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The misuse of benzodiazepines among adolescents: Psychosocial risk factors in a national sample

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ABSTRACT

Background: The misuse of benzodiazepines (BZs) among adolescents is an important issue within the fields of mental health, medicine, and public health. Though there is an increasing amount of research on prescription medication misuse, a relatively small number of studies focus on adolescent BZ misuse. The goal of this study, therefore, is to identify demographic and psychosocial factors that place adolescents at risk for misusing BZs. Additionally, the authors applied concepts from social bonding theory, social learning theory, and strain theory to determine the extent to which these concepts explain BZ misuse.
Methods: Using data from the 2011 National Survey of Drug Use & Health, multivariate logistic regression models were estimated to determine which factors were associated with an increased risk of BZ misuse.
Results: These findings help to describe the psychosocial profile of adolescent BZ misusers which should increase the ability of clinicians to identify patients who may be at greater risk for misuse.
Conclusion: This study is particularly important within the context of psychiatry, where a clearer understanding of adolescent BZ misuse is critical for informing prevention efforts and developing best practices for prescribing BZs.

1. Introduction

Benzodiazepines (BZs) are a class of medication commonly prescribed by physicians to treat a variety of mental/behavioral health problems including bipolar disorder, anxiety, and panic disorder (Brunette et al., 2003). BZs are primarily used by doctors as sedatives, although they can also be used as hypnotics and anticonvulsants to treat, for example, insomnia and seizures (Hernandez and Nelson, 2010). BZs, however, are prone to misuse because they can cause the user to feel sedated and/or euphoric when taken in high doses.

Surveillance systems have documented a recent rise in problems associated with BZ misuse which has raised concerns within the medical community and among public health professionals (SAMHSA, 2011b, 2011c). What is of particular concern is that the misuse of BZs appears to be occurring among adolescents at an especially high rate (McCabe et al., 2011; SAMHSA, 2011a). Despite high rates of misuse, BZs are one of the most widely prescribed anxiolytic medications because of their efficacy in the treatment of anxiety disorders (Augustin, 2001).

The current literature on prescription medication misuse, however, has some key limitations that have hampered our understanding of adolescent BZ misuse. First, the majority of studies does not utilize representative samples of the US population, but rather rely on school-based surveys of high school (monitoring the future) or college (College Alcohol Study and Student Life Survey) students. Second, the majority of studies examine the misuse of any prescription drug (Simoni-Wastila et al., 2004), opioid analgesics (Rigg and Murphy, 2013), or stimulants (Herman-Stahl et al., 2007). There is less research attention on BZ misuse, especially among adolescents.

Additionally, there has been little research examining theoretical predictors of BZ misuse. As a result, the theoretical links that may explain BZ misuse are not well-understood. Travis Hirschi's (1969) theory of social bonding, argues that adolescents with strong social bonds will have lower levels of substance use. Ronald Akers' (1998) social learning theory argues that exposure to deviant attitudes and deviant behaviors, from family members or peers, is a significant risk factor for substance use (Akers, 1998). Agnew's (1992) strain theory contends that strain (e.g., negative life events) can lead to substance use by increasing the probability that an individual will endure negative affective states, such as anger or fear (Agnew, 1992). While these theories have been applied successfully

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to various forms of drug use (Carson et al., 2008; Akers and Lee, 1999), they are seldom used to explain the misuse of BZs in adolescent populations.

The goals of this research, which aimed to partially fill these gaps, were threefold. First, the study aimed to determine the prevalence of BZ misuse among adolescents in the general US population. The second goal was to identify demographic and psychosocial factors that increase the risk of adolescent BZ misuse. The rationale for including these risk factors in our analyses is that they have been previously linked to substance use in adolescent populations. The third goal was to determine the extent to which concepts from social bonding theory, social learning theory, and strain theory explain BZ misuse among adolescents.

Based on prior research and the theoretical processes postulated by these theories, we hypothesize that: (1) older age, being female, being white, lower income, and living in an urban area will increase risk of BZ misuse, (2) being depressed, less religious, more delinquent, perceiving less risk with using drugs, not taking a drug abuse prevention class, and using other drugs will increase risk of BZ misuse, (3) weaker social bonds will increase risk of BZ misuse, (4) exposure to deviant attitudes/behaviors will increase risk of BZ misuse, and (5) strain will increase risk of BZ misuse.

2. Methods

2.1. Data

The data for the current study are drawn from the 2011 National Survey on Drug Use and Health (NSDUH). The primary focus of the NSDUH is prevalence and correlates of drug use in the United States and has been collected for over 30 years. Using a 50-state design with an independent, multistage area probability sample, data was collected from a sample of 70,109 respondents that was generalizable to the non-institutionalized US civilian population aged 12 and older. The interviews were carried out using a combination of computer-assisted personal interviewing (CAPI) conducted by a trained interviewer and audio computer-assisted self-interviewing (ACASI). The weighted interview response rate was 74.38%.

To protect the confidentiality of respondents, the complete version on the NSDUH is not available to the public. Rather, a public use version of the data was created by applying a statistical disclosure limitation method to the full analytic file. This process eliminated all directly identifying information from the data file (Singh, 2009). This process created a public-use file with 58,379 respondents, which was also representative of the non-institutionalized US civilian population ages 12 and older. The focus of the current research is adolescents and the NSDUH has 19,264 respondents' ages 12–17 in the public use data file.

2.2. Dependent variable

The dependent variable was the lifetime misuse of BZs (0 = no, 1 = yes). The NSDUH included a measure to specifically identify BZ misuse and comprised prescription drugs such as klonopin, xanax, valium, ativan, and librium. BZ misuse was defined as taking a BZ that was not prescribed to you, or only for the experience or feeling it caused.

2.3. Demographic risk factors

A number of demographic characteristics were included in the analysis: age was a continuous variable with a range of 12–17), gender (0 = female, 1 = male), and race (0 = non-white, 1 = white). We also included a measure of population density (0 = non-urban, 1 = urban). A respondent was classified as living in an "urban" area if they were in a core-based statistical area with one million or more persons. Finally, we included a measure of total family income (0 = less than $50,000, 1 = $50,000 or more). This measure was created to split the sample at median household income, which was $50,054 in 2011 (DeNavas-Walt et al., 2012).

2.4. Psychosocial risk factors

We included a number of psychosocial risk factors that have been linked to substance use in adolescent populations. First, a scale of religiosity ($\alpha = 0.78$) included measures of church attendance, importance of religious beliefs, religious beliefs influence decision making, and religious friends. All items in this scale were coded (1–4) so that a higher score would reflect a greater degree of religiosity and lower risk for substance use. Second, a scale was created to measure delinquency ($\alpha = 0.69$) in the past 12 months and included property (e.g., stolen or tried to steal anything worth more than $50), violent (e.g., attacked someone with the intent to seriously hurt them), and drug offenses (e.g., sold illegal drugs). All items on this scale were coded 1 = 0 times to 5 = 10 or more times; therefore, a higher score on this scale indicated greater delinquency and increased risk for substance use.

Third, a measure of major depressive episode in the past year was included (0 = no, 1 = yes). A respondent was classified as having a major depressive episode if they reported experiencing at least five of the following symptoms: felt sad, empty, or depressed most of the day or discouraged; lost interest or pleasure in most things; experience changes in appetite or weight; sleep problems; other noticed you were restless or lethargic; felt tired or low energy nearly every day; felt worthless nearly every day; inability to concentrate or make decisions; any thoughts or plans of suicide. Respondents who reported a major depressive episode would be at increased risk for substance use.

Fourth, a scale measuring drug risk ($\alpha = .071$) included 6 items that were all coded 1 = no risk, 2 = slight risk, 3 = moderate risk, and 4 = great risk. Respondents were asked how much people risk harming themselves physically and in other ways when they. . .smoke one or more packs of cigarettes per day, smoke marijuana once or twice a week, try LSD once or twice a week, use heroin once or twice a week, use cocaine once or twice a week, and have five or more drinks of an alcoholic beverage once or twice a week? A higher score on this scale indicated a greater perceived risk associated with drug use and therefore less likelihood of reporting BZ misuse. Finally, respondents were asked if they had a special *class* about drugs or alcohol in school during the past 12 months (0 = no, 1 = yes).

2.5. Theoretical risk factors

We created several measures that were associated with popular theories of deviance. These scales have been used before in existing research that examined other types of prescription drug misuse (Schroeder and Ford, 2012; Ford, 2009, 2008). Hirchi's (1969) theory of social control, or social bonding, argued that adolescents were free to deviate from the norms of society and only conformed to social norms when they developed strong ties to significant others and conventional institutions. Consistent with social bonding, we created scales that measured bonds to parents ($\alpha = 0.70$), bonds to school ($\alpha = 0.91$), and involvement in conventional activities ($\alpha = 0.68$). The bond to parents scale included the following items to determine if parents. . .check homework, help with homework, make you do chores, limit TV, limit time out with friends on school nights, tell you when you had done a good job, and tell you they were proud of you. All items were coded 1 = never, 2 = seldom, 3 = sometimes, and 4 =nalways.

The bond to school scale included the following five items: how did you feel about going to school, feel school work was important