SPECIAL TOPIC REPORT

DEPRESSION AMONG ADOLESCENTS AND TRANSITION-AGE YOUTH

Recommendations for Prevention and Early Intervention

JUNE 2020

COUNTY OF SAN DIEGO
BEHAVIORAL HEALTH SERVICES

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I.   Introduction

The incidence of depression is increasing among adolescents both nationwide (Keyes et al., 2019), and in San Diego County. Depression is caused by a complex interplay of genetic and environmental factors, and the cause of the recent increase among adolescents has not been clearly identified. The purpose of this report is to provide ideas for new prevention and early intervention programs that could help curb the increase in adolescent depression. To that end, this report provides an overview of the change in local and national rates of adolescent depression, the factors that are known to cause adolescent depression, and new risk factors that might be driving the increase. The final section of the report reviews the current PEI programs and strategies that San Diego County is using to address depression among adolescents and Transitional Age Youth (TAY), and provides suggestions based on the identified risk factors for new PEI programs and strategies.

II.   Background

Nationwide rates of adolescents receiving a diagnosis of a major depressive episode in the previous year increased from approximately 8.7% in 2005 to approximately 13.2% in 2017. This same trend was not present in adults who were 26 or older (Twenge, Cooper, et al., 2019). For girls, this increase was even more pronounced: 13% of girls reported having at least one major depressive episode in 2005, whereas 20% reported having one in 2017. Furthermore, increases were consistent across racial ethnic groups and socioeconomic status (Twenge, Joiner, et al., 2018). Another study, using the same sample with different analytic methods, also concluded that the prevalence rates of depression are increasing in adolescents (Mojtabai et al., 2016).

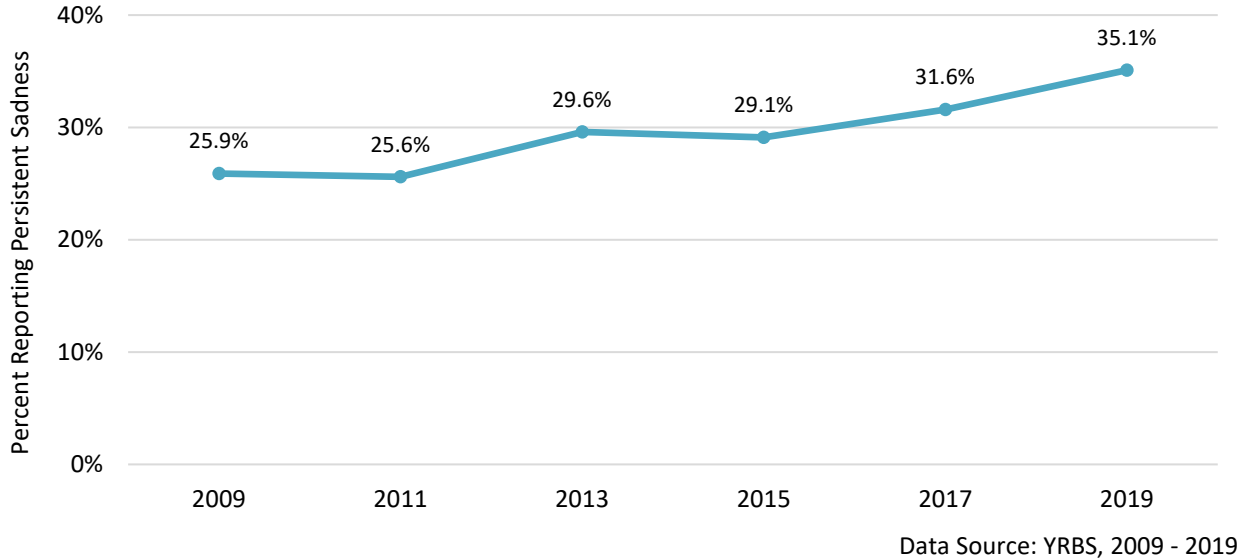# III.   San Diego County Prevalence of Depression Trends

Local data suggest the rates of depression have been steadily increasing among adolescents in San Diego for at least a decade. The burden of depression is not uniformly distributed across the population. Specifically, both the prevalence of depression and rate of increase are greatest among younger adolescents, females, and youth identifying as lesbian, gay and bisexual. Also, the data suggest adolescents and youth residing in certain areas of San Diego County may be at higher risk for negative consequences of depression, like acute psychiatric hospitalizations and emergency department visits. The secondary data supporting these key findings are presented below.

Prevalence of depression among adolescents in San Diego

Combined data from the 2014 to 2016 National Survey of Drug Use and Health (NSDUH) suggest nearly one in eight San Diego youth between the ages of 12 and 17 met the diagnostic criteria for a past year major depressive episode (MDE). This represents a change in MDE, from an estimated 8.4% in 2010-2012 to an estimated 12.3% in 2014-2016.

Beyond focusing solely on youth who met the diagnostic criteria for depression, experiencing persistent feelings of sadness or hopelessness for two weeks or longer in the past year is a proxy for depressive episode included in Youth Risk Behavior Survey (YRBS). More than one in three (35.1%) San Diego Unified High School students reported persistent sadness on the YRBS in 2019, as compared to 25.9% in 2009. There has been a statistically significant linear increase in the prevalence of persistent sadness since 2009 (Figure 1).

Figure 1. High school students reporting persistent sadness
San Diego Unified School District, 2009 - 2019

Data Source: YRBS, 2009 - 2019

Disparities in prevalence of depression among adolescents in San Diego

Between 2009 and 2019 there were also statistically significant linear increases in the percent of female and male high school students that experienced persistent feelings of sadness (Figure 2). For females, the estimated increase was 42.6% compared to 20.8% for males, suggesting the gender disparity is becoming more pronounced over time.

Figure 2. High school students reporting persistent sadness, by gender
San Diego Unified School District, 2009 - 2019

Date Source: YRBS, 2009 - 2019
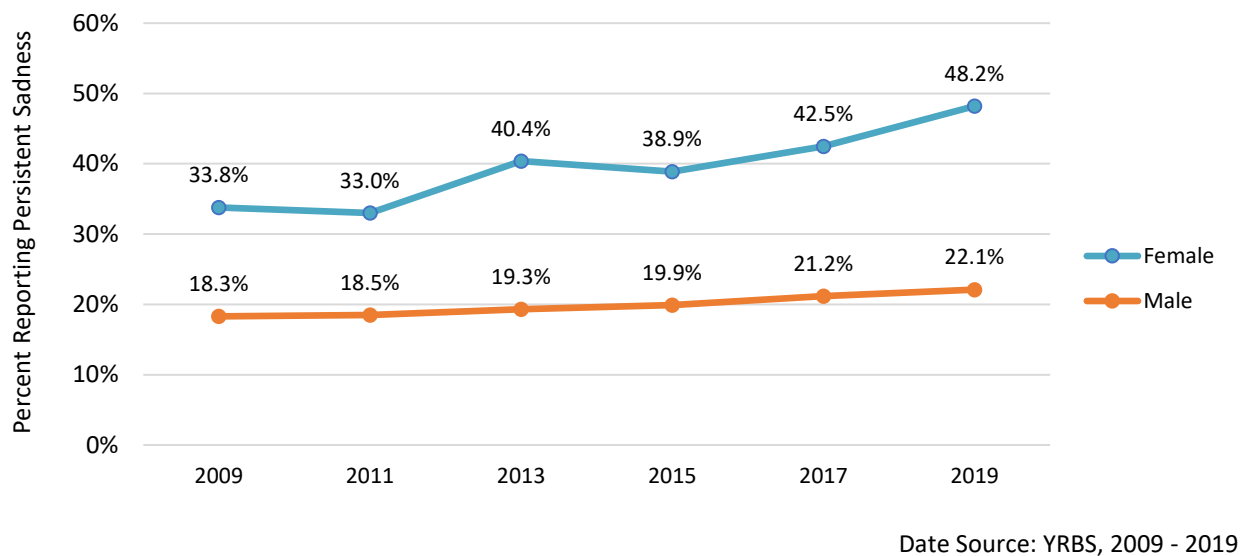
Gay, lesbian and bisexual high school students had the highest prevalence of persistent sadness of any investigated group (Figure 3). Approximately 62.8% of non-heterosexual high school students experienced persistent sadness, compared to only 31.0% of heterosexual students. Data were not collected on sexual identity prior to 2011, however, between 2011 and 2019 there were statistically significant increases in the prevalence of persistent sadness among both heterosexual and non-heterosexual students.

Figure 3. High school students reporting persistent sadness, by sexuality
San Diego Unified School District, 2009 - 2019
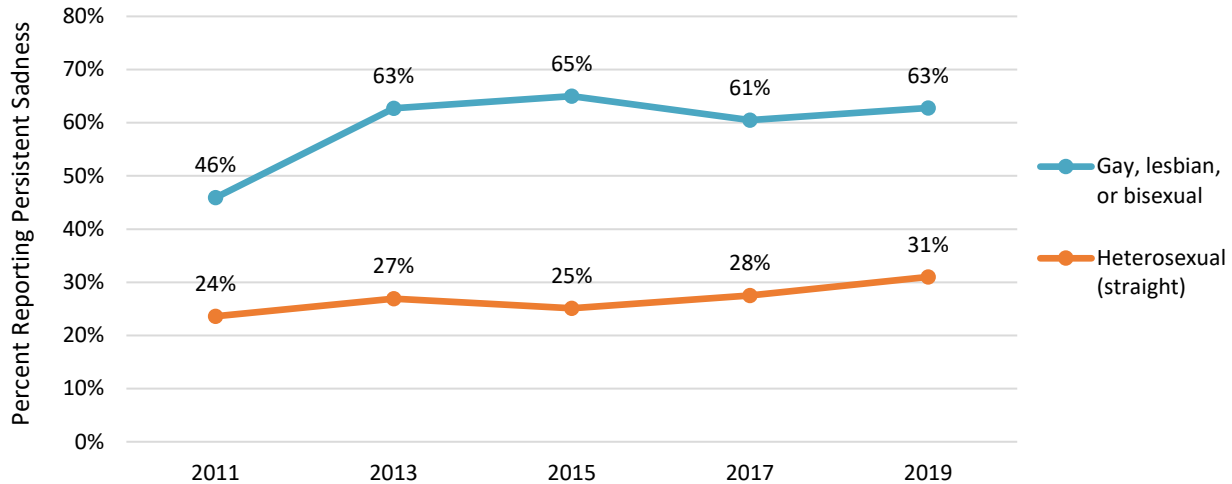
Date Source: YRBS, 2011 - 2019

Racial and ethnic disparities in persistent feelings of sadness were also investigated but were less pronounced. In 2019, Hispanic/Latinos had the highest prevalence of persistent sadness (39.6%), followed by Asians (31.5%) and non-Hispanic Whites (28.5%). There were statistically significant increases in the prevalence of persistent sadness between 2009 and 2019 for White (20.8% to 28.5%) and Hispanic/Latino students (32.1% to 39.6%). Data were not available to estimate changes over time for other racial and ethnic groups.

Primary diagnosis of depression among adolescents receiving public mental health services

The percentage of Children, Youth and Family Behavioral Health Services (CYFBHS) clients ages 12 to 18 with a primary diagnosis of depression increased from 33.6% in FY 2014-2015 to 44.5% in FY 2018-2019. For most years, having a primary diagnosis of depression peaked among 15-year-olds. Over time, the percent increase in depression diagnosis was greatest for 12-year-olds, increasing from 27.6% in 2014-2015 to 39.9% in FY 2018-2019 (Figure 4).

Figure 4. Primary diagnosis of depression, by age

Adolescents served by CYFBHS, 2014 - 2019
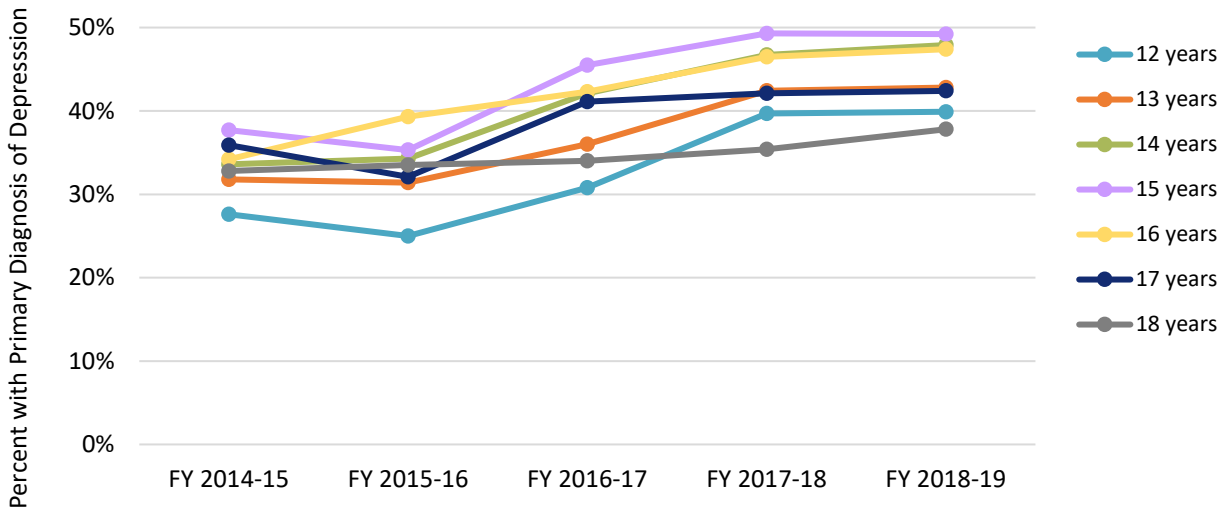
Date Source: CCBH, 2014 - 2019

Depression rates among TAY served in the Adult and Older Adult Behavioral Health Services (AOABHS) system have remained relatively constant over the same time period, suggesting increased depression risks are primarily affecting younger adolescents (Figure 5). However, because of differences in the approach used to calculate primary diagnosis in the CYF and AOA BHS systems, diagnosis rates may not be directly comparable.

Figure 5. Primary diagnosis of depression, by age

TAY served by AOABHS, 2014 - 2019
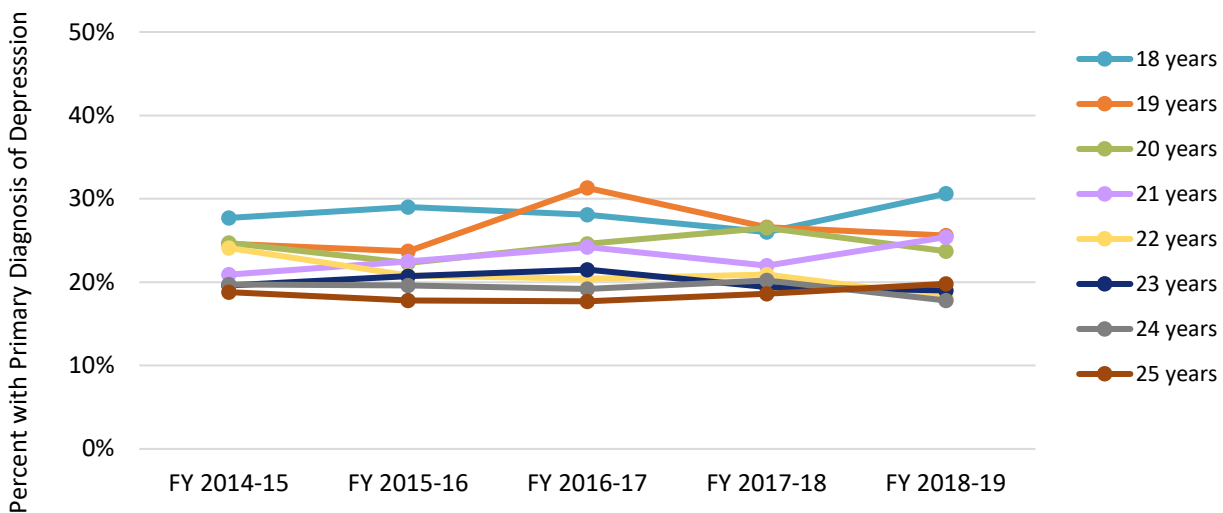
Date Source: CCBH, 2014 - 2019

Discharge rates for emergency department visits and inpatient treatment for depression

While acute psychiatric hospitalizations and emergency department (ED) treatment are an important part of any continuum of mental health care, higher rates of inpatient treatment may indicate a failure of the mental health system to meet the needs of individuals in the community.

Countywide discharge rates for those with a diagnosis of depression were first released in 2019, using data from 2017 (HHSA, Community Health Statistics Unit, 2020). These data suggest ED and inpatient discharge rates for depression were substantially higher for those aged 15 to 24 compared to all other age groups, highlighting the unique depression risks for TAY (Figure 6).

Figure 6. Discharge rates for depression, by age

Rate per 100,000 San Diego County residents
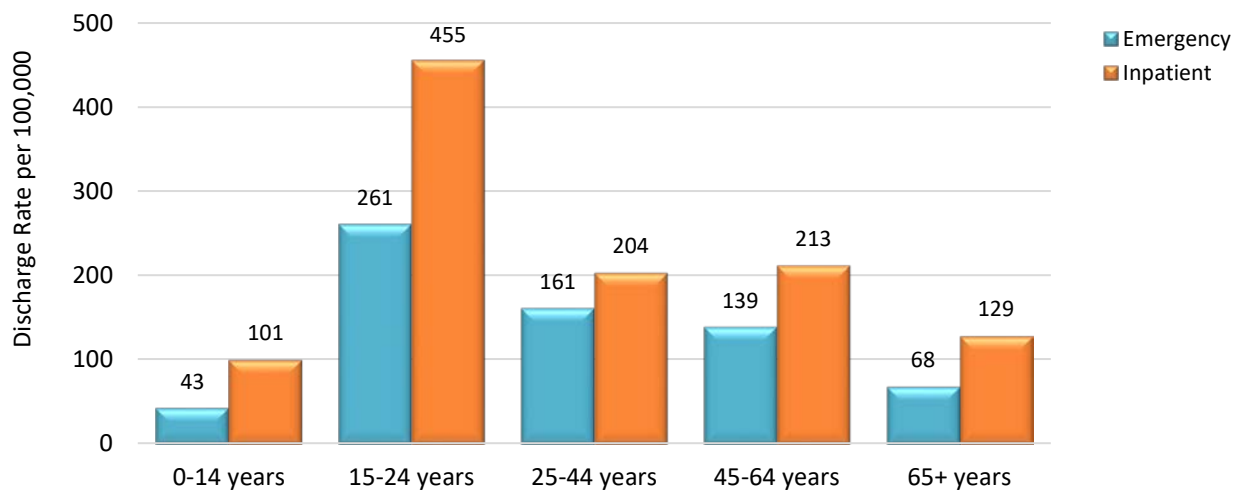
Date Source: HHSA, Community Statistics Unit, 2017

Among those aged 15 to 24, ED and inpatient discharge rates for depression were higher for females than males. They also varied by region (Figures 7 and 8). The highest ED discharge rates were observed among females residing in the North Coastal Region (514 per 100,000) and East Region (383 per 100,000). The highest inpatient discharge rates were observed among females residing in the East Region (874 per 100,000).

Figure 7. ED discharge for depression, by region
Rate per 100,000 San Diego County residents ages 15 to 24
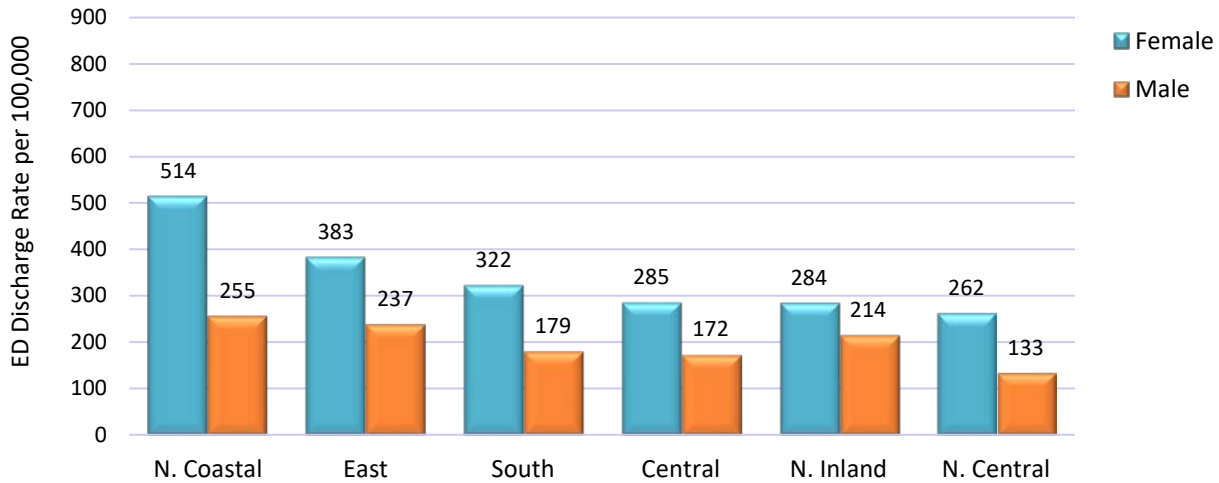
Date Source: HHSA, Community Statistics Unit, 2017

Figure 8. Inpatient discharge for depression, by region
Rate per 100,000 San Diego County residents ages 15 to 24
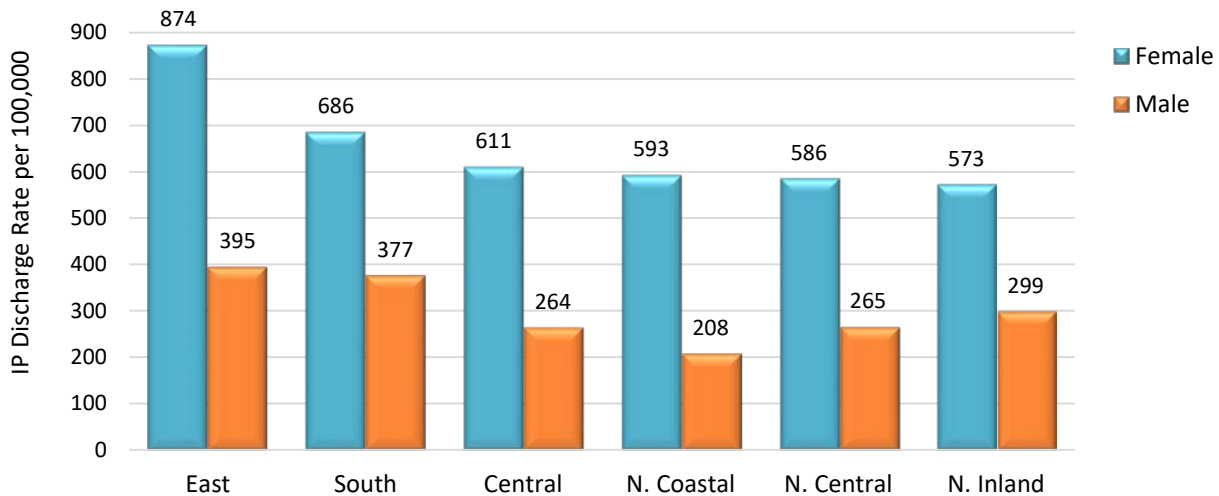
Date Source: HHSA, Community Statistics Unit, 2017

IV. Previously-Identified Risk Factors for Depression

Genetics

Depression during adolescence and early adulthood is likely due to the interplay of both an individual's biology and social environment. A youth is three to four times more likely to suffer from depression if his or her parents have a history of the disorder (Rice, 2010), and several genes have been identified that may contribute to the intergenerational transmission of depression (Bernaras et al., 2019). After reaching puberty, girls are two times more likely to suffer from depression than boys (Rice, 2010); a disparity that may be driven, in part, by hormonal differences between the two genders (Albert, 2015).

Sleep

In addition to genetics, poor sleep duration and quality are significant predictors of depression. Several longitudinal studies have found that youth who have sleep disturbances are more likely to become depressed than youth who have adequate sleep (Goldstone et al., 2020). Sleep disturbances may be caused by the same genes that play a role in the intergenerational transmission of depression (Lovato & Gradisar, 2014). Further, lying awake in bed is conducive to rumination and it is possible that youth with sleep disturbances develop negative patterns of thinking that eventually lead to clinical depressive episodes (Lovato & Gradisar, 2014).

Family Environment

A youth's risk for depression is also dependent on his or her family environment: parental alcohol abuse (Hanson et al., 2006), childhood maltreatment (Gladstone et al., 2011), family conflict (Sheeber et al., 2001), and growing up in a household without a father (Lu, 2019) are all significantly associated with the development of depressive disorders. The mechanisms through which parental adversity can lead to the development of adolescent depression are not entirely clear. Some researchers have found that a lack of positive responses from parents can contribute to adolescent depression (Chapman et al., 2016). There is also some evidence that caregivers of depressed youth may direct anger and criticism towards the youth and engage in harsh discipline and psychological control (Sheeber et al., 2001). In response to these negative parenting practices, adolescents can develop a cognitive style that leads to depression, as well as poor problem-solving skills and a limited ability cope with negative affect (Sheeber et al., 2001).

Negative School Experiences

In addition to the family environment, a youth's experience at school can have a strong impact on his or her mental health. At school, students face various social, emotional, and academic challenges. Youth who dislike attending school and do not feel that their coursework is meaningful are more likely to experience depressive episodes than other youth (Lu, 2019). Both poor academic performance (Hishinuma et al., 2012) and negative interactions with peers (Klomek et al., 2013) are associated with adolescent depression.

Lack of Support and Bullying

For high school students, factors such as school violence, peer victimization, low teacher support and low peer support are strongly associated with depression and anxiety symptoms (Lepore & Kliewer, 2019; Pössel et al., 2013; Turner et al., 2018; Watts et al., 2019). Bullying others and being the victim of bullying increases the likelihood that a youth will have symptoms of depression, and youth who are both bullies and victims of bullying are at the highest risk (Klomek et al., 2007).

Sexual Minority Youth

Bullies often target youth who identify as members of sexual minority groups or who have characteristics that are associated with being a member of a sexual minority group. A national study of school climates in 2017 found that more than half of the students who identified as sexual minorities felt unsafe at school and 87% had been harassed or assaulted on school grounds (Kosciw et al., 2018). Youth who identify as sexual minorities have significantly higher rates of depression and suicide compared to youth who identify as heterosexual, and some research suggests that bullying is partially responsible for this disparity (Burton et al., 2013).

Native American Youth

In addition to youth who identify as sexual minorities, Native American youth have higher rates of depression and suicide than other youth (Livingston et al., 2019). High rates of poverty and drug abuse among Native American populations, as well as years of historical traumas, may cause Native American youth to feel hopeless (Abassi, 2017). It is not clear that membership in other racial or ethnic minority populations (Black, Hispanic, or Asian), or belonging to multiple minority groups (e.g., members of both racial and sexual or gender minority populations) is a risk factor for depression (Fox et al., 2020; Mojtabai et al., 2016). However, many racial and ethnic minority groups experience stigma regarding mental health problems, so the rates of depression in these groups may be under-reported (Robillos et al., 2010).

V.   Possible New Risk Factors for Depression

Increase in Screen Media Use

Smart phone ownership among adolescents living in the United States rose from approximately 73% in 2014-2015 to 95% in 2018 (Pew Research Center, 2018). The majority of youth now have access to screen media whenever they have a phone with them. There is currently a large debate among child health researchers as to whether increases in time spent on screen media, due to the proliferation of smart devices, is one of the causes of increased adolescent depression. Additionally, new research in this area is being published at a rapid pace. The fact that there are many different types of screen media (social media, video game playing, television viewing etc.), and that some youth may have pre-existing depression, complicates this issue. Below we summarize research on different types of screen media use and use by youth with pre-existing mental health problems, separately.

Social Media Use

One of the reasons social media has received a lot of attention as a potential risk factor for depression is that adolescent girls use social media much more frequently than adolescent boys (Rideout & Robb, 2018), and girls are at higher risk for depression. Social media use lends itself to both social comparison and the depiction of idealized lifestyles, which could cause feelings of sadness and hopelessness among adolescents who compare themselves negatively to others' posts.

There appears to be a concurrent link between social media use and depression, such that higher current use of social media is associated with more current symptoms of depression and vice versa (Gamez-Gauix, 2014; Piteo & Ward, 2020; Vidal et al., 2020). A meta-analysis found that there were not only statistically, but clinically significant relationships (albeit small) between depressive symptoms and social media use in adolescents (McCrae et al., 2017). In fact, out of the 11 studies included in this meta-analysis, nine found a statistically significant relationship between social media and depression or depressive symptoms.

Further, using social networking sites and time spent on social media has a stronger relationship with depression among girls, versus boys (Neira & Barber, 2014; Thorsdottir et al., 2019; Zink, Belcher, et al., 2020). A large British national study of 14-year olds found that there were significant increases in depressive symptoms for girls who used social media more than three hours a day (26% increase) and 5 hours/day (50% increase), compared to those who used between 1-3 hours of social media/day (Kelly et al., 2018).

However, concurrent associations cannot determine if use of social media causes depression. In fact, results from longitudinal studies that examined whether current social media use predicts later depression have found either small effects (Boers et al., 2019) or no effect (Coyne et al., 2020; Heffer et al., 2019; Orben & Przybylski, 2019).

One of the reasons that researchers who study the impact of social media on adolescent mental health find conflicting results is that how youth are interacting with social media may matter more than the actual time they spend. For example, "lurking" on social media which consists of viewing content written by other people but not commenting or responding to it, or posting one's own content, is more strongly associated with depression than active use (Thorsdottir et al., 2019), particularly among girls (Frison & Eggermont, 2016). The same research group found that adolescents who utilized more public social media (e.g., updating ones profile status), versus private social media (e.g., messaging) reported more depressed mood (Frison & Eggermont, 2016).

Social media can also be a platform for cyberbullying. A recent systemic review concluded that youth who identify as sexual minorities are far more likely to report cyberbullying and that this cyberbullying has been associated with symptoms of depression across multiple studies (e.g., Abreu & Kenny, 2017). One study found that cyberbullying fully explained the relationship between social media use and psychological distress as well as suicide attempts (Sampasa-Kanyinga & Hamilton, 2015). This means that the relationship between social media use and poor psychological outcomes may be dependent upon the youths' experiences of cyberbullying.

Video Gaming

In contrast with social media, boys are more likely to spend time playing video games than girls. In 2013, Internet Gaming Disorder was added to the DSM-IV, and a growing body of research suggests that Internet Gaming Disorder in youth is associated with negative long-term consequences including depression (Gentile et al., 2011; Krossbakken et al., 2018; Wartberg et al., 2019). Several cross-sectional studies have found that youth who spend more time playing video games have more symptoms of depression (Zink, Belcher, et al., 2020). However, it is unclear if heavy users of video games who do not have current symptoms of addiction to video games or current symptoms of depression, are at risk for future depression. One longitudinal study found that girls who spent more time playing video games had more symptoms of depression a year later, but the same was not true for boys (Zink, Ebrahimian, et al., 2020). Another study found frequent video game use among youth was associated with increases in social skills one year later (Van Den Eijnden et al., 2018).

Television and Movie Viewing

The association between the amount of time spent watching television and movies and subsequent depressive symptoms among adolescents is also not clear. While some studies with strong research designs have found that frequency of television viewing is linked to future depression (Primack 2009; Grøntved, 2015) others have not shown a relationship between the two (McAnally, 2019). One meta-analysis of 29 studies reported that more than half of these studies found that TV watching had a

weaker relationship with depression than other types of screen use, such as using the computer and playing video games (Zink, Belcher, et al., 2020). However, the content that youth watch on TV may be of particular importance; media portrayals of suicidal behavior by teenagers such as the television show *13 Reasons Why* can lead to increases in adolescent suicide (Hawton et al., 2020; Niederkrotenhaler et al., 2019).

Timing of use

Adolescents who use screen media before bedtime are more likely to have poor sleep quality and get an insufficient amount of sleep (Hale et al., 2018), which could play a role in the development of depression (Vandendriessche et al., 2019). A recent meta-analysis found that higher level of problematic phone usage was related to poorer sleep outcomes in adolescents (e.g., Mac Carthaigh, Griffin, & Perry, 2020). One literature review concluded that a common mediator of the relationship between social media use and depressive symptoms was sleep issues (Keles, McCrae, & Grealish, 2020). Further, higher social media use (more than 3 hours/day) was associated with poorer sleep patterns in a large sample of 13-15 year-olds (Scott, Biello, & Woods, 2019).

Screen Media Use Among Youth with Mental Health Problems

While associations between screen media use and symptoms of depression have been widely studied in the general population (Odgers & Jensen 2020), they have not been widely studied among youth receiving treatment for mental health problems. However, there is some evidence that youth with mental health problems are more likely than youth without mental health problems to use the internet late at night and to visit websites that promote eating disorders or suicidal behavior (Mullen et al., 2018). Additionally, a small study of adolescents in an inpatient psychiatric ward in Boston, found that youth with higher levels of suicidality and aggressive or developmental disorders were more likely to show symptoms of internet addiction than other youth on the ward (Gansnser, Belfort, Cook, et al., 2019a). The authors also examined admissions related to digital media. Slightly more than half of the digital media admissions were the result of relationship conflicts online, such as cyber-bullying. Adolescents with digital media admissions were more likely to say they felt hopeless and had made suicide plans in the past year than adolescents admitted for other reasons (Gasnser, Belfort, Leahy, et al., 2019b). However adolescents with digital media admissions were not more likely to have diagnoses of depression (Gasnser et al., 2019b).

Increases in Academic Pressure

Increases in the number of students applying to college led to lower admission rates in the last decade (Desilver, 2019; Ivywise.com). Additionally, the most prestigious universities continued to admit less than 10% of their applicants (Desilver, 2019). Thus with more applicants applying for the same number of admission spots, competition to get into college has increased. In turn, these changes lead to increasing academic pressure in high schools, especially in wealthy communities. One meta-analysis found that academic pressure was a risk factor for depression in youth ages 12 to 18 (Tang, Tang, Ren, & Wong, 2020). Academic pressure may be particularly damaging for girls, who may internalize messages that in addition to excelling in academics and extracurricular activities, they must also be kind (Spencer et al., 2018) and beautiful (Lyman & Luthar, 2014). Struggling to excel in multiple areas may lead to both lack of sleep and low self-esteem if youth are unable to perform at the level they feel is expected.

Loneliness and Social Isolation

Older adolescents are at risk for loneliness and social isolation, and these rates have increased markedly after 2011 (Twenge, Spitzberg, et al., 2019). A study by Cigna, an insurance provider, found that generation Z (born in the 1990s and early 2000s) had the highest rates of loneliness (Chatterjee, 2018). TAY spend less in-person interaction time with peers and engaging in activities such as movie outings, dating, and socializing with friends compared to previous generations. Loneliness is an uncertainty that one can confide in, depend on, or trust others and is a debilitating psychological condition characterized by emptiness, worthlessness, lack of control, and personal threat. It is a major risk factor for depression, suicidal ideation and behavior, cognitive decline, impaired sleep, elevated blood pressure, and morbidity and mortality (VanderWeele et al., 2011).

VI. Depression-Focused Prevention and Early Intervention (PEI) Programs in San Diego

San Diego County is already addressing youth depression in a few of its prevention and early intervention (PEI) programs. Helping, Engaging, Reconnecting and Educating (HERE) Now is a CYF school-based suicide prevention and early intervention program that works with schools located in the eastern portion of the county. Additionally, the Urban Youth Center (one of three PEI programs offered by the Dream Weaver Consortium that promote community wellness and cultural awareness among Native Americans) addresses youth depression in teens and young adults.

While the AOA PEI programs are not specifically designed for populations at high risk of depression, they use several strategies to help TAY who might be at risk for this disease. For example, the Breaking Down Barriers program partnered with a local performing arts group to produce an interactive play depicting the struggles and successes of youth who identify as sexual minorities. The Breaking Down Barriers program also hosts an open panel event for Native American community members, providers, and advocates to start the conversation on mental wellness, share resources currently available, and address needs and attitudes toward mental health that can be improved or changed. Finally, the Mental Health First Aid Training program provides a specific training on addressing depression in young people. The training is offered to adults who work with youth ages 12-17.

VII. Prevention Strategies

Given that the rate of depression among adolescents served by CYF BHS is still on the rise, new PEI programs and strategies are needed. Focusing prevention efforts on certain target populations that are at higher risk for the development of depression, and addressing both previously known and new risk factors may be the most effective means of preventing further cases of adolescent depression in San Diego County. Another potential strategy is applying techniques used to treat depression to all adolescents and transition-age youth.

Specific Regions

East Region

In 2017, the east region of San Diego County had the highest rate of inpatient discharges for depression and the second highest rate of emergency room discharges for depression among 14-24

year-olds (see figures 7 and 8). Thus, this region may particularly benefit from prevention and intervention programs designed to reduce the incidence and severity of depression in youth.

Strategies for Specific Target Populations

Middle Schools-focus on early adolescence

School-based programs have demonstrated modest effects in preventing depression among children and adolescents (Feiss et al., 2019; Johnstone et al., 2018, Werner-Seidler et al., 2017; Ahlen et al., 2015; Dray et al., 2017). While most studies combine outcomes for youth and adolescents, Johnstone et al.'s (2018) meta-analysis focused specifically on school-based interventions among children under-13. The authors found small but significant reductions in symptoms of depression post-intervention and at long-term follow-up (Johnstone, 2018).

One of the most widely implemented and evaluated school-based interventions is the PENN Resilience Program (PRP), a 12-week structured CBT- based intervention focused on building resiliency in youth. Although well researched, the results have been inconsistent across trials, and the effectiveness of PRP in reducing depression among youth remains unclear (Gillham, 2007; Dray et al., 2017). Moderating effects like the race, sex and age of participants, school environment, and intervention qualities (e.g., program type, number of sessions, quality of trainers, etc.) have been shown to influence the effectiveness of school-based interventions, although definitive conclusions from studies investigating moderators are still forthcoming (Dray et al., 2017; Werner-Seidler et al., 2017; Feiss et al., 2019; Johnstone et al., 2018).

Sexual and Gender Minority Youth (SGMY)

Although sexual and gender minority youth (SGMY) are disproportionately affected by depression, there have been only limited efforts to develop or tailor depression interventions to the population (Sheinfil et al., 2019; Austin & Craig, 2015; Craig & Austin, 2016). CBT-based interventions tailored to SGMY like AFFIRM, BOWS (Being out with Strength), and the computerized Rainbow SPARX show promising results, although the evidence is preliminary (Sheinfel, 2019; Hall, 2019; Craig & Austin, 2016; Lucassen, 2015).

Strategies that address previously-known and new risk factors

Interventions to reduce screen media use and improve the quality of use

The few interventions that have been developed to reduce problematic screen media use have not been rigorously tested and have not shown positive effects on all outcomes (Barber & Cucalon, 2017; Rogers & Barber, 2019; Weaver & Swank, 2019). However, there are a number of practical strategies that could help adolescents reduce problematic use. For example, psychoeducation could be provided to parents and teens regarding how to set time limits and space restrictions on screen media use, particularly social media and video gaming among girls, and how to use contracts to outline responsible and healthy ways of using technology. Time limits should include no technology use in the hour before bedtime, and space restrictions should include no technology use in private areas of the house. The purpose of space restrictions would be to make the content of youth screen media use public, which would discourage cyber-bulling and visiting websites that promote risk behaviors. Parents and youth can review together the amount of time the youth spends on screen media each day. Additionally, psychoeducation efforts should teach parents about television shows and websites that promote negative behaviors such as self-injury and restrictive eating. Finally, youth

should be encouraged to interact in person when possible, through team sports, other school activities/clubs, or supervised hanging out.

Reducing Cyberbullying

There is strong evidence that interventions designed to reduce cyberbullying can be effective, although the effects may be modest (Gaffney et al., 2019). Many of these interventions provide psycho-education to youth and parents about how to identify cyberbullying, and provide training to the youth on empathy and effective communication (Hutson et al., 2018). Many also teach about the importance of digital citizenship (Hutson et al., 2018). Peer-led prevention efforts such as NoTrap! may resonate the most with high-school students (Palladino et al., 2016). Additionally, having this intervention led by girls and non-heterosexual youth could help reduce victimization among the highest-risk groups.

Reducing Loneliness

Develop social identification programs

Social identification development is critical for growing healthy bonds with others and is part of an individual's self-concept that comes from perceived membership in a social group. Groups 4 Health is an example of a TAY program that helps to build social identification by targeting the development and maintenance of social group relationships (Haslam et al., 2016). The Beyond Differences program was launched to help build social identification by implementing "Know Your Classmates," a project designed to explore youth identity and belonging, and it helps TAY understand traditions and recognize stereotypes (Beyond Differences, 2020). The program focuses on honest communication with TAY about their feelings and experiences with one another.

Building social skills

Building social skills maintains healthy personal development throughout life. It is a strategy to prevent loneliness and social isolation in TAY, and additionally, to prevent, avoid, and handle bullying in a healthy manner. To enhance social skills requires increasing self-esteem, fostering friendships, learning assertiveness, learning respectfulness, cultivating resiliency, modeling empathy, and problem solving (Gordon, 2019). "No One Eats Alone" is a project through Beyond Differences that helps TAY make friends at lunch by preparing them with different strategies and social skills.

Supported socialization programs

Supported socialization relies on a "socially focused supporter" who supports and guides TAY in finding and attending new activities or groups to prevent loneliness and social isolation. This individual can be a trained professional, family member, friend, volunteer, or peer supporter. The goal of a socially focused supporter is to help TAY make social connections that can be maintained after their support ends. This strategy can transition an individual efficiently into the community and help him or her sustain a confident role in society (Mann et al., 2017).

Improving Sleep

Preliminary evidence suggests cognitive-behavioral sleep interventions are effective at improving sleep and reducing depressive symptoms in adolescents (Blake et al., 2017). These interventions aim to reduce sleep disturbances by improving sleep hygiene (e.g., establishing regular bedtimes, creating comfortable sleep environments), teaching relaxation techniques, and providing cognitive therapy to address negative thought patterns about sleep (Blake et al., 2017). Education about healthy sleep

behaviors could also be incorporated into other interventions designed to improve screen media use and/or reduce academic pressure.

Reducing Academic Pressure

Although the research indicates adolescents from high-achieving schools are at increased risk for negative mental health outcomes, few interventions have been designed to systematically address the problem (Luthar & Kumar, 2018). Luthar and Kumar (2018) argue that interventions should heighten awareness of risks in affluent communities and describes a collaborative intervention based on resilience research. Although promising, this approach is both time and labor-intensive and has not been well studied. However, it could be beneficial for clinicians who are placed in middle schools and high schools to assess the level of academic pressure, and to provide psychoeducation to school staff about the role that academic pressure can play in the development of depression. Further, clinicians could collaborate with teachers to identify students who have symptoms of depression and ensure that these students have a course load that is not causing undue burden. Efforts to reduce academic pressure may be especially useful for the north coastal region of the county, which had the highest number of emergency department visits for depression among 14-24 year-olds in 2017 (see figure 8).

Applying techniques that are used to treat depression to all adolescents and TAY

Promoting Physical Activity

Engaging in physical activities can help prevent depression (Mammen & Faulkner, 2013). Furthermore, physical activity held in group settings, such as through exercise classes and sports, can help foster interpersonal relationships. This can help foster the individual's social development and perceived social support (Pels & Kleinert, 2016). The Sierra Club, 4-H, Trails Carolina (Shannonhouse, 2017), ropes courses, Habitat for Humanity, and team building exercises are examples of current programs that foster positive group physical activity.

Mindfulness interventions

Mindfulness interventions help individuals cultivate skills in self-awareness, self-management, social awareness, and relationship building. This helps the individual with moment-to-moment awareness, nonjudgment, acceptance, and compassion. Mindfulness interventions help reduce depression, anxiety, and stress (Finklestein-Fox et al., 2019; Patton et al., 2019), and also help students develop positive coping skills (Toomey & Anhalt, 2016). Interventions that use mindfulness in combination with other strategies, such as compassion meditation and psychoeducation (Hwang & Chan, 2019) or in a workshop focused on building emotional regulation and social skills (Burckhardt et al., 2018) have been shown to reduce depression and anxiety among students.

VIII. Conclusion

Rates of depression among adolescents and TAY youth have increased significantly in the last decade. There are many risk factors for the development of depression as the disease involves a complex interplay of both biological and environmental causes. San Diego County PEI programs already address some of these risk factors by providing peer specialists, outreach education, and resources to Native American youth and families, youth attending high schools in East County, and TAY in underserved communities. While the causes of the increasing incidence of depression are still elusive, screen media use, increased academic pressure, and increased isolation may play a role.

In order to curb the increasing rates of depression among youth, CYFBHS could consider purchasing a program that has already been designed and empirically tested, and/or creating a new program. Additionally, the review of the age-related trends in depression suggests that programs aimed at early adolescents are more likely to reduce the incidence of depression, while programs designed for transition-age youth are more likely to reduce the severity of this disease.

If interested in purchasing a program, a program designed to prevent depression among young, sexual and gender minority youth, or a program designed to prevent cyberbullying may be the best options. These types of programs may be the most beneficial, because sexual and gender minority youth in San Diego are at higher risk of depression and suicide than heterosexual youth, and cyberbullying interventions have slightly stronger evidence of effectiveness than some of the other types of programs reviewed in this report. However, a program designed for preventing depression in youth attending middle schools would also be a good option. The UCSD research centers could support BHS in identifying which programs have the strongest research evidence, and which may be the most cost-effective.

Implementing a program that already has some evidence of effectiveness is likely to be more successful than creating a program from scratch. However, if interested in designing a new program, a family-based intervention that combines some evidence-based strategies that promote healthy sleep patterns, along with strategies to reduce negative screen media use and strategies to reduce family conflict, could be the most helpful. Addressing negative screen media use and poor sleep patterns within the same intervention is important because negative screen media use can lead to poor sleep. Furthermore, family conflict is a risk factor that is more likely to be successfully addressed in family-based interventions as opposed to interventions designed solely for youth. While the increasing incidence of depression among adolescents is a concern, using programs and strategies based on research evidence is the first step in combatting this problem.

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Appendix A

Methodology

Secondary Data Analysis

Online data portals and publicly available data reports were used to generate descriptive statistics and conduct statistical tests of difference for the secondary data analysis. CYFBHS data were prepared by analysts at CASRC.

Secondary data were drawn from epidemiological surveys, clinical data and other administrative sources, including:

- The National Survey of Drug Use and Health (NSDUH), an annual, national survey of the non-institutionalized population aged 12 and older conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA). Because of sample size limitations, San Diego regional estimates were based on three years of combined data.
- The Youth Risk Behavior Survey (YRBS), a biennial, representative sample of students attending San Diego Unified School District high schools and coordinated by the Centers for Disease Control (CDC). Linear change is based on published trend analyses using a logistic regression models controlling for sex, race/ethnicity and grade.
- Treatment data for adolescents receiving services from the County of San Diego's Children, Youth and Family Behavioral Health System (CYFBHS) and entered into CCBH.
- Inpatient and emergency department discharge data for those with a primary diagnosis of depression at the time of discharge. ED data are maintained for all emergency hospitals in San Diego County, and inpatient treatment data are maintained for all psychiatric and chemical rehabilitation facilities in San Diego County. Cases are allocated to their HHSA region based on the address of the patient's residence, not the address of the discharging facility. Discharge rates were prepared by the County of San Diego, Health and Human Services Agency, Community Health Statistics Unit, using data compiled by California's Office of Statewide Health Planning and Development (OSHPD) and the San Diego Association of Governments (SANDAG).