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### Impact of quitting smoking and smoking cessation treatment on substance use outcomes: An updated and narrative review



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#### HIGHLIGHTS

- Quitting smoking/smoking cessation has a positive effect on substance use outcomes.
- Improvement in a range of alcohol and drug use outcomes was reported.
- Smoke-free policy nor cessation intervention worsened SUD treatment outcomes.
- Smoking cessation aid should be offered to any individual who reports substance use.
- Not offering smoking cessation in SUD treatment is tantamount to increased harm.

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#### ABSTRACT

*Background:* Historically, smoking cessation was thought to negatively impact substance use outcomes among smokers who use other substances. We sought to synthesize recent reports on this association.

Methods: Google Scholar, PubMed, and Cinahl were searched for studies published from 2006 to March 29, 2016 that reported impact of smoking cessation treatment or quitting smoking on substance use or substance use disorder treatment outcomes in the general population and among those in substance abuse treatment. Studies were grouped by reported impact as follows: "positive" (i.e. improved), "null" (i.e. no change), or "negative" (i.e. worsened).

Results: Twenty-four studies were included. Eighteen reported the impact of quitting smoking and six reported the impact of smoking cessation treatment intervention, independent of quitting, on substance use outcomes. Eleven studies (46%) reported solely positive impact; four (17%) reported solely null impact; eight (33%) reported mixed positive and null impact by analysis (combined and subgroup, n=1); substance (n=4); length of follow-up (n=2); and comparison group (n=1). One study (4%) reported mixed negative and null impact by ethnic group. No studies reported increased substance use.

Conclusion: Smoking cessation does not appear to have a negative effect, and often has a positive effect on substance use outcomes. Smoking cessation advice should be offered, without hesitation, to smokers who report substance use and those in treatment for substance use disorder.

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#### 1. Introduction

Smoking rates are two to four times higher among adolescents and adults with substance use disorders (SUD) compared to the general population (Compton et al., 2007; Guydish et al., 2015; Kalman et al., 2005). Still, smoking cessation treatment is not included in most SUD treatment settings (Dawson et al., 2013; Piper et al., 2013) and there is a dearth of reporting on the impact of quitting smoking on substance use behaviors in non-treatment seeking populations. Smoking has had a steady, long-term relationship with both clinicians and patients in substance use and mental health treatment settings, making these settings less receptive to smoking cessation treatment and less supportive of quitting than providers in general medical facilities or the community (Metrik et al., 2011; Tsoh et al., 2011). Historically, smoking was allowed and even encouraged in addiction treatment programs and in mental health units, the pervasive rationale being that tobacco was a lower treatment priority and/or a less harmful alternative to other substance use (Piper et al., 2013; Brown et al., 2009; de Dios et al., 2009). Arguments proffered by treatment providers included if their patients quit tobacco they would relapse on other substances of abuse, their depression would recur and/or they would otherwise decompensate (Myers et al., 2007). Meanwhile, just below the surface, the tobacco industry was marketing cigarettes to persons with mental illness and providing tax-free cigarettes to treatment facilities (Satre et al., 2007) where cigarettes were provided to patients, facilitating smoking initiation, while hospitalized, for some formerly nonsmoking patients (Alessi & Petry, 2014; Kahler et al., 2010). Finally, many staff and clinicians in the fields of drug abuse treatment and mental health are smokers, which serves to both perpetuate the habit and stem implementation of smoking cessation programs and smoke free policies in these settings (Callaghan et al., 2007; Rohsenow et al., 2015; Lisha et al., 2014; Reitzel et al., 2014).

Many adults and adolescents attend 12-step fellowship meetings such as Alcoholics Anonymous or Narcotics Anonymous to achieve abstinence or as a form of relapse prevention upon completion of formal SUD treatment (Winhusen et al., 2014; Stahre et al., 2013). The 12-step philosophy, which teaches that the first and primary responsibility is sobriety from alcohol, illegal drugs, and non-prescription medications (Campbell et al., 2009; Myers & Prochaska, 2008; Prochaska et al., 2008) can further perpetuate continued smoking by recommending members focus and not make too many additional changes (i.e. quitting smoking) (Myers & Prochaska, 2008; Prochaska et al., 2008; Brook et al., 2007). Meetings often allow or encourage smoking as a form of "fellowshipping" to enhance recovery, thereby helping to maintain smoking and nicotine dependence among individuals who report use of other substances (Caldwell & Cutter, 1998; Laudet et al., 2006).

Evidence is mounting that the harms of tobacco use far outweigh any perceived benefit in the context of substance use or SUD treatment. For example, adolescent substance users who smoke are more likely to continue smoking in adulthood (Orlando et al., 2005) and far more deaths among adults reporting alcohol and drug use are due to smoking than to alcohol and all other drugs combined (Baca & Yahne, 2009). In 2004, a meta-analysis of smoking cessation intervention studies conducted among individuals in SUD treatment or recovery found that cessation interventions offered concurrently with addictions treatment

were associated with a 25% increased likelihood of long-term drug and alcohol abstinence (Prochaska et al., 2004). Thus, fears associated with smoking cessation among people with SUD may be unwarranted.

Studies have increasingly addressed smoking cessation in the context of SUD treatment over the last decade. Strategies for promoting smoking cessation have included delivering cessation programs to individuals in SUD treatment and implementing and enforcing smoking bans in adult and adolescent treatment facilities (Brown et al., 2009; Callaghan et al., 2007; Lawn & Campion, 2013.) In 2010, two literature reviews summarized the evidence on the effects of smoking cessation in the context of SUD treatment: one among those in treatment for or in early remission from alcohol dependence (Kalman et al., 2010); and one in addiction and mental health treatment settings (Myers et al., 2007). Both studies found improved rather than worsened substance use treatment outcomes related to smoking cessation intervention. In 2015, a systematic review of randomized controlled trials that included impact of smoking cessation treatment on substance use outcomes among those in early recovery from or in treatment for SUD reported either no impact on or improvement in substance use treatment outcomes (Thurgood et al., 2015). With limited extant research, no reviews among adolescent populations were identified. One study (2007) conducted in adolescent residential substance use treatment programs assessed the relationship between program-level policies and client-level smoking, and showed increases in stringency of smoke-free policy were associated with decreases in smoking prevalence (Chun et al., 2007). These findings suggest addressing tobacco use in the context of addiction treatment and recovery may afford patients multiple health benefits now and in the future.

Here, we provide an updated review and interpretation of the most current knowledge by reviewing reports from the last decade (January 2006 through March 2016) on the impact of formalized smoking cessation treatment or of quitting smoking/former smoker status on substance use outcomes. By synthesizing recent findings and including studies with adolescents, reports from epidemiological studies, and results from pilot studies and secondary analyses, we fill important gaps in the extant literature. Whereas reports from 2010 (Kalman et al., 2010) and 2015 (Thurgood et al., 2015) have addressed solely formal smoking cessation treatment interventions among those in treatment for or recovery from substance use (including alcohol) this report includes findings among non-SUD treatment seeking populations including reports published from 2015 through March 2016 as well. This allows for a broader, more inclusive view of the overarching impact of smoking cessation and quitting smoking on substance use outcomes.

#### 2. Methods

Articles published in print or online between January 1, 2006 and March 29, 2016 were identified through electronic searches of Google Scholar, PubMed, and Cinahl. Google Scholar was chosen for breadth and as a more novel search tool; PubMed as a standard search engine; and Cinahl for its inclusion of peer-reviewed nursing and nursing practice journals not easily identified elsewhere. Search criteria combined the terms "smoking" "cessation" "substance" "drug," and "alcohol." Study title, abstracts, and bodies were reviewed by KM and JT to determine study inclusion. Selection was restricted to English language

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