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School-based mental health services, suicide risk and substance use among at-risk adolescents in Oregon

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ABSTRACT

This study examined whether an increase in the availability of mental health services at school-based health centers (SBHCs) in Oregon public schools was associated with the likelihood of suicidal ideation, suicide attempts and substance use behaviors among adolescents who experienced a depressive episode in the past year. The study sample included 168 Oregon public middle and high schools and 9073 students who participated in the Oregon Healthy Teens Survey (OHT) in 2013 and 2015. Twenty-five schools had an SBHC, and 14 of those schools increased availability of mental health services from 2013 to 2015. The OHT included questions about having a depressive episode, suicidal ideation, attempting suicide in the past year, and substance use behaviors in the past 30 days. Multi-level logistic regression analyses were conducted in 2017 to examine associations between increasing mental health services and the likelihood of these outcomes. Analysis results indicated that students at SBHC schools that increased mental health services were less likely to report any suicidal ideation [odds ratio (OR) (95% C.I.) = 0.66 (0.55, 0.81)], suicide attempts [OR (95% C.I.) = 0.71 (0.56, 0.89)] and cigarette smoking [OR (95% C.I.) = 0.77 (0.63, 0.94)] from 2013 to 2015 compared to students in all other schools. Lower frequencies of cigarette, marijuana and unauthorized prescription drug use were also observed in SBHC schools that increased mental health services relative to other schools with SBHCs. This study suggests that mental health services provided by SBHCs may help reduce suicide risk and substance use behaviors among at-risk adolescents.

1. Introduction

Depressive episodes are prevalent among adolescents in the U.S. The 2015 Youth Risk Behavior Survey (YRBS) indicated that 29.9% of high school students felt sad or hopeless every day for at least two weeks in the past 12 months, with a higher prevalence among females (39.8%) than males (20.3%) (Kann et al., 2016). Youth who experience depression are at elevated risk for attempting suicide and other risk behaviors, including alcohol, tobacco and other drug use (Brooks et al., 2002; Hallfors et al., 2004; Schilling et al., 2009). This led the U.S. Surgeon General and the World Health Organization to emphasize the need for accessible and effective services to prevent or reduce emotional health problems among adolescents (Murthy, 2015; World Health Organization, n.d.).

To identify and help adolescents who are at risk for depression, suicide and substance use, a growing number of schools offer mental health services through school-based health centers (SBHCs). SBHCs provide comprehensive, convenient health care services for school children and adolescents in all 50 states and the District of Columbia, often serving disadvantaged students who have less access to health care services (Keeton et al., 2012; School-Based Health Alliance, 2013).

Although SBHCs represent a promising strategy for improving adolescents' emotional health, research on the effectiveness of SBHC mental health services is limited and equivocal (Bains and Diallo, 2016; Mason-Jones et al., 2012). The majority of studies to date have focused on utilization of SBHCs, and have found consistently higher levels of use among girls for reproductive and mental health services (Langille et al., 2008; Pastore and Techow, 2004; Soleimanpour et al., 2010; Szumilas et al., 2010). These studies support the premise that SBHCs can improve access to and utilization of mental health services needed by students, but leave questions about whether SBHCs contribute to improved mental health outcomes.

A prospective cohort study with 744 students in 16 middle and high schools in Michigan compared changes in emotional discomfort and other health indicators (e.g., satisfaction with health, physical activity, nutrition) at schools with SBHCs compared to demographically matched schools without SBHCs (McNall et al., 2010). No significant differences were observed in levels of emotional discomfort and other

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health indicators between students who had access to an SBHC compared to those that did not, though utilization of SBHC services was positively related to overall satisfaction with health, physical activity, and eating healthy food.

Another prospective study in six Ohio school districts examined mental health care costs and mental health outcomes among students at schools with SBHCs compared to students at matched non-SBHC schools (Guo et al., 2008). Using Medicaid records from 1997 to 2003 for 109 students, the study found lower mental health care costs among students who utilized SBHC services than students who did not. There was also evidence of greater improvement in psychosocial health-related quality of life among students who utilized SBHC mental health services compared to students at non-SBHC schools. Although these results provide support for the effectiveness of SBHC mental health services, the study was limited by its reliance on Medicaid records for a cohort of students who represented only a small fraction of over 9000 students who were enrolled in the six school districts.

A study of over 300 students in 12 California schools with SBHCs found significant improvements in a number of mental health outcomes based on assessments conducted by mental health service providers (Soleimanpour et al., 2010). Students participated in at least three mental health visits and were asked about their level or anxiety or nervousness, depression or sadness, eating disorders, grief, loss or bereavement, self-injury, substance abuse, and suicidal ideation. Over a period of at least three months, students reported significant improvement for all of these mental health indicators. Students also reported improvements for a number of resiliency indicators, including school attendance and commitment, expressing feelings and emotions, expressing a sense of hope for the future, and involvement in recreational or vocational activities. While providing further evidence for the effectiveness of SBHC mental health services, this study was limited by absence of a comparison group. Thus, the observed improvements in mental health outcomes may have occurred regardless of students' exposure to mental health services.

A more recent study of 168 public schools and over 36,000 students in Oregon found that schools with SBHCs that increased availability of mental health services after 2013 had significant reductions in the prevalence of depressive episodes, suicidal ideation and suicide attempts from 2013 to 2015 compared to other public schools that did not increase mental health services (Paschall and Bersamin, 2017). This study also found significant reductions in the likelihood of depressive episodes and suicidal ideation among schools with SBHCs that increased mental health services after 2013 relative to other SBHC schools that did not increase mental health services. The large sample of public schools, use of comparison groups, and longitudinal design of this study represented an improvement on previous research on the effectiveness of SBHC mental health services.

The present study extends this recent study by examining associations between the increase in availability of mental health services at SBHC schools and suicidal ideation, suicide attempts and substance use behaviors among adolescents who experienced a depressive episode in the prior year. As prior studies show that adolescents who experience emotional health problems are more likely to utilize SBHC services than adolescents without emotional health problems (Amaral et al., 2011; Anyon et al., 2013; Pastore et al., 1998; Wade et al., 2008), this study focuses on at-risk adolescents who are most likely to use and potentially benefit from SBHC mental health services. We examine whether the likelihood of suicidal ideation, suicide attempts, and substance use behaviors in this subgroup of adolescents decreased from 2013 to 2015 at SBHC schools that increased mental health services after 2013 relative to other public schools, and relative to other schools with SBHCs that did not increase mental health services. We also examine possible moderating effects of student demographic characteristics, including gender, ethnicity, race, and socioeconomic status. We expected that females would benefit more from the increase in mental health services than males, as they are more likely than males to report depressive episodes and utilize SBHC services (Juszczak et al., 2003; Langille et al., 2008; Pastore and Techow, 2004; Soleimanpour et al., 2010; Szumilas et al., 2010). We were also interested in possible ethnic, racial and socioeconomic differences as SBHCs may be more beneficial for disadvantaged youth who have limited access to health services (Keeton et al., 2012; School-Based Health Alliance, 2013).

2. Methods

2.1. School sample and study design

This study is based on 168 public schools in Oregon that participated in the Oregon Healthy Teens (OHT) Survey in both 2013 and 2015. Twenty-five of those 168 schools had SBHCs, and 14 of the schools with SBHCs increased mental health services between 2013 and 2015 with funds allocated by the Oregon Health Authority (OHA). Across the 14 SBHCs, there was an increase of 11.0 mental health service FTEs (mean = 0.8 FTE per SBHC). Available services included short- and long-term mental health therapy; several schools also hired behavioral health consultants to assist students with behavioral problems. The increased mental health provider time began by early 2014, after the administration of the 2013 OHT survey and before the 2015 OHT began. We compare changes in prevalence rates of having a depressive episode, suicidal ideation, and attempting suicide in the past year among students at schools with SBHCs that increased availability of mental health services after 2013 with all other schools in the sample, and with other schools with SBHCs that did not increase availability of mental health services after 2013. Prevalence rates of past-year suicidal ideation, suicide attempts and substance use behaviors in 2013 and 2015 are based on repeated cross-sectional samples of students.

2.2. School characteristics

School characteristics included having an SBHC, increasing SBHC mental health services after 2013, school type (middle, middle/high school, high school), total school enrollment, the percentage of students who were non-Hispanic and non-white, and the percentage of students receiving free or reduced price meals. These data were obtained from the OHA, Public Health Division, Adolescent and School Health Program.

2.3. Oregon Healthy Teens Survey

Survey data for 8th and 11th grade students were obtained from the statewide Oregon Healthy Teens (OHT) Survey, which was administered prior to increases in SBHC mental health services in 2013, and again in 2015 (Oregon Health Authority, Public Health Division, n.d.). The OHT is an anonymous, voluntary self-administered survey of 8th and 11th graders modeled after the Youth Risk Behavior Survey (YRBS). The OHT is conducted during the spring semester from February through May and is available either online or via paper-and-pencil, at the discretion of the school district. Students do not submit any personal information with their survey responses. The OHT survey is designed to be completed in a single class period.

The OHT sampling frame is based on the YRBS, and comprises public middle and high schools sampled within each county. The sample is intended to be representative of 8th and 11th graders in each county and the state. Post-hoc sample weights were developed for each county and the state based on the actual number of 8th and 11th graders in each school, county and the entire state (Oregon Health Authority, Public Health Division, n.d.). This study was limited to 168 schools that participated in both 2013 and 2015. The sample was further limited to students who reported experiencing a depressive episode in the past year (n = 11,266), and another 2193 were excluded because they did not provide responses to all study variables. This left a total of