

Household dynamics in the prevalence of mental health conditions and substance use disorders

Variation in the prevalence of behavioral disorders for those with impacted family members

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The National Institute of Mental Illness estimates that one in five adults in the United States experiences mental illness in a given year.¹

Other studies have established the tendency for mental illness to run in families, including conditions such as mood disorders,² anxiety,^{3,4} schizophrenia,⁵ and substance use disorders,⁶ to name a few. While some evidence supports genetic drivers of these conditions, researchers acknowledge that genetic associations likely only contribute a small amount of risk to developing a mental illness or substance use disorder.⁷

A significant amount of recognition has been given to other drivers of health status, including social, economic, and environmental factors, often referred to as social determinants of health.^{8,9,10} Many of these factors, such as poverty, housing stability, access to transportation, and adverse childhood experiences, have important impacts on behavioral health and can apply to all family members at once. Some research has also found that having a family member with mental illness decreases family functioning and is a general stressor for families.¹¹ With this in mind, payers and providers may find that the diagnosis of a behavioral health condition in one family member could signal that it may be worth screening for circumstances that might affect the entire household. This could provide an opportunity for earlier diagnosis and intervention with other household members that may be at heightened risk for similar behavioral health concerns.

In order to shed more light on how behavioral conditions impact families, we analyzed the prevalence of several conditions among family members from a national, commercially insured population in 2017. This paper aims to expand on existing research by analyzing the prevalence of behavioral conditions in parents of children with behavioral conditions versus those without, as well as children of parents with behavioral conditions versus those without. While many types of data are available that identify various risk factors for mental illness and substance use

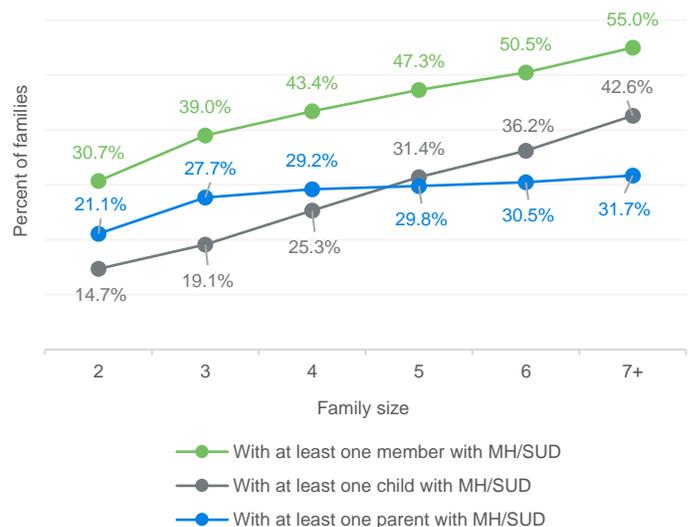
disorders (biological, social, and otherwise), administrative claims databases offer a unique opportunity to:

- Efficiently study the scale and distribution of important health outcomes within specific populations of interest
- Tie health outcomes to financial outcomes in ways that can support the delivery of high-value healthcare
- Leverage the skills of analytical staff in the work of identifying and addressing population health goals

Prevalence of behavioral conditions in families

We studied the prevalence of mental health conditions and substance use disorders (MH/SUDs) within commercially insured families in the United States to understand the likelihood of a household being impacted by these conditions.¹² Figure 1 shows the prevalence of MH/SUD conditions within commercially insured families in the United States in 2017 by family size.

FIGURE 1: PREVALENCE OF MH/SUD CONDITIONS BY FAMILY SIZE, 2017



While a significant number of people personally experience MH/SUD conditions, these figures shed light on the breadth of their impact when considering how commonly they are encountered within families.

For a typical family of four, we found that over 43% of households had at least one family member treated for MH/SUD conditions. Among families with more than five members, more than half had at least one family member treated for MH/SUD conditions. The likelihood of at least one family member having a MH/SUD condition increased with family size, as a function of larger families having more members that could potentially be affected.¹³

Figure 2 breaks down prevalence rates by family size for several specific behavioral health conditions.

FIGURE 2: PREVALENCE OF SPECIFIC MH/SUD CONDITIONS BY FAMILY SIZE, 2017

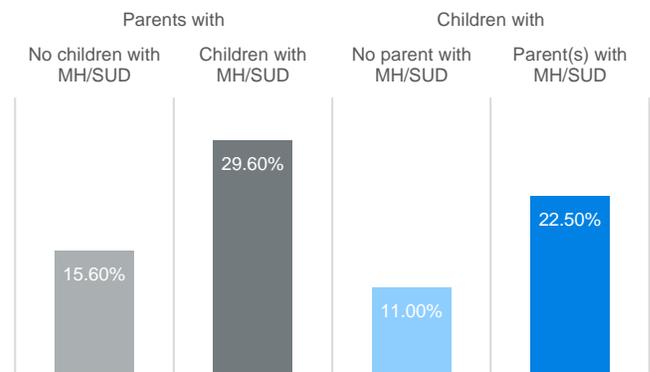
Condition	Family size					
	2	3	4	5	6	7+
Adjustment Reaction	5.1%	6.9%	8.4%	9.8%	11.1%	13.4%
Alcohol Use Disorder	1.3%	1.8%	1.9%	2.2%	2.5%	3.0%
Anxiety Disorder	14.4%	20.2%	23.3%	25.3%	27.0%	29.8%
Bipolar Disorder	1.3%	1.9%	2.0%	2.4%	3.1%	4.0%
Depression	10.9%	14.7%	16.2%	18.2%	20.8%	24.7%
Drug Use Disorders	6.1%	7.1%	6.7%	7.9%	9.8%	12.3%
Eating Disorder	0.4%	0.6%	0.8%	0.9%	1.0%	1.3%
Intellectual Disabilities or Developmental Disorders	2.2%	3.3%	4.8%	6.0%	6.9%	8.7%
Post-Traumatic Stress Disorder	1.0%	1.3%	1.3%	1.7%	2.4%	3.4%
Psychotic Disorder	0.3%	0.3%	0.4%	0.5%	0.7%	1.0%
Schizoaffective Disorder	0.2%	0.3%	0.2%	0.3%	0.4%	0.6%

Anxiety disorder and depression were the conditions most commonly encountered within families in 2017. Among families of four or more, at least 23% had at least one member with an anxiety disorder, and at least 16% had at least one member with depression that was recognized by a clinician within the year.

Prevalence of behavioral conditions in parents and children

In order to understand the impact of MH/SUD conditions on individuals within the same household, we analyzed the percentage of parents in 2017 who had a MH/SUD condition, dependent on whether or not a child also had one. Likewise, we analyzed the percentage of children with a MH/SUD condition, dependent on whether or not a parent also had one. The results of this analysis are presented in Figure 3.

FIGURE 3: PREVALENCE OF MH/SUD CONDITIONS FOR PARENTS AND CHILDREN WITHIN THE SAME FAMILY, 2017



Parents of children with behavioral conditions were twice as likely to have a behavioral condition compared to those without. Similarly, children of parents with a behavioral condition were twice as likely to have a behavioral condition as those without.

Certain conditions show particularly strong relationships between parents and children. Figure 4 displays the prevalence rates of various behavioral conditions for parents given no child had the listed condition alongside the prevalence for parents given that at least one of their children also had the listed condition.¹⁴

Schizophrenia, intellectual disabilities or developmental disorders, psychotic disorder, and bipolar disorder showed the most prominent links between parent and child prevalence. The prevalence of these conditions for parents increased dramatically when at least one of their children had the same condition. Schizophrenia, autism (classified in the intellectual disabilities or development disorders category), and bipolar disorder are also among the five major mental disorders identified as having genetic components.

FIGURE 4: PREVALENCE OF MH/SUD CONDITIONS FOR PARENTS WITH AND WITHOUT AT LEAST ONE CHILD WITH SAME CONDITION, 2017

Condition	No child has the same condition	At least one child has the same condition	Relative prevalence
Adjustment Reaction	2.7%	10.4%	3.9x
Alcohol Use Disorders	0.7%	2.1%	3.1x
Anxiety Disorder	9.0%	18.0%	2.0x
Bipolar Disorder	0.7%	4.5%	6.7x
Depression	6.4%	15.5%	2.4x
Drug Use Disorders	3.1%	9.5%	3.1x
Eating Disorder	0.2%	0.9%	5.8x
Intellectual Disabilities or Developmental Disorders	0.0%	0.3%	11.0x
Post-Traumatic Stress Disorder	0.5%	3.2%	6.4x
Psychotic Disorder	0.1%	0.6%	8.6x
Schizoaffective Disorder	0.0%	1.0%	22.9x

The likelihood of a parent having the same MH/SUD condition is higher when a child has the condition. To a lesser extent, the likelihood that a parent has any MH/SUD condition also increases when a child has a MH/SUD. These increases vary depending on the specific conditions that their children may have. Figure 5 displays the prevalence rates of any MH/SUD condition for parents, given that no child had the listed condition alongside the prevalence rates given that at least one of their children had the listed condition.

FIGURE 5: PREVALENCE OF ANY MH/SUD CONDITIONS FOR PARENTS WITH AND WITHOUT AT LEAST ONE CHILD WITH GIVEN CONDITION, 2017

Condition	No child has the listed condition	At least one child has the listed condition	Relative prevalence
Adjustment Reaction	18.9%	35.6%	1.9x
Alcohol Use Disorder	19.6%	31.1%	1.6x
Anxiety Disorder	18.1%	33.0%	1.8x
Bipolar Disorder	19.5%	38.5%	2.0x
Depression	18.5%	34.1%	1.8x
Drug Use Disorders	19.3%	33.5%	1.7x
Eating Disorder	19.6%	29.7%	1.5x
Intellectual Disabilities or Developmental Disorders	19.3%	26.1%	1.4x
Post-Traumatic Stress Disorder	19.5%	38.7%	2.0x
Psychotic Disorder	19.6%	34.3%	1.7x
Schizoaffective Disorder	19.6%	32.1%	1.6x

Nearly 40% of parents of children with bipolar disorder or post-traumatic stress disorder (PTSD) had a MH/SUD condition in 2017. These parents were twice as likely to have a MH/SUD condition compared to parents without children with bipolar disorder or PTSD. At least 26% of parents of children with any of the listed conditions had a MH/SUD condition themselves. For a majority of the conditions, at least one-third of parents had their own MH/SUD conditions.

Figure 6 presents similar results for children, displaying prevalence rates by condition with and without the requirement that one of their parents also had the listed condition.

FIGURE 6: PREVALENCE OF MH/SUD CONDITIONS FOR CHILDREN WITH AND WITHOUT PARENTS WITH SAME CONDITION, 2017

Condition	No parent has the same condition	At least one parent has the same condition	Relative prevalence
Adjustment Reaction	2.0%	7.9%	4.0x
Alcohol Use Disorder	0.4%	1.2%	3.0x
Anxiety Disorder	4.6%	10.0%	2.2x
Bipolar Disorder	0.5%	3.2%	6.6x
Depression	3.2%	8.1%	2.6x
Drug Use Disorders	1.2%	3.6%	3.0x
Eating Disorder	0.2%	1.4%	5.7x
Intellectual Disabilities or Developmental Disorders	2.4%	19.9%	8.4x
Post-Traumatic Stress Disorder	0.3%	2.0%	6.2x
Psychotic Disorder	0.1%	1.2%	8.1x
Schizoaffective Disorder	0.1%	2.1%	21.9x

Intellectual disabilities or developmental disorders were among the most prevalent conditions for children in 2017. Children of parents with these conditions were over eight times more likely to have the same condition compared to those without.¹⁵ Schizoaffective disorder again showed the strongest link between parents and children, with the condition being over 20 times as prevalent in children of parents with the disorder.

As with parents, the likelihood of a child having the same MH/SUD condition is higher when a parent has the condition, and the likelihood that a child has any MH/SUD condition varies depending on the specific condition that the parent(s) had. Figure 7 displays the prevalence rates of any MH/SUD condition for children, given that no parent had the listed condition alongside the prevalence rates given that at least one of their parents had the listed condition.

FIGURE 7: PREVALENCE OF ANY MH/SUD CONDITION FOR CHILDREN WITH AND WITHOUT PARENTS WITH GIVEN CONDITION, 2017

Condition	No parent has the listed condition	At least one parent has the listed condition	Relative prevalence
Adjustment Reaction	14.3%	26.7%	1.9x
Alcohol Use Disorder	14.9%	22.4%	1.5x
Anxiety Disorder	13.3%	23.4%	1.8x
Bipolar Disorder	14.8%	29.2%	2.0x
Depression	13.5%	25.8%	1.9x
Drug Use Disorders	14.6%	20.8%	1.4x
Eating Disorder	14.9%	26.7%	1.8x
Intellectual Disabilities or Developmental Disorders	14.9%	37.0%	2.5x
Post-Traumatic Stress Disorder	14.8%	27.6%	1.9x
Psychotic Disorder	14.9%	23.8%	1.6x
Schizoaffective Disorder	14.9%	24.3%	1.6x

Children of parents with intellectual disabilities or developmental disorders were two and a half times more likely to have a MH/SUD condition of their own compared to those without. Thirty-seven percent of children that had parents with intellectual disabilities or developmental disorders had a MH/SUD condition of their own in 2017. At least 20% of children that had parents with any of the listed conditions had a MH/SUD condition themselves. For a majority of the conditions studied, at least one-fourth of children had their own MH/SUD conditions.

Discussion

Having a parent with a behavioral condition doubles the likelihood that a child also has one. The same observation holds true for parents of children with and without behavioral conditions. This suggests that when a MH/SUD condition is identified in one member of a family, other family members may also benefit from screening and interventions to manage their behavioral health risks.

Studies have also shown that family members of patients with mental health disorders incur increased healthcare expenses.¹⁶ An earlier study, to which Milliman contributed, found that parents of children with chronic medical conditions and comorbid MH/SUDs had healthcare costs that were 59% higher than those for parents of children with chronic medical conditions alone.¹⁷ Another study authored by Milliman found that family members of those with opioid use disorder (OUD) experienced 18% higher healthcare costs than similar individuals without OUD in the household.¹⁸

Given the strong linkages in behavioral health outcomes between members of a family, factors that affect the entire family such as genetics, environment, and social determinants of health should be properly considered when delivering effective treatment. Care delivery and payment models that include wider determinants of health are well positioned to improve population health and potentially reduce healthcare costs for patients whose medical needs are not currently being met by individualized healthcare approaches alone.

Data sources and methodology

This analysis is based on the 2017 IBM Watson Health MarketScan Commercial Claims and Encounters Databases®. These research databases reflect the healthcare experience of employees and dependents covered by the health benefit programs of large employers, health plans, and government organizations. These claims data are collected from approximately 350 payers. The MarketScan Commercial Claims and Encounters Database includes data from active employees, early retirees, COBRA continues, and dependents insured by employer-sponsored plans.

Families with at least one child and at least one adult were included in this analysis. Children and adults were identified using dependent codes in administrative claims data, without regard to age. For example, an 18-year-old may be classified as a child dependent in one family and an adult subscriber in another.

Mental health and substance use disorders were identified using ICD-10 diagnosis codes in the range F01 to F99. Additional instances of these conditions can also be identified based on the use of certain services or prescription drugs but we have not included those criteria in this analysis. We identified 11 behavioral conditions for detailed analysis by flagging any claim with an ICD-10 diagnosis code in the list below.¹⁹

- Adjustment Reaction: F430, F432x, F438-F439, F930, F948
- Alcohol Use Disorder: F101x-F102x, F109x
- Anxiety Disorder: F064, F40x- F42x
- Bipolar Disorder: F30x-F31x
- Depression: F32x, F330x-F334x, F338-F339, F341, F348, F349, F39
- Drug Use Disorders: F11x-F19x, F55x
- Eating Disorder: F50x, F982x-F983
- Intellectual Disabilities or Developmental Disorders: F70-F82, F840, F842, F845, F848, F849, F88, F99
- Post-Traumatic Stress Disorder: F431x
- Psychotic Disorder: F22-F24, F28-F29
- Schizoaffective Disorder: F20x, F21, F25x

Caveats and limitations

The results in this analysis reflect commercial large group employer-sponsored insurance and thus likely under-represent lower-income households that purchased individual coverage under the Patient Protection and Affordable Care Act (ACA). Noncommercial populations such as Medicare and Medicaid were not studied. Additionally, while sampling errors are quite small due to the large sample sizes available in each data set used for this analysis, sampling bias could be present to the extent that health plans and payers that contribute to the research databases differ systematically from non-contributors.

This analysis is intended to highlight the prevalence of behavioral conditions in families in the United States. Our analysis does not include a study of the causality of behavioral conditions occurring for different individuals within the same family.

Milliman has not audited the research data set used for this analysis, but we have extensive experience working with this data and have found it to be reasonable. To the extent that there are errors or omissions in any of the data sources relied upon for this analysis, these results may also be in error. This report does not represent conclusive recommendations regarding treatment of opioid use disorder or legal advice. Milliman does not intend to benefit or create a legal duty to any recipient of this work.

The information in this study is designed to describe the prevalence of insured members with behavioral conditions. It may not be appropriate and should not be used for other purposes. Milliman did not receive any external funding for this analysis.

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Endnotes

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- ¹² Families included in this analysis were those identified with at least one child and at least one parent (i.e., those included under the family size of two represent families with one adult and one child and exclude two-adult households). Members were grouped into families based on insurance contract and are not necessarily genetically related, as they could include adopted children and/or stepparents. Additionally, families in this analysis may not include all members, as individuals may not be included on the same insurance contract.
- ¹³ These findings do not suggest that the risk for MH/SUD conditions to an individual is higher in larger families, only that the likelihood that at least one person in a family is impacted is higher in larger families.
- ¹⁴ Children of all ages were included in this analysis, although some conditions may not have manifested in young children, such as alcohol or drug use disorders and schizoaffective disorder. Relative prevalence may be understated for these types of conditions.
- ¹⁵ The disorders in this category vary in severity, including conditions such as mild to profound intellectual disorder, speech or language disorders, and autistic disorder. While many intellectual disabilities and developmental disorders are considered to be lifelong conditions, the parent prevalence rate of these conditions may be significantly lower than that of children for several reasons: adults with these disorders may be less likely to appear in employer-sponsored insurance, less likely to have children, or less likely to be coded with an intellectual disorder on their health claims.
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- ¹⁹ An "x" listed at the end of the diagnosis code indicates that the entire subset of codes with the same starting digits was included.