Review

Medical cannabis and mental health: A guided systematic review

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HIGHLIGHTS

- Mental health conditions are prominent among the reasons for medical cannabis use.
- Cannabis has potential for the treatment of PTSD and substance use disorders.
- Cannabis use may influence cognitive assessment, particularly with regard to memory.
- Cannabis use does not appear to increase risk of harm to self or others.
- More research is needed to characterize the mental health impact of medical cannabis.

ARTICLE INFO

ABSTRACT

This review considers the potential influences of the use of cannabis for therapeutic purposes (CTP) on areas of interest to mental health professionals, with foci on adult psychopathology and assessment. We identified 31 articles relating to the use of CTP and mental health, and 29 review articles on cannabis use and mental health that did not focus on use for therapeutic purposes. Results reflect the prominence of mental health conditions among the reasons for CTP use, and the relative dearth of high-quality evidence related to CTP in this context, thereby highlighting the need for further research into the harms and benefits of medical cannabis relative to other therapeutic options. Preliminary evidence suggests that CTP may have potential for the treatment of PTSD, and as a substitute for problematic use of other substances. Extrapolation from reviews of non-therapeutic cannabis use suggests that the use of CTP may be problematic among individuals with psychotic disorders. The clinical implications of CTP use among individuals with mood disorders are unclear. With regard to assessment, evidence suggests that CTP use does not increase risk of harm to self or others. Acute cannabis intoxication and recent CTP use may result in reversible deficits with the potential to influence cognitive assessment, particularly on tests of short-term memory.

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1. Background

The first decades of the 21st century have witnessed a dramatic resurgence of interest in the therapeutic potential of cannabis. In response, a growing number of countries and jurisdictions have initiated or expanded programs to allow legal access to cannabis for therapeutic purposes (CTP). Although the majority of CTP programs specifically focus on the use of cannabis for symptoms associated with physical health disorders (e.g. arthritis, cancer, chronic pain; see Belendiuk, Baldini, & Bonn-Miller, 2015 for a review), a substantial portion of CTP use aims to address mental health concerns, and CTP users evince substantial levels of psychiatric comorbidity (Bonn-Miller, Boden, Bucossi, & Babson, 2014; Walsh et al., 2013). As such, mental health practitioners are increasingly likely to encounter CTP use in the course of clinical practice.

Cannabis is among the world's most widely used psychoactive substances, and the associations between cannabis use, cognition, and mental health have been the subject of substantial research. Nonetheless, the implications of CTP use for mental health remain somewhat unclear as extant research has focused primarily on negative consequences associated with illicit, non-medical use of cannabis (NMC), and although this research can contribute to understanding the potential consequences of CTP use, differences in comorbidity, motivations, and patterns of use complicate generalizing from NMC to CTP. In order to provide a comprehensive review and synthesis of the literature regarding the impact of CTP on issues of concern to mental health practitioners, the current review integrates parallel reviews of the nascent research on CTP and the more developed research on NMC.

1.1. Cannabis strains and cannabinoids

User reports and pharmacological analyses unequivocally point to diversity across types - or strains - of herbal cannabis and understanding the diverse consequences of cannabis use may be furthered by the appreciation of the variety of agents that underlie the psychoactivity of cannabis. Herbal cannabis may contain over 100 distinct cannabinoid compounds that are unique to cannabis, several of which have proven, or potential, psychoactive effects. The most prominent and well-characterized cannabinoids are Δ^9 – THC (THC) and cannabidiol (CBD), with THC being the primary agent responsible for the psychoactivity of cannabis (Schier et al., 2012). The distinct influences of THC and CBD are particularly salient with regard to psychosis and anxiety where they may exert contradictory influences (Crippa et al., 2009; Zuardi, Crippa, Hallak, Moreira, & Guimarães, 2006). Strains of cannabis vary substantially with regard to concentrations of THC and CBD, and adding complexity to the unique and combined influences of THC and CBD are the still obscure influences of the many other cannabinoids and terpenes that are present to differing degrees across strains. These diverse constituents have been proposed to engage in interactions described as entourage effects (Russo, 2011), such that strains of cannabis with distinct profiles of THC, CBD, and other constituents may differ with regard to psychoactive and therapeutic effects (Russo & Guy, 2006; Russo & McPartland, 2003; Schier et al., 2012).

The phenomenological importance of strain-type is reflected in a recent study in which over 80% of CTP users reported variable effectiveness across strains (Walsh et al., 2013). Popular discourse and promotion of CTP also tout salutary features of distinct strains (e.g., Leafly.com), and federal health authorities have allowed for such distinctions to be included – with caveats - on product labelling (e.g. Health Canada). Percentages of THC and CBD content are prominent features of strain distinctions, as is the still-debated botanical distinction between *Cannabis sativa* and *Cannabis indica*, with the former reputed to have more stimulating effects and the later putatively more sedative. However, although there are clear pharmacological and morphological differences across strains, evidence germane to this topic is not strong, as few human studies have compared the effects of differing levels of cannabinoids (Ilan, Gevins, Coleman, ElSohly, & de Wit, 2005; Wachtel, ElSohly, Ross, Ambre, & de Wit, 2002), and methodological factors complicate generalizing from the relatively limited range compared in these studies to the diverse strains and products available to many CTP users (Russo & McPartland, 2003). Estimating the relative effectiveness of different cannabis strains for diverse outcomes requires further research; nonetheless, strain-level differences are salient to CTP users and are promising candidates to help explain the apparently divergent effects of cannabis.

2. Methodology

To systematically review research elucidating the influence of CTP use on adult psychopathology and psychological assessment, we comprehensively review studies of CTP and meta-review studies of NMC. Throughout, we adopt an integrative approach that allows for review of diverse methodologies including longitudinal, cross-sectional, and lab-based studies (Whittemore & Knafl, 2005). The review is organized as mini-reviews of areas of interface between CTP and clinical practice, with discussion of implications, quality of evidence, and areas requiring further investigation. Topics reviewed include substance use, anxiety, affective, and psychotic disorders, cognitive functioning, and risk for harm to self and others.

2.1. Search strategy

Our inclusion of research from medical and nonmedical contexts involved a mixed search methodology. To identify research on CTP use we searched electronic databases (Psycinfo, Medline) for all published studies between 1960 and September 2015 on medical OR therapeutic cannabis OR marijuana AND anxiety disorder, posttraumatic stress disorder, social anxiety disorder, substance dependence, substance abuse, substance use disorder, tobacco, cocaine, alcohol, opiates, heroin, amphetamine, depression, bipolar, mania, mood disorder, psychosis, schizophrenia, neuropsychology, neurocognitive, IQ, intelligence, violence, intimate partner violence, suicide, suicide risk. Article titles and abstracts were reviewed and studies were included if they addressed the association of CTP use with these outcomes (Fig. 1). The literature on NMC and mental health is voluminous and diverse, thus we conducted a more guided and exclusive review focusing on meta-analytic and systematic reviews using a strategy parallel to that described above, but omitting the terms medical OR therapeutic, and adding the terms review OR meta-analysis OR meta-analytic (Fig. 2).