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Implementation of the Generalized Anxiety Disorder 2-Item Screening Tool for Adult Patients in an Underserved Outpatient Cardiology Clinic

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Documentation of Mastery of DNP Program Outcomes

Final Manuscript

Implementation of the Generalized Anxiety Disorder 2-Item Screening Tool for

Adult Patients in an Underserved Outpatient Cardiology Clinic

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Abstract

Background: 11.7% of adults aged 18 and over have regular feelings of worry, nervousness, or anxiety. Anxiety can often present with somatic symptoms. The rates of misdiagnoses are high with symptoms often attributed to physical etiologies. Early recognition and treatment of anxiety can improve quality of life, prevent complications and reduce health care costs.

Purpose of Project: Implementation of the Generalized Anxiety Disorder 2-item (GAD-2) screening tool in a fast-paced underserved outpatient cardiology clinic for adult patients presenting with chest pain and/or palpitations without documented history of anxiety. The purpose of this project is to improve the utilization of the GAD-2 survey when clinically appropriate. Positive GAD-2 scores will prompt cardiology providers to refer patients for further evaluation of GAD regardless of the evaluation of cardiovascular disorders.

Evidence-Based Intervention: The Iowa Model of Research guided this practice change. The literature supports the utilization of the GAD-2 survey to screen patients for GAD. Cardiology providers will receive one-on-one training on the use of the GAD-2 survey as part of the history and physical for adult patients presenting with chest pain and palpitations.

Results: Preintervention, retrospective, baseline data was collected for a period of three months in order to obtain a good sample ($n = 30$) for comparison. Three months post intervention data was collected and assessed for adherence to the practice guideline ($n = 23$). The findings demonstrated 100% improvement in screening and referral when appropriate.

Implications for Clinical Practice: Appropriate use of the GAD-2 screening tool improved early identification and referral of individuals at risk of GAD presenting with cardiac symptoms. Early intervention of GAD improves quality of life and reduces healthcare related costs.

Keywords: anxiety, panic disorder, chest pain, palpitations, GAD-2

Implementation of the Generalized Anxiety Disorder 2-Item Screening Tool for Adult

Patients in an Underserved Outpatient Cardiology Clinic

Background and Significance

Anxiety disorders are the most common psychiatric disorder in the United States, affecting 40 million adults every year (Anxiety and Depression Association of America, 2022). According to the National Center for Health Statistics, 11.7% of adults aged 18 and over have regular feelings of worry, nervousness, or anxiety (CDC, 2021). The lifetime prevalence of U.S. adults experiencing generalized anxiety disorder (GAD) during their lifetime is estimated to be 5.7% (National Institute for Mental health, 2022). Anxiety disorders often go unrecognized, undiagnosed, and untreated, with approximately 37% of those suffering receiving treatment (Anxiety and Depression Association of America, 2022). In 2020, the number of people living with anxiety significantly increased due to the COVID-19 pandemic, with initial estimates showing a 26% increase in just one year (World Health Organization, 2022).

Anxiety is a natural human emotion that most people experience at some point in their life, but it becomes problematic when it becomes excessive, uncontrollable, and impedes on day to day living. Generalized anxiety disorder is defined as persistent and excessive worry that interferes with daily activities, occurring more days than not for at least 6 months. The Diagnostic and Statistical Manual (DSM5; American Psychiatric Association, 2013) specifically states that anxiety is considered a disorder when these feelings are associated with three or more of the following symptoms: fatigue, difficulty concentrating, sleeping disturbances, irritability, restlessness, feeling keyed up or on edge, and muscle tension. Individuals affected find it difficult to control these symptoms which cause significant distress or impairment in social, occupational, or other important areas of functioning.

Anxiety can often present with somatic symptoms that are sometimes the igniting factor that trigger patients to seek a healthcare evaluation (Campbell et al., 2017). The somatic symptoms experienced are due to increased motor tension, autonomic hyperactivity and cognitive vigilance that occur and include chest pain, palpitations, tachycardia, loss of appetite, dry mouth, nausea, vomiting, diarrhea, sweating, hyperventilation, shortness of breath, paresthesias, and headaches (Dunphy et al., 2019). Chest pain is one of the most common chief complaints evaluated annually in emergency departments throughout the United States, accounting for approximately 20% of all visits (Campbell et al., 2017). It is estimated between 15-50% of patients that present to the emergency department with noncardiac chest pain have symptoms associated with an anxiety disorder (Hamel et al., 2022). A study by Musey et al., (2018), surveyed 409 emergency medicine providers from 46 states and seven countries on their experience with non-cardiac chest pain encounters. The surveyed responders estimated that 30% of patients presenting to the emergency department with chest pain, thought to be low risk for acute coronary syndrome, end up having an anxiety disorder as the primary cause, yet less than half discuss this concern with the patient (Musey et al., 2018). There is a long list of life threatening and urgent diagnoses that are foremost important to rule out in a patient presenting with chest pain, but once they are efficiently ruled out, anxiety should be considered.

Anxiety disorders cost the United States more than $42 billion a year and more than half of those costs are associated with repeated healthcare visits to seek relief from anxiety related physical symptoms (Konnopka & Konig, 2020). People with an anxiety disorder are three to five times more likely to go to the doctor and six times more likely to be hospitalized for a psychiatric disorder than non-suffers (Konnopka & Konig, 2020). The healthcare costs for individuals with untreated GAD are said to be 64% higher than those without GAD (Kertz et al., 2013). People

suffering from GAD have about a 60% or higher chance of having a comorbid psychiatric diagnosis, most often depression, which is associated with a poorer prognosis and greater functional impairment (Dunphy, 2019). GAD can be debilitating and has been linked to problems with self-care, healthcare resource utilization, and social functioning (Kertz et al., 2013). Unfortunately, GAD is poorly recognized in clinical settings due to confounding comorbidities, distracting somatization of symptoms, and the negative stigma that accompanies mental health disorders causing patients hesitancy in seeking help. Consistently utilizing a practical screening tool in practice could lead to earlier detection and treatment (Kertz et al., 2013).

The United States Preventative Services Task Force (USPSTF) concludes with a grade B recommendation (moderate certainty), that screening for anxiety in adults has moderate net benefit in improving outcomes such as treatment response and disease remission. Screening for anxiety has more potential benefits than potential harms (USPSTF, 2022). Early detection and treatment of anxiety can improve quality of life, decrease sequelae and complications, and reduce health care costs (Mulvaney-Day et al., 2017).

Purpose/Aims

The main purpose of this study was to evaluate the rate of screening for anxiety before and after the introduction of a standardize screening tool for adults (greater than 18 years old) presenting to the cardiology clinic with a chief complaint of palpitations and/or chest pain. The secondary aim was to evaluate the rate in which patients with a positive score were referred back to their primary care provider for further evaluation and treatment of an anxiety disorder. The Iowa Model of Research-Based Practice was used to guide and complete this project.

Literature Review

A systematic review commissioned by the USPSTF (Connor et al., 2016) evaluated benefits and harms of screening for anxiety disorders. The authors examined ten studies (n=5935) which evaluated the accuracy of screening adults for anxiety with the GAD 7, GAD 2, GAS, EPDS-anxiety subscale, or the Patient Health Questionnaire-panic disorder instrument. The most studied tools were the GAD- 2 and the GAD-7. The GAD-2 demonstrated adequate sensitivity and specificity to detect GAD at a cutoff score of 3 or greater, the pooled sensitivity to detect GAD was 0.81 and pooled specificity was 0.86. The GAD 7 demonstrated adequate sensitivity and specificity to detect GAD at a cutoff of 10 or greater, the pooled sensitivity was 0.79 and pooled specificity was 0.89. In general, the GAD-7 performed as well or better than the GAD-2.

A systematic review and diagnostic meta-analysis (Plummer et al., 2015) examined the GAD-7 and GAD-2 questionnaires for accuracy in identifying anxiety disorders against a recognized gold standard diagnosis. The authors identified 12 studies (n=5223) and utilized the random-effects bivariate meta-analysis to pool estimates of diagnostic test accuracy and heterogeneity was explored using the I2 statistic. The authors concluded that the GAD-7 was acceptable for identifying GAD at cutoff scores between 7-10, although a cutoff score of 8 showed the most accuracy with a sensitivity of 0.83 and a specificity of 0.84. Additionally, the GAD-2 was acceptable for identifying GAD at a cutoff score of 3, which showed a sensitivity of 0.81 and a specificity of 0.81.

Mulvaney-Day et al. (2017) completed a systematic review that aimed to identify and evaluate screening tools available for primary care physicians for common mental health disorders, to include anxiety. The authors identified 24 screening tools that screen for behavioral

health disorders which included six tools that screen for anxiety (GAD-7, GAD-2, patient health questionnaire, mental health inventory, hospital anxiety and depression scale, and the web-based depression and anxiety test). The GAD-7 and the GAD-2 had the highest sensitivity and specificity for diagnosing GAD. The GAD-7 had a sensitivity of 0.89 and a specificity of 0.82 and the GAD-2 had a sensitivity of 0.86 and a specificity of 0.83.

Staples et al. (2019), study examined the utility of the GAD-2, PHQ-2, and Kessler Psychological Distress Scale 6 item (K-6) as screening instruments and measures of treatment response. They examined the reliability and capacity to measure change in symptoms in comparison to the longer forms of each tool (GAD-7, PHQ-9, K-10, respectively). The authors first examined data from four randomized controlled trials (n=993) conducted to examine efficacy of internet-delivered treatment for depression and anxiety. The authors then examined data from consecutive patients (n=1389) starting internet-delivered treatment for the same mental health conditions. Scores from the screening tools were compared with actual diagnosis and the GAD-2 showed to be an acceptable tool. With a cut off score of 3, the survey had optimal sensitivity of 0.71 and adequate specificity of 0.69. Additionally, the GAD-2 was responsive to treatment change. The study concluded it showed good psychometric properties in both heterogeneous samples of treatment-seeking adults. Results demonstrated feasibility of the GAD-2 in monitoring symptoms and objectively evaluating effectiveness of mental health care.

Sapra et al. (2020) reviewed the use of the GAD-2 and GAD-7 in the primary care setting and concluded that both tools maintain good sensitivity and specificity for diagnosing GAD. With a cut off score of 10, the GAD-7 held a sensitivity of 0.89 and specificity of 0.82 in diagnosing GAD. With a cut off score of 3, the GAD 2 held a sensitivity of 0.76 and specificity of 0.81. The authors concluded the GAD-2 retained excellent psychometric properties of the

GAD-7 and due to its discriminate capability, it has been proposed as an essential first step in screening for GAD. The authors also recommend utilizing the GAD-2 for initial screening in clinical settings where time is a constraint, with recommended appropriate follow-up for positive scores.

Selecting the best screening tool is multifaceted. Staffing, time constraints, environment, and population in which the clinic serves should all be heavily considered (Mulvaney-Day et al, 2017). Ultra-short screening tools (i.e., GAD-2) with high specificity tend to function best in ruling out disorders, one can feel confident that a patient who scores negative with a tool that has high specificity is truly negative (Mulvaney-Day et al., 2017). If time is not a constraint, choosing a longer screening tool with a higher sensitivity and specificity (i.e., GAD-7) may provide a more thorough and confident evaluation. Additionally, it is important that when implementing a tool to screen for any mental health disorder, to have a plan in place for patients who screen positive (Mulvaney-Day et al., 2017). A synopsis of evidence can be reviewed in Table 1.

Methods

Study Design

This project was a nurse-practitioner led, prospective/retrospective chart review evaluating anxiety screening of Advanced Practice Providers (APPs) and physicians managing adult patients presenting with the chief complaint of chest pain and/or palpitations without a documented history of anxiety presenting to an urban, underserved cardiology clinic. Pre-intervention data were collected for a period of six months (January 1, 2022 to June 30, 2022). The GAD-2 screening tool, which can be seen in Figure 1, was then implemented. It was

selected for this project because the review of the literature indicated its high sensitivity and specificity in diagnosing GAD.

The GAD-2 screening tool asks the patient two questions: over the last two weeks have you been feeling nervous, anxious, or on edge, and have you not been able to stop or control worrying? They assess themselves by selecting one of four responses for each question: "not at all" (0 points), "several days" (1 point), "more than half the days" (2 points), or "nearly every day" (3 points). You add the two numbers together to get the patient's total. A score of two or less indicates that no further steps are needed and a score between 3 and 6 indicates the need to assess the individual further for generalized anxiety disorder (Sapraa et al., 2020).

Although the GAD-7 has similar sensitivity and specificity as the GAD-2, the GAD-2 can be completed in much quicker time (less than 2 minutes), which was conducive to the fast-paced cardiology clinic where this study took place. All providers were asked to utilize the GAD-2 to screen adult patients that were presenting to the clinic with a chief complaint of chest pain and/or palpitations for anxiety in addition to their standard cardiac workup. Post-intervention data were collected for a period of five months (August 1, 2022 to December 31, 2022). The goal was to increase the rate of anxiety screening and the rate of referrals back to primary care providers for positive scores in this patient population.

Study Setting and Sample

This study was conducted in an urban cardiology clinic in one of the most underserved areas of Southern California. This cardiology clinic treats approximately 15,000 patients annually. Institutional Review Board approval was obtained from a local university.

Study Protocol

A query of the clinic's electronic medical record system was performed for patients presenting to the clinic with the chief complaint of chest pain and/or palpitations. Inclusion criteria were patients aged 18 years and older, presenting for the first time to the clinic, without a previously documented history of anxiety. Exclusion criteria were patients who did not have chest pain and/or palpitations as their chief complaint and patients who were there for follow up appointments. A standardized chart review was conducted for a total of 11 months, 6 months pre-intervention and 5 months post-intervention.

Measurements

Data collected included date of encounter, demographics, chief complaint, known history of anxiety, whether the patient was screened for anxiety, and whether the patient was referred to their primary care provider for further evaluation of anxiety if the results was positive. Additionally, data regarding the patient's known medical history was collected to include history of hypertension, hyperlipidemia, diabetes mellites, atrial fibrillation, other arrythmias, and depression. The entirety of the patient chart was reviewed in search for any documentation regarding anxiety screening. Pre-intervention data included 30 charts and post-intervention included 23 charts for a total sample of 53 charts.

Results

Summary statistics were calculated for each interval and ratio variable, and frequencies and percentages were calculated for each nominal variable split by group. As depicted in Figure 2, the demographics of the patient charts review pre and post intervention were fairly similar. Most patients were female in both groups. There was a low rate of patients with a history of anxiety, depression, or atrial fibrillation (Figure 2).

The patient charts that were reviewed pre-intervention had no evidence of screening for anxiety while the charts that were reviewed post-intervention had GAD-2 surveys completed and charted on 100% of the patients (Figure 3). There was no clinical significance in the rate of ordering Holter monitors and 14-day event monitors, there was actually a slight increase in both orders post intervention. Providers did not stop ordering cardiac monitors whether the patient had a positive or negative GAD-2 survey.

Out of all the patients (n=16) who had a positive GAD-2 score, 3 of them had an arrythmia diagnosed via their Holter monitors or 14-day event monitors. The arrythmias that were identified included paroxysmal supraventricular tachycardia, paroxysmal atrial fibrillation, and a high premature ventricular contraction burden of more than 10% (Figure 4).

Interpretation of Findings/Discussion

The intervention group had a clinically significant improvement in anxiety screening and management using the GAD-2 screening tool compared to the comparison group. The intervention group included anxiety as a differential diagnosis when clinically appropriate. The intervention did not interfere with the cardiology management of these patients. There was no deviation in cardiology evaluation and management. Patients continued to be screened for arrythmias via Holter monitors and/or 14-day event monitor at the same rate as the comparison group. The data demonstrated improved patient outcomes and management of patients with palpitations. Appropriate referrals and education were provided without deviation from the standard of care from a cardiology standpoint.

Limitations

One limitation of this study was the lack of an already established standardized area to document whether anxiety was assessed. Data were obtained from the provider documentation

notes which leaves room to question if anxiety was assessed during a patient encounter but was not documented. The second limitation was that the sample size was relatively small. The last limitation was lack of follow up with patients to evaluate if they received further evaluation and treatment of GAD. It would be beneficial for future research to include following up with patients who had positive scores to evaluate if they were diagnosed with GAD, if they received treatment, and if symptoms have improved.

Potential Cost Benefit Analysis

The cost and benefit of utilizing the GAD-2 screening tool to screen for anxiety at a cardiology clinic can be substantial as anxiety costs the United States $42 billion dollars per year Konnopka & Konig, 2020). There is no associated cost to utilizing the GAD-2 screening tool during an appointment. It takes less than 2 minutes to complete and there is no additional equipment, space, or staff needed. Utilizing the GAD-2 survey increases screening rates and referrals for further evaluation and treatment of anxiety when appropriate. Properly treated anxiety improves quality of life and decreases repeat unnecessary clinic and Emergency Department visits for uncontrolled symptoms.

Implications for Nursing Practice

Implementation of the GAD-2 screening tool for adult patients who presented to the cardiology clinic with chest pain and palpitations overwhelmingly improved screening for anxiety and referrals to primary care for further evaluation when indicated. Providing the clinic with one evidenced-based standardized screening tool that was short and easy to use vastly increased utilization and in turn, recognition of a potentially debilitating disorder. APPs should do their due diligence in taking care of patients, including their mental health. This can be done

by taking the time to screen patients for anxiety as a possible etiology for chest pain and/or palpitations in a cardiology clinic.

Selection of the screening tool should be tailored to the clinic, the staff, and the patients they serve. Utilizing a short, 2 question survey like the GAD-2, is conducive to a fast-paced clinic with short appointment times. Administering the survey upon check in or offering it available online prior to the appointment are two other options to screen appropriate patients for anxiety while saving valuable time. Creating a specific place in the electronic health record for the selected screening tool may also assist in prompting APPs to assess whether the screening is appropriate. It is important to note that when a patient has a positive GAD-2 screening, proper referral must be made for further evaluation and treatment.

Conclusions

Anxiety disorders are the most common psychiatric disorder in the nation, and it is unfortunately grossly unrecognized, undiagnosed, and untreated. Anxiety can often present with somatization of symptoms including chest pain and palpitations. Often, patients are rightfully referred to cardiology for investigation of these symptoms and a full cardiac workup is completed; however, the anxiety level of the patient goes unevaluated and therefore unrecognized and untreated. The patient may continue living with symptoms, making repeat office and emergency room visits. This can be debilitating for the patient and their loved ones, leading to decreased quality of life, poor prognosis, and increased healthcare costs.

Early recognition and treatment of anxiety disorders improves patient outcomes. Implementing a standardized screening tool at a cardiology clinic that sees many patients with symptoms that could potentially be attributed to the somatization of anxiety increases the evaluation, referral for further investigation, and therefore treatment of symptoms when

appropriate. Additionally, it does not interfere with cardiology investigation, diagnostics, patient

management or meeting standards of care.

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Tables

Table 1

Synopsis of Evidence

Author(s) Name of article	Ranking	Summary of evidence
Connor et al. (2016) Screening for depression in adults: an updated systematic evidence review for the U.S. preventative services task force	I	• The GAD-2 and GAD-7 both demonstrate adequate sensitivity and specificity in screening for anxiety. • The GAD-2 and GAD-7 are the most studied screening tools for anxiety
Plummer et al. (2016) Screening for anxiety disorders with the GAD-7 and GAD-2: a systematic review and diagnostic meta-analysis	I	• The GAD-2 and GAD-7 both demonstrate adequate sensitivity and specificity in screening for anxiety. • The GAD-2 is most accurate at a cutoff score of 3, the GAD 7 is most accurate at a cutoff score of 8.
Mulvaney-Day et al. (2017) Screening for behavioral health conditions in primary care settings: a systematic review of the literature	I	• The GAD-2 and the GAD-7 demonstrated the highest sensitivity and specificity in screening for anxiety in comparison to 4 other screening tools. • Screening tool selection should be based off environment, needs, resources available, patient populations. It is a multifactorial decision.
Konnopka et al. (2020) Economic burden of anxiety disorders: a systematic review and meta-analysis	I	• Anxiety disorders associated with a significantly increased health care costs on an individual level compared with healthy controls.
Kertz et al. (2012) Validity of the Generalized Anxiety Disorder-7 Scale in an Acute Psychiatric Sample	III	• GAD is poorly recognized, diagnosed, and treated. • GAD is linked to problems with self care, healthcare utilization, and social functioning. • Proper use of screening tools can help identify GAD earlier leading to earlier treatment.
Staples et al. (2019) Psychometric properties and clinical utility of brief measures of depression, anxiety, and general distress: the PHQ-2, GAD-2, and K-6.	II	• The GAD-2 is an adequate tool when compared to the GAD-7 for screening for and monitoring symptoms of anxiety and objectively evaluating effectiveness of mental health care.
Sapra et al. (2020) Using generalized anxiety disorder-2 (GAD) and GAD-7 in a primary care setting	V	• GAD-2 retained excellent psychometric properties of the GAD-7 and due to its discriminate capability, it has been proposed as an essential first step in screening for GAD. • Utilize the GAD-2 for initial screening in clinical settings where time is a constraint is recommended.
Musey et al. (2018) Anxiety about anxiety: a survey of emergency department provider	IV	• Approximately 30% of patients seeking emergency care for low-risk chest pain have anxiety or panic as a primary problem, yet fewer

| beliefs and practices regarding anxiety-associated low risk chest pain		than half receive treatment or information to help manage anxiety
Hamel et al. (2022) Anxiety disorders in patients with noncardiac chest pain: association with health-related quality of life and chest pain severity	V	• Anxiety disorders are associated with increased chest pain severity and lowered health-related quality of life.

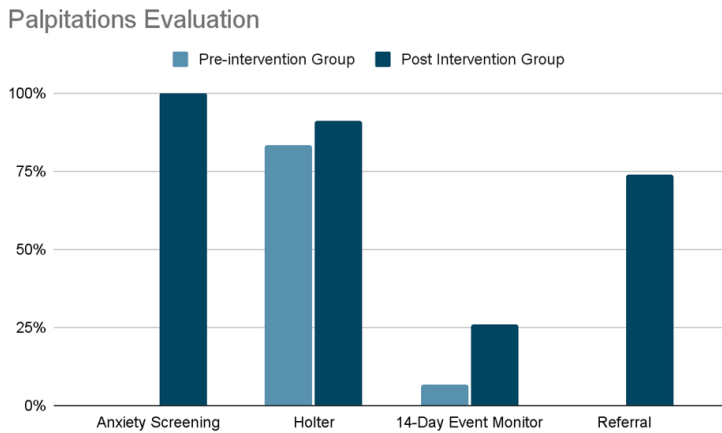**Figure 1**

Patient Demographics
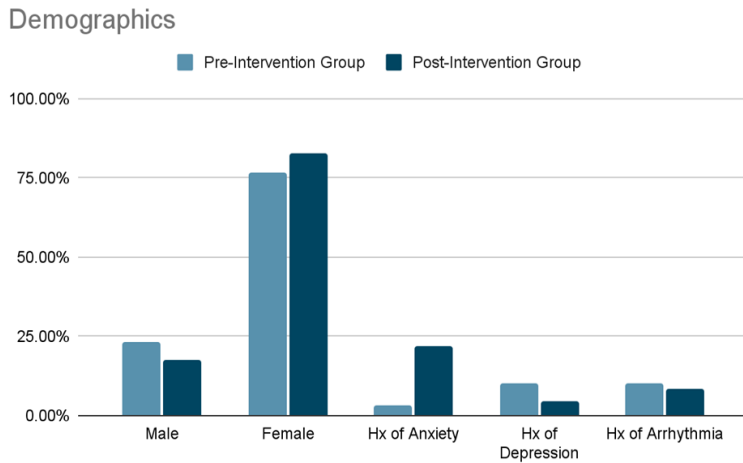
Figure 2

Palpitations Evaluation

Figure 4

GAD-2 and Arrythmia Results

GAD-2 & Arrhythmia Results