Adolescent Substance Abuse and Mental Health: Problem Co-Occurrence and Access to Services

Erin L. Winstanley[a], **Donald M. Steinwachs**[b], **Maxine L. Stitzer**[c], and **Marc J. Fishman**[c,d]

[a]University of Cincinnati College of Medicine, Cincinnati, OH, USA

[b]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

[c]Johns Hopkins School of Medicine, Baltimore, MD, USA

[d]Mountain Manor Treatment Center, Baltimore, MD, USA

Abstract

The purpose of this study is to identify factors associated with adolescent alcohol or drug (AOD) abuse/dependence, mental health and co-occurring problems; as well as factors associated with access to treatment. This is a secondary analysis of data from the National Survey on Drug Use and Health (NSDUH) 2000. The 12-month prevalence rate of adolescents with only mental health problems was 10.8%, 5.1% had only AOD abuse/dependence only, and 2.7% had co-occurring problems. Approximately 15% of youth reported receiving behavioral health treatment in the past 12 months. Several factors associated with having behavioral health problems and receiving treatment are presented.

Keywords

adolescent; substance abuse; mental health; epidemiology

Introduction

Approximately 22% of adolescents in the United States are estimated to have a mental health (MH) disorder (Merikangas et al. 2010). Based on regional studies, between 13-32% of adolescents are estimated to have a MH disorder (Stiffman et al. 1997; Leaf et al. 1996) and 9-13% of adolescents have a serious emotional disturbance (Friedman et al. 1996). The National Survey on Drug Use and Health (NSDUH) 2000 utilizes a nationally representative sample and found that 4.6% of adolescents met the criteria for substance use disorders (SUDs) (Epstein 2002). Rates of co-occurring MH disorders among adolescents with SUDs range from 50% to 71% (Grilo et al. 1996; Roehrich & Gold 1986; Armstrong & Costello 2002). Research on the co-occurrence of MH and SUDs generally has been based on adolescents seeking treatment for either condition; therefore, the generalizibility of the results is limited to a treatment-seeking population. The majority of existing studies assess risk and protective factors for MH and SUDs separately and rarely consider the overlap or differences across behavioral health risks.

Accurate estimates of the prevalence of adolescent behavioral disorders based on community samples is important to understanding the potential demand for services and devising strategies for prevention, treatment, and outreach. Existing research suggests that

Address correspondence to Erin L. Winstanley, PhD, University of Cincinnati College of Medicine, 3210 Jefferson Avenue, Suite 6, Cincinnati, OH 45220, USA. erinwinstanley@me.com.

the number of adolescents who need behavioral health treatment greatly exceeds the number who receive treatment. Approximately 11-40% of adolescents in need of behavioral health treatment receive services (Merikangas et al. 2011; Epstein 2002; Costello et al. 1996; Burns et al. 1995) and even fewer receive services in specialty treatment settings.

The purpose of this study is to determine the national prevalence of co-occurring behavioral health problems in adolescents, identify factors associated with adolescent behavioral health problems and access to treatment. Without better estimates of the need for treatment, the extent to which the current adolescent behavioral health systems have the capacity to meet this need cannot be evaluated nor can the need for programs to address co-occurring conditions in the adolescent population be fully appreciated.

Methods

Sampling and Data Collection

This is a secondary data analysis of the 2000 NSDUH. The NSDUH is an annual federally funded survey that uses a multi-stage sampling design to achieve a probability sample of the non-institutionalized civilian population and is estimated to represent 98% of the United States population. The weighted screening response rate in 2000 was 93% and the weighted interview response rate was 74% (U.S. Department of Health and Human Services 2002). The interviews were conducted in the respondents' homes using computer-assisted interviewing (CAPI). The survey took approximately one hour to complete and the respondents were not compensated for their participation. Additional details on the methods have been described elsewhere (U.S. Department of Health and Human Services 2002). The Committee on Human Research at Johns Hopkins Bloomberg School of Public Health approved this research.

Main Outcome measures

The need for MH treatment was assessed utilizing a modified version of the DISC Predictive Scales (DPS) Version 4 (Lucas et al. 2001; Lucas 1999), which is based on the Diagnostic Interview Schedule for Children (DISC). The original DPS scoring algorithm was modified such that a positive on any subscale required a score that is two or more standard deviations above the mean subscale score. The reliability of the modified DPS subscales was assessed using the Kuder-Richardon 20 and values ranged from .62 to .81, indicating acceptable internal consistency. The modified DPS also demonstrated acceptable convergent validity. The modified DPS scale assessed 14 diagnostic areas (see Table 1) and the modified DPS algorithm was supplemented by the development of a proxy measure for impairment.

The presentation of MH symptoms alone are insufficient to meet the criteria for a DSM-IV diagnosis, which requires that the symptoms cause distress or impairment, frequently referred to as clinical significance criteria (CSC). Three items were used to generate a proxy measure for CSC including poor school performance of average grades of D or less, reported fair or poor health, or reported receiving MH services within the past 12 months. School performance was used as a proxy measure of CSC because it has been firmly established as being associated with MH (Costello et al. 1996). Poor physical health has been associated with behavioral health problems (Browning & Cagney 2003), particularly among young adolescents who experience higher rates of somatization compared to adults (Achenbach & Edelbrock 1978). MH treatment utilization was used as a post-hoc proxy for CSC in the re-estimation of the data from the ECA and NCS (Narrow, Rae, Robins, & Regier 2002). The abbreviation of 'DPS' will be used to indicate any modified DPS subscale score and 'DPS +CSC' will indicate a subscale score plus the proxy measure for impairment.

The NSDUH utilizes a series of questions regarding symptoms and impairment that are consistent with the criteria specified in the DSM-IV (abuse or dependence), and researchers have created an algorithm that identifies probable SUD diagnostic categories (U.S. Department of Health and Human Services 2002), which includes the presence of impairment. Adolescent self-reports of alcohol or drug use demonstrate reliability, particular when confidentiality is assured by the computer-assisted interview method (Ensminger, Anthony & McCord 1997; Gfroerer, Eyerman & Chromy 2002; Gfroerer 1985). Tobacco use and dependence was excluded from this analysis.

The co-occurrence of SUDs and MH problems was assessed by combining the DPS +CSC and SUDs. The categories for the dependent variable behavioral health problems were no MH or SUDs, only MH problems, only SUDs, and both MH and SUDs.

The items measuring MH treatment specified that the treatment was "for emotional or behavioral problems that were not caused by alcohol or drugs." The items measuring SUD treatment services reflect slightly different modalities and the stem question was "have you received treatment or counseling for your use of alcohol or any drug, not counting cigarettes?" The variables for MH and SUD treatment were combined to create the dependent variable used in the multivariate analysis with the following categories: no behavioral treatment, only MH treatment, only SUD treatment, and both MH and SUD treatment.

Two dependent variables, behavioral health problems and access to behavioral health treatment, are used in the analyses. Both of these dependent variables are based on survey questions framed within the past 12 months.

Covariates

The individual-level characteristics include age, gender, and race/ethnicity. The family-level characteristics included family income, poverty (determined by a combination of family income and the number of persons in the household per DHHS 2000 Poverty Guidelines), health insurance (none, public or private), and household composition (neither mother nor father in the household, father only, mother only, and both mother and father in the household).

Statistical Analysis

Stata SE Version 8 was used to conduct all of the analyses. Descriptive statistics are presented followed by the multivariate models for both outcome variables: behavioral health problems (DPS+CSC) and access to behavioral health treatment. For both outcome variables, the multivariate analyses were assessed via multinomial logistic regression equations and analyses were adjusted for the complex sampling design [robust cluster (verep)]. The multivariate model for access to behavioral health treatment was limited to only those in the sample with behavioral health problems.

Results

The sample was well balanced in terms of gender (51%) and age. Sixty-seven percent of the sample was white, 13% was black, and 14% was Hispanic. Most adolescents reported either A or B grades (78%). Approximately 20% of respondents were living in poverty and the majority (71%) of adolescents were living with both their parents. Most adolescents (77%) had private health insurance and 11% reported no health insurance.

Behavioral Health Problems

During the past 12 months, 81.4% (n=14,821) of study participants had no behavioral health problems, 10.8% (n=1,957) had only MH problems, 5.1% (n=934) had only SUDs, and 2.7% (n=496) had co-occurring problems. Many adolescents scored positive on multiple DPS subscales and 52% (n=1,268) were positive on three or more DPS+CSC subscales. Overlapping categories of MH problems included, 10.5% (n=1,970) with anxiety problems, 4.9% (n=924) with mood problems, and 7.3% (n=1,363) with disruptive behavior problems.

The co-occurrence of MH and SUDs was less frequent than the co-occurrence of multiple MH problems. Thirty-five percent of those with SUDs scored positive on the DPS+CSC (compared to 13.5% of the overall sample) and 22% of those who scored positive on the DPS+CSC had SUDs as well (compared to 7.8% of the overall sample). Substance use was more prevalent among those scoring positive on the DPS than in the overall sample: 42% of adolescents in the overall sample reported lifetime substance use, compared to 47% of those positive on the DPS and 52% of those positive on DPS +CSC.

Among those with behavioral health problems, girls had a higher odds of having a MH problem only or co-occurring problem and a lowers odds of having a SUD only compared to boys (see Table 2). Older adolescents had a higher odds of any combination of co-occurring problems compared to younger adolescents. For example, adolescents aged 16 to 17 years had 5.01 (p<.01) times the odds of having a co-occurring problem compared to adolescents aged 12 to 13 years. Non-white adolescents had a lower odds of SUDs only and co-occurring problems compared to white adolescents, however there was no difference in the odds for white, black and Hispanic adolescents for having only MH problems. Living in poverty was only associated with a lower odds of only SUDs and household composition had a mixed pattern of results. Adolescents living with only their father had a higher odds of a MH only or SUDs only compared to adolescents living with both parents and adolescents living with neither parent had a lower odds of either a SUDs only or co-occurring problems.

Access to Services

Approximately 15% of adolescents reported receiving behavioral health treatment in the past 12 months. Eighty-five percent (n=16,522) received no behavioral health treatment, 13% (n=2,534) reported MH treatment, 1% (n=204) reported SUD treatment and less than 1% (.7%, n=130) reported receiving both MH and SUD treatment.

Among those who reported receiving MH treatment, the three most frequently utilized modalities of treatment were a therapist (51%, n=1,365), school counselor (42%, n=1,123) and a family doctor (14%, n=375). Twenty-one percent (n=1,895) of those who scored positive on the DPS reported receiving MH treatment. Overall, 2% (n=334) of adolescents accessed SUD treatment, irrespective of diagnostic category. Among those with SUDs in the past 12 months (n=1,430), 17% (n=239) reported ever receiving SUD treatment and 14% (n=199) reported receiving SUD treatment in the past 12 months. Sixty-two percent (n=199) of those who received SUD treatment in the past 12 months also met the criteria for a SUD.

Girls had a higher odds of receiving MH only treatment and a lower odds of receiving SUD only treatment (Table 3). There was a very consistent pattern of older adolescents having a higher odds of receiving any kind of treatment. Black adolescents, compared to white adolescents, had consistently lower odds of receiving any type of treatment and adolescents with private health insurance had the same odds of receiving treatment compared to adolescents with no health insurance. Hispanic adolescents had a lower odds of receiving MH only treatment and adolescents living with only their father had a higher odds of receiving any type of treatment. Access to behavioral health services was not associated with living in poverty.

Discussion

The national prevalence of behavioral health problems in 2000 was 18.6%; 13.5% of adolescents had a MH problem and 7.7% had SUDs in the past year. The overall prevalence of co-occurring problems was 2.7%. The majority (73%) of adolescents with MH problems scored positive on more than one DPS+CSC subscale and 35% of those with SUDs also had a MH problem. The prevalence of adolescent behavioral health problems appears to be consistent with previous studies (Merikangas et al. 2010). The overall prevalence of co-occurring MH and SUDs is relatively low; however, adolescents with MH problems are likely to experience multiple MH problems and research has demonstrated similar findings for adults (Kesseler et al. 1996).

Access to Behavioral Health Treatment

Fifteen percent of adolescents reported receiving any behavioral health services during a 12-month period and this rate is largely driven by adolescents receiving MH services from either a private therapist, a school counselor or a family doctor. A recent study of behavioral health service utilization among adolescents found that the lifetime rate of utilization was 36.2% (Merikangas et al. 2011), whereas this study was focused on past-year utilization rates. Adolescents with MH problems accessed treatment at a slightly higher rate compared to adolescents with SUDs (21% versus 14% respectively). Adolescent rates of MH treatment utilization are lower than the utilization rate among adults (Kessler, Koretz, Merikangas & Wang 2002; Regier et al. 1993; U.S. Department of Health and Human Services 1999). MH problems are more prevalent in the adolescent population than SUDs, although adolescents with SUDs may have a greater unmet need for treatment. Both adolescents and adults need expanded access to treatment that addresses co-occurring disorders, but these treatment improvements are particularly important to adolescents because of the opportunity to intervene early and ensure healthy trajectories.

Identifying the disjunctions between the need for and receipt of treatment may help illuminate why there is a significant unmet need for behavioral health services and inform strategies to address this unmet need. For example, black and white adolescents appear to have the same risk for behavioral health disorders, however black adolescents are less likely to receive treatment. Only public health insurance was positively associated with receipt of treatment, whereas adolescents with either no health insurance or private health insurance had the same odds of receiving treatment. In this study, girls were more likely to have a MH problem or co-occurring problems and boys were more likely to have SUDs. Consistent with this finding, girls were more likely to receive MH treatment and boys were more likely to receive SUD treatment. From a slightly different perspective, although boys and adolescents who live with both parents may be less likely to experience MH problems, when they do experience problems they are less likely to receive treatment. Taken together, this data may suggest that stereotypes of behavioral health problems may influence access to treatment. Addressing the unmet need for adolescent behavioral health treatment may in part reflect the need for public education regarding the ubiquitous nature of adolescent behavioral health problems.

Screening and brief interventions have been found to be effective in reducing alcohol consumption and potentially reducing the risk of alcohol abuse/dependence (Babor & Kadden 2005). Although screening and brief interventions for adults initially are attractive because they are cost-effective (Wutzke, Shiell, Gomel & Conigrave 2001), they also may be effective tools to promote adolescent behavioral health by providing the opportunity to intervene early and more broadly in general health settings without the stigma associated with specialty MH or SUD treatment. For example, access to SUD treatment increased when Federal regulations were changed to allow general practitioners to distribute buprenorphine

in their offices rather than requiring specialists to dispense the pharmacotherapy in dedicated treatment facilities (Sullivan et al. 2005). Similarly, school counselors and family doctors may present ideal locations to screen and deliver brief interventions for behavioral health problems.

Clinical Implications

This research offers multiple implications for behavioral health policy. Given that approximately one in three adolescents with SUDs also have a MH problem, a brief MH screen should be incorporated into standard intake assessments at adolescent SUD treatment facilities. At an organizational level, this research may suggest that adolescent SUD treatment facilities should adopt a standard policy to 1) refer patients to a local MH facility or 2) integrate treatment for co-occurring MH disorders into their existing treatment services. Adolescents with MH problems report higher levels of substance use compared to the general adolescent population, and their substance use puts them at an elevated risk for SUDs (Swadi 1999). Therefore, adolescents receiving MH treatment may benefit from both primary and secondary substance use prevention interventions. Finally, the two most frequently endorsed MH treatment modalities were private therapist and school counselors and perhaps the provision of SUD treatment could be expanded by incorporation into school health and/or mental health/counseling services.

Strengths and Limitations

The strength of this research is that it utilized a community-based nationally representative sample to generate data on the demand for and access to behavioral health services. Nevertheless, there are several limitations worth noting. This research used a cross-sectional dataset, which limits conclusions to associations rather than causality. The recognized standard for assessing problems among adolescents is to rely on information from multiple informants (Lahey et al. 1996), using a diagnostic interview. However, it is extremely expensive to obtain this type of data in large-scale epidemiological studies. The NSDUH approaches this ideal by using a symptom-based interview, however the problems identified are not equivalent to a clinical diagnosis. The reliability of adolescent self-reports of treatment utilization is unknown, however it is possible that higher intensity of services are more likely to be preferentially recalled and reported. Additionally, this study focused only on access to treatment and was not able to adequately measure the gradations inherent in service utilization.

Conclusions

This research suggests that the prevalence of adolescent behavioral health problems in the United States exceeds that of other chronic adolescent health conditions such as asthma (Akinbami & Schoendorf 2002), yet there continues to be a significant unmet need for treatment. The commonalities in risk factors for adolescent MH and SUDs suggest that primary and secondary prevention strategies could be combined. Further research is needed to explore whether public education campaigns on the ubiquitous nature of adolescent behavioral health problems can decrease disparities in access to treatment, as well as whether the expansion of screening and brief interventions in school and family-practitioner settings can improve overall adolescent access to treatment.

Acknowledgments

References

Achenbach TM, Edelbrock CS. The classification of child psychopathology: a review and analysis of empirical efforts. Psychological Bulletin. 1978; 85:1275–1301. [PubMed: 366649]

Akinbami LJ, Schoendorf KC. Trends in childhood asthma: Prevalence, health care utilization and mortality. Pediatrics. 2002; 110:315–322. [PubMed: 12165584]

Armstrong TD, Costello EJ. Community studies on adolescent substance use, abuse, or dependence and psychiatric comorbidity. Journal of Consulting & Clinical Psychology. 2002; 70:1224–1239. [PubMed: 12472299]

Babor TF, Kadden RM. Screening and interventions for alcohol and drug problems in medical settings: what works? Journal of Trauma. 2005; 59:S80–S87. [PubMed: 16355071]

Browning CR, Cagney KA. Moving beyond poverty: Neighborhood structure, social processes, and health. Journal of Health & Social Behaviors. 2003; 44:552–571.

Burns BJ, Costello EJ, Angold A, Tweed D, Stangl D, Farmer EM, Erkanli A. Children's mental health service use across service sectors. Health Affairs (Millwood). 1995; 14:147–159.

Costello EJ, Angold A, Burns BJ, Erkanli A, Stangl DK, Tweed DL. The Great Smoky Mountains Study of youth. Functional impairment and serious emotional disturbance. Archives of General Psychiatry. 1996; 53:1137–1143. [PubMed: 8956680]

Ensminger ME, Anthony JC, McCord J. The inner city and drug use: Initial findings from an epidemiological study. Drug and Alcohol Dependence. 1997; 48:175–184. [PubMed: 9449016]

Epstein, JF. Substance Dependence, Abuse and Treatment: Findings from the 2000 National Household Survey on Drug Abuse. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2002. DHHS Publication No SMA 02-3642

Friedman, R.; Katz-Leavy, J.; Manderscheid, R.; Sondheimer, D.; Manderscheid, RW.; Sonnenschein, MA. Prevalence of serious emotional disturbance in children and adolescents. In: Anonymous, editor. Mental Health, United States, 1996. Washington, DC: US Government Printing Office; 1996.

Grilo CM, Becker DF, Fehon DC, Edell WS, McGlashan TH. Conduct disorder, substance use disorders, and coexisting conduct and substance use disorders in adolescent inpatients. American Journal of Psychiatry. 1996; 153:914–920. [PubMed: 8659614]

Gfroerer J. Influence of privacy on self-reported drug use by youths. NIDA Research Monograph. 1985; 57:22–30. [PubMed: 3929113]

Gfroerer, J.; Eyerman, J.; Chromy, J. Substance Abuse and Mental Health Services Administration. Redesigning an ongoing national household survey: Methodological issues. Office of Applied Studies; Rockville, MD: 2002.

Kessler, RC.; Koretz, D.; Merikangas, KR.; Wang, PS. The epidemiology of adult mental disorders. In: Levin, BL.; Petrila, J.; Hennessey, KD., editors. Mental Health Services: A Public Health Perspective. Oxford: Oxford University Press; 2002.

Kessler RC, Nelson CB, McGonagle KA, Edlund MJ, Frank RG, Leaf PJ. The epidemiology of co-occurring addictive and mental disorders: implications for prevention and service utilization. American Journal of Orthopsychiatry. 1996; 66:17–31. [PubMed: 8720638]

Lahey BB, Flagg EW, Bird HR, Schwab-Stone ME, Canino G, Dulcan MK, et al. The NIMH Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) Study: background and methodology. Journal of the American Academy of Child & Adoelscent Psychiatry. 1996; 635:855–864.

Leaf PJ, Alegria M, Cohen P, Goodman SH, Horwitz SM, Hoven CW, et al. Mental health service use in the community and schools: Results from the four-community MECA Study. Methods for the Epidemiology of Child and Adolescent Mental Disorders Study. Journal of the American Academy of Child & Adolescent Psychiatry. 1996; 35:889–897. [PubMed: 8768348]

Lucas CP. DPS Version 4 Youth Informant. 1999

Lucas CP, Zhang H, Fisher PW, Shaffer D, Regier DA, Narrow WE, et al. The DISC Predictive Scales (DPS): efficiently screening for diagnoses. Journal of the American Academy of Child & Adolescent Psychiatry. 2001; 40:443–449. [PubMed: 11314570]

Merikangas KR, He J, Burstein M, Swanson SA, Avenevoli S, Cui L, et al. Lifetime prevalence of mental disorders in U.S. adolescents: Results from the national comorbidity survey replication - adolescent supplement (NCS-A). Journal of the American Academy of Child & Adolescent Psychiatry. 2010; 49(10):980–989. [PubMed: 20855043]

Merikangas KR, He J, Burstein M, Swendsen J, Avenevoli S, Case B, et al. Services utilization for lifetime mental disorders in U.S. adolescents: Results from the national comorbidity survey replication - adolescent supplement (NCS-A). Journal of the American Academy of Child & Adolescent Psychiatry. 2011; 50(1):32–45. [PubMed: 21156268]

Narrow WE, Rae DS, Robins LN, Regier DA. Revised prevalence estimates of mental disorders in the United States: using a clinical significance criterion to reconcile 2 surveys' estimates. Archives of General Psychiatry. 2002; 59:115–123. [PubMed: 11825131]

Regier DA, Narrow WE, Rae DS, Manderscheid RW, Locke BZ, Goodwin FK. The de facto US mental and addictive disorders service system. Epidemiologic catchment area prospective 1-year prevalence rates of disorders and services. Archives of General Psychiatry. 1993; 50:85–94. [PubMed: 8427558]

Roehrich H, Gold MS. Diagnosis of substance abuse in an adolescent psychiatric population. International Journal of Psychiatry Medicine. 1986; 16:137–143.

Stiffman AR, Chen YW, Elze D, Dore P, Cheng LC. Adolescents' and providers' perspectives on the need for and use of mental health services. Journal of Adolescent Health. 1997; 21:335–342. [PubMed: 9358297]

Sullivan LE, Chawarski M, O'Connor PG, Schottenfeld RS, Fiellin DA. The practice of office-based buprenorphine treatment of opioid dependence: is it associated with new patients entering into treatment? Drug & Alcohol Dependence. 2005; 79:113–116. [PubMed: 15943950]

Swadi H. Individual risk factors for adolescent substance use. Drug & Alcohol Dependence. 1999; 55:209–224. [PubMed: 10428362]

Anonymous, editor. U.S. Department of Health and Human Services. Mental health: a report of the surgeon general. US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health; 1999.

U.S. Department of Health and Human Services SAMHSA, Office of Applied Studies. National Household Survey on Drug Abuse, 2000. Research Triangle Park, NC: Research Triangle Institute; 2002. Computer File

Wutzke SE, Shiell A, Gomel MK, Conigrave KM. Cost effectiveness of brief interventions for reducing alcohol consumption. Social Science & Medicine. 2001; 52:863–870. [PubMed: 11234861]

Table 1

DPS Subscale Frequencies (N=19,430)

	DPS N (%)	DPS +CSC N (%)
Disruptive Disorders		1,363 (7.3)
Conduct Disorder	2,210 (11.5)	855 (4.5)
Oppositional Defiant	1,762 (9.3)	688 (3.6)
ADHD	1,158 (6.1)	524 (2.8)
Mood Disorders		924 (4.9)
Mania	2,104 (11.0)	740 (3.9)
Major Depressive Disorder	875 (4.6)	445 (2.3)
Anxiety Disorders		1,970 (10.5)
Specific Phobia	1,282 (6.7)	400 (2.1)
Generalized Anxiety	2,939 (15.3)	1,010 (5.3)
Panic Attacks	2,983 (15.5)	1,017 (5.3)
Agoraphobia	1,777 (9.2)	543 (2.8)
Separation Anxiety Disorder	1,343 (7.0)	475 (2.5)
Social Phobia	3,202 (16.6)	894 (4.6)
Other		
Elimination Disorder	132 (.7)	48 (.3)
Eating Disorder	1,133 (5.9)	369 (1.9)
Obsessive Compulsive	2,705 (14.1)	864 (4.5)

Table 2

Multinomial Logistic Regression for Behavioral Health Problems (N=19,430)

	Behavioral Health Problems					
	MH Only*		SA Only*		MH & SA*	
	AOR (95% CI)	p value	AOR (95% CI)	p value	AOR (95% CI)	p value
Sex						
Male (ref.)						
Female	1.33 (1.26,1.41)	<.01	.89 (.88,.90)	<.01	1.37 (1.27,1.47)	<.01
Age						
12-13 Years (ref.)						
14-15 Years	1.10 (1.09,1.12)	<.01	4.45 (3.14,6.29)	<.01	3.46 (3.05,3.93)	<.01
16-17 Years	.98 (.92,1.06)	.65	10.34 (7.36,14.52)	<.01	5.01 (3.59,7.00)	<.01
Race/Ethnicity						
White (ref.)						
Black	1.04 (.69,1.56)	.85	.48 (.44,.52)	<.01	.61 (.46,.81)	<.01
Hispanic	.99 (.93,1.05)	.63	.91 (.80,1.05)	.21	.69 (.64,.74)	<.01
Other	.83 (.82,.84)	<.01	.95 (.94,.96)	<.01	.77 (.75,.80)	<.01
Poverty						
No (ref.)						
Yes	1.02 (.88,1.18)	.82	.87 (.77,.99)	.04	1.02 (.89,1.17)	.79
Health Insurance						
None (ref.)						
Public	1.31 (1.17,1.47)	<.01	.88 (.85,.90)	<.01	1.00 (.67,1.50)	.99
Private	.87 (.83,.92)	<.01	.97 (.91,1.03)	.26	.76 (.58,.99)	.04
Household Composition						
Both Parents (ref.)						
Mom Only	1.00 (.82,1.23)	.98	1.35 (.96,1.90)	.08	.89 (.61,1.28)	.52
Dad Only	1.39 (1.11,1.72)	<.01	1.29 (1.24,1.35)	<.01	1.08 (.81,1.44)	.60
Neither Parent	.70 (.47,1.02)	.06	.78 (.65,.95)	.01	.41 (.32,.52)	<.01

Notes: SA=substance abuse; MH=mental health AOR=Adjusted Odds Ratios; CI=Confidence Interval; Ref.=reference group.

*
The categories No SA or MH (reference group), MH, SA and MH & SA dependent are mutually exclusive categories based on past year self-report data.

Table 3

Multinomial Logistic Regression for Behavioral Health Treatment among Adolescents with Behavioral Health Problems (N=3,384)

	Behavioral Health Treatment					
	MH TX Only		SA TX Only		MH & SA TX	
	AOR (95% CI)	p value	AOR (95% CI)	p value	AOR (95% CI)	p value
Sex						
Male (ref.)						
Female	1.86 (1.74,1.99)	<.01	.74 (.69,.80)	<.01	1.14 (.84,1.55)	.39
Age						
12-13 Years (ref.)						
14-15 Years	.47 (.46,.49)	<.01	1.72 (1.02,2.89)	.04	1.52 (1.11,2.09)	.01
16-17 Years	.29 (.26,.32)	<.01	2.94 (1.27,6.85)	.01	1.19 (.97,1.45)	.09
Race/Ethnicity						
White (ref.)						
Black	.76 (.60,.95)	.02	.35 (.22,.57)	<.01	.59 (.34,.99)	.05
Hispanic	.83 (.70,.97)	.02	1.05 (.87,1.26)	.64	.77 (.30,1.97)	.58
Other	.67 (.33,1.38)	.28	0.73 (.18,3.00)	.67	.61 (.29,1.27)	.19
Poverty						
No (ref.)						
Yes	1.02 (.73,1.42)	.90	.93 (.81,1.06)	.26	1.30 (.54,3.11)	.56
Health Insurance						
None (ref.)						
Public	1.53 (1.39,1.68)	<.01	2.25 (2.03,2.50)	<.01	.74 (.57,.98)	.04
Private	1.24 (.95,1.62)	.11	1.16 (.68,1.97)	.70 (.56,.87)	<.01	
Household Composition						
Both Parents (ref.)						
Mom Only	1.01 (.80,1.28)	.93	1.05 (.71,1.55)	.79	1.14 (1.11,1.17)	<.01
Dad Only	1.44 (1.16,1.80)	<.01	1.46 (1.43,1.50)	<.01	2.22 (1.63,3.03)	<.01
Neither Parent	1.18 (.69,2.03)	.54	.93 (.25,3.39)	.91	2.68 (1.92,3.75)	<.01

Notes: SA=substance abuse; MH=mental health AOR=Adjusted Odds Ratios; CI=Confidence Interval; Ref.=reference group.

*The categories No SA or MH (reference group), MH, SA and MH & SA treatment are mutually exclusive categories based on past year self-report data.