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Social determinants to nonmedical prescription drug use among multiracial youth

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Abstract

Background: The prevalence of Nonmedical prescription drug (NMPD) use, which is defined as using prescription drugs without a doctor's prescription, is increasing among youth. The present study examined Nonmedical prescription drug (NMPD) use among Multiracial students in 7th through 12th grades.

Method: A total of 2,134 students completed the PRIDE Questionnaire, which examines alcohol and drug use among youth.

Results: A total of 14.8% of students reported using NMPDs in their lifetime. No significant differences were found based on sex. High school students were significantly more likely than junior high school students to use NMPDs. Results indicated that friends' involvement in tobacco, alcohol, and marijuana was associated with significantly greater odds of lifetime Nonmedical prescription drug use. Involvement in risky behaviors also increased the odds of use.

Conclusions: NMPD use is a significant issue among Multiracial youth. Specific prevention efforts should be implemented. Findings from this study may be used to develop prevention programs for Multiracial youth.

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INTRODUCTION

The prevalence of nonmedical prescription drug (NMPD) use, which is defined as using prescription drugs without a doctor's prescription, is increasing among youth [1]. Estimates of nonmedical prescription drug use reveal approximately 15 million Americans over age 12 used prescription pain relievers, tranquilizers, stimulants or sedatives nonmedically at least once in the past year [2]. Specifically, research indicates a significant increase in nonmedical use of pain relievers, psychotherapeutics, tranquilizers, stimulants, and sedatives with stimulants ranking as the most prevalent [3-4].

Use of nonmedical prescription drugs among adolescents differs based on several variables including race and ethnicity. Research indicates that white males are more likely to use NMPDs than white females [5]. Regarding young adults, additional research found that White and Latinos engage in NMPD use more

frequently and at greater rates than African-Americans and Asians [6].

Regarding Multiracial youth, evidence from national data suggests that Multiracial youth report lower rates of substance use than white youth; however, overall rates of substance use are higher than African American youth [4]. Additional research found significant differences in substance use and other risky behaviors between Multiracial youth and peers identifying as a single race minority [7-8]. Similarly, Choi et al. [8] found Multiracial youth were significantly more likely than single race minorities to use drugs and alcohol to get high. Limited research exists on NMPD use among multiracial youth as researchers examine Multiracial youth drug use as part of general population studies. Specific studies examining determinants to use among Multiracial youth are needed.

In addition to race and ethnicity, risk and protective

factors for substance misuse have been identified. Concerning risk factors, access to substances increases the likelihood of youth use [9]. Poor parental monitoring, having a parent who uses alcohol or other drugs, lack of parent-child connection, and use of authoritarian parenting are family level risk factors for youth substance use [10-13]. At the peer level, having peers who use alcohol and drugs is identified as a risk factor for youth substance use whereas in schools, low levels of school connectedness are identified as risk factors [14-15]. Conversely protective factors include positive peer relationships, lack of peer approval to use substances, and opportunities for positive involvement at school [16-17]. In the family, protective factors include a sense of family connectedness, parental monitoring and support and clear and consistent rules against substance use [15, 17-18].

Reducing risk factors and encouraging the development of protective factors is an effective method of decreasing substance use among youth. Identifying specific risk and protective factors among Multiracial youth is key to preventing continued misuse of nonmedical prescription drugs. In addition, previous research has identified cultural factors as important concepts in substance use prevention and education program [19-20]. Effective prevention and intervention programs incorporate culturally competent content and cultural-specific information for youth. Evaluations of such programs increase the effectiveness of substance use messages and reduce youth use of alcohol and drugs [21-22]. Regarding Multiracial youth, limited research has been conducted on substance use particularly nonmedical prescription drug use. Research is needed to identify specific risk and protective factors among this population. As such, culturally relevant prevention programs and educational initiatives can be developed and implemented.

Purpose

As student use of nonmedical prescription drugs continues to rise, research is needed to identify psychosocial correlates to use. Such findings can be used to develop prevention and intervention programs aimed specifically at decreasing prescription drug use and over-the-counter drug use among Multiracial youth. Therefore, the purpose of the present study is to examine Nonmedical prescription drug use among Multiracial youth and specific risk and protective factors associated with use. More specifically, the following research questions were examined: 1) What is the extent of Nonmedical prescription drug use among Multiracial youth in grades 7 through 12? 2) Does lifetime use differ based on sex, grade, and job status?, 3) Is frequency of participation in pro-social behaviors associated with decreased odds for lifetime

use?, 4) Is frequency of participation in risky behaviors associated with increased odds for lifetime use?, 5) Does lifetime use among Multiracial youth differ based on frequency of friends' involvement and specific parent, teacher, and school factors?

METHODS

Participants

Participants in the present study were 2,134 students self-identifying as Multiracial in 7th through 12th grades in Greater Cincinnati public and private schools (N = 133). Schools were recruited by the Coalition for a Drug Free Greater Cincinnati to participate in the study. Student participation in the survey was completely voluntary and parental permission was requested in order for students to participate. Students were excluded from the survey if parents refused permission to participate. Student responses were kept anonymous and confidential.

Instrument

The PRIDE Questionnaire for Grades 6-12, which examines substance use among students, was used to survey students. In the present study, students were requested to report how often they engaged in pro-social behaviors including involvement in school sports and clubs, community groups and faith-based institutions and risky behaviors such as skipping school, getting in trouble at school or with police and being involved in a gang by using a 5-point scale (1 = never, 5 = a lot). Students also rated how often their parents, teachers and schools talked about the dangers of alcohol and other drug use and set/enforced rules regarding use by using this 5-point scale. Demographic information (N = 8 items) was requested and required students to fill in appropriate boxes. Stability reliability of this survey has been established. Metz [23] distributed the survey to 631 students on two separate occasions one week apart, yielding Pearson correlation coefficients of <.80. Similarly, Adams [24] compared PRIDE results to findings from the National Institutes of Drug Abuse Monitoring the Future study and found substance use rates in each survey to be comparable. Additional research also found the psychometric characteristics of this survey to be valid and reliable [25].

Procedures

Students in participating schools completed surveys during their regularly scheduled hours. Per *PRIDE Survey Distribution Instructions*, survey administrators informed students of the purpose of the study, the voluntary nature of the study, and that all responses were anonymous and confidential. All survey administrators were instructed to remain at the front of

the room during survey completion. Each student was requested to place completed questionnaires in a designated envelope, which were delivered to the office to be sent out for data entry and analysis.

Data Analysis

All data was entered and analyzed via SPSS (Statistical Package for the Social Sciences) Version 17.0. Frequency distributions, means, standard deviations and ranges were used to describe students' demographic and background characteristics. A series of chi-square analyses and odds ratios were conducted to determine whether lifetime Nonmedical prescription drug use differed significantly based on sex, grade, job status, peer substance use, and parent/teacher/school factors. The alpha level of significance was established at .05 to avoid committing a Type I error.

RESULTS

Demographics

A total of 2,134 students in 7th – 12th grades in participating schools completed surveys (77.4% response rate). Half of students were male (48.8%) and half were female (51.2%) (Table 1). A total of 21.5% of 7th graders, 22.2% of 8th graders, 21.2% of 9th graders, 15.2% of 10th graders, 10.8% of 11th graders, and 9.1% of 12th graders participating in this study. Less than half (41.8%) reported living with both parents and one in four (25.5%) lived with their mother only. Less than half of students reported fathers (42.2%) and mothers (44.6%) as college graduates. Regarding parent employment, three in four (76.8%) reported fathers with full-time employment and almost two in three (60.6%) reported mothers working full-time. Approximately three in four students (74.0%) were unemployed.

Table 1. Demographic and Background Characteristics of Students

Item	n	%
Sex		
Male	950	48.8
Female	995	51.2
Grade		
7 th	449	21.5
8 th	464	22.2
9 th	443	21.2
10 th	319	15.2
11 th	227	10.8
12 th	191	9.1
Living Situation		
Live with Mother and Father	872	41.8
Live with Mother only	532	25.5
Live with Father only	77	3.7
Live with Mother and Stepfather	308	14.8
Live with Father and Stepmother	64	3.1
Other	232	11.1
Educational Level of Father		
Some high school	195	11.3
High school graduate	479	27.8
Some college	322	18.7
College graduate	728	42.2
Educational Level of Mother		
Some high school	166	8.8
High school graduate	425	22.5
Some college	455	24.1
College graduate	841	44.6
Job Status of Father		
Yes, full-time	1410	76.8
Yes, part-time	233	12.7
No	193	10.5
Job Status of Mother		
Yes, full-time	1214	60.6
Yes, part-time	430	21.5
No	359	17.9
Job Status		
Unemployed	1483	74.0
Employed	522	26.0

Notes: Percents denote valid percents; Missing values excluded; N=2134

Table 2. Odds Ratios for NMPD Use among Males and Females based on Involvement in Prosocial and Risky Behaviors, Parent and Teacher/School Factors

Item	Males						Females					
	Have Never Used Lifetime n (%)	Have Used Lifetime n (%)	OR	(95% CI)	χ^2	p	Have Never Used Lifetime n (%)	Have Used Lifetime n (%)	OR	(95% CI)	χ^2	p
Involvement in Prosocial Activities												
Low ^a	391 (84.3)	73 (15.7)	.6210	(.408, .943)	5.056	.015	377 (81.6)	85 (18.4)	.630	(.436, .910)	6.120	.008
High	328 (89.6)	38 (10.4)					387 (87.6)	55 (12.4)				
Involvement in Risky Behaviors												
Low ^a	338 (93.6)	23 (6.4)	3.607	(2.234, 5.822)	30.420	<.001	480 (91.6)	44 (8.4)	3.859	(2.627, 5.644)	52.252	<.001
High	383 (80.3)	94 (19.7)					289 (73.9)	102 (26.1)				
Parent Factors												
Low ^a	301 (82.2)	65 (17.7)	.734	(.481, 1.119)	2.077	.090	303 (75.8)	97 (24.3)	.463	(.312, .687)	15.116	<.001
High	265 (86.3)	42 (13.7)					290 (87.1)	43 (12.9)				
Teacher/School Factors												
Low ^a	291 (82.2)	63 (17.8)	.592	(.403, .870)	7.235	.005	315 (80.8)	75 (19.2)	.658	(.463, 936)	5.479	.013
High	460 (88.6)	59 (11.4)					472 (86.4)	74 (13.6)				

Notes:

^a Indicates Referent

^b All categories do not total 2134 due to missing data

Use of Nonmedical Prescription Drugs Based on Sex, Grade, and Job Status

Overall, 14.8% of students reported lifetime use of prescription drugs without a doctor's prescription. In the past 30 days, 7.4% reported using NMPDs. A total of 15.8% of females and 14.2% of males reported using NMPDs in their lifetime. No significant differences were found based on sex. Concerning grade level, 6.9% of junior high school students used NMPDs in their lifetime whereas 20.6% of high school students reported lifetime use. High school students were approximately 3.5 times more likely than junior high school students to use NMPDs in their lifetime ($X^2 = 72.991, p <.001$).

Overall, employment was associated with significantly greater odds of using NMPDs. Male students employed full or part-time had significantly greater odds of engaging in NMPDs than unemployed male students ($X^2 = 39.484, p <.001$). Female students employed full or part-time had significantly greater odds of engaging in NMPD use than non-employed female students ($X^2 = 29.838, p <.001$). In addition,

junior high school students employed full or part-time had significantly greater odds than their counterparts of using NMPD ($X^2 = 4.467, p = .037$). High school students employed full or part-time were significantly more likely than students who were not employed to use NMPDs ($X^2 = 28.402, p <.001$).

Pro-Social Behaviors and Risky Behaviors and Lifetime Use

Males with low involvement in pro-social behaviors were at greater odds of using NMPDs than males with high involvement in pro-social behaviors (Table 2). Similarly, females with low involvement in pro-social behaviors also were at significantly greater odds of NMPD use than females with high involvement in pro-social behaviors. Regarding risky behavior, males engaging in high levels of such behaviors were significantly more likely than males engaging in low levels of risky behaviors to use NMPDs. Females engaging in high levels of risky behaviors were also significantly more likely than females engaging in low levels of risky behaviors to use NMPDs.

Table 3. Odds Ratios for NMPD Use among Junior High and High School Students based on Involvement in Prosocial and Risky Behaviors, Parent and Teacher/School Factors

Item	Junior High						High School					
	Have Never Used Lifetime n (%)	Have Used Lifetime n (%)	OR	(95% CI)	χ^2	p	Have Never Used Lifetime n (%)	Have Used Lifetime n (%)	OR	(95% CI)	χ^2	p
Involvement in Prosocial Activities												
Low ^a	390 (92.2)	33 (7.8)	.808	(.468, 1.394)	.589	.265	431 (76.3)	134 (23.7)	.572	(.418, .782)	12.447	<.001
High	351 (93.6)	2 (6.4)					422 (84.9)	75 (15.1)				
Involvement in Risky Behaviors												
Low ^a	406 (96.2)	16 (3.8)	2.747	(1.506, 5.012)	11.635	<.001	461 (89.7)	53 (10.3)	3.737	(2.668, 5.234)	63.818	<.001
High	351 (90.2)	38 (9.8)					391 (69.9)	168 (30.1)				
Parent Factors												
Low ^a	254 (90.1)	28 (9.9)	.667	(.367, 1.214)	1.776	.119	397 (73.8)	141 (26.2)	.586	(.426, .807)	10.842	.001
High	272 (93.2)	20 (6.8)					341 (82.8)	71 (17.2)				
Teacher/School Factors												
Low ^a	261 (92.2)	22 (7.8)	.872	(.505, 1.505)	.242	.359	124 (24.3)	124 (24.3)	.648	(.483, .869)	8.434	.002
High	517 (93.2)	38 (6.8)					490 (82.8)	102 (17.2)				

Notes:

^a Indicates Referent

^b All categories do not total 2134 due to missing data

Table 4. Odds Ratios for NMPD Use among Males and Females based on Friends' Involvement in Tobacco, Alcohol and Marijuana

Item	Males						Females					
	Have Never Used Lifetime n (%)	Have Used Lifetime n (%)	OR	(95% CI)	χ^2	p	Have Never Used Lifetime n (%)	Have Used Lifetime n (%)	OR	(95% CI)	χ^2	p
Friends' Involvement in Tobacco												
Low ^a	487 (93.5)	34 (6.5)	6.995	(4.416, 11.081)	82.479	<.001	494 (92.3)	41 (7.7)	7.390	(4.900, 11.145)	108.207	<.001
High	129 (67.2)	63 (32.8)					150 (62.0)	92 (38.0)				
Friends' Involvement in Alcohol												
Low ^a	471 (95.2)	24 (4.8)	11.020	(6.681, 18.176)	116.458	<.001	446 (93.1)	33 (6.9)	7.622	(4.946, 11.745)	102.078	<.001
High	130 (64.0)	73 (36.0)					172 (63.9)	97 (36.1)				
Friends' Involvement in Marijuana												
Low ^a	526 (93.4)	37 (6.6)	8.530	(5.428, 13.403)	106.924	<.001	531 (92.8)	41 (7.2)	8.730	(5.769, 13.211)	128.545	<.001
High	110 (62.5)	66 (37.5)					135 (59.7)	91 (40.3)				

Notes:

^a Indicates Referent

^b All categories do not total 2134 due to missing data

Concerning grade level, results indicated that low levels of involvement in prosocial behaviors were significantly associated with NMPD use among high school students (Table 3). Conversely, low levels of involvement in prosocial behaviors did not significantly increase the odds of use among junior high school students. High levels of involvement in risky behaviors were significantly correlated with increased odds of NMPDs use among junior high and high school students. In fact, junior high and high school students engaging in risky behaviors were approximately 3 times more likely to use NMPDs than their counterparts.

Parent, Teacher, and School Factors and Lifetime Nonmedical Prescription Drug Use

For males, results indicated that low parent involvement did not increase the odds of engaging in NMPD use. Conversely, females with low parent involvement were at greater odds of using NMPDs than females with high parent involvement. Concerning junior high students, no significant differences were found based on parent involvement. Among high school students, participants with low parent

involvement were at significantly greater odds of NMPD use than students with high parent involvement.

Teacher and school factors were found to be significant for males, females, and high school students. Males, females, and high school students with high teacher/school factors were at decreased odds for NMPD use. Interestingly, teacher and school factors were not significantly associated with NMPD use among junior high school students.

Friends' Involvement in Substance use and Lifetime Use

Results indicated that friends' involvement in substance use significantly increased the odds of NMPD use among students (Table 4). Male and female students were significantly more likely to use NMPDs if friends were involved in tobacco, alcohol, or marijuana use. Similarly, junior high and high school students with friends who used tobacco, alcohol, or marijuana had significantly greater odds of lifetime NMPD use than their peers who did not have friends who used these substances (Table 5).

Table 5. Odds Ratios for NMPD Use among Junior High and High School Students based on Friends' Involvement in Tobacco, Alcohol and Marijuana

Item	Junior High					High School						
	Have Never Used Lifetime n (%)	Have Used Lifetime n (%)	OR	(95% CI)	χ^2	p	Have Never Used Lifetime n (%)	Have Used Lifetime n (%)	OR	(95% CI)	χ^2	p
Friends' Involvement in Tobacco												
Low ^a	604 (96.6)	21 (3.4)	8.167	(4.326, 15.417)	55.303	<.001	438 (88.7)	56 (11.3)	4.720	(3.331, 6.687)	83.814	<.001
High	81 (77.9)	23 (22.1)					232 (62.4)	140 (37.6)				
Friends' Involvement in Alcohol												
Low ^a	606 (96.0)	25 (4.0)	7.969	(4.328, 14.674)	57.832	<.001	373 (91.9)	33 (8.1)	6.471	(4.306, 9.725)	94.833	<.001
High	73 (75.3)	24 (24.7)					269 (63.6)	154 (36.4)				
Friends' Involvement in Marijuana												
Low ^a	644 (95.7)	29 (4.3)	5.731	(2.951, 11.129)	32.581	<.001	483 (90.6)	50 (9.4)	6.698	(4.677, 9.593)	124.217	<.001
High	62 (79.5)	16 (20.5)					212 (59.1)	147 (40.9)				

Notes:

^a Indicates Referent

^b All categories do not total 2134 due to missing data

DISCUSSION

Results from this study found 14.8% of Multiracial youth used NMPDs in their lifetime. In 2010, Monitoring the Future data indicated that 21.6% of youth in the general population used prescription drugs without a doctor's supervision [26]. In addition, analyses of the 2005 National Survey on Drug Use and Health data revealed that 12% of all adolescents reported lifetime NMPD use with whites most likely to use [27]. However, limited data is available which specifically examines Multiracial youth involvement in NMPD use. Findings from the current study indicate that a sizeable percentage of Multiracial youth have used NMPDs in their lifetime

In this study, no significant differences were found between males and females regarding NMPD use. This is contrary to recent research within the general population, which suggests males may be more likely to use than females [28]. Sex differences in use among Multiracial youth and other minority populations should continue to be explored. Concerning grade level, high school students in this study were 3.5 times more likely than junior high school students to have ever used NMPDs. The present study also found that current employment was associated with increased odds of NMPD use. Previous studies have found that youth who are employed tend to engage in risky behaviors such as substance use more frequently than youth who are not employed [4]. In particular, full-time employment has been found to be strongly correlated with alcohol use [29]. Full-time employment provides individuals with disposable income which may in turn allow them the means with which they can purchase substances [30-31]. Based on the findings of the current study, this may also hold true with NMPD use.

High involvement in prosocial behaviors was associated with reduced odds of NMPD use for males, females and high school students, but not for junior high school students. Previous research has similarly shown inverse relationships between prosocial behaviors and substance use [32]. Interestingly, among junior high school students, high involvement in prosocial activities was not associated with reduced use of NMPDs. Perhaps risk factors play an important role in the development of NMPD use among junior high school students. More research is clearly needed to further examine the potential protective effect of prosocial behavioral involvement and junior high school student NMPD use.

Participation in risky behaviors significantly increased the odds for NMPD use for males, females, junior high school students, and high school students. Students engaging in high levels of risky behaviors also engaged

in NMPD use. Jessor's Theory of Problem Behavior [33] posits that risky behaviors tend to cluster and involvement in one risky behavior increases the likelihood of other risky behaviors. Identifying students at risk for such behaviors with intervention efforts may be an important step in reducing NMPD use among Multiracial youth.

Friends' involvement in tobacco, alcohol, and marijuana was associated with use of nonmedical prescription drugs. Previous research has shown that friends' use of alcohol and other drugs is related to increases in adolescent substance use [34]. Based on the current study findings, targeting peer groups may be an effective method of preventing NMPD use among Multiracial youth. Peers were found to have a consistent and substantial impact on use regardless of sex or grade level. Positively connecting students to peers through prosocial activities may reduce the use of NMPDs. In addition, prevention programs should incorporate peer resistance and refusal skills as means of building student confidence and efficacy in rejecting peer substance use.

Parent factors including communication about drug use and setting firm rules against use significantly reduced the odds of use for females and for students in high school. Regarding females, previous research has identified parents as a protective factor against youth substance use [35]. Researchers hypothesize that parents may be more likely to communicate with female adolescents about health issues including substance use. In light of this, concerted efforts targeting parent communication specifically with male youth is needed. Conveying the importance of parent-child communication and increasing parent confidence in discussing substance use may increase both the quantity and quality of such discussions. Somewhat surprisingly, parent factors were not found to be significant for junior high school students. Previous research on substance misuse has found parents have a profound impact on junior high and elementary school students' use of alcohol and other drugs [36]. Incorporating parents into prevention programming from early childhood through adolescence may increase opportunities for communication and clearly establish parents as protective factors against use.

To effectively prevent Nonmedical prescription drug use, comprehensive strategies which incorporate individual, family, peer/school, and community approaches, are needed. Promoting prosocial behaviors, creating positive bonds between family, peers, and school, and creating alternative activities in schools and communities are important steps in preventing youth from initiating NMPD use. In addition, identifying youth at risk for engagement in NMPDs may allow early intervention programs to

reduce negative consequences of use. Global approaches that recognize the needs of Multiracial youth are imperative to target this population and reduce NMPD use.

Limitations

In the current study, the following limitations should be noted. Causal relationships cannot be determined as data is cross-sectional in nature. In addition, the self-reported nature of the survey instrument may have elicited some socially desirable responses from students. The study sample was comprised of Multiracial in grades 7 through 12 in the Greater Cincinnati area. Therefore, caution should be exercised in generalizing study findings to Multiracial youth in other grade levels or geographical locations.

CONCLUSIONS

In summary, several correlates to NMPD use among Multiracial youth have been identified in this study. Prosocial behaviors, parent factors, and school factors decreased the odds of NMPD use whereas engagement in risky behaviors and peer factors significantly increased the odds of use. Developing and implementing prevention programs targeting specific risk and protective factors for Multiracial youth are needed to reduce NMPD use. As such, prevention specialists are encouraged to develop evidence-based programs that effectively meet the needs of Multiracial youth.

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