Analysis of a School-Based Behavioral Health Program: Exploring the Value of Mental Health Services for Vulnerable Students

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ABSTRACT

This paper explores the effectiveness of public school-based mental health treatment for K-12 students. Extant clinical data from 2017-2018 for behavioral health service recipients (n = 874) was used in this analysis. Relationships among clinical diagnosis at discharge, duration in treatment, student participation, and status of mental health improvement were examined. Logistic regression explored associations among variables of interest. Results indicate 74.3% (n = 649) of students were identified by clinicians with improvement in mental health status at discharge. The most prominent mental health diagnoses being treated in the schools were depression, anxiety, and trauma. Students involved in treatment were over 15 times more likely to be categorized as having an improved mental health status; students who lacked participation were 63% less likely to improve. Our results highlight the necessity for school administrators to prioritize and support school-based mental health services. The findings provide school administrators guidance, evidence, and impetus for implementing effective school based mental health programs.

Keywords: adolescents, children, mental health, school, trauma-informed

School administrators are challenged with meeting the increased mental health needs of vulnerable students and providing appropriate school-based mental health programs. Students struggle with a variety of mental health and trauma-related concerns, which may contribute to educational, relational, and physical wellbeing and achievement. Although students are some of the most vulnerable populations in need of behavioral health services, limited research has been done to assess effectiveness of interventions. A survey conducted by Eklund et al. (2017) shows that one in five children experience mental health related problems requiring professional intervention. According to the National Center for Educational Statistics (NCES, 2018), of the over 50 million public school students in the US, nearly 11.2 million students are at risk for serious mental health issues. A common mental health issue that adolescents and children in the US experience is depression, which is a major risk factor for suicide. More than half of adolescents who die by suicide experience a depressive disorder, and suicide ranks as the third leading cause of death in this age group (Thapar et al., 2012; Langley et al., 2010).

Along with the risk of suicide, depression also leads to impairments of functions in a variety of settings including educational, social and familial. These impairments can escalate medical concerns of smoking, substance use, and obesity of vulnerable populations (Thapar et al., 2012). Mental health concerns that are left untreated have been linked with
negative outcomes in adolescents in the school setting, such as academic and behavioral problems, dropping out, and delinquency (NASP, 2016).

Over half (54%) of all adolescents in the US have been exposed to at least one traumatic Adverse Childhood Experience (ACE), and over one fourth (28%) experience two or more ACEs (Soleimanpour et al., 2017). Trauma can have many health and education-related effects on adolescents, including having to repeat a grade in school, lower resilience, and suicidal ideation (Soleimanpour et al., 2017). Vulnerable populations (including children and adolescents) impacted by ACEs are in need of mental health services. Studies have linked ACEs to a range of mental health outcomes that continue well into adulthood (Schilling et al., 2007). Individuals who have higher levels of ACEs have the potential to have their mental health impacted by those ACEs throughout their lifetime. The impact of ACEs left untreated in children and adolescents evolves into chronic and expensive public health concerns for the community, including increased rates of substance use, homelessness, incarceration and criminal justice involvement, and family violence (Schilling et al., 2007). More empirical analysis is needed to fully understand the exact pathways between ACEs and specific mental health diagnoses.

The Case for School-based Mental Health Services

School mental health services have been shown to reduce barriers and limitations to treatment that are due to the many hours students are in school, limited transportation, and parental financial concerns (Langley et al., 2010; National Association of School Psychologists [NASP], 2016). Further studies found school-based mental health treatment programs to be both effective and efficient in addressing mental health concerns and preventing major mental health crises (Cook et al., 2015).

Results from a state-wide implementation of trauma focused intervention in Washington state suggests significant reductions in child posttraumatic stress symptoms that necessitates scaling up of school-based interventions for children with experiences of trauma and posttraumatic stress disorders (Hoover et al., 2018). Additionally, lessons learned from school-based trauma and grief-focused treatment groups show promising results on early and sustained intervention efforts (Grassetti et al., 2018). The State of Washington’s Office of Superintendent of Public Instruction (OSPI) (n.d.) heeds advice from the National Child Traumatic Stress Network (NCTSN) (n.d.) that “becoming trauma-informed should be an essential component of the overall mission of the education system” (para. 2). In fulfilling this directive, every behavioral health therapist/clinician utilizes trauma-informed school resources and receives specific training in Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) to be implemented in their clinical interventions.

School-based treatment programs have also been found to be successful in mitigating adverse effects of poly-victimization of sexual minority children and youth (Sterzing et al., 2019). School clinicians with additional connection to school administration, teachers, and support staff and are able to collaborate on behalf of the student’s treatment process allows for a team-based approach to implementing school-based mental health treatment services (Wolk et al., 2019). Collaborative team efforts are able to identify the continuum of needs for students, and they are able to recognize, address, and treat mental health concerns before they become chronic problems (NASP, 2016).

Relevance for School Leaders

School leaders are not unfamiliar with the concept of school-based mental health treatment programs, as the Joint Commission on Mental Health and Illness initiated major policy level decisions in 1961 to establish and enhance children's mental health services and prevention (Levine, 2015). However, the NASP (2016) estimates that 60% of students do not currently receive mental health treatment due to stigma and lack of access to services, and nearly two thirds of people who do seek treatment do so only in schools. Although evidence suggests schools are the most common access point of services for students (Langley et al., 2010) and are well-suited to assist in meeting the mental health needs of students (Demissie & Brener, 2017), school administrators face challenges in providing services.

Challenges for school leaders in providing appropriate mental health services include a “mind-shift” in school leadership thinking and the development of new “supporting infrastructure” (McInerney & McKlindon, 2014, p. 14). This is in line with recommendations that push for encouraging the establishment of support systems for school-based interventions (Dorado et al., 2016). It has already been established that school systems in the United States are inadequately prepared to respond to the student mental health crisis (Walker, 2018).
Purpose of the Present Study

Despite the fact that there are existing programs across the country that deliver school-based mental health services, there is not a lot known about the quality of those services (Langley et al., 2010). The purpose of this study is to evaluate whether a school-based clinical mental health service program was effective in addressing mental health challenges of students in Eastern Washington. We utilized school administrative records to conduct a quantitative analysis of secondary data. We hypothesized that continuing with the clinical mental health service delivery improved the mental health status of participating students and that there were specific risks and protective factors associated with improved mental health status at discharge. Specifically, the program evaluation focused on the following research questions: 1) What types of mental health issues are addressed in a school-based mental health clinical service delivery program?, 2) Is there a difference in improvement of mental health status based on length of time of receiving clinical mental health services at school?, and 3) What are the factors associated with the likelihood of improved mental health status at the time of discharge?

METHOD

This study utilizes quantitative analysis of secondary administrative data collected over a year’s time.

Sample

The program evaluation included archived discharge summary documents containing clinical notes from the program’s electronic medical records (n = 1017) between 2017 and 2018. The school system’s archived medical records database did not include demographic characteristics of the students such as age, gender, and ethnic origin. Inclusion criteria were records of students diagnosed in accordance with the DSM-5 (American Psychiatric Association, 2013) that received clinical mental health services for at least 60 days. The time frame of 60 days was selected to ensure any intervention offered had sufficient time to demonstrate results (Lally et al., 2010). Students in treatment for less than 60 days were excluded from this analysis. Records with input errors, missing data (less than 10%), without a matching DSM-5 diagnosis, and/or records of students in treatment for less than 60 days were excluded from this analysis. The final usable sample resulted in n = 874, or about 85% of the total records obtained.

Sampling Procedures

The sample was drawn from a school-based behavioral health program in Eastern Washington that has been serving vulnerable and at-risk youth since 2004 in an urban regional area. The program offers direct therapeutic services for the public school district, including individual, group, and family mental health counseling; clinical assessment; crisis intervention and assessment; case management; psychoeducation; and advocacy. Behavioral health services were delivered by trained mental health therapists under the aegis of a regional public-school system in Eastern Washington. In 2017-2018, this public-school district served over 30,000 students, while the mental health therapists served over 1,000 students. The program serves students who are eligible for public assistance (Medicaid) in the United States and who present intense mental health care needs, which includes those who are at risk for hospitalization/institutionalization, in need of two or more service hours a month, and/or have a severe or chronic mental health concern. An institutional review board granted exempt review status for the purposes of this evaluation using de-identified student records.

Dependent Variable and Covariates

The dependent variable, status of mental health at discharge, was dichotomized as improvement (1) and no improvement (0) to capture clinician guided student outcomes. Covariates included duration of treatment (measured as number of days), diagnoses at discharge (categorized at a nominal level), and type of participation. Type of participation was rated as disinterested (1), lack of participation (2), sporadic (3), and involved (4).

Primary clinical diagnoses of participants were obtained from those recorded in the clinician’s charts. For clients who presented with more than one clinical diagnosis category, only the primary presenting diagnosis was used. Within each diagnosis category, subgroups were combined into one large umbrella diagnosis. For example, major depressive disorder deemed severe, moderate, or minor, was included under the umbrella diagnosis of “depression.”
Conditions and Design

This study conducted a quantitative analysis of secondary data from de-identified clinical records obtained from mental health diagnoses at baseline and outcome from a school-based mental health treatment program. No conditions were manipulated.

Analytic Strategy

This study evaluated school-based mental health service delivery by utilizing a longitudinal design consisting of student records at baseline and outcome as maintained by clinicians. Records from students who participated for at least 60 days and had baseline and outcome comparisons were analyzed. The 60-day timeframe ensured adequate time to complete an intake assessment (at least 30 days), development of treatment and/or crisis management plans, and an additional 30 days to assess any changes following the application of treatment. Data analysis included univariate analysis to describe clinical and behavioral characteristics of the sample. Bivariate analyses to assess proportional and mean differences, respectively using chi-square and independent samples t-test assessed the hypothesis of whether the length of time receiving mental health treatment was different for students with improved mental health status compared to those who do not improve. Effect sizes denoted by Cramer’s V and Cohen’s d allowed for interpretations beyond tests of significance (Kim, 2015). A binary logistic regression was employed to test the exploratory hypothesis that determined significant predictors of the likelihood of improvement of mental health status. Data analysis was conducted using IBM Statistical Package for the Social Sciences (SPSS), version 26.0.

RESULTS

Sample Description

From the 874 useable records analyzed, it was evident that the school-based clinicians spent a median of 306 days providing mental health treatment and recorded improvement for 75% of the students at the time of discharge compared to baseline mental health status. The main diagnostic categories at discharge were depression- (31.1%), trauma- (27.2%), and anxiety- (25.2%) related disorders, with improvement of mental health status achieved by 23.6%, 22.4%, and 18.9%, respectively. Students with a diagnosis of trauma-related services received services for the least number of days ($M = 364, SD = 385.36$) compared to students receiving services for depression related diagnoses ($M = 417.1, SD = 322.9$). Students diagnosed with disorders such as schizophrenia/schizoaffective, bipolar disorder, and autism spectrum disorder received services for the longest amount of time, averaging 531 days.

Status of Improvement

Degree of participation, in terms of level of involvement in mental health services, was a significant predictor in attainment of improved mental health status at discharge, $\text{Pearson } \chi^2 (3) = 238.9, p < .0001$. The effect size determining the strength of this relationship was medium (Cramer’s $V = 0.53$). There was no significant difference between duration of treatment for improved mental health status at discharge compared to no improvement as presented in Table 1.

Factors Associated with Mental Health Improvement

Binary logistic regression was employed to answer the question: What factors are associated with the likelihood of improved mental health status at discharge? The overall model included five independent variables as covariates. The final model containing all predictors was statistically significant, $\chi^2 (5) = 220.37, p < .0001$, which supported the model’s ability to differentiate between those having improved mental health status at discharge from those who did not. The generalized (Cox & Snell) $R^2$ was 23%, while the rescaled (Nagelkerke) $R^2$ was 34.7%. While controlling for other variables, for each unit increase in students’ involvement in mental health treatment services, there was a 15 times increase in the likelihood of improving mental health status at discharge. Students who lacked participation in clinical interventions were 63% less likely to improve mental health status at discharge per clinician assessment, as depicted in Table 2.
Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Improvement M (SD)%</th>
<th>No Improvement M (SD)%</th>
<th>t/χ² (df)</th>
<th>p-value</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days in care</td>
<td>434.38</td>
<td>393.14</td>
<td>1.43 (843)</td>
<td>ns</td>
<td>0.11</td>
</tr>
<tr>
<td>Diagnosis at discharge</td>
<td></td>
<td></td>
<td>9.64 (5)</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>Participation in treatment</td>
<td></td>
<td></td>
<td>238.89 (3)</td>
<td>.0001</td>
<td>0.53</td>
</tr>
<tr>
<td>Involved</td>
<td>456 (70.3)</td>
<td>41 (20.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sporadic</td>
<td>159 (24.5)</td>
<td>67 (34.2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lacks participation</td>
<td>16 (2.5)</td>
<td>63 (32.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disinterested</td>
<td>18 (2.8)</td>
<td>25 (12.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2

Results from Logistic Regression Analyses: Exploring Relationships by Mental Health Improvement Status and Variables of Interest

<table>
<thead>
<tr>
<th>Predictors</th>
<th>b</th>
<th>SE</th>
<th>Wald χ²</th>
<th>p-value</th>
<th>Odds Ratio</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trauma/Stress</td>
<td>.089</td>
<td>.231</td>
<td>.148</td>
<td>.700</td>
<td>1.093</td>
<td>.695-1.721</td>
</tr>
<tr>
<td>ADHD</td>
<td>-.278</td>
<td>.336</td>
<td>.684</td>
<td>.408</td>
<td>.758</td>
<td>.392-1.463</td>
</tr>
<tr>
<td>Involved</td>
<td>2.738</td>
<td>.351</td>
<td>60.984</td>
<td>.000</td>
<td>15.463</td>
<td>7.777-30.777</td>
</tr>
<tr>
<td>Sporadic</td>
<td>1.205</td>
<td>.342</td>
<td>12.375</td>
<td>.000</td>
<td>3.336</td>
<td>1.705-6.527</td>
</tr>
<tr>
<td>Lacks Participation</td>
<td>-1.006</td>
<td>.419</td>
<td>5.776</td>
<td>.016</td>
<td>.366</td>
<td>.161-1.831</td>
</tr>
<tr>
<td>Constant</td>
<td>-.335</td>
<td>.314</td>
<td>1.137</td>
<td>.286</td>
<td>.716</td>
<td></td>
</tr>
</tbody>
</table>

Model χ² (df) 220.37 (5)
Generalized R² .230
(Cox and Snell R²)
Rescaled R² .347
(Nagelkerke R²)
- 2 log likelihood 694.977
N 845

Note. The dependent variable is mental health improvement among participants.

DISCUSSION

The main goal of this study was to evaluate the efficacy of behavioral health treatment services offered in one particular school district. Overall, the present study’s findings add to the knowledge that school-based mental health intervention was a success by way of achieving improved mental health status among a majority of the students compared to their mental health status at the time of intake. The finding that 74.3% of the students achieved improvement in mental health status supports successful delivery of school-based mental health intervention. By utilizing trauma-informed theoretical interventions, the program achieved significant improvement in trauma and related disorders among their student population. Students with trauma-related disorders received treatment for the least duration of time in treatment, indicating another recognition of delivery of mental health services. Areas of concern include diagnosis of conduct disorder and attention-deficit/hyperactivity disorder (ADHD), where despite an increase in duration in treatment, very few students are achieving improvement.

The results supported the hypothesis that there was a statistically significant relationship between participation in treatment and mental health status at the time of discharge. Over 70% of students who participated in an involved manner achieved improved mental health status at discharge compared to only 21% who did not improve despite involvement in
treatment. This could indicate that student buy-in and active participation in treatment is a major indicator of success within the program. This is corroborated by the fact that less than 3% of disinterested students achieved improvement of mental health status at termination. Individuals presenting schizophrenia/schizoaffective, bipolar, and autism spectrum disorders stayed in services for the longest amount of time, averaging 530 days. This finding indicated that individuals with diagnoses associated with chronic and highly stigmatized mental health disorders were staying in services longest. This could be due to a focus on maintaining and managing symptoms as opposed to experiencing symptom-free daily living. Furthermore, the analysis shows that students diagnosed with trauma, anxiety, depression, and ADHD can experience goal attainment for symptom-free daily function in a variety of environments (school, social, etc.).

Results showed no association between student diagnosis type and discharge status. This is perhaps explained by the contextual recognition that clinicians are trained in evidence-supported interventions to effectively treat depression, anxiety, and trauma. It is important to consider that trauma, anxiety, and depression related disorders are more commonly diagnosed and treated in the general public.

The study found that there is a relationship between the level of involvement in services and the discharge status of student at that time. Those students who were identified by clinicians to be actively involved in treatment experienced improvement compared to students who were disinterested. What can be gathered from this data is an affirmation that involvement in treatment services is a predictor for improvement.

Findings in our study are consistent with studies highlighted in the American Psychological Association’s Public Interest Government Relations Office report entitled, “Psychologists, School-Based Health Centers and Medicaid” (American Psychological Association, 2020). In addition, understanding factors associated with mental health outcomes is important for policy makers and service providers to identify intervention priorities consistent with established recommendations (Kang-Yi et al., 2018).

Despite the encouraging finding that mental health service delivery at the program level was a success, the study comes with limitations. Due to program constraints, demographic information was unavailable for this analysis. Variables such as mental health status at discharge and diagnosis at discharge are based on clinician judgement and not standardized measures. Further, some students had multiple diagnoses (i.e., depression and anxiety), and for data integrity, only the primary diagnosis at discharge was used for this analysis. This could potentially underestimate the actual extent of mental health challenges in this sample. Records indicating obvious outliers potentially skewing the analysis were also removed. Another methodological limitation included an inability to assess the reason for termination, such as student attrition, altered location of services (therefore change in provider), aging out of school services, or students attaining treatment goals.

Despite these limitations, the study is robust from the point of view of analyzing unduplicated anonymous extant data for students located in a geographical region over a period of time. A particular strength was the use of clinician judgment instead of student self-report to arrive at diagnostic and outcome status. Use of DSM-5 assured standardized diagnosis criteria that was symptom-based in conjunction with clinician judgment. Given the large sample size for categories such as depression, anxiety, and trauma-related disorders, the results are representative of public school students attending behavioral health services.

**IMPLICATIONS**

This evaluation points to the success of delivery of school-based mental health treatment services. Further research is needed to explore the future trajectory of this specific population post termination. Statistical analyses controlling for factors such as social economic status (SES), other demographics (race, age, gender), and behavioral factors will be needed to identify vulnerability factors for delivery of effective school-based mental health services.

Legislative advocacy can be done to include school-based mental health programs as effective models for reaching vulnerable and at-risk populations. This study supports that school-based mental health treatment is effective in treating depression, anxiety, and trauma in children and adolescents. Further research is needed to fully identify all individuals who need services and how services can be delivered to a wider range of students. The study findings indicate that mental health interventions have proven to be effective in improving mental health status of students and that school-based clinicians can be effective even with sporadic student involvement.

In addition, with the identification of the main treatment areas (anxiety, depression, and trauma), this information can be used to advocate for more training for school personnel on specific diagnoses, an area where school administrators can specifically focus on. The United States General’s National Task Force on Children Exposed to Violence urges school leaders to be more educated on trauma and the models used to serve students in need (Freeman, 2011). The United States
Department of Justice (2012) recommends that school leaders implement programs guided by the best available trauma-informed evidence suited for their specific student population. This is reiterated by United States Department of Health and Human Services (2019), which recommends establishing result-oriented school mental health programs.

CONCLUSION

Students are some of the most vulnerable populations in need of mental health services, and yet limited research has been done to assess effectiveness of school-based service delivery. Our results highlight the necessity of including mental health services in school settings, as students struggle with a variety of mental health and trauma-related concerns that may contribute to student educational, relational, social, and physical wellbeing and achievement. In describing the types of mental health issues addressed in school settings for research question 1, we found that the three major diagnoses were more commonly treated within the school setting: depression, trauma-related disorders, and anxiety. Students with more chronic disorders like conduct disorder and schizophrenia were in treatment for a longer duration. In answering research question 2, which assessed the difference in improvement of mental health status based on length of time of engagement in clinical services, we found that students who were actively involved in treatment showed the most improvement in services. The results support the finding that mental health services delivered in school settings are effective in treating children and adolescents with mental health diagnoses. We also found that even minimal engagement with clinical mental health services was a protective factor towards improving mental health status, which addresses research question 3. This study adds to existing analytical studies that focused on clinical mental health program delivery within the school setting. Despite acknowledgements that “schools are in a unique position to help improve the health status of children and adolescents” (Brener et al., 2016, p. 1), access to such services is often not universally available to those in need. It is hoped that this study will help mental health services within school settings to be seen as a necessary service for the community. Further, the researchers hope the study can provide encouragement for school leaders to implement their own school-based mental health programs.

REFERENCES


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