Does depression and substance abuse co-morbidity affect socioeconomic status? Evidence from a prospective study of urban African Americans

Rada K. Dagher [a,*], Kerry M. Green [b,1]

[a] University of Maryland School of Public Health, Department of Health Services Administration, 3310B SPH Building, College Park, MD 20742, United States
[b] University of Maryland School of Public Health, Department of Behavioral and Community Health, 2375 SPH Building, College Park, MD 20742, United States

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ABSTRACT

Studies have established a graded association between mental health and socioeconomic status (SES). However, scarce research has examined the impact of substance use disorders (SUD) and depression comorbidity on SES. We use data from the Woodlawn Study, a longitudinal cohort study, which recruited a cohort of first graders from Chicago starting 1966–1967 ($N=1242$). Analyses focus on those interviewed in young adulthood and followed up through midlife. Regression analyses adjusting for childhood confounders showed that young adults with depression and SUD comorbidity had higher likelihood of having any periods of unemployment, higher likelihood of being unemployed for 3 or more months, and lower household income in midlife than those with neither disorder. Moreover, young adults with SUD without depression had higher odds of having any periods of unemployment and higher odds of being unemployed for 3 or more months than those with neither disorder. Findings point to the possibility of social selection where depression and SUD comorbidity contributes to a downward drift in SES. Clinical interventions that integrate the treatment of SUD and depression may be more effective at reducing socioeconomic disparities among minority populations.

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1. Introduction

Studies have established a graded association between socioeconomic status (SES) and health, including mental health. Socioeconomic differences in health have been shown to occur at every level of SES regardless of the measure employed (Williams, 1990; Adler et al., 1994). Specifically, research shows a higher prevalence of mental disorders among the lower social strata (Link and Dohrenwend, 1989; Dohrenwend et al., 1992; Kessler et al., 1994). Two hypotheses have been suggested to explain this socioeconomic gradient in mental health: social causation and social selection. Social causation theory posits that the stress and environmental adversity associated with low SES are contributing factors to the onset of mental disorders (e.g. Hollingshead and Redlich, 1958). On the other hand, social selection theory posits that people with mental disorders – whether caused by genetic predisposition and/or environmental factors and stress – tend to drift downwards in SES or fail to rise out of low SES (e.g., Wender et al., 1973).

While the literature is not conclusive regarding which theory has more support, Dohrenwend et al. (1992) showed that social causation may better explain depression in women and antisocial personality and substance use disorders in men while social selection is better suited for explaining schizophrenia. Another study by Johnson et al. (1999) showed that low family SES (maternal and paternal education and occupation, family income) was associated with higher risk of anxiety, depressive, disruptive, and personality disorders among offspring, whereas disruptive and substance use disorders among offspring were associated with their poor educational attainment. Thus, it seems that social causation and social selection processes differ in importance depending on the mental disorder being studied, and they may both operate at different times over the life course. However, from a health policy perspective, if indeed some mental disorders result in a downward drift in SES, then interventions that prevent or treat these disorders may have economic benefits to society.

An important gap in understanding this complex phenomenon is that individuals with mental health disorders tend to have a comorbid condition. Two of the most prevalent comorbid conditions are substance use disorders and depression (Helzer and

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Pryzbeck, 1988; Regier et al., 1990; Grant and Harford, 1995; Kessler et al., 1996). This consistent finding in the literature of a strong association between substance use disorders and depression has been documented in both national and community studies (Kessler et al., 1996; Swendsen et al., 1998; Grant et al., 2004; Roberts et al., 2007; Green et al., 2012). Moreover, each of these disorders as well as their comorbidity have been found to be associated with suicide and suicide attempts (Pompili et al., 2010), highlighting the importance of better understanding their consequences.

African Americans are an important study population to consider when examining the consequences of substance abuse disorders and depression comorbidity. Each of depression and substance abuse disorders has been shown to follow a chronic and persistent pattern among African Americans (Dawson et al., 2005; Walsemann et al., 2009) and the consequences of each of these disorders has been shown to be worse and more disabling in African Americans compared to other racial groups, including lower quality of life, higher severity when these disorders are present, and lower rates of treatment (Caetano and Clark, 1998; Jackson-Triche et al., 2000; Williams et al., 2007; Sloan et al., 2009). In general, both substance use disorders and depression have separately been associated with poor SES outcomes. However, little is known about the prevalence of substance abuse and depression comorbidity and its effects on SES in the African American population that suffers disproportionately from poor socioeconomic outcomes (DeNavas-Walt et al., 2011).

The research literature has generally shown associations of each of substance abuse and depression with different indicators of SES. For example, there is strong evidence that substance use and abuse is associated with higher risk for poor educational attainment (Johnson et al., 1999; Green and Ensminger, 2006), negative effects on work performance (Siegal et al., 1996), unemployment (Green and Ensminger, 2006), negative employment outcomes among welfare recipients (Wickizer et al., 2000; Schmidt et al., 2007), and an increase in welfare dependency (Schmidt et al., 1998). Similarly, the literature shows that depression is associated with lower education (Miech and Shanahan, 2000), lower income (Whooley et al., 2002), and unemployment (Dooley et al., 1994; Whooley et al., 2002).

There is also evidence that together substance use disorders and depression lead to worse outcomes than either condition on its own. Studies have shown that individuals with comorbid substance abuse and depression are more frequent users of health services and have higher disability and worse treatment outcomes than those with one or none of these disorders (Drake et al., 1996; Burns and Teesson, 2002; Najt et al., 2011). However, scarce research has examined the impact of substance use disorders and depression comorbidity on socioeconomic status as described by the social selection hypothesis. Specifically, no studies have examined the socioeconomic effects of such comorbidity in the African American population, a minority group that has shown worse and more disabling outcomes for each of depression and substance use disorder than other racial groups.

This study attempts to bridge this gap in the literature by testing the social selection hypothesis through examining the impact of depression and substance abuse comorbidity in young adulthood on four measures of socioeconomic status in midlife among an African American sample: having any period of unemployment, unemployment for 3 or more months, household income, and poverty status. We compare individuals with a comorbid substance use disorder and major depression separately to individuals with either one of these mental health conditions and to individuals with neither condition to determine if comorbidity is worse in terms of socioeconomic outcomes than the single condition. Understanding the contribution of comorbid substance use and depression to poor SES offers potential opportunities for intervention among disadvantaged populations.

2. Methods

2.1. Population

The Woodlawn Study is a prospective, longitudinal cohort study of urban African Americans, which began in 1966–67, by recruiting an entire cohort of first graders from the Woodlawn neighborhood on the south side of Chicago ($N=1242$, 52% female, 48% male). The study population included all children who attended one of the 12 public or private schools in the neighborhood. Only 13 families declined participation, minimizing selection bias. At the study's initiation, Woodlawn was the fifth poorest community of the 76 community areas in Chicago, and yet variability existed in terms of socioeconomic outcomes due to residential segregation in the 1960s. In first grade, mothers provided in-depth interviews on the focal child and first grade teachers provided information on the child's classroom behavior and performance. The youth were followed up in adolescence (1976–77, age 16, $N=705$, young adulthood (age 32–33, $N=952$), and midlife (age 42–43, $N=833$). The current analyses focus on those interviewed in young adulthood with complete data to allow for diagnoses of depression and substance use disorders, excluding 18 individuals who were incarcerated at the midlife follow-up and unable to provide relevant SES outcomes, resulting in a final sample size of 935 after multiple imputation to handle missing data in midlife. This study has been approved by the Institutional Review Boards at the University of Maryland. Additional details on the Woodlawn Study are available in the literature (Kellam et al., 1977, 1980; Ensminger et al., 2002; Fothergill et al., 2009).

2.2. Attrition

Attrition analyses comparing individuals who were re-assessed over time to those who were lost to follow-up reveal some differences. Only those who remained in Chicago were assessed in adolescence. Those interviewed in young adulthood did not differ on maternal education, first grade teacher ratings of behavior, or adolescent drug use. There were differences on first grade poverty status and family type. Those interviewed in midlife compared to those who were not showed no differences on numerous socioeconomic indicators including mother's education, childhood or adolescent poverty status or welfare receipt, or educational attainment in young adulthood. Significant differences were found based on gender, SUD, criminal record and marital status in young adulthood. Women and married individuals were more likely to be interviewed than men and unmarried individuals. Those with a substance use disorder in young adulthood were more likely to be deceased by midlife. Additional attrition analyses are provided elsewhere (Kellam et al., 1982; Ensminger et al., 2002; Crum et al., 2006).

2.3. Measures

2.3.1. Main independent variable
Substance use and depression comorbidity by young adulthood (age 32–33) served as the primary independent variable. Individuals were classified as having comorbid substance use disorder (SUD) and major depression, major depression without a lifetime substance use disorder (SUD), a substance use disorder (SUD) without lifetime major depression, or neither. Lifetime major depression was assessed during the young adult interview using a module from the University of Michigan version of the Composite International Diagnostic Interview (UM-CIDI), a fully structured research diagnostic interview designed to assess mental health disorders in epidemiologic surveys by trained interviewers who are not clinicians (Kessler et al., 1994; Wittchen, 1994). A diagnosis of major depression is based on *Diagnostic and Statistical Manual for Mental Disorders* Revised Third Edition (DSM III-R, American Psychiatric Association (APA), 1987) criteria. The UM-CIDI was also used to assess substance abuse and dependence according to DSM III-R criteria (Kessler et al., 1994). Adult interviews assessed abuse and dependence of alcohol, marijuana, cocaine, heroin, analgesics, inhalants, hallucinogens, barbiturates, tranquilizers, stimulants, and sedatives. Those meeting criteria for either abuse or dependence of any substance at young adulthood according to DSM III-R criteria were classified as having a lifetime substance use disorder (SUD).

2.3.2. Outcome variables
We included four outcome variables that were collected during the midlife interview. First we examined having any period of unemployment during the past 10-years (the interval between the young adult and the mid-adult interviews, 1=yes, 0=no). Sixty percent of individuals had some period of unemployment in the past 10 years, regardless of length. We also examined a significant period of unemployment including a variable that represented a period of unemployment of 3-months or more since the young adult interview (1=yes, 0=no); 45% had a period of unemployment of 3 months or more over the past 10 years. Household income before taxes for the previous year was self-reported on an 18-point scale