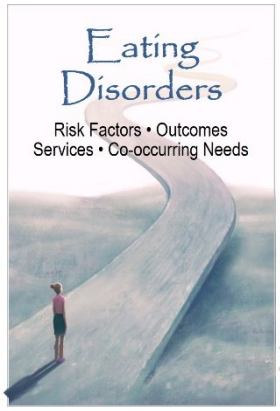

Eating Disorders Among Apple Health-Enrolled Youth and Young Adults

Prevalence, Characteristics, and Recent Trends in Washington State

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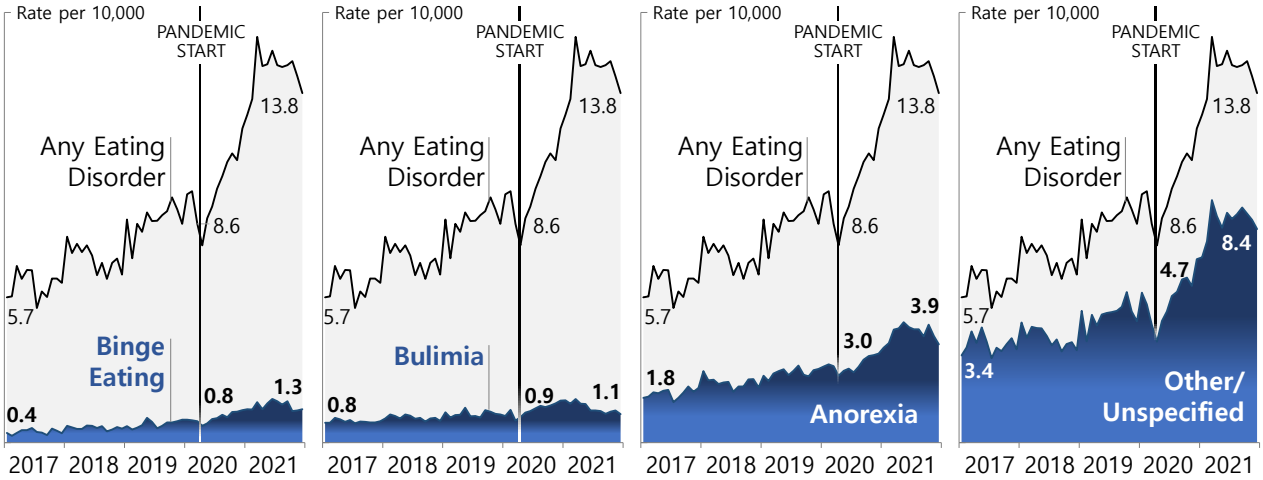
EATING DISORDERS can be severe and complicated illnesses with extremely negative impacts on individuals' well-being. Eating disorders such as anorexia nervosa, bulimia nervosa and binge eating often co-occur with other debilitating and costly health problems and are associated with high rates of hospitalization and mortality (Deloitte Access Economics, 2020; Zhao & Encinosa, 2011). Given concerns around eating disorders increasing dramatically during the COVID-19 pandemic (Devoe et al., 2023; Damour 2021; Linardon et al., 2022) and a lack of information and research on this topic specific to Medicaid populations, the Washington State Health Care Authority (HCA) has asked the Research and Data Analysis division of DSHS (RDA) to produce detailed information on eating disorders among Apple Health-enrolled youth and young adults to support their planning processes.

To inform HCA's programmatic efforts, RDA has produced a set of analytics to describe the prevalence and types of eating disorders among youth and young adults enrolled in Apple Health (Washington's publicly funded health care program for low-income individuals, including Medicaid and CHIP) during 2021, including co-occurring diagnoses and health needs, demographics and other characteristics of individuals who have eating disorder diagnoses, and behavioral health services and outcomes associated with eating disorder diagnoses. To assess potential pandemic impacts, we also examined prevalence trends in eating disorder diagnoses from January 2017 through December 2021.

FIGURE 1.

Eating Disorder Diagnosis Trends Before and During the COVID-19 Pandemic

Clients Ages 12-25 with Binge Eating, Bulimia, Anorexia, and/or Other/Unspecified Per 10,000 Apple Health Clients
January 2017 – December 2021



Washington State Department of Social & Health Services
Transforming lives

Key Findings

Eating disorder rates have increased dramatically for Apple Health clients since the onset of the COVID-19 pandemic. Increases are apparent for all eating disorder categories. Among Apple Health-enrolled individuals ages 12 to 25, eating disorders rose from 8.6 per 10,000 diagnosed in the month of March of 2020 to 13.8 per 10,000 individuals in December of 2021.

About half of the Apple Health-enrolled individuals in Washington State with eating disorders are between 12 and 25 years old. The overwhelming majority of the 3,523 clients ages 12 to 25 with diagnosed eating disorders in CY 2021 were female (87 percent). Diagnoses had different age distributions; for those diagnosed with Anorexia, Bulimia and Other/Unspecified Eating Disorders the most prevalent age group was 12- to 25-year-olds and for those with Binge Eating, the most prevalent group was 26- to 40-year-olds.

Co-occurring physical and behavioral health problems are common. A large proportion of clients ages 12 to 25 with eating disorders had additional diagnoses recorded for anxiety (72 percent), depression (69 percent), trauma/stressor disorders (39 percent), suicidal ideation (22 percent), and substance use disorders (17 percent). The most common co-occurring physical health problems included abdominal pain (28 percent), nausea and vomiting (25 percent), menstrual disorders (19 percent), abnormal heart rate/blood pressure (18 percent), malaise and fatigue (16 percent), abnormal weight loss (15 percent), other gastrointestinal disorders (14 percent), and obesity (14 percent).

Individuals with eating disorders have high rates of inpatient psychiatric hospitalizations, crisis services, and emergency department use. A surprisingly large proportion of those with eating disorders (8 percent) received specialty services outside of Washington State. Individuals with eating disorders also have high rates of community psychiatric inpatient services (15 percent), crisis services (11 percent), and emergency department use (23 percent).

The COVID-19 Pandemic and Eating Disorder Trends

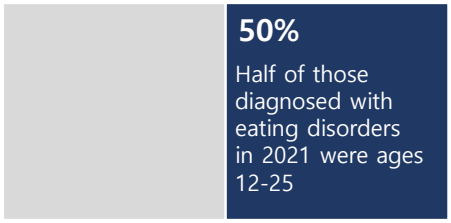
The number of Apple Health clients ages 12 to 25 with eating disorder diagnoses has increased dramatically since the onset of the COVID-19 pandemic and resulting school closures in March 2020, with the overall number of cases and corresponding diagnosis rates increasing more than twofold between CY 2017 and CY 2021 (Figure 1, first page). There were striking increases in the number of diagnosed Anorexia, Binge Eating and "Other/Unspecified" eating disorders, which is largely composed of non-specific diagnoses but also includes codes indicating avoidant and restrictive food intake disorders as well as atypical anorexia and bulimia. Because of these increases, we focused our analyses on CY 2021 to get a sense of needs and client characteristics since the pandemic.

Prevalence and Age Distribution of Eating Disorders Among Apple Health-Enrolled Individuals

Analyses were conducted using Washington State administrative data from the Department of Social and Health Services' Integrated Client Databases (ICDB; Mancuso & Huber, 2021). The ICDB contain data from various state agency systems including the ProviderOne data system that records Apple Health-funded claims and encounters. We first reviewed the prevalence of eating disorders. For persons of all ages with at least one month of Apple Health coverage in Calendar Year (CY) 2021, we counted the number with at least one diagnosis in the year in the following categories: Anorexia, Bulimia, Binge Eating and Other/Unspecified. Additional details regarding methods and measures are provided in the Technical Notes at the end of this report.

FIGURE 2.

Eating Disorders Age Distribution



With no age restrictions applied, there were a total of 7,021 individuals (or 0.3 percent of the Apple Health population) who had at least one eating disorder diagnosed in CY 2021.

Of these:

- 1,250 had Anorexia;
- 779 had Bulimia;
- 1,175 had Binge Eating Disorder; and
- 4,712 had Other/Unspecified Eating Disorders.

Half of those diagnosed with eating disorders were ages 12 to 25 (Figure 2).

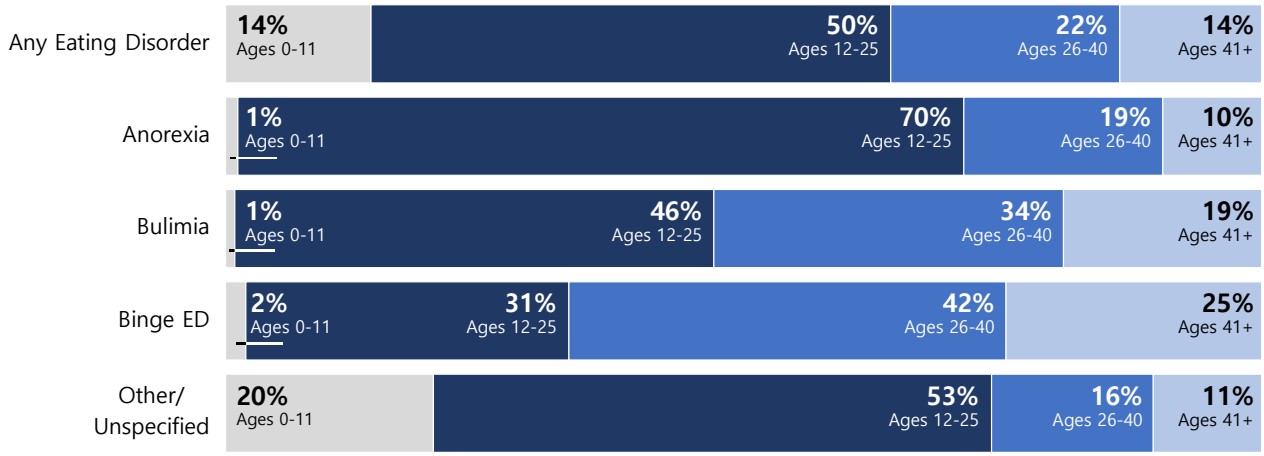
The majority (70 percent) of individuals with Anorexia were ages 12 to 25, as were about half of those with Bulimia or Other/Unspecified. In contrast, Binge Eating Disorders were more common for those over age 25, with two-thirds of those with Binge Eating diagnoses being age 26 or older (Figure 3).

After reviewing the age distributions for each disorder and discussing behavioral health program development options with subject matter experts in the Division of Behavioral Health and Recovery, **we decided to focus the current study on the 3,523 individuals with eating disorders in the 12 to 25 youth and young adult age range**, acknowledging that further work is needed to address the specific needs of younger and older individuals with eating disorder diagnoses.

FIGURE 3.

Apple Health Clients Diagnosed with Eating Disorder Categories by Age

Calendar Year 2021



NOTE: Eating disorder diagnosis categories are not mutually exclusive.

In the study population of 3,523 individuals ages 12 to 25 with a diagnosed eating disorder, 872 (25 percent) had Anorexia, 359 (10 percent) had Bulimia, 365 (10 percent) had Binge Eating and 2,529 (72 percent) had Other/Unspecified Eating Disorder diagnoses recorded in CY 2021. (see Table 1)

It was not uncommon for individuals to have more than one eating disorder diagnosis recorded in the year, as displayed in Table 1 below, where the denominators for the percentage calculations in each column are highlighted in gray. In fact, 16 percent had diagnoses in more than one eating disorder category, which is mostly accounted for by the individuals with Bulimia (34 percent) and Anorexia (43 percent) having a co-occurring diagnosis of Other/Unspecified Eating Disorder, likely reflecting the overlapping symptomatology of these disorders. Additionally, a large proportion of those with Bulimia had a co-occurring diagnosis of Anorexia (22 percent).

TABLE 1.

Prevalence of Eating Disorder Diagnosis Categories and Overlapping Diagnoses

Ages 12-25, Calendar Year 2021

	Any Eating Disorder		Anorexia		Bulimia		Binge Eating Disorder		Other/Unspecified Eating Disorder	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Any Eating Disorder	**3,523**	**100%**	**872**	**100%**	**359**	**100%**	**365**	**100%**	**2,529**	**100%**
Anorexia	872	25%	872	100%	78	22%	**	**	379	15%
Bulimia	359	10%	78	9%	359	100%	14	4%	121	5%
Binge Eating Disorder	365	10%	**	**	14	4%	365	100%	51	2%
Other/Unspecified Eating Disorder	2,529	72%	379	43%	121	34%	51	14%	2,529	100%

NOTE: Eating disorder diagnosis categories are not mutually exclusive. **Cell sizes smaller than 11 are suppressed.

Demographics, and Co-Occurring Health Needs of Apple Health-Enrolled Youth and Young Adults with Eating Disorders

Demographics

We examined gender, age, and race and ethnicity for individuals with eating disorders as a whole, and for the diagnostic subgroups (see Figure 4). Same-age comparison groups of Apple Health clients overall, and Apple Health clients with a depression diagnosis, are included for benchmarking. Individuals with a depression diagnosis (referred to as persons with "depressive disorders") were chosen as a comparison group because it is the one of most common behavioral health disorders for this age range.

Note that differential rates of eating disorder diagnoses in administrative data across demographic groups can reflect differential rates of incidence of eating disorders but may also reflect differential rates in seeking and accessing treatment relating to these disorders.

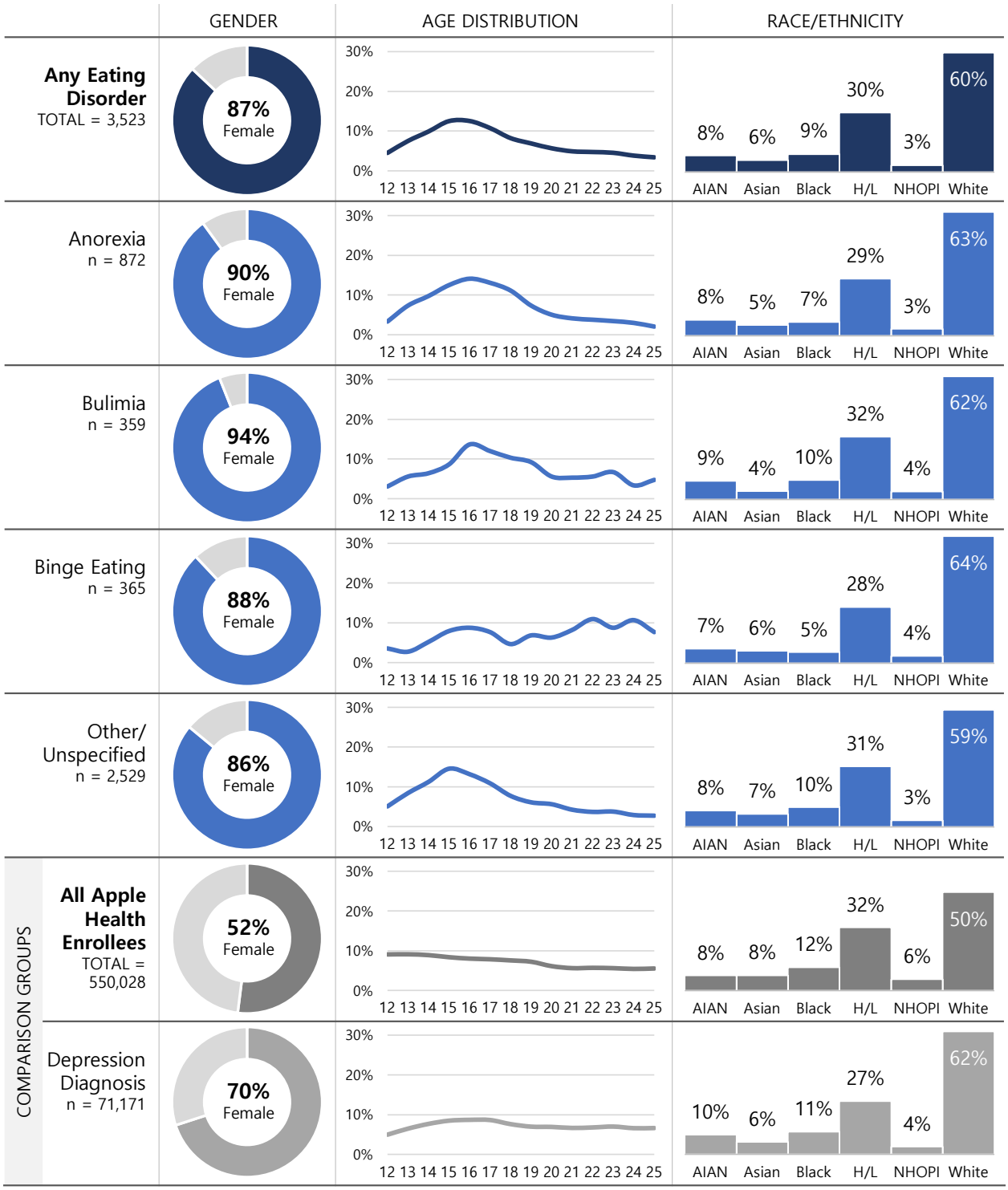
The majority (87 percent) of individuals ages 12 to 25 with eating disorders were female (3,051 of 3,523). For the 3,051 females with eating disorders, prevalence is highest in the age range of 14 to 20 (with only binge eating diagnoses having higher rates after age 20). For males, the overall number of eating disorders statewide is much smaller (n=472) and therefore difficult to assess for age patterns, but adolescence also appeared to be a period of heightened risk for eating disorders.

Turning to race/ethnicity, there were higher proportions (9 percentage points or higher) of White Non-Hispanic individuals with eating disorders relative to the overall population of individuals with Apple Health coverage. This was consistent across all eating disorder categories. Most other race and ethnicity groups were represented at similar proportions (within 5 percentage points) among eating disorder categories as in the same-age Apple Health group. One notable exception is that Black individuals were underrepresented in Binge Eating and Anorexia categories (5 and 7 percent, respectively versus 12 percent in all Apple Health).

FIGURE 4.

Gender, Age, and Race/Ethnicity Distributions

Ages 12-25, Calendar Year 2021



AIAN = American Indian/Alaska Native • **Black** = Includes African American • **H/L** = Hispanic or Latino
NHOPI = Native Hawaiian or Other Pacific Islander • **White** = White, Non-Hispanic

NOTE: Chart displays demographic characteristics of Apple Health clients ages 12 to 25 with an eating disorder diagnosis in CY 2021. Chart does not display prevalence of eating disorders by demographic group. Race/ethnicity groups are not mutually exclusive except for White, Non-Hispanic.

Co-Occurring Behavioral and Physical Health Needs

We identified co-occurring behavioral health conditions (mental health diagnoses, mental health prescriptions, and substance-related measures) for youth and young adults ages 12 to 25 with eating disorders. For comparison purposes, rates of the same conditions are presented for same-age Apple Health clients with depressive disorders.

Apple Health clients with eating disorders have high rates of anxiety (72 percent) and depression (69 percent). However, compared to the same-age group of individuals with depressive disorders, young adults ages 12 to 25 with eating disorders have notably higher rates of trauma/stressors disorders (39 percent vs. 27 percent), including Post-Traumatic Stress Disorder (PTSD; 28 percent vs. 17 percent); as well as mania/bipolar disorders (12 percent vs. 7 percent). PTSD rates are high for all eating disorder categories (27-38 percent) with the highest rate for those with Bulimia (38 percent). The rate of mania/bipolar is also particularly high for those with Bulimia (21 percent).

Suicidal ideation (22 percent), suicide attempt and other self-harm events in the study year (10 percent), and history of self-harm (14 percent) are all high for those with eating disorders compared to the depressive disorders reference group (15 percent, 6 percent, and 6 percent, respectively). Other behavioral health disorders with higher prevalence among those with eating disorders compared to those with depression were sleep disorders, personality disorders, and gender dysphoria.

Individuals with eating disorders also had fairly high rates of psychotropic medications prescribed in all categories assessed (antidepressants, ADHD, antipsychotics, antianxiety and antimania) compared to the reference group with depressive disorders, with particularly high rates of antianxiety and antipsychotic medications for those with Bulimia. Although only 3 percent of those with eating disorders received antimania prescriptions, this is three times the rate for those with depressive disorders and the rate is even higher (6 percent) for those with Bulimia specifically.

Substance use disorders and corresponding diagnoses rates for those with eating disorders were mostly similar to those in the depressive disorders reference group, however, drug use (21 percent) and nicotine use disorders (17 percent) were more common for those with Bulimia.

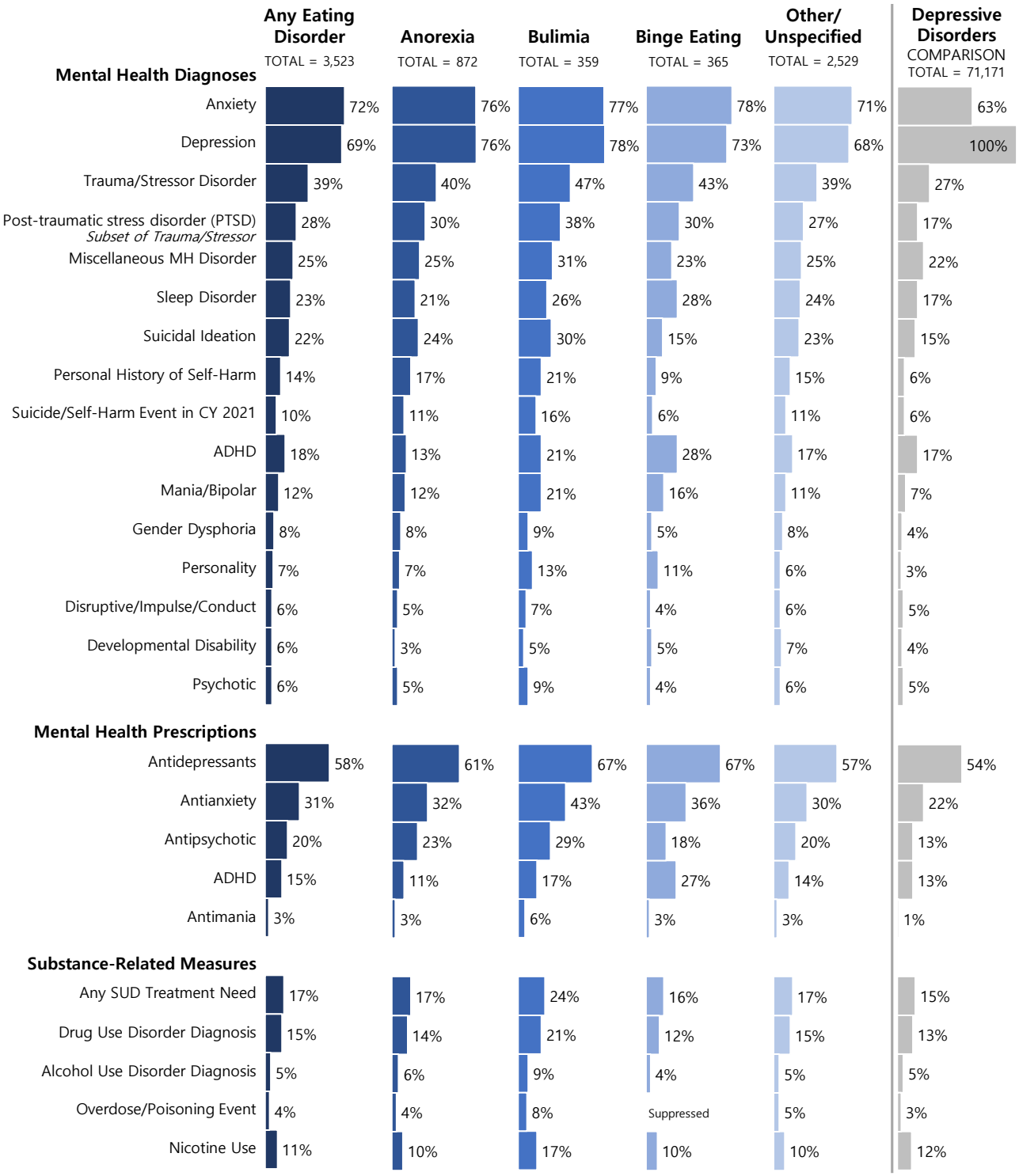
Individuals with eating disorders also have increased risk of serious co-occurring physical health conditions as a direct result of their symptoms that can be incapacitating and chronic (Zhao & Encinosa, 2011; Olguin et al. 2017; Hambleton et al. 2022). During exploratory phases of these analyses, we identified documented physical health conditions with an elevated prevalence among the eating disorder population. We evaluated prevalence of these conditions as well as conditions expected to be linked to eating disorders based on published literature. The most commonly found physical health diagnoses are shown in Figure 6 in order of prevalence for the Any Eating Disorder group. Digestive and related diagnoses topped the list (28 percent), along with heart rate and blood pressure abnormalities (18 percent), menstrual disorders (19 percent), and fatigue (16 percent). Many of the other diagnoses shown are directly related to symptoms of eating disorders (e.g., nutritional deficiencies, obesity, underweight, loss of appetite). See additional information about these diagnosis categories in the Technical Notes section.

We also calculated a metric indicating "serious health problems" (not shown) among those with eating disorders using the Chronic Illness and Disability Payment System (CDPS) measure, which predicts future Apple Health costs based on diagnosis and medication history (Kronick et al., 2000). Using this measure, **18 percent of individuals with eating disorders had indications of serious health problems comparable or more severe than those receiving SSI benefits.** We observed some variation by type of eating disorder: 20 percent of Anorexia patients and 25 percent of Bulimia patients had indications of serious health problems, compared to 18 percent among Binge Eating and Other/Unspecified eating disorder patients. All classifications of eating disorder patients had higher prevalence of serious health issues compared to the depressive disorders reference group; 13 percent of individuals with a depression diagnosis had indications of serious health problems.

FIGURE 5.

Behavioral Health and Related Conditions Among Those with Eating Disorders

Ages 12-25, Calendar Year 2021

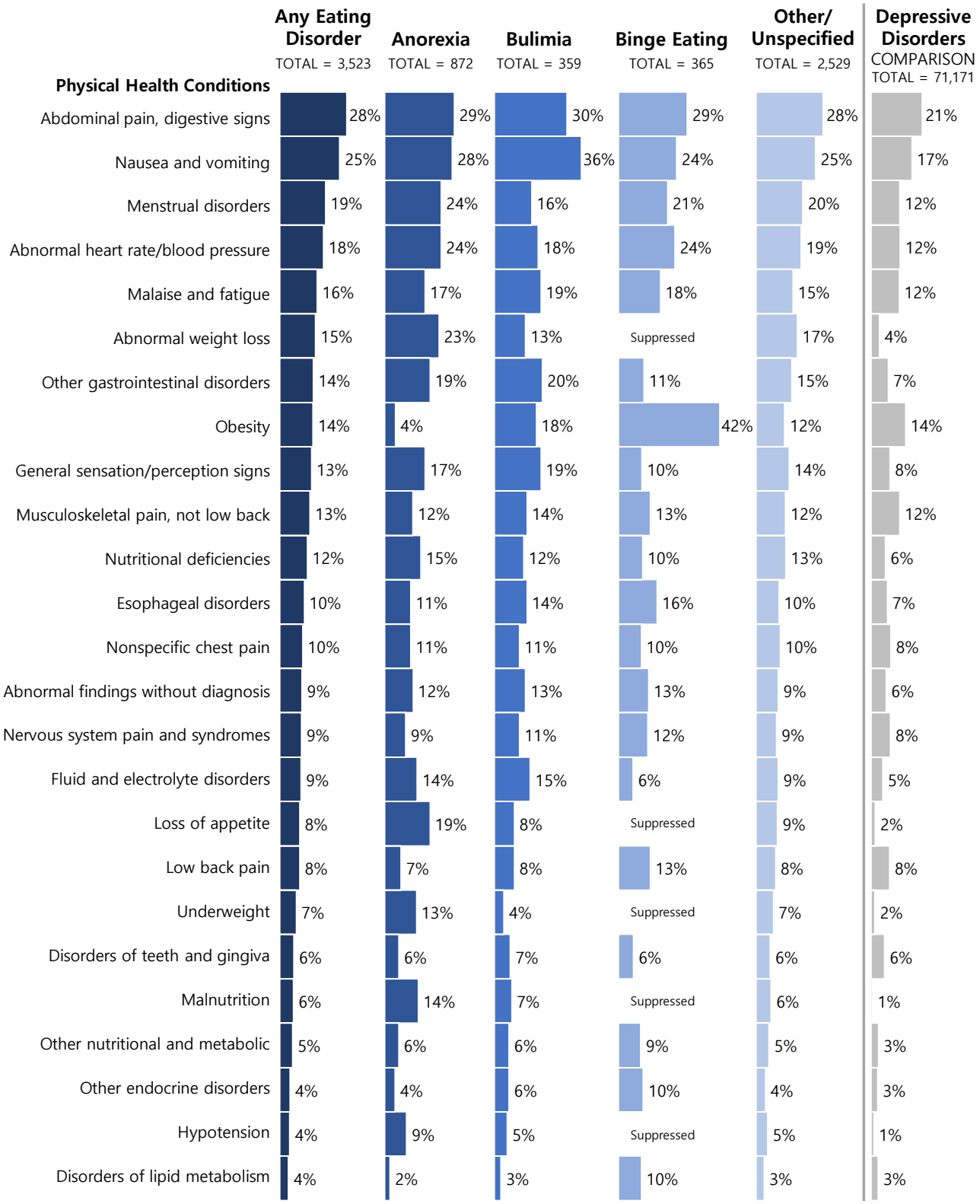


NOTE: The anxiety diagnosis category excludes PTSD and acute/severe stress-related diagnoses. The trauma/stressor disorder category includes PTSD, acute/severe stress-related diagnoses, adjustment disorders, and dissociative/conversion disorders. Although most MH diagnoses are shown in descending order of prevalence, the chart intentionally keeps related measures of suicidal ideation, personal history of self-harm, and suicide/self-harm event in CY 2021 together for comparison purposes. Nicotine use is not considered an indication of substance use treatment need, and thus is shown last. Measures representing fewer than 11 persons are suppressed.

FIGURE 6.

Most Frequent Physical Conditions Among Those with Eating Disorders

Ages 12-25, Calendar Year 2021



NOTE: See technical notes for physical health condition measures. Measures representing fewer than 11 persons are suppressed.

Behavioral Health Services Received by Those with Eating Disorders

Individuals with eating disorders are primarily receiving services in community mental health outpatient settings (85 percent). They also have extremely high use rates of community psychiatric inpatient services (15 percent), crisis services for more emergent behaviors and symptoms (11 percent; a subset of outpatient), and Wraparound with Intensive Services (WISe; 8 percent of those in the WISe-eligible age range; a subset of outpatient) that are designed for those with more severe and high-risk needs. These percentages are much lower in the population of individuals with depressive disorders (6 percent, 8 percent, and 5 percent, respectively).

TABLE 2.

Community Mental Health Services

Ages 12-25, Calendar Year 2021

	Any Eating Disorder		Anorexia		Bulimia		Binge Eating Disorder		Other/ Unspecified		Depressive Disorders
TOTAL	3,523		872		359		365		2,529		71,171
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	PERCENT
MH Outpatient	**2,982**	**85%**	**765**	**88%**	**320**	**89%**	**324**	**89%**	**2,132**	**84%**	**86%**
MH Crisis Services	383	11%	102	12%	57	16%	42	12%	284	11%	8%
WISe, Ages 12-20[a]	233	8%	56	8%	37	14%	18	9%	183	9%	5%
MH Inpatient											
Community Psych	536	15%	179	21%	82	23%	37	10%	408	16%	6%

NOTE: A second type of MH inpatient services—State Hospital and Children's Long-Term Inpatient Program (CLIP) services—were rare for eating disorders clients, with fewer than 1 percent receiving such services in CY 2021, so is omitted from the table. [a]The percentages shown for WISe represent the portion of individuals with eating disorders in the study population and in the WISe-eligible age range (12 to 20) that received WISe services; persons with eating disorders who are ages 21 to 25 are excluded from the denominator.

To gauge the services available for individuals with eating disorders in Washington State, we used ProviderOne claim and encounter data to flag providers for whom a substantial proportion of their clientele in CY 2021 had diagnosed eating disorders. We then reviewed publicly available online information to narrow that list to eating disorder treatment programs and providers whose sole specialty was eating disorder treatment (see Technical Notes for additional details).

Several specialty eating disorder providers were identified in this analysis, such as the Emily Program (sites in Seattle and St. Paul, MN), the Eating Recovery Center (Bellevue), and the Kartini Clinic (Portland, OR). Just under one-tenth (9 percent; 319 of 3,523) of individuals with eating disorders in CY 2021 were served by a provider we identified as a specialty eating disorder provider. Most of those served by specialty providers (87 percent; 277 of 319) were served by an out-of-state specialty provider at some point in the year; this was more than twice as common as receiving in-state specialty services (40 percent; 129 of 319).[1] Future work could continue to explore how to identify providers who specialize in treating eating disorders, as well as understanding the types of services they provide.

Claim and encounter data also indicated that a number of clients with eating disorders received "dietary counseling and surveillance" (14 percent; identified by ICD-10 diagnosis code Z713) at some point in the year. Future work could explore what kinds of service providers are providing this type of counseling.

[1] In concordance with WAC 182-501-0175, service providers located in bordering cities such as Portland, Oregon are not counted as out-of-state providers.

Health and Human Services

To identify subgroups for potential outreach and other cross-system programming implications, we summarized other health and human services received by individuals with eating disorders in CY 2021. Compared to individuals with depressive disorders, a slightly larger proportion of those with any eating disorder had at least one emergency department visit in the year (23 percent); this was much higher for those with Bulimia, with a third (33 percent) seeking care in emergency departments. Child welfare involvement overall and foster care placement rates were similar for those with eating disorders and depression (15 and 13 percent for overall child welfare involvement, with 2 percent of each in foster care). Child welfare rates were lower for those with binge eating disorders, which may be a function of the older ages of this group.

Similar to those in the depression group, 41 percent of those with eating disorders lived in households receiving Basic Food benefits and 6 percent received Temporary Assistance for Needy Families (TANF) cash assistance. A smaller proportion of eating disorders clients was identified as homeless or unstably housed compared to those in the depression group (7 and 12 percent). Barriers to accessing specialized mental health care for diagnosis and treatment could contribute to lower rates of identified eating disorders among homeless adolescents and young adults.

TABLE 3.

Cross-System Service Use Among Those with Eating Disorders

Ages 12-25, Calendar Year 2021

	Any Eating Disorder		Anorexia		Bulimia		Binge Eating Disorder		Other/ Unspecified		Depressive Disorders
TOTAL	3,523		872		359		365		2,529		71,171
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	PERCENT
Any Emergency Department Use	804	23%	203	23%	119	33%	66	18%	603	24%	20%
Child Welfare Involvement	515	15%	118	14%	58	16%	30	8%	399	16%	13%
Foster Care	71	2%	14	2%	12	3%	**	**	53	2%	2%
Basic Food	1,446	41%	360	41%	156	43%	142	39%	1,040	41%	45%
TANF	209	6%	42	5%	26	7%	11	3%	165	7%	7%
Homeless/ Unstably Housed	249	7%	57	7%	43	12%	23	6%	172	7%	12%

NOTE: **Cell sizes smaller than 11 are suppressed.

Discussion

In this analysis, we describe the population of individuals enrolled in Apple Health who have been diagnosed with eating disorders, providing details on client characteristics, demographics, and co-occurring needs and services received in CY 2021. Given that about half of the individuals with any eating disorder, more than half of those with Other/Unspecified Eating Disorders (54 percent), most of those with Anorexia (70 percent) were ages 12 to 25, and because of DBHR's interest in developing programming for youth and young adults, we focused most analyses on individuals in this age range.

The number of youth and young adults who have been diagnosed with eating disorders since the start of the COVID-19 pandemic has increased. A total of 3,523 individuals with Apple Health coverage, ages 12 to 25, had an eating disorder diagnosed in CY 2021. Although relatively small in number (less

than one percent of the total Apple Health population ages 12 to 25), individuals with eating disorders have significant co-occurring behavioral and physical health conditions, as well as intense and costly service needs. The overwhelming majority of youth and young adults with eating disorders also had diagnoses indicating the presence of anxiety (72 percent), depression (69 percent), trauma/stressor disorder (39 percent), suicidal ideation (22 percent), substance use disorder (17 percent), serious health problems (18 percent), and/or more than one eating disorder (16 percent). Compared to same-age individuals with depressive disorders, those with eating disorders have similar or higher rates of service use such as community inpatient psychiatric and emergency department use that indicate intensive behavioral health needs. Consistent with the widespread shortage in eating disorder specialty treatment providers (Cooper & Bailey-Straebler, 2015; Kazdin, Fitzsimmons-Craft, and Wilfley 2017), a modest proportion of those with eating disorders in this study (9 percent) received specialized care, and most who did so received some or all of their specialty services out of state. Individuals with eating disorders also received a myriad of other social services such as Basic Food and had child welfare system involvement. They also had high rates of inpatient psychiatric hospitalizations, crisis services, and emergency department use.

There are several implications of these findings. First, given the age range of individuals diagnosed with eating disorders and spikes in prevalence for adolescents, schools are an obvious venue for prevention and early intervention services. Second, as other social services are being used, there is potential for cross-system preventative and early intervention outreach in settings such as community services offices and child welfare case management. Third, trends in eating disorders should be closely monitored as this disorder is debilitating and costly. Fourth, the capacity of the mental health system is a concern as inpatient and outpatient needs for specialized eating disorder services have likely increased contemporaneously (Lin et al., 2021). Future studies on this topic should address the short and long-term outcomes for individuals with eating disorders, particularly for those with onset during the pandemic, as well as predictors of positive and negative outcomes. Early indicators and risk factors associated with eating disorders among youth and young adults should also be studied for this population for the purpose of developing prevention and early intervention programming. For example, the Healthy Youth Survey, an annual statewide survey of 6th to 12th grade students, added new questions about disordered eating and weight stigma in 2023. This information may help to identify trends and patterns to support future prevention, safety, and health promotion initiatives.

Although our study focused on individuals with eating disorders ages 12 to 25 years, there are a substantial number of Apple Health clients with eating disorders who are outside of these age ranges, about 3,500 in the diagnostic categories studied. There are additional eating and feeding disorder diagnoses that are more common for younger children and some subpopulations (e.g., pica), as well as for older adults, who are frequently diagnosed with unspecified eating disorders (Mulchandani et al., 2021). Future analyses on this topic should separately address, in detail, the unique eating disorders and needs experienced by younger children (0-11) and adults over age 25, including older adults.

Future work focused on individuals with eating disorders should also address more detailed services, needs and gaps. For individuals seeking care in emergency departments, primary care, hospital settings, or residential programs, further connections to outpatient services can be essential for successful outcomes. More analyses are needed to determine how many individuals seen in inpatient or emergency settings are connected and successfully engaged in treatment, which is a critical factor in determining long-term recovery (Peckmezian & Paxton, 2020). The notably higher proportion (8 percent) of the population studied that received specialty services outside of Washington State as compared to in-state (4 percent) suggests that appropriate intensive services are not always locally available for individuals in need. Specialty providers may be both in short supply as well as difficult to locate, given the lack of formal licensing requirements, however DOH recently published a resource

guide on eating disorders, including a list of treatment centers available in Washington (DOH, 2024). Region-specific lists of specialty eating disorder providers have also been developed by Youth Regional Behavioral Health Navigation Teams through the Kids Mental Health Washington initiative.[2]

The analytics presented here related to eating disorders services and providers will inform the eating disorders section of the Health Care Authority's Access Report, an annual report required by RCW 74.09.495 that informs the legislature on behavioral health service access for children and youth. Additionally, short- and long-term outcomes for individuals enrolled in Apple Health who have eating disorders should also be studied in detail. It is likely that the physical and behavioral health needs associated with these disorders are more debilitating and costly than other behavioral health problems because of all of the co-occurring disorders and resulting health difficulties experienced by those with these disorders. It will also be valuable to assess psychosocial outcomes related to missed school and employment for those who require intensive and long-term treatment. Understanding this information in the Apple Health-enrolled population will help evaluate the impacts of specific treatment and prevention programs for individuals receiving publicly funded health services to inform future programming and policy.

Finally, the focus of this study was on individuals with eating disorders. Caregivers of individuals with eating disorders are also heavily impacted by this all-encompassing disease which puts them at risk for mental health and other difficulties (Linardon et al., 2022). Future work assessing the impacts on, and the needs of, caregivers navigating Apple Health-covered services and other publicly funded systems is essential to supporting all those affected by eating disorders.

Limitations

There are several limitations of this study. The prevalence of eating disorders during the pandemic period may actually be underestimated due to individuals seeking less emergency and primary medical care, especially during the period March 2020 – May 2021, although emergency department visits for those for eating disorders did reportedly increase (Lin et al., 2021).

This report presents services and needs indicated in Apple Health claims and encounters only. Some Apple Health-enrolled individuals in the study population included those with dual Medicaid and Medicare coverage. It is possible that some individuals received services or attended programs outside of the Apple Health domain (e.g., schools, private programs). For those with dual coverage, estimates of prevalence and co-occurring conditions are likely even higher than reported here. Prevalence estimates of eating disorder diagnoses derived from administrative service data may also differ across demographic groups (age, gender, race/ethnicity) and service populations (e.g., foster care youth populations, youth impacted by homelessness/unstable housing) based on a variety of factors including differential rates in seeking and accessing eating disorders treatment due to awareness, stigma, or other service barriers; or in receiving appropriate and unbiased diagnoses and treatment services when individuals attempt to access care (Becker et al., 2019; Brown & Keel 2023; Sonneville & Lipson, 2018).

[2] Kids Mental Health Washington is a state-local initiative to improve the coordination of services for youth experiencing behavioral health challenges. Resources including region-specific eating disorder provider lists can be found at https://kidsmentalhealthwa.org/.

STUDY DESIGN AND OVERVIEW

This study examines trends in eating disorders among the Apple Health population between the ages of 12 and 25 years from 2017 to 2023 as well as characteristics, service use, and outcomes for individuals diagnosed with an eating disorder in CY 2021. The population of those enrolled in Apple Health included some individuals with dual Medicaid and Medicare coverage. The initial trends analysis reflects the number of people ages 12 to 25 with an eating disorder diagnosis in each month per 10,000 Apple Health clients ages 12 to 25 in the month. The study then focuses on a cohort of 3,523 eating disorder clients with diagnoses in CY 2021 who are between the ages of 12 and 25 years. Comparison populations of same-aged individuals diagnosed with depression (n=71,171) and individuals receiving Apple Health (n=550,028) in CY 2021 were also assessed.

Analytical approach. Multiple measures were compared among individuals ages 12 to 25 diagnosed with any eating disorder, Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder, and Other/Unspecified eating disorders in CY 2021. Similar depression-diagnosed individuals and Apple Health-enrolled individuals were also included as comparison groups.

DATA SOURCES AND MEASURES

This study relied on integrated service and outcome information contained in the DSHS Integrated Client Databases (ICDB; Mancuso & Huber, 2021).

- **Eating disorder diagnoses.** Eating disorders were flagged using Apple Health encounters as recorded in ProviderOne. Diagnosis codes underlying these categories are shown in the table below. An exploratory analysis found that the majority of diagnoses in the "other/unspecified" eating disorder category are from a specific ICD-10 diagnosis code: F509, "eating disorder unspecified."

Anorexia	
F5000	Anorexia nervosa, unspecified
F5001	Anorexia nervosa, restricting type
F5002	Anorexia nervosa, binge eating/purging type
Bulimia	
F502	Bulimia nervosa
Binge Eating Disorder	
F5081	Binge eating disorder
Other/Unspecified Eating Disorder	
F5082	Avoidant/restrictive food intake disorder
F5089	Other specified eating disorder
F509	Eating disorder, unspecified

- **Depression diagnoses.** This measure identified clients with any depressive disorder diagnosis (e.g., F329 "Major depressive disorder, single episode, unspecified") in CY 2021 using data contained in the ICDB, including ProviderOne.
- **Apple Health enrollment.** The Apple Health enrollment flag identified those with at least one month of Apple Health coverage in CY 2021. Specific coverage categories in this study included full-benefit Medicaid under Title XIX of the Social Security Act (SSA) and full-benefit State Children's Health Insurance Program (SCHIP) under SSA Title XXI, but not the state-only Children's Health Program (CHP). Potential future analyses on eating disorders may consider a more comprehensive Apple Health definition including the CHP population.
- **Demographics.** Age, gender, and race/ethnicity variables were identified using service records in the ICDB. Race and ethnicity categories are not mutually exclusive. Age is measured in June of CY 2021 for CY 2021 analyses. Age is measured in the month for the trends analysis covering CY 2017- CY 2021. Gender is reported as female or male; more granular gender categories such as transgender and non-binary are not available in the administrative data used for this study. This is an important limitation, as transgender and non-binary individuals tend to experience higher rates of eating disorders than their peers (Parker and Harriger, 2020).

- **Behavioral health conditions**. Those with behavioral health conditions were identified through administrative records of behavioral health diagnoses using data contained in the ICDB, including ProviderOne.
- **Mental health prescriptions.** Psychotropic medication prescriptions filled were identified in CY 2021 using data from ProviderOne.
- **Substance-related measures.** Individuals were identified who had a substance use disorder diagnosis or accessed substance use treatment, in ICDB administrative data, or had a substance-related arrest, as reported to the Washington State Patrol. Alcohol use disorder diagnoses, drug use disorder diagnoses, overdose/poisoning event diagnoses, and nicotine use diagnoses were also derived from the ICDB.
- **Physical health conditions.** Physical health conditions examined included conditions with an elevated prevalence among the eating disorder population during the exploratory analysis phase as well as conditions expected to be linked based on published literature on eating disorder populations.
  - **CCSR measures.** The most common physical health conditions associated with eating disorders were identified using diagnosis information from ProviderOne claims and encounter data. Most physical health indicators are based on "Clinical Classifications Software Refined (CCSR) for ICD-10-CM Diagnoses" by the Agency for Healthcare Research and Quality (AHRQ), version 2022. See https://hcup-us.ahrq.gov/toolssoftware/ccsr/ccs_refined.jsp for additional information. For example, "abdominal pain, digestive symptoms" is a grouping of 73 specific ICD-10 diagnosis codes that CCSR groups together as "Abdominal pain and other digestive/abdomen signs and symptoms." In the population of Apple Health clients ages 12 to 25 with any eating disorder in CY 2021, 28 percent had at least one of these diagnoses, the most common being unspecified abdominal pain (R109; 16 percent). Abnormal heart rate/blood pressure reflects CCSR measure "circulatory signs and symptoms," with the most common in the any eating disorders population being tachycardia (R000; 8 percent), bradycardia (R001; 4 percent), palpitations (R002; 4 percent), and elevated blood pressure (R030; 4 percent). The most common of "general sensation/perception signs and symptoms" (13 percent) in the any eating disorders population is dizziness and giddiness (R42; 11 percent). The most common diagnosis of "nutritional deficiencies" (12 percent) in the any eating disorders population is vitamin D deficiency (E559; 8 percent). The most common diagnoses of "abnormal findings without diagnosis" (9 percent) are other specified abnormal findings of blood chemistry (R7989; 4 percent) and abnormal electrocardiogram (R9431; 3 percent). The most common diagnosis of "nervous system pain and pain syndromes" (9 percent) is other chronic pain (G8929; 8 percent).
  - **Non-CCSR indicators** used that reflect important physical health measurement concepts not directly available in the CCSR set include abnormal weight loss (R634), loss of appetite (R630), and underweight (R636,Z681,Z6851).
  - **Serious health problems.** The serious health problems measure was based on diagnoses and prescriptions which indicate costly medical conditions. Based on each individual's combination of age, gender, diagnoses, and prescriptions, he or she is given a risk score (Kronick et al., 2000). Those with risk scores higher than the average among the Supplemental Security Income service population (disabled clients) are flagged as having serious health problems.
- **Mental health services.** Several types of mental health services were examined.
  - **Mental health outpatient.** Mental health services delivered in non-inpatient settings (i.e., not requiring an overnight stay), including services delivered in office or clinical settings, in home or community settings, or via telehealth.
  - **Mental health crisis services.** Mental health crisis services are a subset of mental health outpatient services that meet the Health Care Authority's guidelines as specified in the Service Encounter Reporting Instructions (SERI) for crisis or stabilization services.
  - **WISe.** Wraparound with Intensive Services (WISe) is an intensive home- and community-based outpatient program that provides wraparound supports and access to 24/7 crisis services, available to Apple Health clients in Washington ages 0-20 years.

- **Community Psychiatric Inpatient.** Community psychiatric inpatient refers to mental health treatment provided in community psychiatric hospitals or evaluation and treatment facilities that includes at least one overnight stay.
- **Specialty Eating Disorder Providers.** Because there is not currently a direct way to identify specialty eating disorder providers in Washington (e.g., no specific licensing requirement), we used a data-driven approach to identifying specialty eating disorder providers serving the Apple Health population. First, we used ProviderOne (P1) claims and encounters to identify a list of providers (billing provider National Provider Identifier/NPI) that delivered at least one service to an Apple Health client (not age restricted) who received an eating disorder diagnosis at any point by any provider in CY 2021. Second, we identified providers for which at least one-quarter of all P1 claims and encounters in CY 2021 were delivered to persons with a CY 2021 eating disorder diagnosis and which had at least 10 total encounters in the year. From that list, we identified approximately two dozen NPIs tied to eating disorder treatment programs or providers whose sole specialty appeared to be eating disorder treatment, based on a review of publicly available online information. A handful of additional providers who listed eating disorders as one of several specialty areas were not included in our tabulation of specialty eating disorder providers.

- **Health and Human Services**
  - **Outpatient emergency department visit.** The outpatient emergency department visit flag used Apple Health encounters as recorded in ProviderOne, and indicates whether an individual had at least one such visit in the year.
  - **Child welfare involvement.** Child welfare involvement included any accepted intake of abuse and neglect or involvement in child welfare case management or services in CY 2021.
  - **Foster care.** Out-of-home child welfare placement in at least one month of CY 2021.
  - **Basic Food receipt.** Basic Food receipt in at least one month of CY 2021 was measured using benefit information from the ACES data warehouse.
  - **TANF receipt.** TANF receipt in at least one month of CY 2021 was measured using benefit information from the ACES data warehouse.
  - **Homeless/unstably housed.** Homeless without housing ('on the street'), homeless and sheltered (i.e., using homeless shelters), or experienced housing instability (e.g., couch surfing, requested services at a coordinated entry site) at some point in CY 2021. This combined measure is based on integrating several indicators of homelessness from multiple administrative data systems, including the ACES data warehouse, eJAS, ProviderOne, and HMIS.

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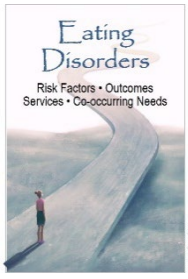

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