

Research Article

Prevalence of Substance use among Adolescents in the First Episode Mood and Anxiety Program (FEMAP) Versus Adolescents in the General Ontario Population

K. Schraeder^{1*}, E. Vingilis², and E. Osuch³

¹K. Schraeder, Department of Psychology, University of Western Ontario, London, ON, Canada

²E. Vingilis, Department of Family Medicine, University of Western Ontario, London, ON, Canada

³E. Osuch, Department of Psychiatry, London Health Sciences Centre, London, ON, Canada

***Corresponding author**

Kyleigh Schraeder, Westminster Hall, Room 235 East, Western University, London, ON, Canada, N6G 2K3.

Email: kschrloed@uwo.ca

Submitted: 14 September 2015

Accepted: 10 February 2016

Published: 23 February 2016

Copyright

© 2016 Schraeder et al.

OPEN ACCESS**Keywords**

- Adolescent
- Substance use
- Mood and anxiety disorders
- Community mental health services

Abstract

The prevalence of substance use among adolescents at the First Episode Mood and Anxiety Program (FEMAP) in London, Ontario, was compared to a regional sample of adolescents who completed the 2009 Ontario Student Drug Use and Health Survey (OSDUHS). Relative-risk ratios were calculated to assess the comparability between FEMAP and OSDUHS adolescents on parallel substance use items selected from intake measures at FEMAP that matched items on the 2009 OSDUHS. FEMAP adolescents were more likely to use cigarettes, cannabis, hallucinogens, cocaine, and sedatives or sleeping pills. Rates of substance use were relatively similar between FEMAP adolescents and a subpopulation of the normative sample who reported having sought help for mental health problem(s). Adolescents seeking help for mood and/or anxiety problems appear at higher risk for using certain substances than their peers. Early intervention programs should screen adolescents with mood and/or anxiety problems for a wide range of substance use.

ABBREVIATIONS

FEMAP: First Episode Mood and Anxiety Program; SUD: substance use disorders

INTRODUCTION

Mood and anxiety disorders are among the most common mental health disorders, with lifetime prevalence rates of almost 21% and 29%, respectively, and onset during childhood or adolescence [1-3]. Epidemiological studies consistently report high rates of comorbid mood and anxiety disorders amongst those with substance use disorders (SUD) [4,5]. Adolescents suffering from these forms of comorbidity have worsened clinical courses and outcomes, and are at higher risk of suicide and impaired functioning [1].

Among substance-using adolescents (ages 16 to 22 years)

who have received specialized drug treatment services, about half also meet criteria for a current mood or anxiety disorder [6]. Adolescents who have received specialized mental health treatment for primary mood or anxiety disorder may also be at risk for using substances. For example, one study [7] examined the prevalence of SUD among adolescents (ages 15 to 22 years) who received cognitive-behavioural therapy for a primary anxiety disorder during childhood, approximately 7.4 years earlier. Although successful treatment of childhood anxiety was linked to less substance use during adolescence, a substantial proportion of adolescents reported having used substances at long-term follow-up. For example, 57% had smoked cigarettes, 81% had drunk alcohol, 38% had tried marijuana, and 16% had tried hard drugs (e.g., hallucinogens, barbituates, inhalants, cocaine, opiates). A better understanding of the nature of the association between mood and anxiety disorders and SUD has

implications for the development of appropriate screening measures and targeted prevention strategies for adolescents. This is especially relevant for mental health systems, such as in Canada, where SUD assessment and treatment approaches are generally not integrated with psychiatric services.

The current study aimed to report the prevalence of substance use among adolescents who sought help at the First Episode Mood and Anxiety Program (FEMAP) in London, Ontario (Canada). FEMAP was developed in 2006 and is one of the first early intervention programs for mood and anxiety disorders available for Canadian adolescents and young adults between the ages of 16 and 25 presenting with anxiety and/or depressive symptoms. A formative program evaluation conducted recently at the clinic revealed that many of the individuals seen at FEMAP presented with symptoms of both anxiety and depression, and that the majority had self-referred [8]. A subsequent study found 49.6% of FEMAP adolescents to be at either moderate or high risk for a SUD [9]. However, it was unclear whether or not the substance use of a clinical sample was similar to a representative population-based sample of adolescents. Hence, differences and similarities in specific substance use were assessed amongst FEMAP adolescents and a regional sample of adolescents who completed the Ontario Student Drug Use and Health Survey (OSDUHS).

METHOD

FEMAP Intake Measures

The FEMAP sample included all adolescents 16 to 19 years of age, and stable enough to complete the assessment. About two thirds of youth who presented to FEMAP agreed to participate in research. Participants presented to FEMAP having either been referred by either traditional means (a physician) or non-traditional means, including self-referral. Adolescents diagnosed with a developmental delay or major medical problems including significant closed head injury, learning disability, Attention Deficit or having a total lifetime psychiatric medication history of greater than 18 months, were not eligible for the program. Participants underwent an in-person clinical evaluation for assessment of their concerns, symptoms, function, substance use, living circumstances, and severity of illness. They completed self-report questionnaires as described below. Based on the clinical evaluation combined with the assessment instruments, a primary (single) final hypothesized diagnostic category was made prior to the participant being scheduled with a psychiatrist for definitive diagnostic assessment. Youth with longer than 18 months lifetime medication treatment were excluded since that indicated an earlier, significant psychiatric episode and the establishment of prior care within the mental health care system. Youth who presented with mood and/or anxiety symptoms that had their onset only after the significant use of alcohol or illicit drugs, or for whom their primary mental health concerns appeared to stem from substance use, were referred to a community addiction services program. Further, actively suicidal youth in imminent danger were excluded and referred to emergency services until more stable. Approximately 25% of adolescents were referred to other more appropriate service(s) following intake; however, these youth were included in the present analyses given that they were seeking help primarily for emotional concerns.

The current study used data collected as part of the intake procedure at FEMAP. Participants completed: (1) a demographic screening questionnaire (i.e., age, gender, current grade, parental education level), (2) the Youth Risk Behavior Surveillance System Questionnaire [10], which provided information on whether participants had ever had 5 or more drinks of alcohol on the same occasion; and (3) the National Institute on Drug Abuse (NIDA) Modified ASSIST-Prescreen V1.0 (NIDA). The NIDA provided information on lifetime use of substances including: tobacco products, alcohol, cannabis, cocaine, prescription stimulants used without a prescription, methamphetamine, sedatives or sleeping pills, hallucinogens, street opioids, and prescription opioids (Table 2). This study received approval from the Office of Research Ethics for Human Subject Use of the University of Western Ontario.

Ontario Student Drug Use and Health Survey (OSDUHS)

The OSDUHS is a population survey conducted every two years since 1977 by the Centre for Addiction and Mental Health. The OSDUHS questionnaire has two versions (Form A and B) and is offered in both English and French to all students in grades 7-12 enrolled in public and Catholic school systems in Ontario. It is a self-administered, anonymous survey given to adolescents in their classrooms by the Institute for Social Research, York University. The OSDUHS employed a stratified (region and school type) two-stage (school, class), cluster sample design. Although the final sample size in 2009 was 9,112 students in grades 7 to 12, the current study included adolescents aged 16 to 19 enrolled in secondary schools within the Western Ontario stratum (N=930) in order to best match the demographic of the FEMAP sample. Items from FEMAP intake measures were matched to parallel items on the OSDUHS. In addition, adolescents who completed the OSDUHS and who endorsed having seen a doctor, nurse or counselor about a mental health issue within the past year were examined as a separate sub-population of help-seeking adolescents, similar to the FEMAP sample.

RESULTS

A total of 134 adolescents (68% female; M = 17.3 years, SD=1.08) completed the intake measures at FEMAP. The OSDUHS sample (N = 930; M = 16.8 years, SD = 0.79) was significantly younger, $t(1062) = 6.95, p < .001$. The proportion of females was significantly lower in the OSDUHS sample (53% female) compared to the FEMAP sample, $\chi^2(1) = 9.92, p = .002$. School attendance significantly differed between samples, $\chi^2(1) = 9.92, p = .002$; about a third (n = 40) of FEMAP youth reported not being in school, $\chi^2(4) = 488.92, p < .0001$. Table 1 provides a summary of demographic information for each sample including parental education (a proxy for socioeconomic status), which did not significantly vary across samples. About half of the OSDUHS sample (N=461) were asked whether they "had seen a doctor, nurse, or counselor about a mental/emotional health problem" (Form A). About 21% (n=95; 56.8% female; M=16.7 years, SD=0.80) reported having seen a professional about a mental health concern within the past year.

Risk ratios for substance use items were calculated to assess the comparability between FEMAP and OSDUHS adolescents

Table 1: Comparison of Demographic Information between FEMAP and OSDUHS Adolescents.

	FEMAP Adolescents	OSDUHS Adolescents	
Demographic Characteristic	(N = 134)	(N = 930)	p
Participant age (M ± SD)	17.3 years ± 1.08	16.8 years ± .79	<.0001
16 years	28.4%	42.7%	
17 years	32.1%	39.8%	
18 years	20.15%	15.2%	
19 years	19.4%	2.4%	
Participant gender (female)	68%	53%	.002
Current grade*			<.0001
Not in school	35.4%	0%	
Grade 10	6.2%	7.4%	
Grade 11	23.9%	41%	
Grade 12	20.35%	51%	
Grade 13 +	14.16%	0%	
Mother level of education			.074
Graduated university/college	49.2%	58.4%	
Attended university/college	17.2%	10.1%	
Graduated high school	18.7%	18.1%	
Attended high school	8.9%	5.5%	
Did not attend high school	1.5%	2.1%	
Unknown	4.5%	5.8%	
Father level of education			.202
Graduated university/college	47.8%	52.0%	
Attended university/college	13.4%	8.2%	
Graduated high school	15.7%	19.8%	
Attended high school	12.7%	9.1%	
Did not attend high school	0.7%	1.6%	
Unknown	9.7%	9.2%	

*n = 113 for FEMAP sample due to missing data.

on parallel substance use items, adjusting for age, gender, and current grade level (Table 2). A “modified Poisson” approach using a robust variance estimator estimated the crude and adjusted relative risks and confidence intervals [11]. Risk values indicating a substantially heightened risk of lifetime substance use (i.e., RR>1) for FEMAP adolescents were found for cigarettes, cannabis, hallucinogens, cocaine, and sedatives. Overall, in their lifetime, FEMAP adolescents were 48% more likely to use cigarettes, 30% more likely to use cannabis, 60% more likely to use hallucinogens, over twice as likely to use cocaine, and about three times as likely to use sedatives and/or sleeping pills than a comparable adolescent population sample assessed by the OSDUHS.

DISCUSSION

It is noteworthy that FEMAP adolescents were at higher risk for using cigarettes, cannabis, hallucinogens, cocaine, and sedatives than a comparative population sample of high school adolescents. Higher rates of substance use were not uniformly found across all types of substances assessed in the FEMAP sample. This finding might suggest a higher risk, or selective use, of certain substances among adolescents with mood and/or anxiety problems.

Although about 25% of FEMAP adolescents were referred to more specialized treatments (e.g.,SUD) at intake, the fact that these youth were referred (or referred themselves) to the clinic for emotional problems highlights the need to better integrate treatments of SUD with mood/anxiety disorders.

Early intervention programs for mood/anxiety problems could therefore benefit from addictions treatment, even if the delivery model involves referring all adolescents with a *primary* SUD elsewhere. Whether substance use behaviours represent an earlier point on the continuum to SUD, serve as a marker for other psychological or social problems, or represent areas associated with medical or psychiatric morbidity in their own right, their identification warrants additional evaluation and intervention. For these reasons, it is important to establish the presence and patterns of psychiatric comorbidity among adolescent clinic outpatients with even sub-diagnostic use of substances. Clinicians should screen all adolescents with a mood and/or anxiety concern for a wide range of substance use. Identification of adolescents with substance use may allow for intervention before either the substance use or the psychiatric symptoms progress to severe levels.

CONSIDERATIONS FOR FUTURE RESEARCH

Future research could extend the current findings in a number of ways. First, the association between mood and/or anxiety disorders and substance use has been found to differ according to the particular type of mood or anxiety disorder being examined and the number of comorbidities [12]. Diagnostic information about the type of mood and/or anxiety disorder was not collected for the current study. Future research should seek to clarify these associations among adolescent populations . Second, the cross-sectional nature of the current study could not explain directionality between substance use and mood/

Table 2: Rates of Substance Use and Crude and Adjusted Relative Risk Estimates of FEMAP Adolescents Compared with 2009 OSDUHS Adolescents.

Lifetime Substance Use	Prevalence (%)		Relative Risk of FEMAP Adolescents in Relation to OSDUHS Adolescents	
	FEMAP Adolescents (N=134)	OSDUHS Adolescents (N=930)	Crude RR (CI)	Adjusted RR (CI)
Ever use cigarettes	57.48%	39.76%	1.44 (1.22-1.71)*	1.48 (1.22-1.78)**
Ever use alcohol	86.15%	88.59%	.972 (.90-1.04)	.958 (.89-1.03)
Ever use cannabis	66.93%	52.53%	1.27 (1.11-1.46)*	1.30 (1.11-1.52)*
Ever use street opioids(e.g., heroin, opium)	3.20%	1.19%	2.70 (.87-8.34)	1.54 (.15-15.42)
Ever use methamphetamine (e.g., speed, crystal meth, ice)	5.60%	2.80%	2.00 (.88-4.51)	1.59 (.61-4.16)
Ever use hallucinogens (e.g., LSD, acid, mushrooms, PCP, ecstasy)	22.22%	13.81%	1.61 (1.12-2.31)*	1.59 (1.06-2.38)*
Ever use prescriptionopioids(e.g., Oxycontin, Vicodin, methadone)	8.73%	3.99%	2.19 (1.14-4.17)*	2.10 (.98-4.48)
Ever use cocaine(e.g., coke, powder, crack)	11.90%	5.49%	2.17 (1.26-3.74)*	2.03 (1.09-3.80)*
Ever use sedatives or sleeping pills (Valium, Ativan, Xanax, Rohypnol, GHB) ^a	17.46%	4.29%	4.07 (2.30-7.21)**	3.24 (1.73-6.08)**
Ever use prescription stimulants without a prescription (ADHD drugs - Ritalin, Concerta, Dexedrine, Adderall, stay-awake pills, diet pills)	13.60%	10.78%	1.26 (.78-2.04)	1.05 (.60-1.86)
Had 5 or more drinks of alcohol on the same occasion (last 4 weeks)	36.51%	46.85%	0.813 (.63-1.03)	0.77 (.58-1.02)

Note. RR = relative risk; CI = 95% confidence interval.

^aOnly 466 participants in the OSDUHS sample were asked about use of sedatives, specifically Rohypnol and GHB.

* p < .05. ** p < .0001.

anxiety problems. Prospective longitudinal studies have great potential to examine whether treatment for mood and/or anxiety disorders could be linked with reduction in adolescent substance use, and vice versa [13]. Such results could change the standard clinical approach for adolescents with SUD or mood and/or anxiety problems in Canada, and in other regions where mental health and addiction services are not well integrated.

Finally, a number of important differences (i.e., age, sex, grade level) were identified between the FEMAP sample and the OSDUHS population and were therefore controlled for in our analyses. Most notably, over a third of the FEMAP sample was not currently attending school. Adolescents with mental health and substance use concerns have been demonstrated to experience educational difficulties and higher rates of school dropout. Since the OSDUHS sample only includes adolescents attending school, our results might underestimate potentially more severe substance use among adolescents in Western Ontario. Further research should examine whether the substance use trends observed in the current study are consistent across diverse geographic locations.

REFERENCES

1. Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62(1), 593-602.
2. Tjepkema M1 . Alcohol and illicit drug dependence. See comment in PubMed Commons below Health Rep. 2004; 15 Suppl: 9-19.
3. Waddell C1, Offord DR, Shepherd CA, Hua JM, McEwan K . Child psychiatric epidemiology and Canadian public policy-making: the state of the science and the art of the possible. See comment in PubMed Commons below Can J Psychiatry. 2002; 47: 825-832.
4. Kandel, D. B., Johnson, J. G., Bird, H. R., Canino, G., Goodman, S. H., Lahey, B. B., ... & Schwab-Stone, M. (1997). Psychiatric disorders associated with substance use among children and adolescents: findings from the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) Study. *Journal of Abnormal Child Psychology*, 25(2), 121-132.
5. Rohde P1, Lewinsohn PM, Seeley JR . Psychiatric comorbidity with problematic alcohol use in high school students. See comment in PubMed Commons below J Am Acad Child Adolesc Psychiatry. 1996; 35: 101-109.
6. Lubman DI1, Allen NB, Rogers N, Cementon E, Bonomo Y . The impact of co-occurring mood and anxiety disorders among substance-abusing youth. See comment in PubMed Commons below J Affect Disord. 2007; 103: 105-112.
7. Kandel, D. B., Johnson, J. G., Bird, H. R., Canino, G., Goodman, S. H., Lahey,

- B. B., ... & Schwab-Stone, M. (1997). Psychiatric disorders associated with substance use among children and adolescents: findings from the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) Study. *Journal of Abnormal Child Psychology*, 25(2), 121-132.
8. Ross E1, Vingilis E, Osuch E . An engagement and access model for healthcare delivery to adolescents with mood and anxiety concerns. See comment in PubMed Commons below *Early Interv Psychiatry*. 2012; 6: 97-105.
9. Osuch, E., Vingilis, E., Ross, E., Forster, C., & Summerhurst, C. (2013). Cannabis use, addiction risk and functional impairment in youth seeking treatment for primary mood or anxiety concerns. *International Journal of Adolescent Mental Health*, 25(3), 309-314.
10. Kann L1 . The Youth Risk Behavior Surveillance System: measuring health-risk behaviors. See comment in PubMed Commons below *Am J Health Behav*. 2001; 25: 272-277.
11. Cummings, P. (2009). Methods for estimating adjusted risk ratios. *The Stata Journal*, 9(2), 175-196.
12. Wu, P., Goodwin, R. D., Fuller, C., Liu, X., Comer, J. S., Cohen, P., & Hoven, C. W. (2010). The relationship between anxiety disorders and substance use among adolescents in the community: specificity and gender differences. *Journal of Youth and Adolescence*, 39(2), 177-188.
13. National Institute on Drug Abuse. NIDA-Modified ASSIST-Prescreen V1.0. National Institute of Health. Available at: Accessed September, 2012.

Cite this article

Schraeder K, Vingilis E, Osuch E (2016) Prevalence of Substance use among Adolescents in the First Episode Mood and Anxiety Program (FEMAP) Versus Adolescents in the General Ontario Population. *J Subst Abuse Alcohol* 4(2): 1046.