through their personal links and contacts, and had clients complete it in sessions.

Recovery Stage

Survey participants were asked the duration of time they have been in recovery / recovered. The question prompted the participant to input the answer in years and / or months in an open ended text box format and this was then recoded as early recovery (the first year), sustained recovery (between one and five years), and stable recovery (five years or more).

Online Recovery Methods

The ORM data was attained by the LiR survey through a series of questions asking whether participants had used an ORM (Group, Website and App; Yes/No), which groups / websites / apps they have used (open ended text), and how helpful they were (using a 5 point Likert scale). The anchor points for the helpfulness Likert scale were Extremely Unhelpful to Extremely Helpful, with Uncertain in the middle.

Employment

The employment statuses of the respondents were ascertained by asking the participant to select their employment status from a category list of Employed full time, Employed part time, Unemployed, Student, Retired and Other (please specify).

Parenting/Care Responsibilities

We gauged the parenting and child care responsibilities of the sample by asking the sample whether they have children or not and if yes, how many of the children are under 18.

Participants

The UK LiR gathered responses from 802 participants, with 3.2% (*N* = 25) living outside of the UK. This paper focuses on UK respondents; therefore, data from respondents outside of the UK and respondents failing to specify their country of residence have been excluded. The resulting sample size is *N*=766. The majority of the sample are males (*N* = 411; 53.9%) compared to females (*N* = 351; 46.1%); four people did not specify their gender. The age profile is as follows: 18-20 years N = 2 (0.3%), 21-29 years N = 29 (3.8%), 30-39 years N = 151 (19.7%), 40-49 years N = 295 (38.6%), 50-59 years N = 185 (24.2%), and 60+ years N = 103 (13.5%). Regarding employment, 314 people (41%) were full-time employees, followed by unemployed respondents (*N* = 128; 16.7%) and part-time employees (*N* = 87; 11.4%). Sixty-seven individuals (8.7%) had retired, whereas 38 (5%) were students. 108 participants (14.1%) specified a different (i.e. 'other') employment status, and twenty-four individuals (3.1%) did not respond.
About one-third of respondents (*N* = 287; 37.5%) had dependent children, while 456 (59.5%) did not, and 23 (3%) did not respond. Most of the participants were in stable recovery (*N* = 333; 43.5%), followed by sustained recovery (*N* = 248; 32.4%) and early recovery (*N* = 78; 10.2%). One hundred and seven people (14%) did not report their recovery status.

Split by ORM in the sample the use of online recovery groups included; AA (*N* = 35), NA (*N* = 33), SMART (*N* = 50), InTheRooms (*N* = 12), Soberistas (*N* = 8) and also Facebook based groups (*N* = 50; recovery focused pages found through Facebook). The recovery based websites

featured many of the same services as the online groups; AA (*N* = 48), NA (*N* = 43), SMART (*N* = 32) and InTheRooms (*N* = 16). Much like the previous two types of ORM, the commonly used smartphone applications also featured AA (*N* = 22), and NA (*N* = 26), but also included the Jo & Charlie App (*N* = 10) and Hazelden (*N* = 13).

Statistical Analysis

This paper analysed the LiR database through the computer program SPSS (Statistical Package for Social Sciences) version 24. Univariate analyses on the data were completed to investigate the frequencies of the participant demographics, as well as the frequency of ORM usage; missing data in this regard were interpreted as lack of engagement. Once this was complete, Spearman's correlation determined whether there were associations between the number of ORMs with which the participants were involved and their perceived helpfulness. Next, chi-square tests of independence explored the association between the use of each ORM and a) recovery stage and b) employment. Finally, chi-square tests for association explored the association between ORM usage and a) having dependent children, and b) gender. None of the chi-square tests distinguished between independent and dependent variables. The missing data in bivariate analyses were handled through pairwise deletion.

Results

RQ1: *How widely are people engaged with each ORM and what is their perceived helpfulness?*

In the sample, 301 participants (39.30%) reported engagement with at least one ORM, while 236 individuals were not engaged with any ORM (30.8%), and 229 (29.9%) did not provide complete information regarding the number of ORMs they had used. Among the participants who reported engagement with ORMs, 141 people (18.41%) were involved with one, 118 (15.40%) with two, and 42 (5.50%) with the three ORMs. Split by ORM, 244 individuals (31.85%) had used online recovery groups, 207 (27.02%) online recovery websites, and 120 (15.67%) recovery apps. Additionally, among people who had used online recovery groups, 21 individuals (8.90%)

were in early recovery, 95 (40.30%) in sustained recovery, and 120 (50.80%) in stable recovery. Regarding people involved with recovery websites, 21 individuals (10.30%) were in early recovery, 68 (33.50%) in sustained recovery, and 114 (56.20%) in stable recovery. Finally, among people who had used recovery apps, 6 individuals (5.20%) were in early recovery, 38 (33.00%) in sustained recovery, and 71 (61.70%) in stable recovery.

The helpfulness of the Groups were rated positively with around 70% of those who have used these groups rating them as; helpful (N = 110; 45.08%), or extremely helpful (N = 66; 24.59%). Similarly, the recovery based websites were ranked just as high, with 108 people (52.17%) saying they were helpful and 63 people (30.73%) saying they were extremely helpful. This paper did not collect data regarding the perceived helpfulness of recovery apps. Spearman's rank-order correlations indicated a low positive correlation between the number of ORMs with which the participants were engaged and the perceived helpfulness of a) online recovery groups (Mdn = 3; helpful), rs = .264, p < .01; and b) online recovery websites (Mdn = 3; helpful), rs = .289, p < .01.

RQ2: *Is the use of ORMs related to people's recovery stage?*

Three chi-square tests of independence between recovery stage and the three ORMs were conducted. Results revealed no statistically significant associations between recovery stage and the use of a) online recovery groups: χ^2 (2) = 4.410, p = 0.110, or b) online recovery websites: χ^2 (2) = 3.860, p = 0.145. In contrast, there was a statistically significant association between recovery stage and the use of recovery apps: χ^2 (2) = 7.263, p = 0.026; Cramer's V = 0.114 (small association). In this latter regard, Table 1 shows that the number of people in stable recovery who have used a recovery app is 118.73% of what would be expected if the null hypothesis was true, with an adjusted standardized residual of 2.4. Likewise, the number of people in early recovery who have used a recovery app is 50% of what would be expected if the null hypothesis was true, with an adjusted standardized residual of -2.1.

Table 1 here

RQ3a - Employment Status: *Are key life domains, such as employment status and having associated with the use of ORMs?*

Three chi-square tests of independence between employment status and the three ORMs were conducted. Results revealed no statistically significant associations between employment status and online recovery groups: χ^2 (5) = 5.241, p = 0.387. However, there was a statistically significant association between employment status and a) online recovery websites: χ^2 (5) = 12.387, p = 0.030. Cramer's V = 0.142 (small association); b) recovery apps: χ^2 (5) = 17.376, p = 0.004. Cramer's V = 0.176 (small association).

Table 2 indicates that the number of people in full-time employment who have used a recovery website is 116.62% of what would be expected if the null hypothesis was true, with an adjusted standardized residual of 2.5. Likewise, the number of unemployed people who have used a recovery website is 65.22% of what would be expected if the null hypothesis was true, with an adjusted standardized residual of -2.6. Additionally, Table 3 shows that the number of people in full-time employment who have used a recovery app is 132.49% of what would be expected if the null hypothesis was true, with an adjusted standardized residual of 3.7. Likewise, the number of unemployed people who have used a recovery app is 46.78% of what would be expected if the null hypothesis was true, with an adjusted standardized residual of -2.7.

Table 2 here

Table 3 here

RQ3b - Dependent Children: *Are key life domains such as having dependent children associated with the use of ORMs?*

Three chi-square tests for association between having dependent children and the three ORMs were conducted. Results revealed no statistically significant associations between having dependent children and using a) online recovery groups: χ^2 (1) = 3.316, p = 0.069, b) online recovery websites: χ^2 (1) = 1.070, p = 0.301, or c) recovery apps: χ^2 (1) = 0, p = 0.985.

RQ4*: Is the use of ORMs related to gender?*

Analysis by gender shows that, 126 females (35.9%) have used online recovery groups, while 100 females (28.5%) used recovery based websites, and 56 women (16%) have used apps. Three chi-square tests for association between gender and the three ORMs were conducted. Results revealed no statistically significant associations between gender and the use of a) online recovery websites: χ^2 (1) = 0.476, p = 0.490, or b) recovery apps: χ^2 (1) = 0.005, p = 0.941. In contrast, there was a statistically significant association between gender and the use of online recovery groups: χ^2 (1) = 5.221, p = 0.022; Cramer's V = 0.088 (small association). In this vein, Table 4 shows that the number of females who have used online recovery groups is 112.70% of what would be expected if the null hypothesis was true, with an adjusted standardized residual of 2.3.

Table 4 here

Discussion

This study reveals that more than one third of the participants have used online recovery methods, with a significantly increased perception of helpfulness among individuals who have used them. Also the amount of people who use ORMs increases as they progress through their recovery journey, which suggests positive effects accumulate. This implies that the ORM could be included in the armory for recovery resources. These findings are consistent with the analyses in this emerging field of enquiry (Cohn, Hunter-Reel, Hagman & Mitchell, 2011; Marsch, 2012; Savic et al., 2013). Although previous research has found that some mobile-based interventions are ineffective in reducing heavy drinking (e.g., Crombie et al., 2018), assessing ORMs use by recovery stage in this paper provides us with new insights. In this regard, this research uncovered a small but significant association between recovery stage and the use of recovery apps, with more people in stable recovery and fewer in early recovery than expected engaged with recovery apps. Since the risk of a return to problematic drug or alcohol usage for persons in early recovery is high in the first twelve months following treatment (McLellan, Lewis, O'Brien & Kleber, 2000; see also Finney, Moss & Timko, 1999), our findings suggest that encouraging the adoption of

ORM use in an early recovery cohort may be beneficial. Additionally, encouraging ORM usage among this high risk group could be an effective way of 'bridging' from time spent alone to attending a meeting and/or an appointment with a substance use professional. As Hser (2007) and others (Litt, Kadden, Kabela-Cormier, & Petry 2009; Longabaugh, Wirtz, Zywiak & O'Malley, 2010) note, the importance of connecting with recovery supportive social networks, mitigates the risk of relapse. Furthermore, encouraging engagement with face-to-face support in concert with ORM use provides a fast way to connect to other persons in recovery and helps keep a person focused while bolstering motivation for recovery oriented activities (Savic et al., 2013).

This paper shows significant associations between employment status and the use of online recovery websites and the use of recovery apps, with significantly more people in full-time employment and fewer unemployed engaged in the use of these two ORMs. First, although much of the content of recovery websites is heterogeneous (e.g., National Institute on Drug Abuse, SAMSHA), the key benefits are flexibility and ease of access for busy people. In this regard, our findings suggest that people who have secured full-time employment, and are thus established in their recovery, still need knowledge related to recovery and drug use. This adds further weight to previous findings that suggest recovery is not an end point but a journey (e.g. Dennis et al., 2005); promoting engagement with recovery websites would augment a person's recovery further. Nonetheless, an alternative explanation for these results could be that unemployed people cannot afford internet access. Thus, future research could benefit from considering as a covariate the amount of income that unemployed people receive.

One of the key strengths of using recovery apps is the anonymity they provide. It is worth highlighting that employers are disinclined to hire former drug users (UKDPC, 2008b; 2010) while Sprague (2007) found evidence to suggest that employers had used online activity, such as written contributions to forums and personal blogs, to make redundant a number of workers. Furthermore, previous research shows that recovery from drug use does not guarantee the

disappearance of the stigma attached to it (Phillips & Shaw, 2013). Similarly, our findings suggest that people in full-time employment engaged less with online recovery groups, as they potentially make visible the recovery status of a person.

These results provide context to our findings of lower levels of online usage by employed people. Finally, this research did not find any significant association between having dependent children and the use of ORMs, thus suggesting independence between these variables. However, it is worth noting that taking care of children is a gendered issue, mostly associated with the private sphere of social life, which is usually attributed to women (e.g. Moscovici, Jovchelovitch & Wagoner, 2013; Rosenblatt & Cunningham, 1976). In line with this, our findings show that females engage significantly more than men with online recovery groups, which highlights the importance of adopting a gender perspective in future research. Furthermore, it is worth noting that women usually report not seeking help due to past experiences with general practitioners and a reliance on social support (Copeland, 1997), which parallels other evidence suggesting that there are specific gender differences in achieving recovery (e.g. Cano et al., 2017; Wincup, 2016). Thus, our findings highlight the idea that there may be less stigma barriers for women to attend online groups than face to face. From this basis, we suggest that prospective research compares different mechanisms of recovery, with a gender perspective, potentially leading to uncover how to advance recovery-oriented strategies, interventions, and policies.

Limitations

The UK LiR 2015 was largely conducted online with few hard copies being completed. Our current sample has a roughly equal split by sex, yet it is important to note that this was a non-probability sample, which was generated by virtue of digital 'snowballing' via use of cross posting on social media to interested and interconnected groups. Drawing a random sample would have been impossible as there is no overarching database currently available for persons in recovery; therefore, no sampling frame could be constructed. Furthermore, future research should focus

on asking participants more ORM focused questions - such as insights as to what types of methods have been used, frequency of use, whether they are used alongside face-to-face or exclusively - would potentially sign-post motivation for engagement, thus better informing more individualised care approaches.

Another limitation in this study is the high rate of missing data regarding the participants' involvement with ORMs. This may lead to decreased statistical power, also calling into question the validity of the inferences applied to the population (Little & Rubin, 1989; Schafer & Graham, 2002). Nonetheless, a common source of bias in survey research findings is social desirability (Nederhof, 1985), which is the tendency of some respondents to provide answers that make them look more socially favourable in the eyes of others (Lavrakas, 2011), taking the form of over-reporting desirable or under-reporting undesirable behaviours. Since there is evidence that social desirability predicts drug use under-reporting (Johnson & Fendrich, 2005) and the LiR survey explicitly focused on recovery, we interpreted missing data as evidence of not engagement with ORMs. Further research could benefit from assessing the extent to which respondents are seeking social approval. In particular, Zemore's (2012) study revealed that the use of the Marlowe–Crowne Social Desirability Scale (MC–SDS; Crowne & Marlowe, 1960) had a significant impact on drug- and alcohol-related responses, and thus we encourage the use of this scale in future research.

Conclusion

This paper explored the use and perceived helpfulness of ORMs, as well as how they relate to different recovery stages and key life domains such as employment and having dependent children. This study uncovered that although ORMs are not widely used, they are perceived as helpful among people who do. As information is increasingly migrating to digital platforms and health care interventions/information continues in a similar vein, the speed with which new recovery focused groups, websites and apps are developed carries the potential for millions of

potentially vulnerable persons to access such information and support. Thus, our findings highlight the potential for ORM usage. However, better efficacy studies would allow individuals and health care professionals to make better informed choices that would expedite recovery efforts. This research highlights that the usage of recovery apps is not evenly distributed across people in recovery. Since online activity is growing rapidly, and with it additional options for help and support, future research could benefit from scientifically testing the effectiveness of specific apps at specific stages of the recovery journey. This paper also adds to previous research by showing that the use of recovery websites and apps increases among those who have secured a full-time employment, and thus are on their pathway to recovery. These findings highlight the importance of providing accessibility to ORMs at all stages of the recovery journey, as well as the capacity to provide a level of anonymity to potentially avoid stigma. These findings provide a basis for developing prospective ORMs which tap into these two components. Finally, this study provides the rationale for future research to include a gender perspective and focus on comparing different mechanisms of recovery, potentially leading to enhance the design and implementation of recovery interventions and policies.

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