Improved Screening for Early Detection of Emotional Disturbance in Children and Adolescents by Performing Universal Screenings for Adverse Childhood Experiences and Anxiety: An Evidenced-Based Project

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Abstract

Although anxiety is common in children and adolescent ages 4-17 years, many providers do not screen for anxiety or for factors that contribute to anxiety. The objective was to use nursing theory and a nursing model to implement changes to the current screening protocol for anxiety to improve assessment for, and follow-up behavioral treatment for, anxiety and anxiety-related disorders at a pediatric clinic. Parents of children 4-17 years completed peer-reviewed anxiety and adverse childhood experiences (ACEs) screening tools during health examinations. Key findings were; (a) the new screening protocol resulted in a 24 percent (%) increase in the number of children diagnosed with anxiety compared to the baseline period, (b) use of the Screen for Child Anxiety Related Emotional Disorders (SCARED) questionnaire extended health visits by 5-10 minutes, and (c) follow-up appointments with an on-site behavioral health (BH) provider resulted in 86% of patients receiving treatment within one month of the initial anxiety diagnosis. Universal anxiety screening and the use of an on-site BH professional helped in early detection and treatment of anxiety.

Keywords: children, anxiety, adverse childhood experiences, screening

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Background

Anxiety is common among children and adolescents, and in recent years there has been an upward trend in the number of children and adolescents reporting anxiety and other emotional disturbances (Bitsko et al., 2018; Ghandour et al., 2019). Approximately 13-20 % of children have a mental, emotional, or behavioral problem, with approximately 7.1% of children 3-17 years having a diagnosis of anxiety. The lifetime prevalence for anxiety is 31.9 % among adolescents (Bitsko et al., 2018; Ghandour et al., 2019). New cases of anxiety in children aged 6-17 years increased from 5.5% in 2007 to 6.4% during 2011–2012 (Bitsko et al., 2018). In 2010, approximately 7% of pediatric suicides worldwide were attributed to anxiety, and for children 5-14 years, the rate years of life lived with a disability caused by anxiety was 226 per 100,000 persons (Baxter et al., 2014; Pella et al., 2020). Anxiety is costly; the estimated total direct and indirect mean annual cost for pediatric anxiety is estimated to be $6,405.00 per child (2010 dollars) (Soni, 2014). Factors contributing to pediatric anxiety include socioeconomic status, access to care, and impacts from adverse childhood experiences (ACEs) (American Psychological Association (APA), 2017; Beers et al., 2017; Opara et al., 2021). Nationally, 21% of children 0-17 years have experienced two or more ACEs (Bethell et al., 2017). Of note is the disparity regarding exposure to toxic stress between racial groups. Due to relatively higher exposures to toxic stress, non-Hispanic Black (NHB) children are at a relatively high risk for anxiety compared to non-Hispanic White children (Bitsko et al., 2018; Ullmann et al., 2021).

The US Department of Health and Human Services (HHS) recognized the need for a focus on pediatric mental health by setting goals and objectives in the *HealthyPeople 2030* initiative to improve detection and treatment for children with mental health problems. For example, one objective is to increase the proportion of children and adolescents with a mental health problem who get treatment from 73.3 % to 84.4% (HHS, n.d.a., n.d.b., n.d.c.). However, a problem exists regarding the lack of routine screening for anxiety and contributing factors within the pediatric population. Although both the American Academy of Pediatrics (AAP) and the American Association of Child and Adolescent Psychiatry (AACAP) recommend screening for behavioral and emotional disorders, pediatricians do not routinely perform routine screening for ACEs and/or anxiety for children and adolescents (AAP, 2021; Kerker, et al., 2016; Sokol et al., 2019; Walter et al., 2020; Zeanah et al., 2016). The purpose of the project was to establish, implement, and evaluate a new universal anxiety screening protocol for early detection of anxiety and ACEs and follow-up treatment for children at an urban pediatric clinic.

The Iowa Model of Evidenced-based Practice to Promote Quality Care was used to improve screening protocols, to increase the number of children screened for anxiety and ACEs and to improve the current decision-making process regarding behavioral health referrals (Tilter et al., 2001). The nursing theory used was Lewin's Theory of Change, which was used in the development of the training course on the new screening protocol (Wojciechowski, 2016). Clinical guidelines from AAP and AACAP as well as national objectives based on *HealthyPeople 2030* were used to as resources to guide the screening process and treatment options (AAP, 2021; Walter et al., 2020; HHS, n.d.a., n.d.b., n.d.c.).

Evidenced-based literature research included selecting peer-reviewed articles published between 2012-2022 from PubMed, the Cumulative Index to Nursing and Allied Health

Literature, Embase, and Goggle Scholar databases. Key search terms included children, adolescents, anxiety disorders, diagnostic screening, ACEs, and pediatric primary care. Nineteen articles were level-1 evidenced-based studies and two were level-2 evidenced-based studies (John Hopkins, n.d.). All studies addressed screening for anxiety or ACEs for children and adolescents and all had data applicable to screening in a primary care setting. A summary of findings from the literature search indicated that screening for ACEs and anxiety in primary care settings can reduce the number of un-treated children and adolescents. Long-term benefits of early detection include prevention of the development chronic illness in adulthood, and a reduction in healthcare costs for mental illnesses (Koita et al., 2018; Lu et al., 2021; Oh et al., 2018). Validated ACEs screening tools for children 4-17 years included the Child Youth Wellness (CYW) Center tool for ACEs, which are age-appropriate questionnaires designed for children, adolescents, and their parents. Anxiety screening questionnaires included the Patient Symptom Check Sheet, 17 items (PSC-17) and the Screen for Child Anxiety Related Emotional Disorders (SCARED) for parents and children (Barnes et al., 2020; Bowers et al., 2020; Bucci et al., 2015; Caporino et al., 2017; Dirks et al., 2014; Gonzalez et al., 2012; Rappaport et al., 2017; Walter et al., 2020).

Objective

The objective was to use nursing theory and a nursing model to design a project to increase anxiety screening and provide arrangement for follow-up behavioral health services to prevent impacts from anxiety and ACEs in both childhood and in adulthood (Felitti et al., 1998; Karlen et al., 2015). The aim was to increase the number of patients screened by 90 percent (%) compared to a pre-implementation baseline, and it was hypothesized that 30% of subjects screened for anxiety would be diagnosed with this disorder.

Methods

The project site was a pediatric population of approximately 98% NHB patients and is located in Tucker, GA. Clinical and administrative staff at the site assisted with project implementation, which was divided into three phases. The pre-implementation phase consisted of obtaining baseline information from patient files and conducting staff training on the impact of ACEs within the pediatric population. Baseline information was obtained from 56 randomly-selected patient records at the clinic for patients 4-17 years that were examined at the clinic during May - August 2021 and included information pertaining to the child's past history of mood disorders, sleep problems, learning challenges, and emotional disturbances. The intervention phase consisted of reviewing patient files, performing screening, and arranging for treatment for those patients with risk factors and screening results that indicated a diagnosis for anxiety or anxiety-related disorders. The target population was children 4-17 years not currently being treated for anxiety. Parents/guardians of the participants completed two questionnaires prior to the visit with a provider. The CYW's ACEs questionnaire was used to screen all patients for risk factors contributing to anxiety (Bucci et al., 2015; CYW, 2017). Also, patients aged 4 -7 years were screened for anxiety-related behaviors using the PSC-17 check sheet, and patients 8-17 years were screened for anxiety and anxiety-related disorders using the SCARED questionnaire (Gardner et al., 1999; Massachusetts General Hospital, n.d.; Oregon Health and Sciences University, n.d.; Rappaport et al., 2017). Providers at the site conducted direct interviews to determine if patient's meet the criteria for a diagnosis for anxiety based on Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5). Follow-up appointments were arranged for patients with documentation indicating anxiety or an anxiety-related disorder (American Psychiatric Association 2013). Evidenced-based data from the HHS

HealthyPeople 2030 initiative and clinical guidelines guided development of project measures (AAP, 2021; APA, 2017; Bucci et al., 2015; Rappaport et al., 2017; HHS, n.d.a., n.d.b., n.d.c.; Walter et al., 2020; Zeanah et al., 2020). Project measures obtained from patient files were recorded on an Excel spreadsheet and included the number of patients with: (a) a history of depression, anxiety, learning disability, sleep disturbance, focus and concentration problems, and behavioral issues; (b) completed questionnaires; (c) prescribed medication for anxiety or anxiety-related disorders; (d) scores greater questionnaire cutoff scores; (e) risk factors for trauma/emotional disturbance; (f) an indication if a referral was made for follow-up evaluations; and (g) an indication if parents or guardians received patient education on pediatric anxiety during the visit. Phase three consisted on referral and follow-up treatment by a behavioral health specialist.

Inferential statistics were used to analyze pre and post-training staff test scores, and descriptive statistics were used to analyze values project measures obtained during implementation. Baseline and implementation findings were compared to determine the extent to which universal anxiety screening increased the number of patients diagnosed with anxiety and referred to appropriate follow-up behavioral health services.

Results

There were no notable modifications to the study design. Results for pre- and post-staff anxiety training test score values were non-normal paired data, and were analyzed using the Wilconox Signed Rank Test, which showed a significant statistical difference of the mean scores ($n=7$, $p < 0.05$). Convenience samples were taken for two groups of records for patients that met the inclusion criteria. The baseline group consisted of 56 randomly-selected records of patients that had health examination appointments during May – August 2021. The baseline group

included 28 males (50 percent [%]) and 28 females (50 %). The average age was 11 years, one month (standard deviation (SD) = 4.29), the race was 100% NHB, and 59% of the subjects had public health insurance. Files for the baseline group had no documentation of anxiety screening performed within previous 12 months or documentation that a direct interview using the DSM-5 criteria had been conducted. The implementation group consisted of 62 randomly-selected files of patients that had appointments during May – August 2022. This group included 26 males (42 %) and 36 females (58%). The average age was 12 years, 10 months (SD=3.72), the race was 98% NHB (98%), and 66% of the subjects had public health insurance. All appointments for subjects in the implementation group were extended 5-10 minutes longer than the normal time for an examination, which is approximately 20 minutes. Children ages 4-7 years were screened using the ACEs questionnaire and the PSC-17 questionnaire. Children ages 8-17 years were screened using the ACEs and SCARED questionnaires. The average ACEs score was 1.4 (SD=2.12), the average PSC-17 score was 4.0 (SD=6.73), and the average SCARED score was 13.87 (SD=6.73). All screening questionnaires were completed by a parent or guardian, and all participants received patient education on anxiety. Forty-one percent of subjects in the baseline group and 45% of subjects in the implementation group had file documentation indicating the patient had two or more anxiety-related factors, such as attention deficit hyperactivity disorder (ADHD), sleep disturbance, poor school performance, etc. Approximately 10-21% of subjects for the baseline and implementation groups had anxiety-related factors such as ADHD, asthma, allergies, eczema, or obesity.

Direct interviews resulted in 15 patients (24%) being diagnosed with anxiety based on the DSM-5 criteria (i.e., the anxiety-diagnosed group). The anxiety-diagnosed group consisted of four males (27%) and 11 females (73%); the average age was 14 years, 8 months (SD=3.26),

93% were NHB, and 7% were NHW. This group had a 66% of subjects with a history of ADHD, asthma, allergies, eczema, or obesity. The average ACE score was 2.07 (SD=2.28), the average SCARED score was 26.23 (SD=2.28), and one participant aged seven years had a PSC-17 score of 12. All patients from the anxiety-diagnosed group were referred within 48 hours of the visit to either the onsite Psychiatric Mental Health Nurse Practitioner (PMHNP) (n=13) or to an out-sourced behavioral health specialist (n=2). Patients that received follow-up care from the onsite PMHNP were provided psychotherapy and patient education on non-pharmaceutical treatments. Eight percent of the anxiety-diagnosed patients were prescribed medications in accordance with clinical guidelines (Walter et al., 2020; Wolraich, et al., 2019). The anxiety diagnosed group had average screening scores for the ACEs, PSC-17, and SCARED questionnaires were 2.0 (SD=2.22), 12.0 (SD=0), and 24.92 (SD=15.05), respectively. There was an 100% increase in the number of children in the implementation group that were diagnosed with anxiety and referred for follow-up treatment compared to the baseline group; this increase was met two national objectives established by the US HHS (HHS, n.d.a., n.d.b.). See graphs 1, 2 and 3 for a summary of results.

Discussion

Factors contributing to pediatric anxiety include impacts from ACEs (APA, 2017; Beers et al., 2017; Finkelhor et al., 2021; Mental Health America, 2021; Opara et al., 2021). Project data suggests that universal screening for ACEs and anxiety in primary care settings can provide early detection of anxiety disorder and that arranging for on-site follow-up treatment to ensure timely, continuity of care.

Key findings were:

1. The number of children screened for anxiety and ACEs increased by 100 percent (%) compared to the number from the baseline period.
2. Universal screening combined with a direct interview to confirm a diagnosis of anxiety based on DSM-5 criteria resulted in early detection of anxiety.
3. Use of an on-site psychiatric mental health nurse practitioner allowed for follow-up treatment within one month of the initial diagnosis.
4. Use of the SCARED questionnaire extended healthcare visits more than 5-10 minutes.
5. The percentage for children in the implementation group diagnosed with anxiety was greater than the values found in the literature; allergies, asthma, eczema, sleep disturbance, ADHD, and obesity were anxiety-related factors.

Differences between project results and findings from evidence-based studies can best be explained by sample size, racial identity of the subjects, use of parent responses regarding the child's anxiety symptoms, the criteria used to diagnose anxiety, and possible unintended adverse impacts on mental health due to the COVID pandemic. All of the factors may have impacted the variation in findings between the project and comparable evidenced-based studies.

The project's sample sizes were relatively small to other studies. Small sample sizes can compromise conclusions drawn from studies (Faber & Fonseca, 2014). The population sizes of children in studies by Elmore & Crouch (2020), Koschmann et al. (2022), and Mersky et al. (2021), were 39,929 subjects, 12,794 subjects, and 20,745 subjects, respectively.

The project evaluated parent responses pertaining to their child's anxiety symptoms and exposure to ACEs, which was similar to a study by Elmore & Crouch (2020), in which anxiety questionnaires were also completed by parents or caregivers of children subjects. However, in Mersky et al. (2021), children, not their parents, completed the ACEs questionnaire. There could

be a difference between a parent and a child's perception pertaining to contributing factors of anxiety symptoms and/or exposure to ACEs (i.e., living conditions, the financial stability of the household, and exposure to violence or trauma) (Bernard et al., 2020).

Use of a standards for determining anxiety helps compare results of studies. For the project, a diagnosis of anxiety was based on use of the DSM-5 criteria (American Psychiatric Association, 2013). However, some studies failed to state if the DSM-5 criteria were used to determine a diagnosis. In a study by Elmore & Crouch (2020), there was no detailed information regarding how anxiety was confirmed. In a study by Koschmann et al. (2022), a diagnosis of anxiety based on responses to the General Anxiety Disorder & items (GAD-7) questionnaire, which is not diagnostic of anxiety based on the DSM-5 criteria. Authors in Qu et al. (2022) based the presence of anxiety symptoms on SCARED questionnaire responses from children; there was no information indicating if anxiety diagnosis was confirmed based on the DSM-5 criteria.

Patients in both the baseline and implementation groups were screened during the COVID pandemic, which began in 2020. Subjects in the baseline groups were not screened for anxiety, but may have been experiencing anxiety related to distancing recommendations and lack of social contact (Nearchou et al., 2020).

Limitations included the timeframe for the study and the availability of the project leader to be present at the site. It is recommended that primary care providers screen for anxiety use ACEs questionnaire to help identify risk for anxiety, and confirm anxiety diagnoses using DSM-5 criteria. The SCARED questionnaire should not be used in wellness visits due to time needed for scoring.

The most significant findings were that universal screening for anxiety and ACE resulted in early detection of anxiety. Fifteen (24%) patients (60% being aged 16-17 years) were

diagnosed with anxiety and referred for follow-up behavioral health services in a timely manner for treatment. See Table 1 for a comparison between project and literature findings. See Tables 1, 2, 3, and 4 for an analytical results of project measures.

Conclusion

Screening tools combined with use of the DSM-5 criteria can be incorporated into the primary care setting to diagnose for anxiety. ADHD, asthma, allergies, eczema, sleep disturbance, obesity, and the number of ACEs should be given consideration as anxiety triggers.

Implications for Nursing

Results of this project can be used by pediatric primary providers to explore the need to perform universal anxiety screen for children ages 4-17 years, as well as the benefits of an onsite BH specialist. Time needed to score and discuss anxiety questionnaires would need to be factored into the length of healthcare visits.

Table 1

Comparison of key measure between evidence-based research statistics and findings

Measure	DNP project finding (n=62)	Result from Evidence-based Literature	Source
Children 3-17 with anxiety	24%	7.1-9.4%	Bitsko et al, 2018, 2022; Ghandour, 2019
Children with 2 or more ACEs	45%	25% - Georgia 21% - National	Bethell et al, 2017
African-American Children with anxiety	23%	5.3 – 6.4%	Bitsko et al, 2022
Average age of children diagnosed with anxiety	14 years, 3 months	12-17 years	Bitsko et al, 2022
Average ACE Score	1.4	1.83	Mersky et al, 2021
% Children prescribed medication for emotional-related disorder[a]	16%	7.8%	Bitsko et al, 2022
% Children with anxiety treated with psychotherapy	100%	10.1%	Bitsko et al, 2022
% Children with prescribed medication for anxiety	8%	No information	
Children 12-17 with anxiety	21%	11.4-13.7%	Bitsko et al, 2022
% Children with anxiety with public insurance	60%	9.4-11.3	Bitsko et al, 2022
% Children with anxiety with private insurance	40%	7.6-9.2	Bitsko et al, 2022
Parents average score for SCARED questionnaire	13.87	14.43	Wren et al, 2004
Parents average score for PSC-17 questionnaire	7.85	7.70	Wren et al, 2004

[a] Depression, Anxiety, Attention Deficit Hyperactive Disorder

Figure 1

Comparison of Gender, Race, and Insurance Category

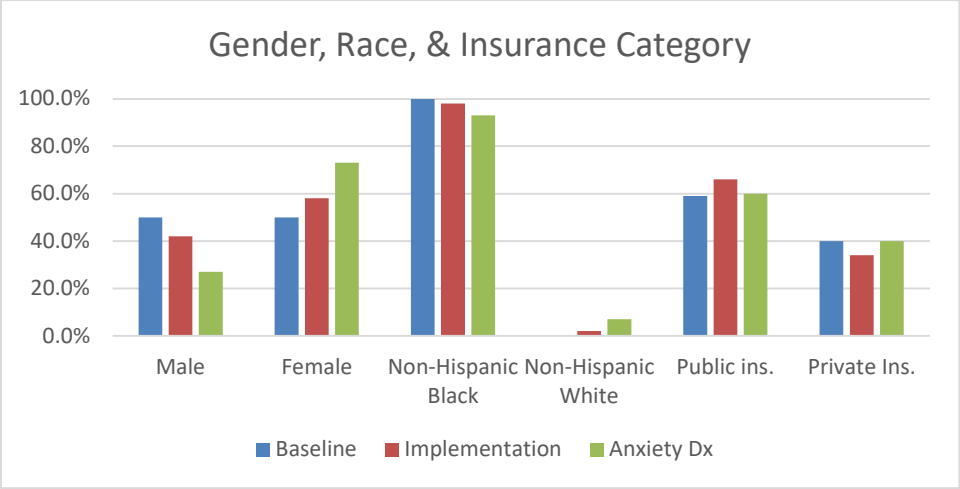


Figure 2

Comparison of Subjects Age Distribution

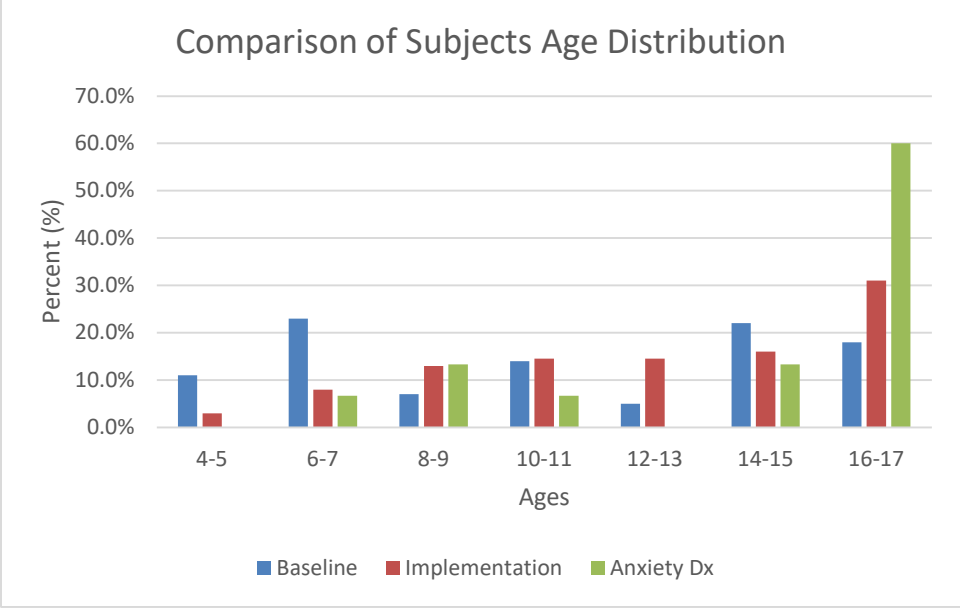


Figure 3

Comparison of Anxiety-Related Factors

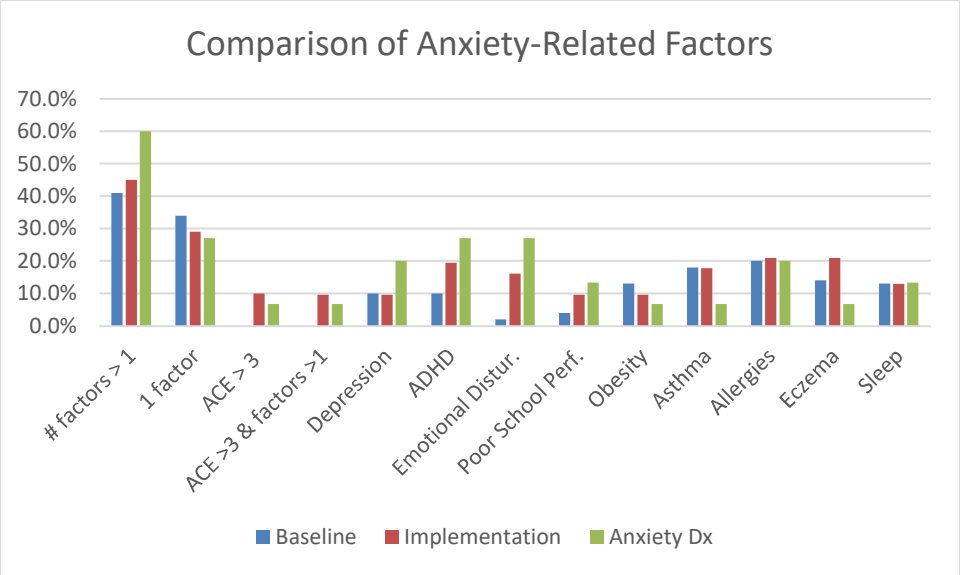
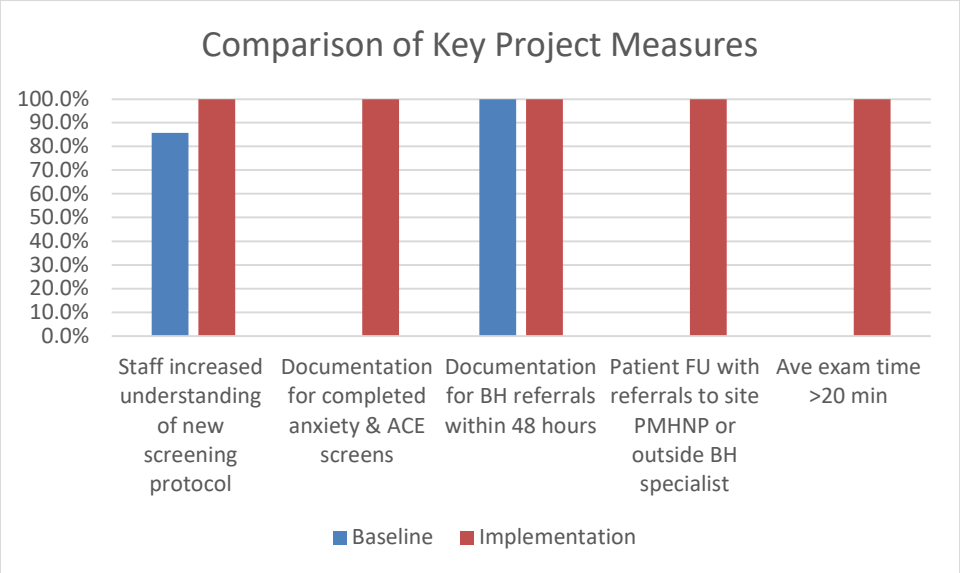


Figure 4

Comparison of Key Project Measures



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