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Association of prescription drug misuse with risky motor vehicle behaviors among low-income young women

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Abstract

The purpose of this study was to examine the association between prescription drug misuse and risky motor vehicle behaviors among 16-24 year old women. A survey was conducted on misuse of four classes of prescription drugs (pain relievers, tranquilizers, stimulants, and sedatives) and past-month risky motor vehicle behaviors among these women during 2008-2010. Overall, 47.7% (1408/2952) of women reported risky motor vehicle behavior(s) in the past month. Misuse of one or more of the four classes was 30.1% (lifetime), 15.0% (past year), and 6.7% (past month). Misuse of one or more of these prescription drug classes was associated with risky motor vehicle behaviors in their lifetime (odds ratio (OR) 1.83, 95% confidence interval (CI) 1.54-2.18), past year (OR 2.25, 95% CI 1.80-2.83), and past month (OR 2.70, 95% CI 1.94-3.78). Our finding that misuse of one or more of the four prescription drug classes, irrespective of when this last occurred, is associated with risky motor vehicle behaviors may help formulate awareness programs.

Keywords

Prescription drug; Misuse; Young women; Motor vehicle; Seatbelt use

Introduction

Prevalence of prescription drug misuse (non-medical or non-therapeutic use) in the US has risen dramatically over the past decade (1). Prescription and over-the-counter drugs are the most commonly misused drugs among adolescents after marijuana (2). According to the 2010 National Survey on Drug Use and Health (NSDUH), 20.4% of the US population has misused at least one of the four prescription drug classes (pain relievers, tranquilizers, stimulants, and sedatives) during their lifetime and 6.3% misused in the past year (3). The highest rate of misuse in the past year (14.3%) was reported among young adults aged 18-25 years followed by adolescents aged 12-17 years (7.4%) with a similar burden in both genders (4).

Motor vehicle accidents are the leading cause of death among adolescents (5). However, studies that have examined the link between prescription drug misuse and risky motor vehicle behaviors among adolescents and young adults are limited. Two studies conducted on US college students did observe a significant association between misuse of prescription-

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type pain relievers or tranquilizers (benzodiazepines) and risky motor vehicle behaviors (driving after drinking alcohol or riding with a drunk driver) (6, 7). However, the relationship between misuse of all four classes of prescription drugs, including pain relievers, tranquilizers (which relieve anxiety), stimulants (which enhance alertness and wakefulness), and sedatives (which aid in sleep by reducing anxiety, irritability, or excitement) and other risky motor vehicle behaviors, such as less use of seatbelts as drivers or passengers, were not investigated. The objective of this study was to examine the association between misuse of these prescription drugs (pain relievers, tranquilizers, stimulants, or sedatives) and risky motor vehicle behaviors among low-income young women.

Methods

We conducted a cross-sectional survey on health risk behaviors among women aged 16-24 years of age attending one of five reproductive health clinics between August 2008 and August 2010. A research assistant approached patients deemed eligible in the privacy of the examination room, inviting them to complete a health survey. After obtaining oral informed consent, the research assistant left the room during survey completion, returning to retrieve the instrument from the patient at the conclusion of the examination. Detailed methods of this survey have been reported elsewhere (8). Overall, 82.9% (3181/3835) of invited women agreed to participate, yielding 3,181 surveys. All procedures were approved by the Institutional Review Board at the University of Texas Medical Branch.

Questions related to risky motor vehicle behaviors were adapted from those used in the National College Health Risk Behavior Survey (NCHRS) (9). This survey included two questions on drinking and driving behaviors and two questions on seatbelt use. We asked the following questions, "During the past 30 days, how many times did you drive a car or other vehicle when you had been drinking alcohol?" and "During the past 30 days, how many times did you ride in a car or other vehicle driven by someone who had been drinking alcohol?" Response options of these two questions included "never," "1 time," "2 or 3 times," "4 or 5 times," and "6/more times". We categorized the options "ever" vs. "never". We also asked "How often do you wear a seatbelt when you are driving a car?" and "How often do you wear a seatbelt when riding in a car driven by someone else?" Responses were "always," "most of the time," "sometimes," "rarely," and "never". We categorized the options as "always" vs. "not always/never". To identify respondents who reported engaging in any of these risky behaviors, a variable was generated using the responses of all four questions together.

Questions regarding misuse of prescription drugs were adapted from those used in the 2007 NSDUH (10). This study focused on the misuse of four prescription drug classes: pain relievers (Vicodin, Darvocet, Percodan, Demerol, Dilaudid, etc), tranquilizers (Valium, Librium, Ativan, Xanax, etc), stimulants (Methamphetamine/speed), Benzedrine/uppers, Dexadrine/hearts, Ritalin/rits, Concerta, etc) and sedatives (Phenobarbital, Seconal, Nembutal, Temazepam, Qualudes, Halcion, etc). Two questions were included for each class. For example, for pain relievers, we asked the following questions: 1) "Have you ever, even once, used a prescription pain reliever that was not prescribed for you or that you took only for the experience or feeling it caused?" Responses were "yes" or "no" 2) "How long has it been since you last used any prescription pain reliever that was not prescribed for you or that you took only for the experience or feeling it caused?" Responses were "have never used," "within the past 30 days," "more than 30 days ago but within the last year," and "more than a year ago". Six more questions for the other three prescription drug classes were asked with identical response scales and wording. Two questions for each class were then combined to generate three variables: lifetime misuse, past year misuse, and past month

misuse, one for each of the four drug classes. To identify respondents who reported misuse of any of the four classes, a variable was generated from the responses of all questions. Information was also obtained on patient's age, race/ethnicity, education, income, marital status, smoking status, and illegal drug use.

Bivariate comparisons were performed using chi square tests. Multivariate logistic regression models were used to examine the association between prescription drug misuse (lifetime, past year and past month) and past-month risky motor vehicle behaviors after adjusting for covariates.

Results

Of the 3181 adolescent and young adult women surveyed, 92.8% (n=2952) responded to the questions on both risky motor vehicle behaviors and prescription drug misuse. The mean age of participants was 20.8 years (SD=2.5, range 16-24 years). Of the 2952 women, 29.0% were white (n=859), 25.7% were black (n=758), 44.5% were Hispanics (n=1313). Of these women, 18.5% had not completed high school, 52.4% were currently enrolled in high school or high school graduate, and 29.5% had some college hours or college degree. Household income was low with 84.8% below \$30,000 per year. About 59% were unmarried, 28.7% were current smokers, and 47.9% had ever used an illegal drug.

Of these women, 47.7% (1408/2952) reported risky motor vehicle behaviors in the past month and 30.1% (888/2952) reported misuse of one or more of the four prescription drug classes during their lifetime, while 15.0% (442/2952) reported misuse during the past year and 6.7% (197/2952) during the past month. Women who were younger (16-19 years), black, unmarried, currently smoked tobacco, were enrolled in high school or had graduated high school, had attended college, used illegal drugs, and misused prescription drugs were more likely to report risky motor vehicle behaviors during the past month than their counterparts (Table 1).

Multivariate logistic regression analyses showed that young women who had ever misused prescription-type pain relievers, tranquilizers, stimulants or sedatives were more likely to report risky motor vehicle behaviors after adjusting for age, race/ethnicity, education, marital status, current smoking status, and illegal drug use (Table 2). When logistic regression models were restricted to misuse of these prescription drugs during the past year or past month, almost all models showed a significant association.

Discussion

We observed that young women who misused prescription drugs of one or more of the four classes (pain relievers, tranquilizers, stimulants, or sedatives), irrespective of when that last occurred, were more likely to engage in risky motor vehicle behaviors such as driving while drinking or riding with a drinking driver as well as less use of seatbelts as drivers or passengers. This is in agreement with a prior study on college students which observed an association between misuse of pain reliever/tranquilizer and risky motor vehicle behaviors, such as driving after drinking or riding with a drunk driver (6, 7).

One reason for the high mortality among adolescents in motor vehicle accidents is that this age group is less likely to use seatbelts as drivers or passengers (5, 11). Regardless of driver or passenger position, seatbelt use is even lower among adolescents who drive after drinking or ride with a drinking driver than those who do not engage in these behaviors (11). On the other hand, young drinkers who misuse at least one of the four prescription drugs classes are even more likely to engage in risky driving while drinking than those who do not misuse

(12). Thus, prescription drug use may have a synergistic effect on risky motor vehicle behaviors.

A relationship between illegal drug use and prescription drug misuse has been reported among adolescent and young adult women (6, 8). Further, a study conducted on college students observed that illegal drug users were more likely than nonusers to engage in one or more risky motor vehicle practices during the past month which increased their risk of being in a motor vehicle crash (13). However, in our study, the association between prescription drug misuse and risky motor vehicle behaviors remained significant even after adjusting for illegal drug use, demonstrating that prescription drug misuse may have an independent association on these behaviors among young women.

This study has several limitations. First, self-reported responses are subjected to recall bias. Second, our cross-sectional design did not allow the examination of causal relationships. Finally, we did not evaluate the drinking status of these women. Thus, to what extent the driving while drinking behavior identified in this study resulted from both prescription drug and alcohol use could not be determined. Therefore, future studies are warranted to examine these components.

The likelihood of practicing risky motor vehicle behaviors increased among young women who misused prescription drugs of one or more of the four classes. Most media campaigns have focused on the risk of driving while intoxicated and have ignored the substantial risks associated with prescription drug misuse. Thus, programs are needed to increase public awareness of this problem in order to reduce morbidity and mortality among this vulnerable population.

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Table 1

Characteristics of women (16-24 years) by risky motor vehicle behavior

	Risky motor vehicle behavior (n=2952)		P value
	Yes n=1408(%)	No n=1544 (%)	
Age			.012
16-19 years	484 (51.1)	464 (48.9)	
20-24 years	925 (46.1)	1080 (53.9)	
Race/ethnicity			<.001
White	400 (46.6)	459 (53.4)	
Black	431 (56.9)	327 (43.1)	
Hispanic	569 (43.3)	744 (56.7)	
Education			<.001
Did not complete HS	211 (39.2)	328 (60.8)	
Enrolled in HS/HS graduate	748 (49.0)	779 (51.0)	
Some college/college degree	435 (51.4)	411 (48.5)	
Household income/year			.728
<15,000	717 (46.9)	812 (53.1)	
15,000-29,999	343 (48.2)	368 (51.8)	
30,000-49,999	131 (49.5)	134 (50.6)	
50,000 and above	69 (50.7)	67 (49.3)	
Marital status			<.001
Never married	937 (53.5)	815 (46.5)	
Currently married/live together	400 (38.6)	637 (61.4)	
Divorced/ separated/widowed	71 (43.6)	92 (56.4)	
Current smoking status			<.001
Yes	468 (55.3)	378 (44.7)	
No	938 (44.7)	1161 (55.3)	
Illegal drug use			<.001
Ever	787 (56.1)	616 (43.9)	
Never	610 (39.9)	918 (60.1)	
Prescription drug misuse			
Lifetime			
Any drug	535 (60.3)	353 (39.8)	<.001
Pain reliever	425 (59.7)	287 (40.3)	<.001
Tranquilizer	184 (60.5)	120 (39.5)	<.001
Stimulant	157 (64.1)	88 (35.9)	<.001
Sedative	100 (71.4)	40 (28.6)	<.001
Past year			
Any drug	295 (66.7)	147 (33.3)	<.001
Pain reliever	247 (66.9)	122 (30.1)	<.001

	Risky motor vehicle behavior (<i>n</i> =2952)		
	Yes <i>n</i> =1408(%)	No <i>n</i> =1544 (%)	<i>P</i> value
Tranquilizer	90 (68.2)	42 (31.8)	<.001
Stimulant	55 (79.7)	14 (20.3)	<.001
Sedative	27 (71.7)	11 (28.9)	.004
Past month			
Any drug	140 (71.1)	57 (28.9)	<.001
Pain reliever	101 (69.7)	44 (30.3)	<.001
Tranquilizer	43 (70.5)	18 (29.5)	<.001
Stimulant	27 (93.1)	2 (6.9)	<.001
Sedative	17 (81.0)	4 (19.0)	.002

HS, High School

*P*value <.05 considered statistically significant

Table 2

Association of prescription drug misuse with risky motor vehicle behaviors

Prescription drug misuse	Risky driving behaviors		Risky passenger behaviors	
	Drove while drinking alcohol ^a OR (95% CI)	Drove without using a seatbelt ^a OR (95% CI)	Rode with a drinking driver ^b OR (95% CI)	Rode without using a seatbelt ^c OR (95% CI)
Lifetime				
Any drug	1.47 (1.14-1.90)	1.56 (1.22-1.99)	1.62 (1.36-1.94)	1.52 (1.24-1.87)
Pain reliever	1.61 (1.23-2.09)	1.30 (1.00-1.69)	1.58 (1.31-1.91)	1.35 (1.09-1.69)
Tranquilizer	1.25 (0.88-1.78)	1.65 (1.18-2.30)	1.54 (1.19-1.99)	1.35 (1.00-1.81)
Stimulant	1.34 (0.91-1.96)	2.02 (1.43-2.86)	1.52 (1.15-2.01)	1.54 (1.12-2.12)
Sedative	1.58 (0.99-2.52)	2.04 (1.32-3.13)	2.08 (1.45-3.00)	1.95 (1.32-2.86)
Past year				
Any drug	1.68 (1.25-2.25)	1.46 (1.09-1.95)	2.16 (1.74-2.68)	1.61 (1.26-2.05)
Pain reliever	1.67 (1.22-2.30)	1.45 (1.07-1.97)	2.15 (1.71-2.72)	1.63 (1.25-2.11)
Tranquilizer	1.20 (0.73-2.00)	2.25 (1.47-3.44)	1.93 (1.34-2.80)	1.83 (1.23-2.71)
Stimulant	1.80 (0.98-3.27)	2.24 (1.28-3.90)	3.21 (1.90-5.44)	2.21 (1.33-3.69)
Sedative	2.10 (0.91-4.84)	2.13 (0.98-4.66)	2.59 (1.29-5.20)	1.91 (0.93-3.92)
Past month				
Any drug	1.60 (1.07-2.40)	1.72 (1.18-2.51)	2.65 (1.94-3.61)	1.90 (1.37-2.64)
Pain reliever	1.52 (0.95-2.44)	1.50 (0.96-2.34)	2.41 (1.69-3.45)	1.93 (1.33-2.81)
Tranquilizer [*]	1.97 (1.04-3.74)	2.71 (1.52-4.86)	2.89 (1.73-4.85)	2.11 (1.23-3.64)
Stimulant [*]	4.26 (1.96-9.24)	6.20 (2.96-13.01)	9.66 (3.67-25.41)	3.51 (1.68-7.34)
Sedative [*]	2.48 (0.90-6.82)	2.98 (1.15-7.74)	4.97 (1.92-12.85)	2.61 (1.08-6.35)

OR, odd ratio; CI, confidence interval

Based on multivariate logistic regression model; Separate model was built for each of the prescription drug misuse and risky driving behaviors; models were adjusted by age, race, education, marital status, current smoking status, and illegal drug use

^{*} Based on bivariate logistic regression analysis as number of events was small for multivariate analysis

^a Drove a car or other vehicle while drinking alcohol (one or more times) during the past 30 days

^b Did not always/never wear a seatbelt while driving

^c Rode in a car or other vehicle driven by someone else who had been drinking alcohol (one or more times) during the past 30 days

^d Did not always/never wear a seatbelt when riding in a car driven by someone else

^e Any of the above mentioned behaviors