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Implementing a Depression Screening in a Pediatric Acute Care Setting for
Adolescents with Type 1 Diabetes

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A Thesis Submitted to The Graduate School at the University of Missouri-St. Louis in
a partial fulfillment of the requirements for the degree

Doctorate of Nursing Practice with an emphasis in Pediatric Nurse Practitioner

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Abstract

Problem: Depression among adolescents with Diabetes Mellitus type 1 (DM 1) is three times more prevalent than adolescents without chronic disease. Diagnosis of depression has been found to negatively affect the quality-of-care management, quality of life, and results in an increase in hospital admissions with hypoglycemia or hyperglycemia events.

Methods: A depression screening, the patient health questionnaire 9 (PHQ-9), a validated screening tool for use among adolescents was implemented in this quality improvement (QI) project. It was the first cycle of a plan-do-study-act (PDSA) cycle for in a pediatric ICU. Adolescents between the ages of 12 – 18, were English speaking and had been downgraded to a general status accommodation were the sample who meet inclusion criteria of for this project. The project question was: What the is the impact of implementation of the PHQ-9 on identification of depression in this population and if needed, on referral to behavioral health?

Results: Data collected from seven adolescents found that depression was identified in this population (n=4 or 57%) and one of these four patients showed suicidal tendencies. The majority of those positive for depression were found to be white and female. Limitations of the project included a small sample size and a short time of implementation.

Implications for Practice: Future PDSA cycles should include establishing policies and procedures for those found to be suicidal for placement within a facility, as well as facilitating observational needs of the patient while in the hospital. Depression

screening of this population should continue as it had a positive impact of detecting depression among these adolescents.

Implementing a Depression Screening in a Pediatric Acute Care setting for Adolescents
with

Type 1 Diabetes

Diabetes Mellitus Type 1 (DM 1) is one of the most common chronic diseases among adolescents. According to Marker et al. (2019), more than 167,000 children and adolescents are affected by DM 1 in the United States, and the incidence is on the rise. Picozzi & Deluca (2019) projected a 300% increase in DM 1 diagnoses by 2050. The diagnosis of DM 1 comes with many lifestyle changes such as monitoring blood glucose at least four times daily, carbohydrate to insulin ratio management, and physical activity monitoring (Jaser et al., 2017). There are some differences in the optimal glycemic index with the International Society for Pediatric and Adolescent Diabetes (ISPAD) asserting the optimal hemoglobin A1c (HbA1c) of less than 7% [53 mmol/mol] and the American Diabetes Association (ADA) guideline stating that the optimal HbA1c is to be less than 7.5% [58 mmol/mol] (Marker et al., 2019).

Lack of adherence to a daily regimen to manage DM 1 among adolescents is profound. Jaser et al. (2017) found that about 17% of adolescents with DM 1 were meeting suggested targets for control. When an adolescent does not meet the recommended targets, this places the child at increased risk of frequent hospitalizations for hyperglycemia or hypoglycemia, and a decreased quality of life (QOL) (McGill et al., 2018). The economic impact of this is staggering, and the healthcare costs annually for diabetes management is \$174 billion, with an additional \$58 billion from

productivity loss (Piccozi & Deluca, 2019). This number is expected to triple by 2050 with the estimated newly diagnosed DM 1 adolescents.

Additionally, among teens with a chronic disease, such as DM 1, depression impacts between 8%-27%, which is roughly three times greater than the general population (Picozzi & Deluca, 2019). Jaser et al. (2017) found that adolescents with DM 1 had concerns of feeling different than peers, felt stressed regardless of glycemic control, daily maintenance and parental “nagging”. When an individual experiences daily stress in their life, it can affect physical and mental health. However, when an individual with DM 1 has chronic stress, this affects glycemic control, creates issues with increasing insulin resistance, and has an indirect negative impact upon diabetes self-management (Jaser et al., 2017).

Marker et al. (2019) found that 5.7% of all adolescents have depression and 25%-30% of adolescents with DM 1 have an increase in depression symptoms. The ADA and ISPAD recommend adolescents with DM 1 be screened annually for depression, particularly those that are not meeting treatment goals such as HbA1c levels and have frequent hospitalizations (Marker et al., 2019). There are several different screening tools and questionnaires used for depression screenings among adolescents including the Patient Health Questionnaire 9 (PHQ-9), Becks Depression Inventory (BDI), Children’s Depression Inventory (CDI), and the Center for Epidemiological Studies Depression Scale for Children (CES-DC) (Buchberger, 2016). Regular implementation of screening tools helps identify those adolescents in need of therapy, medication, and/or referral to a mental health provider which can have a

positive impact on mental health and can lead to improved adherence to diabetes management and ameliorate physical QOL (Picozzi & Deluca, 2019).

Recently, in a moderately sized pediatric unit in an urban midwestern pediatric hospital, suicide screenings were implemented in adolescent patients but not depression screenings. Implementing a depression screening at time of discharge from the Pediatric Intensive Care Unit (PICU) may improve timely treatment of depression. The purpose of this project is to administer the PHQ-9 to adolescent patients admitted to the PICU with a diagnosis of DKA once the patient is downgraded to general status. General status would be those that are near discharge, at baseline functionality, without monitoring needs. The Institute for Healthcare Improvement's (IHI) plan-do-study-act (PDSA) cycle was the framework selected for this project. The aim of the project is to perform depression screening using the PHQ-9 on at least 50% of adolescents admitted to the PICU with DKA during a three-month implementation period. The primary outcome measure is PHQ-9 completion. Secondary outcome measures include the PHQ-9 scores and referrals to behavioral health providers. The question this project asks is: in pediatric patients aged 12-18 years admitted to the PICU with DKA, what is the impact of PHQ-9 screening on identification and referrals to behavioral health?

Review of Literature

The search engines used for this literature review were PubMed, CINAHL, and Cochrane review. The first searches within PubMed and CINAHL produced 1,958 (PubMed) and 7,970 (CINAHL) with the phrases diabet* AND depression AND adolescen*. Another search was conducted on CINAHL using the phrases screening tool AND depress* AND diabete* which resulted in 53 articles. On Cochrane review,

the search phrase type 1 diabetes AND depression yielded 43 reviews. The search was refined with the inclusion criteria of English language, adolescent ages 13-18, and free full text. Exclusion criteria were developmental delay, non-English speaking, journals that were older than 10-years and pre-existing psychiatric diagnosis. After reviewing abstracts and full texts, exclusion criteria eliminated 6,098 articles. A total of 10 publications were selected for this review.

Of the 10 articles selected, three researched the effect of screening tools to detect depression, four monitored how depression affected glycemic control, and three studied how using specific therapies correlated with glycemic control. All of the studies for review used at least one screening tool for depression. The PHQ-9 (Kroenke, Spitzer & Williams, 2001) and the CDI (Saoji et al., 2018) were the two most used depression scales in the ten studies.

The PHQ-9 has a sensitivity of 88% and specificity of 88% for detecting depression (Nefs et al., 2019). The PHQ-9 is comprised of questions regarding depression and future suicide attempts using a Likert scale for 0 (not at all) to 3 (nearly every day) for a possible score of 0-27. Higher scores mean more depressive symptoms present (Marker et al., 2019). A score of greater than 5 indicates depression, and if the suicide question were answered affirmatively, this is an automatic flag for depression (Picozzi & Deluca, 2019). Kroenke, Spitzer & Williams (2001) implemented cut off points for clinicians using the PHQ-9 to diagnose depression as: 5-9 indicates mild depression, 10-14 indicates moderate depression, 15-19 indicates moderately severe depression, and greater than or equal to 20 indicates severe depression. Marker et al. (2019) used the PHQ-2/9 and found that 6.7% of the population had depressive

symptoms and 3.1% of those had suicidal ideations. Similar results were found by Picozzi & Deluca (2019) in which a total of 156 individuals with DM 1 were screened with the PHQ-9 resulting in a rate of 19% diagnosed as depressed, and of those screened, 75% were females. Watson et al. (2020) found the implementation of the PHQ-4 followed by the PHQ-a (PHQ-9 revised for adolescents) was sufficient in identifying depression in those with DM 1.

The other widely used depression screening tool was the CDI with a Cronbach alpha of 0.70-0.86 showing strong internal consistency (McGill et al., 2018). Saoji et al. (2018) reviewed the psychometrics of the CDI to establish this tool as effective at screening for depression in children, particularly those with chronic illness. The means of the CDI did not differ between those with chronic disease and the comparison peers suggesting this tool is acceptable to screen for depression in those with chronic disease (Saoji et al., 2018). This 27-item self-screening tool identifies cognitive, behavioral and affective symptoms associated with depression with a possible score of 0-54 (Saoji et al., 2018). Each of the 27 items are scored 0 to 2, and higher scores are associated with more depressive symptoms present at the time of screening, with a score greater than or equal to 19 representing the clinical range for a diagnosis of depression (Saoji et al., 2018). Similar to the PHQ-9, the CDI gives the patient three separate responses to choose from to best describe the thoughts and feelings that they had over the previous two-week time frame (McGill et al., 2018). According to the American Diabetes Association (2020), the screening tools are selected by the institution, as one is not recommended over another. The PHQ-9, a free tool that available for parents or patients to complete, is available via paper and pencil, or in electronic form, however, an in-

person interview is preferred (ADA, 2020). It can also be completed over the phone if more convenient for the family (Marker et al., 2019). Marker et al. (2019) implemented the PHQ-9 screening tool at a large midwestern children's hospital, which included 13 tertiary and outreach pediatric endocrinology clinics. The goal of implementation was to achieve 80% screening success in adolescents 12-21 years of age with DM 1 seen in clinic for regular scheduled appointments (Marker et al., 2019). In total, 1,009 adolescents were screened over a two-year time frame (Marker et al., 2019). Of those, 6.7% patients had an elevated PHQ-9 score of greater than or equal to 5 indicating greater depressive symptoms, and these findings were correlated to a higher average blood glucose (Marker et al., 2018).

In a retrospective chart review, Duffus et al. (2019) studied The Strengths and Difficulties Questionnaire (SDQ) scores completed during routine scheduled appointments, on adolescents aged 11-17 years with a diagnosis of DM 1. Of the 135 patients screened during 2016, scores were compared to a normative group without chronic illness (Duffus et al., 2019). Results showed that the group with DM 1 scored significantly higher, indicating greater depression occurrence in this population with no difference noted in the length of time since diagnosis (Duffus et al., 2019). Duffus et al. (2019) concluded that screening should be implemented at time of diagnosis and on a routine basis. Depression plays an important role on diabetes management, with earlier diagnosis of depression having a greater impact on quality of care with management (Duffus et al., 2019).

In a meta-analysis, Kongkaew et al. (2013) investigated the association of depression and management of DM 1 in adolescents. Within the meta-analysis, six

different screening tools throughout 19 studies were assessed on the effect of depression and diabetes management. Kongkaew et al. (2013) determined there was a moderate association between depression and non-adherence to diabetes management. Results of this study helped to directly tie screening, diagnosis and management to indicate screening for depression has a positive impact on glycemic control (Kongkaew et al., 2013).

McGill et al., (2018) conducted an observational, prospective study evaluating how depression affected adolescents' self-management of diabetes. A total of 103 adolescents ages 10-17 were recruited into either the new onset DM 1 group or insulin pump initiation group (McGill et al., 2018). The CDI was given at baseline then at one, six and 12 months (McGill et al., 2018). No statistical difference in CDI scores between the groups were found, however both groups had elevated CDI scores in the first month when compared to the general population (McGill et al., 2019). New onset patients had fewer improvements in HbA1c levels at the 6month time frame, indicating that depressive symptoms can lead to poor glycemic control (McGill et al., 2019). McGill et al. (2019) concluded that assessing and diagnosing depression early within the diagnosis of DM 1 may improve glycemic control.

Picozzi & Deluca (2019) conducted a chart review to assess whether glycemic control varies between those diagnosed with either DM 1 or DM 2 and depression to those not diagnosed with depression. This retrospective case study reviewed charts of 214 endocrinology patients at St. Christopher's Hospital for Children in Philadelphia (Picozzi & Deluca, 2019). One hundred fifty-six adolescents had a diagnosis of DM 1 and 24% were found to have depressive symptoms utilizing the PHQ-9 (Picozzi &

Deluca, 2019). Those with depression were predominately female, younger age at diagnosis, increased HbA1c levels, and had been diagnosed with DM 1 for a shorter duration of time (Picozzi & Deluca, 2019). Diagnosing depression early in those with DM 1 leads to earlier intervention, which is crucial during the adolescent years when developmental stages such as identity vs role confusion can affect their sense of self (Jaser et al., 2017).

Buchberger et al. (2016) reviewed 14 studies in a meta-analysis focusing on the impact depression and anxiety has on glycemic control in adolescents diagnosed with DM 1, as well the prevalence of depression and anxiety. Depression and anxiety were prevalent among those with DM 1 based upon scores of CDI, DSRS, CES-D, and BDI-Y behavioral screenings (Buchberger et al., 2016). A positive correlation was made between diabetes management and depression scores with higher depression scores resulting in a higher HbA1c level (Buchberger et al., 2016). In those with lower CDI scores, optimal levels of HbA1c were recorded as well as improved QOL score (Buchberger et al., 2016).

In a post hoc analysis, Hood, Rausch & Dolan (2011) screened 145 adolescents for depression utilizing the CDI tool at a diabetes clinic at baseline and six months, also obtaining HbA1c level and blood glucose monitoring (BGM). The increase in depressive symptoms at six months was associated with increased HbA1c levels in which Hood, Rausch & Dolan (2011) estimated that for every 0.5% increase in HbA1c levels, a CDI score increased 5 points, as well as a one fewer BGM was associated. These results suggest implementation of screening tools, along with coping strategies can improve diabetes management (Hood, Rausch & Dolan, 2011). Jaser et al. (2017)

studied coping strategies effect on depressive symptoms, QOL measures and glycemic control. One hundred seventeen adolescents completed the Responses to Stress Questionnaire (RSD) DM 1 version to evaluate stress, and the Quality of Life Inventory (QLI) and the CDI for measurement of depression (Jaser et al., 2017). Jaser et al. (2017) found higher levels of stress indicated poorer QOL and glycemic control. Adolescents reporting diabetes related stress with a mean score of 11.3 (\pm 4.6) at baseline, increased 15% in the population depressed at 12 months from 9% at 6 months (Jaser et al., 2017). A bi directional correlation of less use of primary coping skills and secondary coping skills correlated with higher levels of stress in the adolescent (Jaser et al., 2017). Intervening with primary (problem solving, emotional expression) and secondary (positive thinking, cognitive restructuring, distraction) coping skills after depression screening will benefit the adolescent with adherence to diabetes management (Jaser et al., 2017).

In a randomized control trial, 94 patients with DM 1 who were diagnosed with depression utilizing the BDI-II, were randomized into groups for mindfulness cognitive therapy (MBCT), cognitive behavior therapy (CBT) or a wait list control group (Tovote et al., 2014). Tovote et al. (2014) found that both MBCT and CBT groups had statistically significant fewer depressive symptoms post measurement when compared to the waitlisted control group. Both the MBCT and CBT groups showed improvement in levels of well-being, anxiety, and distress related to diabetes management (Tovote et al., 2014).

Weissberg-Benchell et al. (2016) constructed a randomized control trial comparing depressive symptoms with implementation of PENN Resiliency Program

(PRP) and a control group. Two hundred sixty-four adolescents ages 14-18 years with DM 1 were randomized for the trial (Weissberg-Benchell et al., 2016). Hood et al. (2018) rendered the results from the Weissberg- Benchell et al. (2016) study. In the one- year report from the PRP implementation, Hood et al. (2018) found there was a decrease in diabetes distress in the PRP group compared to the control group. Depressive symptoms and HbA1c levels remained stable in both groups with no differences (Hood et al., 2018). Those individuals who received the PRP showed better diabetes care management, which further documents adolescents with DM 1 benefit from various forms of therapy for diabetes management and depression (Hood et al., 2018).

Studies strengths included similarities in study designs (longitudinal), usage of validated screening tools, and low cost of implementation. Studies limitations included small sample populations which led to low statistical power. Studies were also limited to less diverse populations, which created low generalizability. Lastly, several studies used a self-report tool which can lead to a response bias when evaluating the data

With an implementation of change at an organization, the IHI model for improvement PDSA cycle was the framework for the project. This framework is easily utilized in projects for improvement processes, as a goal of the project is to initiate depression screening among the adolescents admitted with DKA with DM 1. During the planning phase, stakeholders and I met to discuss implementation of the PHQ-9 screening tool for the population, as well as setting the clinical goal for implementation. Implementation of the PHQ-9 was completed by the patients by wipeable sheet with dry

erase then replicated into the electronic medical record (EMR) by the registered nurse (RN).

To summarize, data in most articles did not provide large statistical significance for depression among DM 1 adolescents, however indicated a clinical significance that depression is a problem among adolescents with DM 1 affecting their daily care management and QOL (Jaser et al., 2017). Marker et al. (2019) as well as Duffus et al. (2019) found the group of individuals with DM I had an increase in depressive symptoms, than those without DM I exhibiting an effect on metabolic control. As depression and poor metabolic control continue to persist into late adolescence, associations with worsening co-morbidities, as well as greater risk for poor care management into adulthood (IPSAD, 2011).

Method

Design

This QI project used a prospective, descriptive design. This was the first PDSA cycle in a quality improvement initiative utilizing a medical record review. Implementation began February 15th with screenings initiated and data collection occurring from February 15th through May 5th 2021.

Setting

The QI project occurred in a small, midwestern suburban pediatric hospital with an eightbed PICU. The hospital serves approximately 382 patients, with 32 of those beds for pediatrics. The hospital is located in a population of approximately 117,000 people with two medical centers, of which a children's hospital is adjoined to one of them.

Sample

The sample for this QI project was purposeful of DKA admissions ages 12-18 years with inclusion criteria of English speaking, admitting diagnosis of DKA, accommodation code of general status. Exclusion criteria was patients who were not English speaking, developmental delay and DKA with diagnosis of DM 2/ HHS, new onset diabetic without DKA.

Procedures

Education was presented to the nursing staff, residents and doctors on the floor, and made available at our bulletin board in the nursing break room. A reminder sheet was placed at the resident desk that stated the inclusion criteria: ages 12-18, English speaking, admitting diagnosis of DKA, and accommodation code of general status. The PICU resident added the nursing communication upon admission that stated “RN to please complete the PHQ-9 depression screening once patient has reached general status accommodation code”. In coordination with the PICU intensivists, hospitalists, residents, unit manager, unit charge nurses, unit nurses and student PI, monitored to see the PHQ-9 was completed once accommodation code of general status was given prior to discharge from the hospital. The adolescents were given a wipeable copy of the PHQ-9 to complete and the RN input the scores in the PHQ-9 flowsheet accessible via the EMR. The depression cut off score was greater than or equal to 10 on the PHQ-9 or positive for suicidal ideations. If the patient scored greater than or equal to 10, a referral to behavioral health was made for the patient to be evaluated for depression prior to discharge from the hospital. If the consult held up discharge, patients were discharged home with a consult appointment made within that first week after

discharge. Patients who scored positive for suicidal ideation on PHQ-9 received an automatic behavioral health referral and seen while in the hospital. Completed PHQ-9 scores were collected, de-identified, and the data was recorded in an Excel spreadsheet. Data was then placed into SPSS in which descriptive statistics used to analyze the collected data.

Data Collection/Analysis

The data collected consisted of demographic information composed of age, gender identification, and race. In addition, PHQ-9 scores, responses to PHQ-9, and any behavioral health referrals were recorded. All data was deidentified and stored on a password protected computer and removable drive owned by the primary investigator (PI). Data analysis includes descriptive statistics that may show some possible relationships between the variables of DKA and depression in pediatric patients with Type 1 Diabetes.

Approval Processes

Approval was obtained from department administration. Additional approvals from the Clinical Scholarship Project committee, the graduate school, and the hospital and university' institutional review board were obtained prior to data collection. The student PI obtained a letter of support from the hospital as a Quality Improvement project to proceed with IRB review at the university.

Results

Seven patients met the inclusion criteria for the project and had a PHQ-9 screening completed. The average score of the PHQ-9 was 9.29 with a standard

deviation (SD) of 7. A score greater than or equal to 5 indicates depression, and behavioral health referrals were given for scores greater than or equal to 10.

Demographics

The majority of the population was female and white. The sample contained 78% white/Caucasian, 11% African American/ black, and 11% Hispanic/Latino. Patient ages ranged from 12-17 years with a mean age of 14 years. A run chart was compiled from the number of patients who completed the PHQ-9 (Table 2). The run chart identifies those who met inclusion criteria indicated in blue, and the total number of screenings that occurred over the three-month collection time frame.

Discussion

For this quality improvement project, the PDSA cycle framework was utilized. The PHQ9 depression screening was administered for adolescents ages 12-18 years who were admitted with new onset DM 1 in DKA in PICU. The screening rate of patients who met inclusion criteria for this project was 78%. Although nine patients met the requirements for the PHQ-9 screening, two adolescents were missed by the staff RNs. Among the patients screened, four scored greater than or equal to 10 on the PHQ-9 indicating depression, or 57% of the sample. While most studies state 25-30% of adolescents with DM 1 have depression, the small sample size of this project suggests that future PDSA cycles will need a larger sample size to increase validity (Marker et al., 2019). While three adolescents were referred to behavioral health, one adolescent who had suicidal ideations was discharged from our hospital for direct admission to an outside hospital for inpatient psychiatric therapy.

The QI project suggests a positive impact for patients. While reviewing results of the PHQ-9 and providing education with the adolescents and parents, an opportunity arose for the adolescents to discuss their feelings of depression with their parents. During these care management discussions, three of the four adolescents stated they had never been able to talk about these feelings asked about on the PHQ-9, and parents were unaware of the struggles that their adolescents were having. An in-depth discussion was held with the adolescent who was identified with suicidal ideations and this patient was thankful that the screening had been completed because the patient did not know how to tell the mother or sisters that these feelings were occurring. This supports studies which discuss parents who are aware of their child's depression take a more active role in their care and management with coping strategies and support (Jaser et al., 2017).

One barrier to this QI project was identified from staff nurses who stated they had difficulty locating the PHQ-9 in the EMR for screening and subsequent increased time to do so. Reminders were discussed with these nurses on a regular basis to emphasize the importance of implementing the PHQ-9 as a service to our population. Once more screenings showed positive depression rates in the sample, an attitude change occurred. Another barrier was the ability to obtain an observation sitter upon the identification of suicidal ideations with the patient. A floor nurse was pulled from the floor to cover this sitter need for the remainder of the shift. Limitations related to this project included small sampling size. During the data collection phase, there were several admissions that did not meet the inclusion criteria or missed the target age by one year. Changing the inclusion criteria for the future PDSA cycles may increase

the sample size. A goal for the next PDSA cycle would expand inclusion criteria of adolescents to ages 11-18, admitted with DKA or new onset DM1 without DKA, and HHS. Future PDSA cycles should include hospital protocols to account for those patients who are at risk of suicide. While a suicide screening is completed on all patients ages eight and older in the hospital setting, if this screening is missed because the patient is obtunded upon admission, but later found to have suicidal ideations with the PHQ-9 screening, there are no protocols in place to address a safety plan for the patient.

Depression screening should be continued as the implementation did identify positive depression screenings providing access to behavioral health care of adolescents who met criteria. Advocating for behavioral health management by implementing a depression screening with this higher risk population is supported by the Doctor of Nursing Practice Essentials (AACN, 2006).

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Figure 1

PHQ-9

Nine-symptom Checklist

Name _____ Date _____

Over the *last 2 weeks*, how often have you been bothered by any of the following problems?

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

(For office coding: Total Score _____ = _____ + _____ + _____)

If you checked off *any* problems, how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with other people?

- Not difficult at all Somewhat difficult Very difficult Extremely difficult

(Kroenke, Spitzer, & Williams, 2001)

Figure 2

PHQ-9 Scoring Interpretation

Guide for Interpreting PHQ-9 Scores		
Score	Depression Severity	Action
0 - 4	None-minimal	Patient may not need depression treatment.
5 - 9	Mild	Use clinical judgment about treatment, based on patient's duration of symptoms and functional impairment.
10 - 14	Moderate	Use clinical judgment about treatment, based on patient's duration of symptoms and functional impairment.
15 - 19	Moderately severe	Treat using antidepressants, psychotherapy or a combination of treatment.
20 - 27	Severe	Treat using antidepressants with or without psychotherapy.

(Kroenke, Spitzer & Williams, 2001)

Table 1

Patient Demographic Characteristics

Patient Characteristic	Mean + SD or percent
Age (y)	14.4 ± 1.74
Gender	56 % Female 44% Male
Race	78% White (n= 5) 11% African American (n= 1) 11% Hispanic/Latino (n=1)
PHQ-9 Completion	78%
PHQ-9 Score	9.29 ± 7.135
Referral to behavioral health	100%

Table 2

Run Chart- PHQ-9 Completion for those who met Inclusion Criteria



