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Emerging adult age status predicts poor buprenorphine treatment retention

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ABSTRACT

Emerging adults (18–25 years old) are often poorly retained in substance use disorder treatment. Office-based buprenorphine often enhances treatment retention among people with opioid dependence. In this study, we examined the records of a collaborative care buprenorphine treatment program to compare the treatment retention rates of emerging adults versus older adults. Subjects were 294 adults, 71 (24%) aged 18–25, followed in treatment with buprenorphine, nurse care management, and an intensive outpatient program followed by weekly psychosocial treatment. Compared to older adults, emerging adults remained in treatment at a significantly lower rate at 3 months (56% versus 78%) and 12 months (17% versus 45%), and were significantly more likely to test positive for illicit opioids, relapse, or drop out of treatment. Further research into factors associated with buprenorphine treatment retention among emerging adults is needed to improve treatment and long-term outcomes in this group.

1. Introduction

1.1. Opioid dependence among 18–25 year olds

Due to the availability of prescription pain medications, the prevalence of opioid dependence in the United States has increased dramatically over the past 15 years (Okie, 2010). Between 2004 and 2012, more than 16 million people in the United States initiated non-medical use of prescription opioids (SAMHSA, 2013a) and between 12.2 and 13.5% of high school seniors misused prescription opioids each year (Johnston, O'Malley, Bachman, & Schulenberg, 2013). From 1998 to 2012, past-month prevalence of heroin use rose from 130,000 to 335,000 people (SAMHSA, 2013a). During this time, the frequency of overdose deaths associated with opioid analgesics rose dramatically (Warner, Chen, Makuc, Anderson, & Minino, 2011).

Particularly troublesome has been illicit opioid use among emerging adults (18–25 year olds) (Arnett, 2000). Rates of chronic prescription opioid misuse have been higher among 18–25 year olds than among any other age group (7.4 per 1000 of 18–25 year olds compared with 5.0 and 4.0 per 1000 among 26–34 and 35–49 year olds, respectively) (Jones, 2012). From 1998 to 2008, admissions for treatment of prescription opioid dependence recorded in the Treatment Episode Data Set increased by 350% among 18–25 year olds, a disproportionately greater rise than among all other age groups (SAMHSA, 2010). Since 2009, prescription opioid misuse has decreased from peak levels among 18–25 year olds; however, since heroin use has increased in parallel (Cicero, Ellis, & Surratt, 2012), levels of opioid dependence in this age group still remain high (SAMHSA, 2012).

1.2. Buprenorphine and treatment retention

One positive development slowing down the epidemic has been the introduction of office-based buprenorphine maintenance treatment for opioid dependence, which is now commonly available for adults in most urban areas, with more than 14,000 prescribers and 1800 programs nationwide (SAMHSA, 2013b). Maintenance treatment with buprenorphine has been demonstrated to be more effective for opioid dependence than detoxification or placebo (Fudala et al., 2003; Johnson, Jaffe, & Fudala, 1992; Weiss et al., 2011). Treatment retention among all adults in office-based buprenorphine treatment is generally between 40 and 50% at 12 months

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(Alford et al., 2011; Fiellin et al., 2008). Notably, in multiple studies, older age has been associated with improved outcomes in treatment for opioid dependence both with buprenorphine (Dreifuss et al., 2013; Marsch et al., 2005; Ohlin, Hesse, Fridell, & Tatting, 2011; Soeffing, Martin, Fingerhood, Jasinski, & Rastegar, 2009) and methadone (McHugh et al., 2013). The association between age and improved retention in buprenorphine treatment is important because retention in opioid agonist treatment predicts drug abstinence (Zhang, Friedmann, & Gerstein, 2003), and dropout is associated with a 7-fold increase in risk of overdose (Clausen, Anchersen, & Waal, 2008). Importantly, all of these studies of retention in opioid maintenance treatment consider age as a continuous variable in the analyses, and do not directly examine the influence of emerging adulthood, a specific developmental period of the lifespan referring to 18–25 year olds (Arnett, 2000, 2005).

1.3. Emerging adulthood

The concept of emerging adulthood as a developmental period differentiates 18–25 year olds from adolescents (< 18) and young adults (26–40) based on common demographic and psychological characteristics that are unique to 18–25 year olds in industrial societies (Arnett, 2000). Research on emerging adulthood has spread rapidly during the past decade through the fields of psychology and the social sciences. For instance, a database search for individual citations from 2000 through 2012 based on the terms "emerging adult" or "emerging adulthood" revealed 329 citations in PubMed, 882 in PsycINFO, and 1580 in Google Scholar. Most of this research has been conducted among non-addicted samples; however, the National Survey on Drug Use and Health demonstrated that 21% of 18–25 year olds reported illicit drug use in 2012, compared to 7% among people 26 and older (SAMHSA, 2013a).

1.4. Age-specific outcomes in addiction treatment

Several clinical outcome studies have begun to support the hypothesis that emerging adults are more difficult to engage in substance use disorder treatment when compared to older adults or adolescents. For instance, among intravenous drug users, one study has shown that emerging adults enrolled less frequently than older adults in continuing care programs after detoxification, and were less likely to enroll in opioid agonist therapy (Shin, Lundgren, & Chassler, 2007). In studies of the community reinforcement approach for youths with alcohol abuse, emerging adults had more days of alcohol use compared to adolescents, and were less likely to be abstinent (Smith, Godley, Godley, & Dennis, 2011). The difference in willingness to stop using substances was seen by the authors as partially due to lower levels of interpersonal motivation for abstinence among emerging adults, who were no longer having daily interactions with school and families of origin (Smith, Cleeland, & Dennis, 2010). Thus, accumulating evidence suggests that compared to older adults and adolescents, it may be more challenging to engage and retain emerging adults in treatment.

Since no study has examined treatment outcomes specifically for emerging adults in office-based buprenorphine treatment, it is crucial both to assess whether this age group benefits from office-based buprenorphine treatment and to understand which patient attributes may affect treatment for emerging adults. If emerging adults do not benefit as much as older adults do from office-based buprenorphine treatment, then novel age-specific interventions or alternative treatment approaches may be needed for this age group.

1.5. Developmental models

The developmental period model suggests that specific features of emerging adulthood (e.g., moving out of the parental home, absence of regular steady work, lack of marriage and/or cohabitation relationships, rapidly changing social networks, minimal responsibilities to family and others, less sense of need to adhere to adult norms) may contribute to patterns of increased substance use (Arnett, 2005; Stone, Becker, Huber, & Catalano, 2012). Additionally, other features of emerging adulthood, such as instability in environment and scheduling, frequent moves and transitions, self- and peer-directed identity exploration may contribute to poor engagement and retention in substance use disorder treatment (e.g., Arnett, 2011; Sheidow, McCart, Zajac, & Davis, 2012).

Neurodevelopmental models posit that during adolescence up until age 25 the developing brain interacts differently than an adult brain would with reinforcing substances, associative cues, and tasks requiring cognitive control, contributing to increased levels of substance use, difficulty remaining abstinent, and ultimately resulting in an inability to remain in treatment (Kellam, 2013). This model is supported by several findings: substance use during critical periods, e.g., cannabis use during adolescence, may differentially affect the developing brain, resulting in increased psychiatric co-morbidity (Malone, Hill, & Rubino, 2010); critical processes of cortical pruning and myelination needed for the development of executive function are underway during this time period (Giedd et al., 1999; Gogtay et al., 2004; Lebel & Beaulieu, 2011; Marsh, Gerber, & Peterson, 2008) and can be disrupted by substance abuse (Jacobus et al., 2009; Medina, Schweinsburg, Cohen-Zion, Nagel, & Tapert, 2007); aspects of normal cognitive development can be derailed (Hanson, Medina, Padula, Tapert, & Brown, 2011); and finally, these disruptions lead to an ongoing situation in which reward-based brain activation remains favored over inhibitory control processing needed to abstain from drug use and adhere to treatment program rules (Casey & Jones, 2010), both of which are often associated with remaining in treatment (Warden et al., 2012).

1.6. Drug dependence inexperience model and treatment outcomes

Emerging adults generally have fewer years of experience with opioid dependence compared to older adults who often have had more years of life available for fostering an opioid habit. Some researchers have hypothesized that lack of motivation related to inexperience with opioid dependence may be a major reason for poor outcomes in buprenorphine treatment (Subramaniam et al., 2011). The health beliefs model predicts that people engage in health services when the perceived severity of illness and benefit of treatment are both high (Rosenstock, 1966). Derived from the health beliefs model, the opioid dependence inexperience model proposes that emerging adults may have less experience with negative consequences of addiction due to a shorter duration of substance use (e.g., less than 2 years of continuous opioid use), resulting in decreased perception of addiction severity (Finney & Moos, 1995), lack of motivation to refrain from substance use (McKellar, Kelly, Harris, & Moos, 2006), and less clear perceptions of the benefits of treatment. Based on clinical experience, we thought less than 2 years of continuous opioid use was a reasonable duration to operationalize the construct of opioid dependence inexperience, allowing us to examine this hypothesis. In addition, total years of opioid use and having started opioid use during adolescence, both of which are associated with opioid dependence experience, may also influence group differences in treatment retention (Soyka, Zingg, Koller, & Kuefner, 2008).

1.7. Predictors of buprenorphine treatment outcomes

To be able to examine whether emerging adulthood independently predicts attrition from treatment, it is essential to address characteristics associated with buprenorphine treatment outcomes, patterns of concurrent substance use, and indicators of drug dependence severity. Male gender (Marsch et al., 2005), recent