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Pediatric Primary Care Depression Screening Using PHQ-9 Modified for Teens

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Abstract

The aim of this evidence-based practice project was to improve depression screening among adolescents between the ages of 12 years and 18 years using the PHQ-9 Modified Scale for Teens in a rural pediatric primary care clinic in Southern California. Depression is a cause of considerable morbidity and mortality among the pediatric population. The literature supports the use of depression screening tools in a variety of settings, including pediatric primary care; their use has shown an improvement in the detection of depression in adolescents. The American Academy of Pediatrics (AAP) and the U.S. Preventive Services Task Force (USPSTF) recommend the use of tools to screen for depression in adolescents beginning at 12 years of age. Screening tools for depression, specifically PHQ-9 Modified for Teens, help to identify depression in both the adult and pediatric populations. With its use in pediatric primary care, the PHQ-9 scale has been shown to have a sensitivity of 94.7% and a specificity of 86.5%. In one pediatric primary care clinic, four clinicians, including physicians and nurse practitioners, were educated about AAP depression screening guidelines and on the use and scoring of the PHQ-9 Modified Scale for Teens. For a period of 3 months, the screening tool was used for every well-child visit with patients between the ages of 12 years and 18 years. Baseline data were collected retrospectively for 3 months prior to the intervention and compared to the 3-month period postintervention from electronic medical record (EMR). The findings demonstrated the effectiveness of using the PHQ-9 Modified to detect depression in adolescents seen during a well-child visit.

Keywords: adolescent depression, depression screening tool, PHQ-9, PHQ-9 modified for teens, AAP depression guidelines, GLAD-PC.

Pediatric Primary Care Depression Screening Using PHQ-9 Modified for Teens

Depression is a cause of significant morbidity and mortality among the pediatric population. According to the World Health Organization (2020), suicide is the third leading cause of death in teenagers between 15 years and 19 years of age. Half of all mental health conditions start by the age of 14 years, but most cases go undetected and untreated. Many pediatric settings do not have a standardized process to screen for depression. The National Institute of Mental Health (2019) estimated that, in the United States, 3.2 million adolescents 12 years to 17 years of age had at least one major depressive episode (MDE). This number represents 13.3% of the U.S. population for this age group. In adolescents, the 12-month prevalence of MDEs increased from 8.7% in 2005 to 11.5% in 2014 and in young adults increased from 8.8% to 9.6%; the increase was larger and statistically significant only in the age range of 12 years to 20 years of age. With little adaptation in mental health treatments, there is a growing number of adolescents who live with untreated depression (Mojtabai et al., 2016).

The literature supported the use of depression screening tools in a variety of settings, including pediatric primary care and improvements have been reported in the detection of depression in adolescents. The American Academy of Pediatrics (AAP, 2021) and the U.S. Preventive Services Task Force (Siu & USPSTF, 2016) recommend the use of screening tools for depression in adolescents beginning at the age of 12 years and through the age of 18 years. With a variety of screening tools for depression, a thorough literature revealed that these tools help identify depression in both adults and pediatric populations, specifically the PHQ-9 Modified for Teens tool. In the pediatric primary care setting, Libby et al. (2014) reported that the PHQ-9 scale had a sensitivity of 94.7% and a specificity of 86.5%.

Project Purpose

The purpose of this evidence-based project was to improve depression screening among adolescents between the ages of 12 years and 18 years using the PHQ-9 Modified for Teens scale in a rural pediatric primary care clinic in Southern California.

Project Approval

The medical group for one pediatric clinic wrote a letter of support approving the project and considering it a priority issue. The letter of support was then presented to the University of San Diego's Institutional Review Board and received approval to commence the project (Appendix A).

Evidence-Based Model

The Iowa Model Revised (Iowa Model Collaborative et al., 2017) was used for this evidence-based practice (EBP) project. The model provides a framework to identify a priority topic, form a team to gather evidence, and determined whether that evidence suggests making a practice change. The practice change must be consistent with the evidence and results are analyzed for effectiveness. The framework loop may be used for further improvements, if no or minimal success was shown.

Methods

Project Design

This project was designed to be led by four clinicians: two nurse practitioners and two physicians in a rural pediatric primary care clinic. The four clinicians were educated about the AAP depression screening guidelines and on the use and scoring of PHQ-9 Modified for Teens scale. A paper copy of the screening form was to be handed out for every well-child visit with pediatric patients between 12 years and 18 years of age for a period of 3 months. Patients

completed the form, then it was reviewed by the clinician, scored, and determined if the patient scored positive for depression.

Baseline data were collected retrospectively via the electronic medical record (EMR) for the 3-month period prior to screening implementation. That data were then compared to the 3-month postintervention results. Data were analyzed to detect whether there was an increase in the detection of depression in adolescents during a well-child visit after the intervention.

Plan for Treatment

For adolescents screening positive for depression, the clinicians held a discussion with the patient and/or caregiver. In conjunction with the parent(s) and child, the clinician decided whether the treatment for depression would commence at the primary care clinic or if a referral would be made to a mental health specialist (e.g., psychiatric mental health nurse practitioner, psychiatrist). If parents opted out of treatment or referral, information about mental health services was provided (e.g., brochures, hotline phone numbers).

Measurements

The PHQ-9 Modified for Teens screens for mental health conditions including dysthymia, suicide risk, and a range of depression (i.e., mild, moderate, moderate-severe, severe). For the purpose of this project, the depression severity questions (Questions 1-9) were the focus data (American Academy of Child & Adolescent Psychiatry, n.d.). Scores of from 0-4 points indicated no or minimal depression. A score of at least 5 points was a positive score for depression. Score as high as 20-27 points (severe depression) could be obtained. Questionnaires that had a score of 5 points or higher were included in the positive case results.

Data Analysis

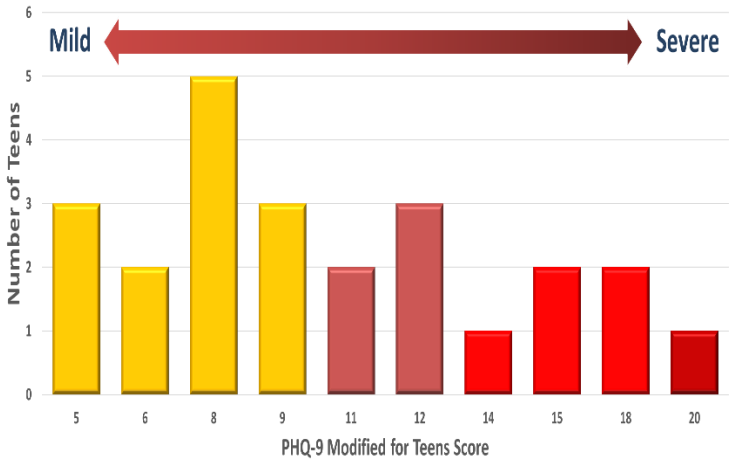
Intellectus Statistics software (2021) was used to analyze the data for this EBP project. The pre-intervention variables were age, gender, specialty referral, specialist referral, primary care provider (PCP) treatment, ER referral, suicidal risk, previous depression history, insurance type, and whether depression was identified. The post-intervention variables were a verification of the pre-intervention variables and the questionnaire score, if the score was positive for depression.

Results

The primary aim of this EBP project was to determine whether there was an increase in depression detection after the implementation of an evidence-based screening tool for depression. The clinic reported 865 pre-intervention patient visits in the targeted age group with nine of those patients scoring 5 or above on the PHQ-9 Modified. In 487 postintervention visits, 80 patients were screened and 24 patients tested positive for depression: 13 (*mild*), 5 (*moderate*), 5 (*moderate-severe*), and 1 (*severe*). To detect whether this represented a significant shift in the proportion of depression detection, a chi-squared test was conducted with significant results ($\chi^2 = 21.291$, $p < 0.001$).

Figure 1

Post-Intervention Positive Depression Cases



Limitations

The main limitation of this project was the COVID-19 pandemic. The original plan for this EBP project was to collect data for a longer term, preferably at least 4 months preintervention and 4 months post-intervention. With limited access to the physical location mandated by COVID-19 restrictions, outside personnel could not go on-site for data collection. The reduced number of patients seen postintervention was presumably the result of those restrictions and patients' fear of contracting the COVID-19 virus in a community setting.

Preintervention data were collected before the COVID-19 pandemic and post-intervention data were collected during the pandemic. This could indicate that the rise in cases could be related to the pandemic environment, as children were attending school virtually. These adolescents were not interacting with peers as they would under normal circumstances and this change could have affected their state of mental health. When compared with 2019, mental health-related ED visits for the same period in 2020 were approximately 44% higher. During

2019 and 2020, adolescents 12 years to 17 years of age accounted for the largest proportion of pediatric mental health-related visits to the ED (Leeb et al., 2020).

Another limitation was that preintervention and postintervention data were not collected during the same time of the year. Pre-intervention data consisted of visits between October 2019 and December 2019. Post-intervention data were collected between November 2020 and February 2021.

A further limitation is that the screening tool was not built into the EMR. When patients completed a paper copy of the PHQ-9 questionnaire for review by the clinicians, the tool was stored in a binder; therefore, the reliability of the screening data depended on the accurate storage of these sheets. Some questionnaires were incomplete and lacked information needed for depression scoring.

Implications for Nursing Practice

Implementing a depression screening tool in a pediatric primary care setting may improve the identification and treatment of depression in adolescents. Consequentially, the clinic should be well-versed in the availability of nearby resources for referral, differences in coverage under various health plans, and other barriers to treatment. This EBP project suggests a higher proportion of teens are screening positive for depression, whether from the COVID-19 pandemic or improvements in depression detection, and that may affect the limited mental health resources in the area for appropriate and timely referrals.

For better insight on the scope and depth of teen depression, future EBP projects could implement this screening tool in other settings or follow the same patients for longer periods. The clinic could assign resources to track the screening process, inform providers and staff about progress, and sustain this practice change.

Cost-Benefit Analysis

Although reimbursement rates vary, private insurers typically allocate $15 for CPT Code 99420, *Administration and interpretation of a health risk assessment instrument (e.g., health hazard appraisal)* and Medicare pays $18 for HCPCS Code G0444, *Encounter for screening for other disorder*, one time per year (Savoy & O-Gurek, 2016). Approximately 80% of the patients seen at this clinic have private insurance. Therefore, an additional $14.63 of revenue could be generated per patient per year with PHQ-9 screening. With capitated patients, there may be a reduction in the number of visits to the clinic. Robinson et al. (2016) reported an increase in the number of visits for other complaints in patients with depression, translating to higher resource utilization and costs. Decreased visits, faster referral, and timelier treatment could result in a more efficient use of provider time, ultimately decreasing costs and resources for the clinic.

Conclusion

Depression is a leading cause of morbidity and mortality among adolescents in the United States. A literature review supported the implementation of a depression screening tool during well-child visits. This EBP project revealed an increased detection of depression in their adolescent population. The use of the PHQ-9 Modified for Teens questionnaire was shown to be beneficial in this rural pediatric primary care clinic.

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