

Adverse Childhood Experiences Associated with Behavioral Health Problems in Adolescents

Findings from administrative data for youth age 12 to 17 enrolled in Medicaid

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A SERIES OF STUDIES has established strong links between adverse childhood experiences (ACEs) and long-term behavioral health and chronic medical conditions.¹⁻⁶ Although the majority of these studies have focused on adults, the impact of these experiences are likely to become apparent during childhood and adolescence. However, collecting self-reported experiences and symptoms for children is challenging and costly. This report shows that it is possible to use state administrative data to measure adverse experiences and other household risk factors similar to those presented in the ACE studies, and to quantify associations between these experiences and behavioral health problems identified during adolescence. The adverse experiences presented here include the occurrence of the following in the child’s birth family: child abuse and/or neglect; parental substance abuse, criminal justice involvement, mental illness, or death; domestic violence; and homelessness. Behavioral health risks associated with the number and type of adverse experiences are explored in detail.

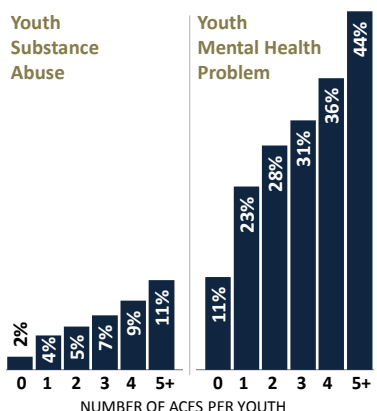
Key Findings

- One-third of DSHS Medicaid youth (age 12-17) had three or more of these adverse experiences.
- The odds of having a substance abuse or mental health problem documented in state administrative data during adolescence increased substantially with each added adverse experience, *however*,
- Risk levels vary greatly by type of experience, with child abuse or neglect increasing behavioral health risk at a much higher rate than other factors.

Number and Type of Adverse Experiences Impact Youth Substance Abuse and Mental Health

Risk increases with number of adverse experiences

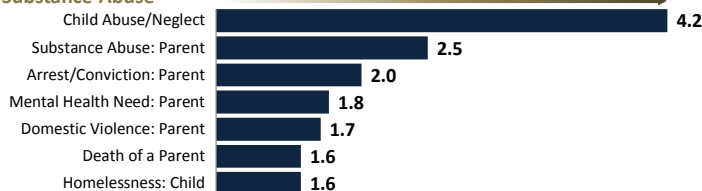
YOUTH AGE 12 TO 17 = 125,123



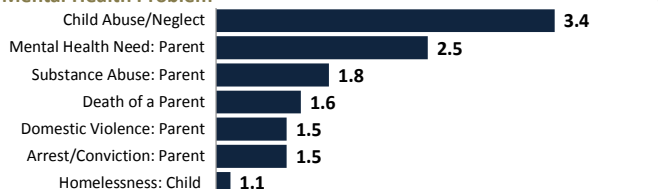
Risk varies greatly by type of adverse experience

ODDS RATIOS, YOUTH AGE 12 TO 17 ENROLLED IN MEDICAID IN SFY 2008

Youth Substance Abuse



Youth Mental Health Problem



Adverse Childhood Experiences Derived from Administrative Data

Youth were 125,123 DSHS clients served during State Fiscal Year (SFY) 2008, who were between the ages of 12 and 17. The analysis included youth who had at least one parent identified in administrative records and who had at least one month of Medicaid or S-SCHIP medical coverage, such that they were likely to be eligible for publicly funded medical and behavioral health services. Adverse childhood experiences were constructed from administrative data using the following definitions.

Adverse Childhood Experiences from Washington State Administrative Data

	DEFINITION	TIMEFRAME
Domestic violence arrests for either parent	Any arrest for which a charge recorded is in a domestic violence crime category.	July 1, 2003 to June 30, 2008
Mental illness of birth parent	Mental health diagnosis, service encounters, procedures or prescribed psychotropic medications recorded in medical claims or publicly funded mental health records.	July 1, 2003 to June 30, 2008
Substance abuse of birth parent	Substance-related diagnosis, service encounters recorded in medical claims or publicly funded mental health records; any arrest for which a charge recorded is in a substance-related crime category (e.g. driving under the influence, possession of controlled substance).	July 1, 2003 to June 30, 2008
Criminal justice involvement of a birth parent	Any arrest recorded by state patrol or court filings for any crime category.	July 1, 2003 to June 30, 2008
Child abuse and/or neglect	Any family involvement in child welfare system, including child protective services, foster care, family reconciliation, behavioral rehabilitation, adoption support services, or other intensive services.	July 1, 2003 to June 30, 2008
A homeless spell for the child	Indicates at least one spell of homelessness, including shelter stays, recorded by a financial eligibility worker during eligibility (re)determination for public assistance.	July 1, 2006 to June 30, 2008
Death of a parent	Department of Health death certificates.	Prior to July 1, 2008

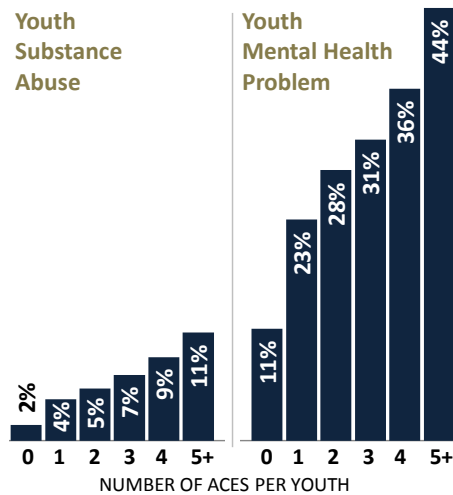
Mental illness. A mental illness indicator was constructed from publicly funded mental health and medical diagnostic and encounter records. These sources were identical to those used to construct the mental illness indicator for the parents. For youth, the mental illness indicator is based on a two-year (SFY 2007-08) window in which any mental health-related diagnoses, service encounters or psychotropic medications were recorded in medical claims or publicly funded mental health records. Categories of diagnosis included the following: psychotic, bipolar, depressive, anxiety, ADHD, conduct, impulse control, and adjustment disorders. Psychotropic medication classes are categorized based on the Food and Drug Administration National Drug Codes (NDC) and include antipsychotics, antimania, antidepressants, anxiolytics, and medications prescribed for ADHD. This measure of mental illness has been used extensively in Washington State and has been found to be consistent with other sources of information and to overlap with self-reported screening measures of mental illness such as the GAIN-SS.⁷

Substance abuse. An Alcohol or Other Drug (AOD) treatment need indicator was constructed from medical claims and service records that indicate a youth received publicly funded chemical dependency or substance abuse services, procedures, or diagnoses during the two-year period. This indicator also includes the presence of substance-related arrests recorded in the state patrol database. This measure has been used in multiple studies and has been shown to correlate highly with self-report screening tools for alcohol and substance abuse.⁸

Youth Behavioral Health Risk Increases with Number of Adverse Experiences

Of the identified 125,123 youth, 32 percent had no adverse experiences, 23 percent had one, 17 percent had two, 12 percent had three, 9 percent had four, and 7 percent had five or more ACEs.

Almost 30 percent of these youth age 12-17 enrolled in Medicaid had three or more of the seven adverse experiences derived from administrative data.



The number of adverse experiences recorded in administrative data was directly related to the current presence of substance abuse and mental health problems for these youth (see Table 1). For example, 2 percent of youth with no ACEs had indications of substance abuse problems, compared to 4 percent of those with one ACE, 5 percent of those with two ACEs, 7 percent of those with three ACEs, 9 percent of those with four ACEs, and 11 percent of those with five or more ACEs.

Similarly, the risk for mental health problems rises dramatically for youth with more ACEs. Only 11 percent of those with no ACEs had a mental health problem, compared to 44 percent of youth with five or more ACEs.

TABLE 1.

Behavioral health problems are more likely as the number of adverse experiences increases

Percentage of Youth Age 12 to 17 with Behavioral Health Problems by Adverse Experiences

	Youth Substance Abuse				Youth Mental Health Problem			
	YES	NO	TOTAL	% YES	YES	NO	TOTAL	% YES
TOTAL	5,895	119,228	125,123	4.7%	29,414	95,709	125,123	23.5%
NUMBER OF ACEs								
0	627	39,207	39,834	1.6%	4,552	35,282	39,834	11.4%
1	1,215	27,913	29,128	4.2%	6,568	22,560	29,128	22.5%
2	1,097	19,689	20,786	5.3%	5,712	15,074	20,786	27.5%
3	1,028	14,244	15,272	6.7%	4,672	10,600	15,272	30.6%
4	966	10,426	11,392	8.5%	4,080	7,312	11,392	35.8%
5+	962	7,749	8,711	11.0%	3,830	4,881	8,711	44.0%

Individual Adverse Experiences Derived from Administrative Data are Associated with Behavioral Health Risk

Of the specific adverse experiences constructed from administrative data, 4 percent had at least one parent with a domestic violence arrest, 3 percent had a parent who died, 33 percent had a parent with a mental illness, 25 percent had a parent with a substance abuse problem, 38 percent had a parent with a criminal justice history, 37 percent had child abuse or neglect, and 3 percent had a history of homelessness.

Table 2 demonstrates that each adverse experience measured here was associated with the presence of substance abuse for youth ($p < .0001$). Additionally, almost every adverse experience measured here was independently associated with the presence of youth mental illness ($p < .0001$). The only exception was homelessness, which did not significantly increase the odds of mental illness for these youth. Although there is a clear link between each risk factor and behavioral health, the differences in magnitude warrant a closer look at the risk associated with each experience individually.

TABLE 2.

Individual Adverse Experiences Associated with Youth Substance Abuse and Mental Illness

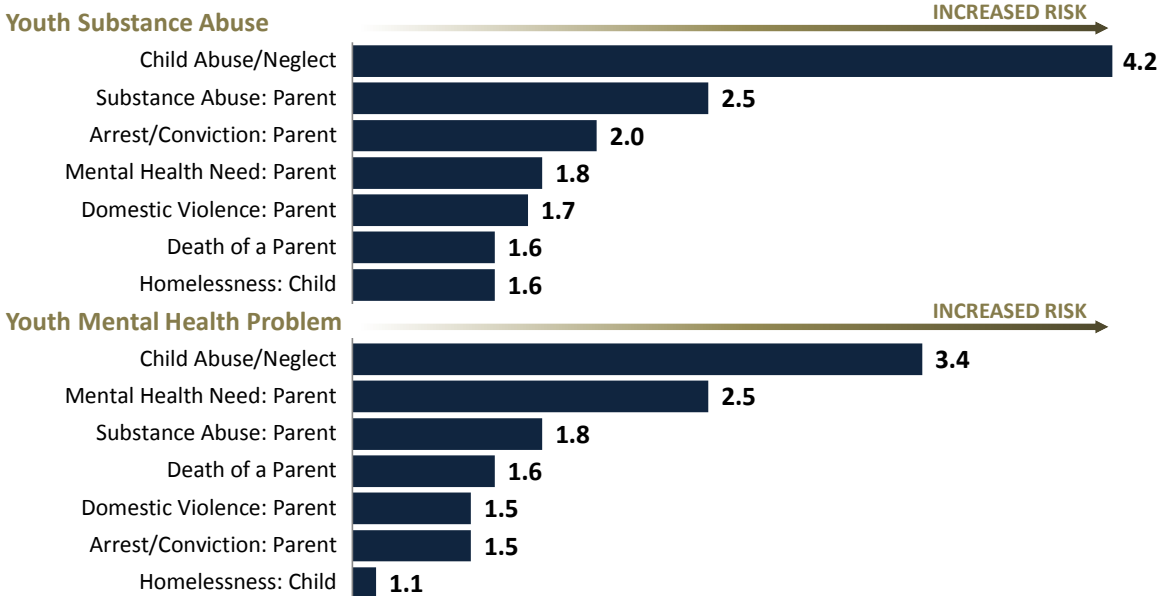
	Medicaid youth age 12-17		Substance Abuse				Mental Illness			
			YES		NO		YES		NO	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL	125,123	100.0	5,895	100.0	119,228	100.0	29,414	100.0	95,709	100.0
Adverse Experiences										
Domestic Violence, Birth Parents	4,594	3.7	355	6.0	4,233	3.6	1,437	4.9	3,151	3.3
Death of Parent	4,001	3.2	290	4.9	3,706	3.1	1,302	4.4	2,694	2.8
Mental Illness of Birth Parent	41,476	33.1	2,707	45.9	38,723	32.5	14,485	49.2	26,945	28.2
Substance Abuse of Birth Parent	31,542	25.2	2,486	42.2	29,014	24.3	10,060	34.2	21,440	22.4
Criminal Justice Involvement of Birth Parent	47,829	38.2	3,192	54.1	44,583	37.4	13,456	45.7	34,319	35.9
Child Abuse/Neglect	45,928	36.7	4,084	69.3	41,775	35.0	17,311	58.9	28,548	29.8
Homeless Spell, Child	3,956	3.2	284	4.8	3,667	3.1	964	3.3	2,987	3.1

All Adverse Experiences are Not Created Equal: Child Abuse and Neglect Increase Behavioral Health Risk at a Much Higher Rate than Other Factors

Although risk was associated with the number of different experiences, the summation of different experiences oversimplifies the portrayal of behavioral health risk. In fact, the data suggest a clear differential impact associated each type of experiences. Odds ratios are presented below for each adverse experience and the associated increased risk for substance abuse and mental illness. The most striking finding is the risk associated with child abuse and neglect. Youth with identified child abuse or neglect are about four times as likely to have substance abuse problems and over three times as likely to have mental health problems as those youth without abuse or neglect. Similarly, youth with substance abusing parents are about two times as likely to have substance abuse problems and about twice as likely to have mental health problems during adolescence.

Differential Impact of Adverse Experiences and Behavioral Health Risk during Adolescence

ODDS RATIO, Youth age 12 to 17 enrolled in Medicaid in SFY 2008



Conclusions and Next Steps

As expected, we found that more adverse experiences are associated with the presence of both mental health and substance abuse problems identified during adolescence. These results generally confirmed our expectations based on other studies of childhood experiences that have been conducted primarily with adults using retrospective questionnaires. However, the analysis of different types of experiences highlights the fact that not all experiences have the same impact and therefore should be considered separately. Of the specific adverse experiences, child abuse or neglect, as measured by family involvement with the child welfare system, was the strongest predictor of both mental health and substance abuse problems during adolescence. The association between child welfare system involvement and mental health problems for youth is consistent with other studies using survey methods such as the National Survey of Child and Adolescent Well-being.⁹

The ability to globally identify risk factors related to adverse childhood experiences during childhood using administrative data is a significant advantage. This approach provides a potential mechanism for directing prevention and early intervention efforts towards families with children who are at the highest risk of developing behavioral and physical health problems in adolescence and adulthood.

This work should be expanded to other health and behavioral health outcomes for youth. For example, indications of functional well-being such as crisis or emergency medical service use, hospitalizations, and chronic disease risk are logical next outcomes to explore in relation to the number and types of ACEs. The findings presented here, together with prior research focused on adults, suggest that the development of chronic health conditions associated with ACEs begins during childhood. Further examination of the specific components of mental health and substance abuse, such as diagnoses, medications, and primary substances that are impacted by each of these experiences will be helpful in designing and targeting early interventions for youth.

Finally, given the heightened risk of behavioral health problems associated with child abuse and neglect, future studies leveraging more detailed risk information from the FAMLINK child welfare data system should address the relative contributions of different types of abuse and more detailed characteristics of child welfare system experiences.

REFERENCES

1. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, Edwards V. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*. 1998;14:245-258.
2. Dube SR, Anda RF, Felitti VJ, Edwards VJ, Croft JB. Adverse childhood experiences and personal alcohol abuse as an adult. *Addict Behav*. Sep-Oct 2002;27(5):713-725.
3. Dube SR, Felitti VJ, Dong M, Chapman DP, Giles WH, Anda RF. Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: the adverse childhood experiences study. *Pediatrics*. Mar 2003;111(3):564-572.
4. Dube SR, Felitti VJ, Dong M, Giles WH, Anda RF. The impact of adverse childhood experiences on health problems: evidence from four birth cohorts dating back to 1900. *Prev Med*. Sep 2003;37(3):268-277.
5. Anda RF, Croft JB, Felitti VJ, et al. Adverse childhood experiences and smoking during adolescence and adulthood. *JAMA*. Nov 3 1999;282(17):1652-1658.
6. Williamson DF, Thompson TJ, Anda RF, Dietz WH, Felitti V. Body weight and obesity in adults and self-reported abuse in childhood. *Int J Obes Relat Metab Disord*. Aug 2002;26(8):1075-1082.
7. Lucenko B, Mancuso D, Yakup S. Identifying behavioral health problems among Medicaid disabled adults. Olympia, WA: WA State Dept. of Social and Health Services, Research and Data Analysis Division; 2011. 3.34.
8. Sears JM, Krupski A, Joesch JM, et al. The use of administrative data as a substitute for individual screening scores in observational studies related to problematic alcohol or drug use. *Drug Alcohol Depend*. Sep 1 2010;111(1-2):89-96.
9. Ringeisen H, Casanueva CE, Urato M, Stambaugh LF. Mental health service use during the transition to adulthood for adolescents reported to the child welfare system. *Psychiatr Serv*. Aug 2009;60(8):1084-1091.

TABLE 3.
Behavioral Health Problems, Adverse Experiences, and Demographics

	Medicaid youth age 12-17		Substance Abuse		Mental Illness	
	NUMBER	PERCENT	YES		YES	
			NUMBER	PERCENT	NUMBER	PERCENT
TOTAL	125,123	100.0	5,895	100.0	29,414	100.0
GENDER						
Female	61,865	49.4	2,451	41.6	13,902	47.3
Male	63,257	50.6	3,444	58.4	15,512	52.7
AGE						
Average Age (SD)	14.2	(1.6)	15.5	(1.2)	14.4	(1.6)
RACE OR ETHNICITY <i>See note below</i>						
White only, non-Hispanic	64,037	51.2	2,879	48.8	17,253	58.7
Any minority	57,770	46.2	3,006	51.0	11,991	40.8
Hispanic Origin	30,232	24.2	1,283	21.8	4,763	16.2
<i>Non-Hispanic</i>						
African American only	11,445	9.1	519	8.8	2,666	9.1
American Indian only	6,945	5.6	665	11.3	2,638	9.0
Asian/Pacific Islander only	5,834	4.7	139	2.4	701	2.4
Multiracial	3,314	2.6	400	6.8	1,223	4.2
Unknown race/ethnicity	3,316	2.7	10	0.2	170	0.6
BIOLOGICAL PARENTS IDENTIFIED <i>Number of Youth</i>						
1 parent	32,983	26.4	1,736	29.4	7,732	26.3
2 parents	92,140	73.6	4,159	70.6	21,682	73.7
LOW INCOME SERVICE CATEGORIES						
ESA TANF or Basic Food	68,599	54.8	3,684	62.5	16,892	57.4
Basic Food	65,123	52.0	3,421	58.0	15,561	52.9
TANF	28,855	23.1	1,849	31.4	7,774	26.4
NUMBER OF ADVERSE CHILDHOOD EXPERIENCES (ACEs)						
0	39,834	31.8	627	10.6	4,552	15.5
1	29,128	23.3	1,215	20.6	6,568	22.3
2	20,786	16.6	1,097	18.6	5,712	19.4
3	15,272	12.2	1,028	17.4	4,672	15.9
4	11,392	9.1	966	16.4	4,080	13.9
5+	8,711	7.0	962	16.3	3,830	13.0
Average ACEs (SD)	1.7	(1.6)	2.6	(1.7)	2.3	(1.7)
TYPES OF ADVERSE CHILDHOOD EXPERIENCES (ACEs)						
Domestic Violence, Birth Parents	4,594	3.7	355	6.0	1,437	4.9
Death of Parent	4,001	3.2	290	4.9	1,302	4.4
Mental Illness of Birth Parent	41,476	33.1	2,707	45.9	14,485	49.2
Substance Abuse of Birth Parent	31,542	25.2	2,486	42.2	10,060	34.2
Criminal Justice Involvement of Birth Parent	47,829	38.2	3,192	54.1	13,456	45.7
Child Abuse/Neglect	45,928	36.7	4,084	69.3	17,311	58.9
Homeless Spell for Child	3,956	3.2	284	4.8	964	3.3
YOUTH BEHAVIORAL HEALTH PROBLEMS						
Substance Abuse	5,895	4.7	5,895	100.0	3,394	11.5
Mental Illness	29,414	23.5	3,394	57.6	29,414	100.0

Individuals with known race were categorized into one of two mutually exclusive groups: White Only, non-Hispanic and Any Minority. Individuals in the Any Minority group were further categorized as Hispanic, non-Hispanic African American One Race Only, non-Hispanic Asian/Pacific Islander One Race Only, non-Hispanic American Indian One Race Only, and non-Hispanic multi-racial.

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