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Risk factors for young adult substance use among women who were teenage mothers

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ABSTRACT

Teenage mothers may not "mature out" of substance use during young adulthood, and this non-normative trajectory of use may contribute to negative outcomes for teenage mothers and their offspring. Pregnant teenagers (age range=12–18 years; 68% Black) were recruited from a prenatal clinic and interviewed about their substance use, and subsequently re-interviewed six and ten years later (n=292). Consistent with the literature, early tobacco and marijuana use were risk factors for young adult use. Other substance use, peer adolescent use and mental health indicators were more important than race and socioeconomic status (SES) in determining which teenage mothers would use tobacco, engage in binge drinking, and use marijuana as young adults. However, race and SES were significant predictors of quitting tobacco use and marijuana use by the 10-year follow-up. Depression was associated with both persistent tobacco use and marijuana use in teenage mothers. These results illustrate the long-term consequences of teenage childbearing and identify modifiable risk factors for later health risks that should be addressed among younger mothers.

1. Introduction

Adolescence is a period of vulnerability for substance use and substance use disorders: some adolescents start engaging in substance use earlier than their peers, and early substance use is associated with a higher risk of adult dependence (Brook, Balka, Ning, & Brook, 2007; Grant & Dawson, 1997; SAMHSA, 2007; Winters & Lee, 2008). Sexual intercourse is also common among teens (Abma & Sonenstein, 2001; Eaton et al., 2006); and although the rate of teenage pregnancy had been steadily declining since 1991 (Martin et al., 2005), it increased again in 2006 (Hamilton, Martin, & Ventura, 2007). Moreover, the rate of teenage births in the US remains significantly higher than in other developed countries (CDC, 2005; Panchaud, Singh, Feivelson, & Darroch, 2000). Therefore, there is a subset of American adolescents who transition into risky behavior at younger ages than their peers, and these early transitions may be associated with negative health outcomes during adulthood.

According to Problem Behavior Theory, early transitions are interrelated because of underlying deviance proneness in these youth, and both risk and protective factors may account for variability in change in substance use and other risky behaviors over time (Donovan, 2005; Donovan & Jessor, 1985; Jessor, 1991; Jessor, Donovan & Costa, 1991; Jessor & Jessor, 1977). Similarly, other authors have suggested that drug use is associated with a premature adoption of adult roles, and that drug use impairs the normal progression and completion of adolescent developmental tasks (Newcomb, 1987; Newcomb & Bentler, 1988). This premature or pseudo-maturity may be especially evident in girls who become pregnant as adolescents, many of whom take on the role of parent at a very young age. In fact, smoking is prevalent among pregnant teenagers (Cornelius, Taylor, Geva, & Day, 1995; Delpisheh et al., 2007; Trollestrup, Frost, & Starzyk, 1992), and both tobacco and marijuana use are common among pregnant teenagers (Albrecht et al., 1999) and young adult women who gave birth during adolescence (Gillmore, Gilchrist, Lee, & Oxford, 2006; Moffitt, & E-Risk Study Team., 2002).

Moreover, patterns of substance use and pregnancy in adolescents differ substantially from that seen in adult women. In a study comparing pregnant teenage and adult women's drinking patterns, although adult women drank more alcohol per day on average, teenage girls were more likely to participate in more sporadic or binge drinking than adult drinkers (Cornelius, Leech, & Goldschmidt, 2004). Furthermore, teenage mothers are at high risk for repeated conception during adolescence (Kalmuss & Namerow, 1994; Meade & Ickovics, 2005; Seitz & Apfel, 1993). Consequently, substance use in pregnant and childbearing teenagers is a major public health problem: not only are these young women shortening and reducing the quality of their own lives, but they are also placing multiple children at risk of prenatal substance exposure and secondhand smoke.

Although there are few prospective, longitudinal studies of teenage mothers, results from previous studies of this high-risk group suggest that their developmental patterns of substance use differ from other

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young women. Specifically, they do not appear to "age out" of substance use as they reach adulthood (Cornelius et al., 2004; Gillmore et al., 2006). Teenage motherhood is also associated with negative outcomes that may contribute to the continuity of problem behaviors into adulthood. For example, women who were pregnant teenagers are more likely to experience low socioeconomic status (SES) and to suffer from more mental health problems as adults (Boden, Fergusson, & Horwood, 2008; Deal & Holt, 1998; Horwitz, Bruce, Hoff, Harley, & Jekel, 1996). These circumstances may explain some or all of the effect of early motherhood on persistent substance use. Furthermore, racial/ethnic differences between women who give birth as adolescents and other young women may also promote differences in their adult patterns of substance use.

In one multi-ethnic (51% White, 28% Black, 21% Other) cohort of pregnant teenagers that has been followed over time, marijuana use declined substantially during pregnancy, increased slightly by 6 months post-partum, and then leveled off significantly below pre-pregnancy rates (Gilchrist, Hussey, Gillmore, Lohr, & Morrison, 1996). Tobacco use was more prevalent in this sample than marijuana use, increased markedly at 6 months post-partum, and then increased at a much slower rate 12 and 18 months after pregnancy. Long term follow-up of these young mothers revealed that their cigarette and drug use did not change significantly from 3.5 to 11.5 years post-partum. Although they were twice as likely to smoke tobacco and use marijuana as other young women their age, they reported significantly less alcohol use (Gillmore et al., 2006). In another study of this cohort (Oxford et al., 2003), there were distinct trajectories in alcohol use 10 years after the teenage pregnancy, in which early users were significantly more likely to increase both the quantity and frequency of use, consistent with epidemiological data on early users (Grant & Dawson, 1997; SAMHSA, 2007; Winters & Lee, 2008). Their results also suggest that teenage mothers who are slow to decrease their alcohol use over time and teenage mothers who increase their alcohol use over time are significantly more likely to use illicit drugs and to be involved in crime, consistent with Problem Behavior Theory.

In a second cohort of pregnant teenagers that has been prospectively followed (two-thirds Black and one-third White), tobacco use persisted during pregnancy and few (7%) of the teenage mothers managed to quit by the 6-year follow-up (Cornelius et al., 2004). Moreover, a significant portion (20%) of the young mothers started smoking after the index pregnancy and most (61%) of these young women reporting daily smoking 6 years later, as young adults. Peer adolescent tobacco use and White race were the best predictors of tobacco use at both time points in this lower SES sample.

Although the Reach for Health Longitudinal Study is not a study of teenage mothers per se, their findings are germane because roughly half their sample of disadvantaged Black and Hispanic women from Brooklyn, NY became pregnant during adolescence (Stueve & O'Donnell, 2007). In this sample, there was an increase in smoking from middle school (14%) to high school (26%) and then a slight decrease in smoking as young adults (22%). However, young women who were raising children were significantly more likely to be smokers at the last time point, consistent with the previous studies of teenage mothers. Nevertheless, the effect of teenage parenthood on smoking lost statistical significance after smoking history was entered in a stepwise logistic regression. Therefore, it is likely that the young mothers who smoked during young adulthood were also more likely to have smoked at the earlier time points than their non-childbearing peers, consistent with Problem Behavior Theory. However, little is known about the long-term risk factors for smoking, alcohol use, or marijuana use among young women who were pregnant teenagers.

The goals of the current study were to examine tobacco, alcohol and marijuana use in teenage mothers 6 years and 10 years post-partum in order to (1) identify antecedent risk factors for substance use during young adulthood, and (2) identify risk factors for late-onset and persistent use of tobacco, binge drinking, and use of marijuana. We hypothesized that White race, peer adolescent use, lower SES, and higher levels of psychological problems would predict smoking and binge drinking 6 and 10 years after a teenage pregnancy and persistent tobacco use across the decade. We hypothesized that Black race, peer adolescent use, lower SES, and higher levels of psychological problems would predict marijuana use 6 and 10 years after a teenage pregnancy.

2. Method

2.1. Study sample

In this cohort study, 445 pregnant adolescents (12–18 years old) were recruited from an outpatient prenatal clinic at a teaching hospital (448 were asked to participate and only 3 refused). The 413 adolescents who gave birth to live, singletons were eligible for follow-up visits 6 and 10 years later. Of the 32 who did not participate in the study at delivery, there was 1 refusal, 15 girls who moved out of the area, 3 gave birth to twins, 7 instances of miscarriage/fetal death, and 6 whose infants died due to premature birth. Complete substance use data for all 3 time points were available for 292 mothers (for a 68% follow-up rate). There were 10 refusals at the 6-year follow-up and 17 refusals at the 10-year follow-up phase. Although there were slightly more Black women in the follow-up sample (71% vs. 67% of the birth cohort), women did not differ from the original birth cohort with respect to age at entry into the study, education, gravidity, age at first cigarette, age at first drink, age at first use of marijuana, cigarette use before pregnancy, alcohol use before pregnancy, marijuana use before pregnancy, levels of anxiety/depression, or levels of aggression during adolescence.

2.2. Data collection

Data from the adolescent phase were collected during interviews with the teenage mothers in a private room at the prenatal clinic of Magee-Womens Hospital in Pittsburgh, PA. Informed consent was obtained after assuring the girls of confidentiality, reinforced by a Certificate of Confidentiality from the Department of Health and Human Services. The Institutional Review Board of the University of Pittsburgh approved each phase of the study protocol. Demographic information and data on mothers' substance use, physical and mental health were obtained during the initial wave of testing (1990–1994) and during the young adult follow-up testing. The six-year and ten-year follow-up visits of the mothers and their offspring took place at our offices at the University of Pittsburgh between 1996 and 2004. For a more extensive description of the original methodology and measures, see Cornelius, Goldschmidt, Day, and Larkby (2002).

2.3. Measures

Interviewers collected demographic information including race, education, family income, and educational attainment of the pregnant teenager's mother. A widely-used, developmentally-appropriate, normed and reliable self-report instrument was used to assess problems with anxiety/depression and aggressive behavior during adolescence, the Youth Self-Report (YSR: Achenbach & Edelbrock, 1987). The YSR measures adaptive functioning and emotional and behavioral problems experienced in the past 6 months using items that are scored on a three-point scale: 0 = not true; 1 = somewhat or sometimes true; 2 = very true or often true. The 112-item profile contains subscales measuring depression, thought disorder, delinquency, somatic complaints, aggression, and unpopularity. Achenbach (1991) reports good test–retest reliability and discriminative validity on large normative samples.

At the six- and ten-year follow-up testing, depression was assessed with the Center for Epidemiologic Studies-Depression (CES-D). This is a 20-item self-report scale developed for use in general population