Schizophrenia Research xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

Schizophrenia Research

journal homepage: www.elsevier.com/locate/schres

Changes in cannabis use among psychotic clients without specialised substance use treatment

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ARTICLE INFO

Article history:
Received 24 December 2015
Received in revised form 23 February 2016
Accepted 24 March 2016
Available online xxxx

Keywords:
Cannabis
Self-management
Psychosis
Natural recovery
Substance use
Comorbidity

ABSTRACT

The need to address substance use among people with psychosis has been well established. However, treatment studies targeting substance use in this population have reported mixed results. Substance users with psychosis in no or minimal treatment control groups achieve similar reductions in substance use compared to those in more active substance use treatment, suggesting a role for natural recovery from substance use. This meta-analysis aims to quantify the amount of natural recovery from substance use within control groups of treatment studies containing samples of psychotic substance users, with a particular focus on changes in cannabis use. A systematic search was conducted to identify substance use treatment studies. Meta-analyses were performed to quantify reductions in the frequency of substance use in the past 30 days. Significant but modest reductions (mean reduction of 0.3–0.4 SD across the time points) in the frequency of substance use were found at 6 to 24 months follow up. The current study is the first to quantify changes in substance use in samples enrolled in no treatment or minimal treatment control conditions. These findings highlight the potential role of natural recovery from substance use among individuals with psychosis, although they do not rule out effects of regression to the mean. Additionally, the results provide a baseline from which to estimate likely changes or needed effects sizes in intervention studies. Future research is required to identify the processes underpinning these changes, in order to identify strategies that may better support self-management of substance use in people with psychosis.

1. Introduction

Rates of psychoactive substance use in psychotic populations are much higher than those in the general population, and this use has been associated with detrimental psychological, social, and physical effects (Hjorthøj et al., 2009). These observations have led to concerted efforts to develop effective psychological treatments to reduce this consumption and its associated harm. However, the results of clinical trials on these treatments have been mixed (Hjorthøj et al., 2014; Hjorthøj et al., 2009; Kavanagh et al., 2004; Madigan et al., 2013).

An issue with efforts to address this problem is the extent of change in control conditions. Similar reductions in substance use among people with psychosis are often seen after these treatments and in assessment only, minimal treatment or treatment-as-usual control conditions (Kavanagh and Mueser, 2007). A recent review of treatment studies of first episode psychosis groups, including five with and nine without specialised substance use treatment, found that participants were able to reduce their average consumption, regardless of whether they received specialist substance use treatment or not (Wisdom et al., 2011). Receipt of specialised substance use treatment did not result in larger reductions or better rates of abstinence (Wisdom et al., 2011). In fact, follow up research on patients with psychosis not treated for substance use (Baeza et al., 2009; Caspari, 1999; Lambert et al., 2005; Wade et al., 2006) have reported abstinence rates of 21%–63% over 15 months to 5 years (Caspari, 1999; Lambert et al., 2005; Wade et al., 2006).

These results highlight the potential role of natural recovery from substance use in psychotic populations (Wisdom et al., 2011). While these improvements may reflect effective self-management of substance use, they may also reflect regression to the mean (if participants entered treatment during a period of unusually heavy substance use). Observations of reduced consumption in the first month after a negative experience from cannabis, of similar or greater size as in the general population are consistent with both of these suggestions (Green et al., 2007). Regardless of the phenomenon's determinants, clarifying its extent is important in the interpretation of clinical outcomes and in planning treatment trials.

A gap in current knowledge is that research is yet to quantify the extent of untreated improvements from substance use that occurs. Accordingly, the current study conducts a meta-analysis that aims to quantify the reductions in the frequency of substance use that is achieved within control groups of treatment studies targeting psychotic clients. It focuses particularly on changes in use of cannabis, the most

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http://dx.doi.org/10.1016/j.schres.2016.03.030
0920-9964/

commonly used illicit substance worldwide (United Nations Office on Drugs and Crime, 2014), and a substance that has been linked to increased risk of psychotic symptomatic exacerbations and relapse (Hides et al., 2006).

2. Methods

Electronic searches were performed in January 2016 to find studies that included a control group and had tested treatment for current cannabis use in people with both a psychotic and substance use disorder. The searches used title, abstract and keywords of Medline, PsycINFO, Psychology Journals, and Psychology Subject Corner. The search was expanded to include other substances (due to limited results for cannabis alone), giving the search terms: (cannabis or marijuana or marihuana or addiction or abuse or substance or cocaine or dual diagnosis or comorbid or comorbidity or co-occurring) and (psychosis or psychoses or schizophren* or schizotypal or psychotic or bipolar) and (treatment or randomi* control).

Potential studies were evaluated for inclusion in this review, based on whether they: (a) provided data that allowed the calculation of pre-post effect sizes in a group of participants receiving inactive (e.g. waitlist) or routine care (excluding substance use treatment); (b) were in English; (c) did not comprise case studies or personal accounts. In order to report results on a single measure, we restricted the studies to those reporting days of substance use in the past 30 (or equivalent). If this data was not reported, attempts were made to contact the authors to obtain it. Due to limited number of trials, studies that had some participants who used substances (including cannabis) and only reported days of substance use (as a global measure) were also included. However, studies that were solely focused on alcohol or nicotine were excluded.

The examination of effect sizes used Comprehensive Meta-Analysis (Borenstein et al., 2005). A random effects model was applied as it is a more conservative approach and is the appropriate method to use when samples or treatments are different, irrespective of whether significant heterogeneity is demonstrated (Borenstein et al., 2009). Effects are reported as standardised mean differences (Cohen's d). Analyses of degree of change require estimates of test-retest correlations of the measures, or reported analyses of changes within groups. While Timeline Followback assessments of cannabis use can have a 7–14 day test-retest reliability of 0.92 (Robinson et al., 2014), the reliability of the 3–12 month assessments of cannabis use in the current trials is unknown. As a result an estimate of 0.70 was used for the primary analyses. Sensitivity analyses were also undertaken using test-retest correlations of 0.60 and 0.80. Where means and standard deviations were reported on different sample sizes at baseline and follow-up, the follow-up sample size for the analysis was used, estimating baseline scores for retained participants using the full sample. Sample-weighted mean days of use at baseline, post and follow-up assessments are displayed in Appendix A.

3. Results

The search elicited 1492 articles (see Fig. 1). Based on reviews in the area, no relevant articles appeared to be missed (e.g., Hjorthøj et al., 2014; Wisdom et al., 2011). A final decision on the inclusion of all papers was made after reading the full paper. Any ambiguous articles were reviewed until consensus was reached. Some studies reported substance use in general, but reported the number of cannabis users in the sample and were therefore retained in this study.

Of the 30 papers identified, those by Lehman et al. (1993); Hellerstein et al. (1995); Baker et al. (2002, 2006); James et al. (2004) and Hjorthøj et al. (2013) were excluded due to an inability to estimate days of cannabis use in the previous 30. A further 16 studies were excluded due to an inability to calculate a within-group effect size from the data provided (Bellack et al., 2006; Bonsack et al., 2011; Burman, 1997; Calsyn et al., 2005; Castle and Ho, 2003; Clark, 2001; Craig et al., 2008; Drebing et al., 2005; Haddock et al., 2003; Hellerstein et al., 2001; Herman et al., 1997; Kavanagh et al., 2004; Martino et al., 2006; Ries et al., 2004; Sigmon and Higgins, 2006; Weiss et al., 2007). Essock et al. (2006) was included after consensus by all authors that the standard case management provided to participants was part of routine care and was unlikely to have included extensive substance use treatment. The final eight articles meeting full inclusion criteria are described in Table 1 and the methodological details in Table 2.

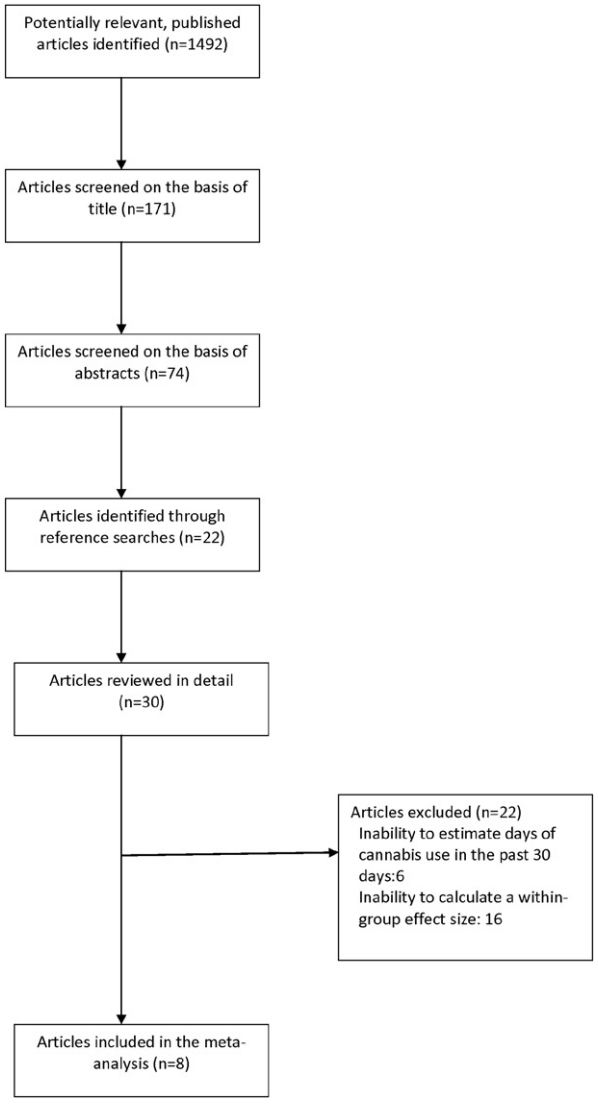

Fig. 1. Flow chart of inclusion criteria.

Over 6 months, weighted mean days fell from 13.2 to 10.6 across 6 studies (a summary of the mean effects is provided in Appendix A). Using a test-retest correlation of 0.70, the random effects meta-analysis gave a mean reduction of 0.332 SD ($p < 0.001$; Fig. 2), and 80 missing studies would be required to take the result to $p > 0.05$. There was no significant heterogeneity ($Q(5) = 10.23, p = 0.069$). Sensitivity analyses using test-retest correlations of 0.60 (−0.330, CI: −0.460 to −0.200) and 0.80 (−0.332, CI: −0.461 to −0.204) made little difference to the obtained effect.

Over 10–12 months, the random effects meta-analysis produced a mean reduction of 0.328 SD over 7 studies ($p < 0.001$; Fig. 3), and 82 missing studies would be required for the result to reach $p > 0.05$. Heterogeneity fell short of significance ($Q(6) = 7.91, p = 0.245$). Sensitivity analyses using test-retest correlations of 0.60 (−0.337, CI: −0.433 to

Please cite this article as: Rebgetz, S., et al., Changes in cannabis use among psychotic clients without specialised substance use treatment, Schizophr. Res. (2016), http://dx.doi.org/10.1016/j.schres.2016.03.030