



## Socioeconomic differences in adolescent substance abuse treatment participation and long-term outcomes



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### HIGHLIGHTS

- Socioeconomic status (SES) is understudied in adolescent substance abuse treatment.
- We examined parent SES on adolescent treatment and long-term outcomes.
- No difference in parent SES on treatment participation and abstinence over 5 years.
- Parent education, but not income, associated with 12-step involvement over 5 years.

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### ABSTRACT

Socioeconomic status (SES) has been consistently linked to poorer access, utilization and outcomes of health care services, but this relationship has been understudied in adolescent substance abuse treatment research. This study examined SES differences in adolescent's treatment participation and long-term outcomes of abstinence and 12-step attendance over five years after treatment. Data are from 358 adolescents (ages 13–18) who were recruited at intake to substance abuse treatment between 2000 and 2002 at four Kaiser Permanente Northern California outpatient treatment programs. Follow-up interviews of adolescents and their parents were conducted at 1, 3, and 5 years, with over 80% response rates across time points. Using parent SES as a proxy for adolescent SES, no socioeconomic differences were found in treatment initiation, treatment retention, or long-term abstinence from alcohol or drugs. Parent education, but not parent income, was significantly associated with 12-step attendance post-treatment such that adolescents with higher parent education were more likely to attend than those with lower parent education. Findings suggest a lack of socioeconomic disparities in substance abuse treatment participation in adolescence, but potential disparities in post-treatment 12-step attendance during the transition from adolescence to young adulthood.

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### 1. Introduction

Disparities in substance abuse treatment has received new attention with the implementation of the Affordable Care Act (ACA) and the creation of the federal Office of Behavioral Health Equity to reduce disparities in substance use and improve access to quality care (Mechanic, 2012; Substance Abuse and Mental Health Services Administration [SAMHSA], 2014a). Race/ethnicity has been much of the focus of treatment-related disparities research (Alegria, Carson, Goncalves, & Keefe, 2011; Campbell, Weisner, & Sterling, 2006; Sahker, Toussaint, Ramirez, Ali, & Arndt, 2015; Saloner, Carson, & Lê Cook, 2014) with fewer studies focused on disparities related to socioeconomic status (SES).

SES often serves as a key outcome variable in treatment studies with employment or school enrollment as measures of successful treatment outcomes (Arria, 2003; Balsa, Homer, French, & Weisner, 2009; Hubbard, Craddock, & Anderson, 2003). Yet how SES predicts treatment participation and outcomes is relatively understudied. With increasing social inequalities in the U.S. (U.S. Department of Health and Human Services, 2014), we need to determine the extent of socioeconomic disparities in substance abuse treatment and to identify ways to enhance treatment strategies for SES groups at-risk for poorer treatment participation and outcomes. In this study, we investigate how SES, measured via parent education and income, can help explain who is more likely to participate in adolescent treatment and who has better long-term treatment outcomes.

We focus on socioeconomic disparities in adolescent substance abuse treatment for three reasons. First, an estimated 1.3 million U.S. adolescents aged 12 to 17 (5.4%) had a substance use disorder (SUD) in the past year (SAMHSA, 2014b), and only 9.1% of them received

Abbreviations: KPNC, Kaiser Permanente Northern California; SES, Socioeconomic Status; SUD, Substance Use Disorders.

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treatment at a specialty facility in the past year (SAMHSA, 2014b). SUD can have a major impact on adolescents' physical and mental development, and lead to long-term effects including unintentional injuries, lower socioeconomic status, and early morbidity/mortality (Fothergill & Ensminger, 2006; Palmer et al., 2009). Therefore, early and effective adolescent substance abuse treatment can help to reduce long-term SUD consequences.

SUD and SES can have a reciprocal relationship in which SUD can influence later SES or lower SES can heighten the risk for later SUD (Schulenberg, Maggs, & O'Malley, 2003). To disentangle the relationship, this study examines SES early in the life course by studying the relationship of parent SES on adolescent SUD and treatment. Given that adolescents are still in school, parent SES is often used as a proxy for adolescents' SES and serves as a foundation from which advantages or disadvantages are passed on to adolescents as they build their own SES trajectory during the transition into adulthood (Furstenberg, 2008; Hanson & Chen, 2007; Lui, Chung, Wallace, & Aneshensel, 2014).

Second, an extensive literature has demonstrated a strong and positive association between SES and healthcare utilization and outcomes (Adler & Newman, 2002; Isaacs & Schroeder, 2004). In general, higher SES leads to better access to health care and health outcomes. However, the relationship between SES and substance abuse treatment is not clear. For example, in population-based studies, lower SES was associated with receipt of substance abuse treatment for adults in the National Survey on Drug Use and Health (NSDUH) and National Epidemiologic Survey on Alcohol and Related Conditions data (Cook & Alegría, 2011; Ilgen, Price, Burnett-Zeigler, Perron, Islam, Bohnert & Zivin, 2011). Studies examining adolescents in NSDUH and Monitoring the Future data showed positive relationships between family income and parent education on adolescents' receiving treatment in bivariate analyses, but the relationships did not remain significant in multivariate analyses (Cummings, Wen, & Druss, 2011; Ilgen, Schulenberg, Kloska, Czyn, Johnston & O'Malley, 2011). In treatment samples, lower education and family income were associated with lower treatment utilization, completion and outcomes among adolescents and adults (Dobkin, Chabot, Maliantovitch, & Craig, 1998; Saloner et al., 2014; Saloner & Lê Cook, 2013). In contrast, two treatment studies showed no significant relationship between parent SES and adolescent treatment outcomes (Anderson, Ramo, Cummins, & Brown, 2010; Chung, Martin, & Clark, 2008). These mixed findings demonstrate the need to better understand socioeconomic differences in treatment participation and outcomes.

Third, as a multidimensional construct, the processes by which SES affects substance abuse treatment may vary by SES dimension (Krieger, Williams, & Moss, 1997; Oakes & Rossi, 2003), and could explain the mixed findings in the SES-treatment research. For example, educational attainment, one dimension of SES, could be indicative of knowledge of the treatment system and comprehension of different treatment options; health-relevant habits and abilities including navigating the treatment system; and social networks or lifestyles that promote or discourage substance use or maintaining treatment regimens or recovery (Crosnoe & Riegle-Crumb, 2007; Ross & Mirowsky, 2011). Income, another SES dimension, could capture purchasing power or the financial resources to obtain substance abuse treatment and opportunities for more specialized treatment. Given the availability of publically-funded treatment programs that minimizes the economic treatment costs, income may not be as salient a measure to capture disparities in treatment participation. Therefore, the strategies used to reduce SES disparities in substance abuse treatment may differ depending on the SES measure.

### 1.1. Research questions and hypotheses

Our primary research questions were: (1) are there socioeconomic differences in adolescent treatment participation and long-term outcomes? and (2) does the relationship between SES and treatment vary by the SES construct of education versus income? Drawing on data from a longitudinal adolescent treatment study, this current study

uses a unique sample of socioeconomically-diverse youth who entered substance abuse treatment in Kaiser Permanente Northern California's (KPNC) integrated managed health care plan between 2000 and 2002. Although KPNC serves families with Medicare and Medicaid, a large number of primary KPNC members were employed with a broad range of education and income levels and were racially-ethnically diverse (Gordon, 2000).

Given the socioeconomic diversity of its members, KPNC adolescent treatment data offer a valuable opportunity to study the SES-treatment relationship for several reasons. First, this dataset includes SES measures from parent and adolescent participants, which are not typically collected in treatment studies or administrative data. Second, youth treatment samples are often of high-risk offending youth or youth receiving publicly-funded or community-based treatment services (Adams, Grella, & Hser, 2001; Brown, D'Amico, McCarthy, & Tapert, 2001; Griffin, Ramchand, Edelen, McCaffrey, & Morral, 2011). Youth in both settings tend to be from lower SES backgrounds, and thus SES-treatment findings from these samples could be biased. Finally, participants were surveyed at intake, and followed for over five years. This longitudinal design provides additional information about treatment outcomes beyond the typical 6- to 12-month follow-up assessments typical in treatment evaluation studies.

In addition to abstinence as an outcome, we examine participation in after-care support through 12-step attendance. SUD recovery extends beyond time in treatment, continues across the life-course for adolescents, and is not merely the absence of symptoms (Joe, Knight, Becan, & Flynn, 2014). Twelve-step participation can be a positive outcome of treatment and encourages abstinence post-treatment (Chi, Campbell, Sterling, & Weisner, 2012; Chi, Kaskutas, Sterling, Campbell, & Weisner, 2009; Kelly, Brown, Abrantes, Kahler, & Myers, 2008; Kelly & Urbanoski, 2012). In this current study, we expect that higher SES will be associated with greater adolescent substance abuse treatment participation, and long-term outcomes of abstinence and 12-step attendance. Given that treatment services are available to all KPNC members regardless of SES and that 12-step support is free, we hypothesize that education, representing parent's knowledge and skills to maximize adolescent treatment benefits, will serve as a stronger SES indicator than income, representing parent's financial resources to access adolescent treatment services.

## 2. Methods

### 2.1. Participants

Adolescents (ages 13–18) were recruited from four KPNC Chemical Dependence Recovery programs, a not-for-profit, integrated health care delivery system between 2000 and 2002. The treatment sites were located in four different Northern California cities that represent geographic and racial/ethnic diversity. Adolescents were eligible for KPNC services through their parents' or guardians' membership. Of the approximately 3 million KPNC members in 2000, 88% were commercially insured, 10% had Medicare, and 2% had Medicaid (or Medi-Cal) (Gordon, 2000). More than three-quarters of KPNC members have at least some college education and two-thirds of families reported household incomes between \$30,000 and \$75,000. Adolescent treatment was provided on an outpatient basis for up to one year and includes supportive group therapy, education, relapse prevention, family therapy, individual counseling, and pharmacotherapy. Programs were abstinence-based with random drug testing. Aftercare support via 12-step programs was highly recommended.

After intake with a clinician, adolescents and their parents were invited to participate in the study by a research assistant. A total of 419 adolescents and their parents (or guardians) agreed to participate (64% recruitment rate). Study participation was independent of receiving treatment and thus, study participants may have completed intake, but did not start treatment. Among all adolescents who started

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