The Impact of an Educational Intervention on Florida Nurse Practitioners’ Knowledge and Confidence Utilizing Depression Screening Tools

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Abstract

Purpose: To assess and describe Florida advanced practice registered nurses’ (APRNs) baseline knowledge about depression and confidence utilizing depression screening tools, to evaluate for a change in knowledge and confidence following an educational presentation, and to determine participants’ likelihood of increasing depression screening after engaging in the project.

Methods: A quasi-experimental design was utilized with pre- and post-intervention surveys. Participants were recruited for the project via social media, and an email was sent to APRNs on staff at a university in the Southeast United States. A total of 51 participants were involved in the project. The intervention was an online interactive educational presentation created by the author regarding depression and depression screening tools.

Results: A paired samples t-test indicated no significant change in knowledge or confidence after engaging in the educational presentation; however, when APRNs were asked if they would increase depression screening after participating in the project, 36% favored the idea.

Discussion: The results suggest that exposure to the educational presentation influenced participants' likelihood of increasing depression screening. This may improve the diagnosis of depression and the management of patients with depression in the primary care setting. Future studies will need to be conducted to confirm this hypothesis.

Conclusion: The study hypothesized that APRNs’ knowledge and confidence would improve after engaging in an interactive educational presentation. No significant changes in knowledge and confidence were observed; however, participants’ likelihood of increasing depression screening could have positive implications for patients suffering from depression.

Major Professor: Dr. Kristin Fadale, DNP, APRN, FNP-C, AGACNP-BC, ENP-BC
Keywords: depression, depression screening, educational training, advanced practice

registered nurse, nurse practitioner, healthcare provider, knowledge, confidence
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Individuals of varying ages and walks of life are impacted by depression each year across the globe. In 2017, the United Nations recognized depression as a leading cause of disability worldwide. Recent state and national census data has revealed increased depressive symptoms in American adults during the COVID-19 pandemic from 2020 to 2021 (Centers for Disease Control and Prevention, 2021). Depression creates a considerable economic cost to society (Greenberg et al., 2021). From 2010 to 2018, the financial cost increased by 37.9% from 236.6 billion U.S. dollars to 326.2 billion. Economic costs are attributed to medical services, pharmaceuticals, suicide-related costs, and unemployment.

Depression is a medical condition that results in negative feelings, thoughts, and actions (American Psychiatric Association, 2020, 2022). An individual’s experience of depression varies but may include difficulty in personal and professional relationships, learning and development, and other critical areas of life. Symptoms of depression include irritability, sadness, and emptiness, as well as changes to the body and mind that impact a person’s ability to function in daily life. The consequences of untreated depression include substance abuse, increased suicide risk, and decreased quality of life (Coppens et al., 2018; Lex et al., 2019; U.S. Preventive Services Task Force, 2022; World Health Organization, 2023; Zhou et al., 2019). Depression also strongly impedes patient adherence to healthcare providers’ recommendations (Devine et al., 2018).

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, outlines a variety of depressive disorders and their diagnostic criteria (American Psychiatric Association, 2022). Depressive disorders include disruptive mood dysregulation disorder, major depressive
disorder, persistent depressive disorder, and premenstrual dysphoric disorder. In order to diagnose major depressive disorder, an individual must have experienced a depressed mood or loss of interest or pleasure and other symptoms such as fatigue, feelings of worthlessness, and diminished concentration for at least two weeks.

The U.S. Preventive Services Task Force (2016, 2022), endorsed by the American Academy of Family Physicians (2022), recommends depression screening for adolescents and adults. A representative sample in the United States showed that only 3% of annual visits to primary care providers included depression screening (Samples, 2020). Providers were also shown to screen for depression selectively based on a patient’s presenting symptoms. Additionally, only 1.4% of all U.S. adults seen in the ambulatory care setting from 2005-2015 were screened for depression (Bhattacharjee, 2018). Researchers have observed that the more time a patient spends in a provider's office, the more likely the patient is to be screened for depression. A recent study found that the average time primary care providers spend with patients is 18 minutes (Neprash et al., 2021). Time constraints have been shown to affect providers’ use of depression screening tools negatively (Colligan et al., 2020; Smith & Meeks, 2019). With decreased visit time, providers are less likely to address depression as more immediate health problems may take priority.

In the United States, preventative care is primarily provided by physicians, advanced practice registered nurses (APRN), and physician assistants. Over 355,000 APRNs are licensed in the United States, and an estimated 70% of all APRNs practice primary care (American Association of Nurse Practitioners, 2022). By 2031, APRN employment is predicted to grow by 46% (U.S. Bureau of Labor Statistics, 2022a). In contrast, physician employment is only
expected to grow by 3% for family medicine physicians, 2% for internal medicine physicians, and 1% for pediatricians (U.S. Bureau of Labor Statistics, 2022b).

Problem Statement

In the United States, less than 3% of annual visits to primary care providers include depression screening (Samples, 2020). As APRNs make up a large part of the preventative healthcare system and employment is projected to grow, they are uniquely positioned to increase depression screening. However, healthcare providers have expressed a need for additional training before implementing depression screening in practice due to a lack of knowledge and confidence (Bartlett et al., 2021; Nollett et al., 2019). Decreased knowledge and confidence have been identified as barriers to healthcare providers’ diagnosis, treatment, and management of depression (Bartlett et al., 2021; Coppens et al., 2018; Nollett et al., 2019; Sinnema et al., 2018; VanderWall et al., 2021). Educational training has been shown to increase healthcare professionals’ knowledge and confidence in managing mental health conditions (Bartlett et al., 2021; Byatt et al., 2021; Coppens et al., 2018; Lee et al., 2020; Nollett et al., 2020).

Purpose and Aims

The purpose of this project was to assess and describe Florida APRNs’ baseline knowledge about depression and confidence utilizing depression screening tools, to evaluate for a change in knowledge and confidence following an educational presentation, and to determine participants' likelihood of increasing depression screening after engaging in the project. The study hypothesized that APRNs’ knowledge and confidence would improve after engaging in an interactive educational presentation.

The project involved three specific aims:
1. Assess and describe Florida APRNs’ baseline knowledge about depression and confidence utilizing depression screening tools.

2. Assess for changes in Florida APRNs’ knowledge and confidence after engaging in an interactive educational presentation.

3. Determine the likelihood of Florida APRNs to increase depression screening in their current practice after participating in the project.

**Literature Review**

To support the aims of this project, a literature review was performed evaluating barriers to depression screening and the impact of education on provider knowledge, confidence, and depression screening practices. This literature review was conducted from 2018 through 2023 on the search engines PubMed, Research Gate, and Google Scholar. Various searches were performed using a combination of the following phrases: “barriers,” “depression screening,” “depression training,” “healthcare provider education,” “healthcare provider training,” and “healthcare provider knowledge.” Additionally, “healthcare provider” was replaced with “nurse practitioner” to identify relevant research.

**Barriers to Depression Screening**

Despite national recommendations for depression screening, only a small percentage of the U.S. population is screened annually (Bhattacharjee, 2018; Samples, 2020). Several barriers affecting providers and patients contribute to the underutilization of depression screening, which will be covered in depth below. Additionally, specific populations are less likely to be screened: men, individuals over 75 years of age, Asian, Hispanic, African American, uninsured individuals, and limited English speakers (Garcia et al., 2020, 2021, 2022; Kato et al., 2018). Insurance also plays a role in the implementation of depression screening. For instance,
Medicare reimburses providers who perform annual depression screening for patients over 65 years of age as part of the Medicare Annual Wellness Visits requirement, which could result in higher depression screening rates in this population (Blackstone et al., 2022).

**Healthcare Provider Barriers**

Healthcare providers face various barriers to utilizing depression screening. For instance, time constraints put pressure on healthcare providers and decrease their likelihood of implementing depression screening (Colligan et al., 2020; Nollett et al., 2020; Smith & Meeks, 2019). Although, increasing the amount of time providers share with patients may not initially solve this dilemma, as perceived lack of time may also play a role in the reluctance to perform depression screening.

In addition to time constraints, a lack of staff support is also a barrier (Blackstone et al., 2022; Henry et al., 2020; Last et al., 2021). Most depression screenings are self-administered by the patient; however, the screening tool must first be given to the patient by the support staff. This will ensure adequate time for the patient to complete the screening tool before meeting with the physician. The results of the depression screening must then be given to the healthcare provider by the support staff to ensure the provider has adequate time to review the results before visiting with the patient. This process enables the healthcare provider to spend sufficient time with the patient to make a proper diagnosis, initiate treatment, provide education, make referrals, and provide follow-up.

Healthcare provider biases are another barrier to depression screening. Healthcare providers have been shown to rely more heavily on their thoughts and feelings when diagnosing depression than on validated screening tools (Samples et al., 2020). For instance, primary care providers are more likely to screen a patient for depression if they believe the patient will meet
diagnostic criteria. This may result in missed depression diagnoses for patients not outwardly exhibiting symptoms of depression.

Healthcare providers also hold beliefs about patient willingness to report depression. Many healthcare providers believe patients are good at hiding depressive symptoms and avoid talking about their feelings (Nollett et al., 2020). This may decrease the healthcare provider's motivation to initiate depression screening. Bedside manner is also essential. Healthcare providers who use clinical language and spend little time placing patients at ease are less likely to obtain a truthful report of depressive symptoms and, therefore, less likely to implement depression screening tools (Colligan et al., 2020; Samples, 2020).

Lastly, healthcare providers’ decreased knowledge and confidence in diagnosing, treating, and managing depression is a barrier to performing depression screening (Bartlett et al., 2021; Coppens et al., 2018; Nollett et al., 2019; Sinnema et al., 2018; VanderWall et al., 2021). Knowledge has been described as an understanding of principles, facts, and information acquired through learning and personal experience (Merriam-Webster, n.d.). Confidence has been described as an assurance in one’s ability to do something successfully (Britannica, 2023). Without a foundation of knowledge and confidence, healthcare providers are unlikely to screen patients for depression.

**Patient Barriers**

Patients have expressed a lack of time with their primary care provider as an obstacle to seeking care for depression as they feel pressure to focus on more critical physical problems during the visit (Colligan et al., 2020). Patients suffering from depression are also more likely to report physical symptoms over mental symptoms, which may result in the healthcare provider overlooking a depression diagnosis in pursuit of a physical problem or illness (Heinz et al., 2021;
Ólafsdóttir Flóvenz, 2021). Also, patients who report more symptoms are more likely to be screened for depression, whereas patients who report fewer symptoms are less likely to be screened (Smith & Meeks, 2019). Having a good relationship with the healthcare provider also seems to affect the likelihood of undergoing depression screening. Patients are more likely to report symptoms if they have a good rapport with the provider and feel the provider is non-judgmental and approachable (Colligan et al., 2020).

As previously mentioned, depression screening disparities exist between various populations (Garcia et al., 2020, 2021, 2022; Kato et al., 2018). This creates barriers to depression care for particular populations, such as men, older adults, ethnic minorities, uninsured, limited English speakers, and more. Standardization of depression screening has been shown to decrease disparities (Garcia et al., 2022). However, screening has yet to be integrated into all U.S. healthcare practices.

Another patient barrier to receiving depression screening relates to patient self-disclosure of symptoms. It has been speculated that patients' self-disclosure when answering depression screenings may not always be honest (Last et al., 2021; Radovic et al., 2021). This could be due to perceived or actual stigma associated with depression (Heinz et al., 2021; Kluemper et al., 2021).

Two types of stigmas affect patients’ health-seeking behaviors: personal or internalized stigma and perceived stigma (Arnaez et al., 2020; Heinz et al., 2021; Horsfield et al., 2020; Schomerus et al., 2019). Patients experiencing personal stigmatizing attitudes are less likely to identify themselves as being depressed, seek out professional help, and be screened for depression (Colligan et al., 2020; Horsfield et al., 2020). Perceived stigma has to do with how an individual believes others see them (Heinz et al., 2021). Perceived stigma is less of a barrier to
initial health-seeking behaviors than personal or internalized stigma; however, it has been identified as a barrier to depression treatment. Further research is needed to show its influence on depression screening.

Impact of Education

Healthcare Provider Knowledge and Confidence

Healthcare providers need additional training before implementing depression screening in practice (Bartlett et al., 2021; Nollett et al., 2019). Educational training has been shown to increase healthcare professionals’ knowledge and confidence in managing various mental health conditions (Bartlett et al., 2021; Byatt et al., 2021; Coppens et al., 2018; Lee et al., 2020; Nollett et al., 2020). Educational training has specifically been shown to increase healthcare providers’ knowledge of depression regarding prevalence, screening tools available, diagnosis, and how to treat or refer (Byatt et al., 2021; Clevesy et al., 2019; VanderWall et al., 2021). Increased healthcare provider knowledge and confidence are essential as they may contribute to increased depression screening; however further research is needed to confirm this.

Screening, Identification, and Management of Depression

Although increased knowledge and confidence in healthcare providers is a positive result of educational training, it is only one part of changing healthcare practice. In addition to improving healthcare providers’ knowledge and confidence, educational training has been shown to increase the screening, identification, and management of depression (Clevesy et al., 2019; Nollett et al., 2020; VanderWall et al., 2021). Educational training has also been shown to increase screening regardless of whether the practice was performing screening before the educational intervention (Clevesy et al., 2019; Nollett et al., 2020). Healthcare providers who
undergo additional training about depression are more apt to diagnose and treat patients with depression.

**Theoretical Framework**

The Kirkpatrick model was developed in 1959 by Dr. Donald Kirkpatrick to evaluate academic training (Alsalamah & Callinan, 2022). The four levels of the Kirkpatrick model include (Nik Nazli, 2022):

- **Level 1-Reaction**: gauges participants’ initial thoughts and feelings about the training.
- **Level 2-Learning**: assesses if participants gained knowledge or skills due to the training.
- **Level 3-Behavioral**: identifies if new knowledge and skills are applied in practice.
- **Level 4-Results**: assesses if the training accomplished its aims and any additional or unplanned outcomes.

The Kirkpatrick model was applied to this project to assess the impact of the educational training on APRNs’ knowledge and confidence. The change in Florida APRNs’ knowledge and confidence after engaging in the educational presentation was assessed with levels two and three. Level four was used to evaluate whether the project's aims were met and APRNs' likelihood of increasing depression screening in their current practice after participating in the project. Level one was not directly assessed, gauging participants’ opinions about the training.

**Methodology and Implementation**

**Project Design**

The project utilized a quasi-experimental design with pre- and post-intervention surveys. The surveys were created using the online platform Qualtrics to assess Florida APRNs' knowledge and confidence levels before and after engaging in an interactive educational presentation. The educational presentation was created using the online platform Genially and
enabled participants to advance through the slides at their own pace while engaging with the content through clickable links. All data was anonymously collected through the platform Qualtrics.

**Participants**

A non-random, purposeful sampling method was used to recruit participants. To be eligible for participation, individuals had to be actively licensed APRNs practicing in Florida and have access to a computer or smartphone. Anonymous demographic data was collected at the beginning of the project (see Appendix A). Advanced practice registered nurses not currently practicing in Florida were excluded from the project. The study sample was obtained by recruiting members of APRN-focused groups on the Facebook social media website and APRNs on staff at a college of nursing at a university in the Southeast United States.

**Setting and Resources**

Participants completed this web-based project on the platform Qualtrics via a computer or smartphone. The surveys and educational presentation were inserted into Qualtrics to create a seamless, user-friendly experience for completing the project. To recruit participants, a digital flier was created explaining the project's purpose, the problem addressed, inclusion criteria, risks, benefits, and that engaging in the project implied consent (see Appendix B). The flier also included a QR code which, when scanned by a smartphone, populated a clickable link to the project.

The digital flier with an introductory message requesting involvement and a link to participate was posted to the following Facebook groups: “Florida Nurse Practitioners,” “Nurse Practitioner New Grads and Students,” “Family Nurse Practitioner – Networking Group,” “Nurse Practitioner Newbies,” “Nurse Practitioner Community Support,” “Doctor of Nursing Practice
Facebook group members were receptive to the project; various group members gave the post a thumbs up, and one member posted a comment requesting results upon the project’s completion. Additionally, an introductory email requesting participation, with the digital flier attached and a link to participate, was sent to APRNs practicing in Florida on staff at a college of nursing at a university in the Southeast United States by a nonclinical faculty member (see Appendix C).

**Instruments and Tools**

This project consisted of three surveys, the demographic survey, the pre-intervention survey, and the post-intervention survey. The first question of the demographic survey was a yes or no question asking whether participants were APRNs practicing in Florida. If participants answered no, they were asked not to proceed with the study. Additionally, the demographic survey consisted of six questions asking information about age, gender, graduate education level, primary certification area, years practicing, and an estimated percentage of patients currently screened for depression over one month in the APRNs’ current practice.

The pre-and post-intervention surveys included a five-question knowledge assessment consisting of four multiple-choice questions and one true or false (see Appendix D). The knowledge questions assessed APRNs’ understanding of recent depression statistics, guidelines, and research. The surveys also included five questions assessing confidence using a Likert scale in a matrix table. The confidence questions assessed APRNs' self-assurance to access, use, and interpret depression screening tools and to treat and follow up with patients with mild to moderate depression. Additionally, the post-intervention survey included a net promoter score (NPS) question, which assessed APRNs’ likelihood of increasing depression screening in their current practice after participating in the project.
Intervention and Data Collection

The educational intervention was an interactive presentation designed by the author with the media creation tool Genially. Interactive components of the presentation included a clickable index, forward and backward arrows, a home button on every slide re-routing to the index, clickable links, mouse-over pop-ups with additional information, and an optional voice-over. The clickable index and forward and backward arrows enabled participants to advance through slides at their own pace and view them more than once. The presentation briefly covered the following topics: depression and COVID-19, results of untreated depression, frequency of depression screening, recommendations for screening, types of screening tools, provider review time of screening tools, where to access screening tools, treatment of depression, dos and don’ts of referrals, and follow-up.

Implementation Plan

After receiving approval from a university’s Institutional Review Board, the Qualtrics surveys with the embedded interactive presentation were made live. The mini-surveys and presentation were implemented into a singular Qualtrics survey in the following order: demographic questions, pre-survey knowledge and confidence questions, interactive presentation, and post-survey knowledge and confidence questions. After opening the project to participation, the digital flier with an introductory message requesting involvement and a link to participate was posted to applicable Facebook groups and sent via email to staff at a college of nursing at a university in the Southeast United States. Project information was posted to each Facebook group at least twice during implementation. The implementation period was from November 2022 through January 2023. The project was closed after survey responses waned in frequency. The survey data was then analyzed and interpreted to assess for changes in
knowledge and confidence post-intervention. The post-survey NPS question was also analyzed to determine APRNs’ likelihood of increasing depression screening in their current practice after participating in the project.

**Human Subjects and Informed Consent**

The Institutional Review Board at a university in the Southeast United States deemed this Doctor of Nursing Practice (DNP) project low risk, identifying it as a “benign behavioral intervention” and exempting it from further review (see Appendix E). No identifying information was collected from participants, and all survey responses were anonymous. The digital flier provided potential and actual participants with information about the problem being addressed, the project's purpose, risks, benefits, alternatives, and that completion of the surveys implied consent. There were no foreseeable risks associated with this study. The advantage of participation was a potential increase in knowledge about depression and confidence using depression screening tools in practice.

**Data Analysis**

**Patient Demographics**

A total of 51 participants completed the demographic survey. The majority were female (94.1%), ages 36 to 45 (43.1%), and family nurse practitioners (74.5%). Participants had varying years of experience, with 39.2% practicing for less than two years and 27.5% practicing for two to four years. Participants primarily held a master’s degree (60.8%), while the rest were doctorly prepared (39.2%). Participants were asked approximately what percentage of patients they screen for depression over one month; 13 participants answered 100% (25.5%), six participants answered 50% (11.8%), and five participants answered 0% (9.8%). Complete demographics are provided in Table 1.
## Table 1

**Demographic Characteristics of the Participants**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Group</th>
<th>Number (% of Sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>3 (5.9)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>48 (94.1)</td>
</tr>
<tr>
<td>Age</td>
<td>26-35</td>
<td>15 (29.4)</td>
</tr>
<tr>
<td></td>
<td>36-45</td>
<td>22 (43.1)</td>
</tr>
<tr>
<td></td>
<td>46 and above</td>
<td>14 (27.5)</td>
</tr>
<tr>
<td>Primary Certification Area</td>
<td>Family</td>
<td>38 (74.5)</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>1 (2.0)</td>
</tr>
<tr>
<td></td>
<td>Adult-Gerontology Primary Care</td>
<td>7 (13.7)</td>
</tr>
<tr>
<td></td>
<td>Psychiatric/Mental Health</td>
<td>3 (5.9)</td>
</tr>
<tr>
<td></td>
<td>Acute Care</td>
<td>1 (2.0)</td>
</tr>
<tr>
<td></td>
<td>Adult-Gerontology Acute Care</td>
<td>1 (2.0)</td>
</tr>
<tr>
<td>Years of Practice</td>
<td>&lt; 2 years</td>
<td>20 (39.2)</td>
</tr>
<tr>
<td></td>
<td>2-4</td>
<td>14 (27.5)</td>
</tr>
<tr>
<td></td>
<td>5-7</td>
<td>7 (13.7)</td>
</tr>
<tr>
<td></td>
<td>8-10</td>
<td>3 (5.9)</td>
</tr>
<tr>
<td></td>
<td>&gt; 10 years</td>
<td>7 (13.7)</td>
</tr>
<tr>
<td>Level of Education</td>
<td>Master's Degree</td>
<td>31 (60.8)</td>
</tr>
<tr>
<td></td>
<td>Doctorate Degree</td>
<td>20 (39.2)</td>
</tr>
<tr>
<td>Approx. Percentage of Patients Screened in 1 Month</td>
<td>0.00</td>
<td>5 (9.8)</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>5 (9.8)</td>
</tr>
<tr>
<td></td>
<td>20.00</td>
<td>5 (9.8)</td>
</tr>
<tr>
<td></td>
<td>30.00</td>
<td>2 (3.9)</td>
</tr>
<tr>
<td></td>
<td>40.00</td>
<td>5 (9.8)</td>
</tr>
<tr>
<td></td>
<td>50.00</td>
<td>6 (11.8)</td>
</tr>
<tr>
<td></td>
<td>60.00</td>
<td>1 (2.0)</td>
</tr>
<tr>
<td></td>
<td>70.00</td>
<td>6 (11.8)</td>
</tr>
<tr>
<td></td>
<td>90.00</td>
<td>3 (5.9)</td>
</tr>
<tr>
<td></td>
<td>100.00</td>
<td>13 (25.5)</td>
</tr>
</tbody>
</table>
Findings

**Aim 1. Assess and describe Florida APRNs’ baseline knowledge about depression and confidence utilizing depression screening tools.**

A total of 46 participants completed the pre-survey prior to participating in the educational intervention. Five questions were utilized to assess Florida APRNs’ knowledge of recent depression statistics, national depression screening recommendations, medical provider screening habits, and depression screening tools. Most participants answered all five questions correctly before engaging in the interactive educational presentation, with 100% of participants correctly identifying the PHQ-9 as the screening tool most often used in primary care. Pre-intervention knowledge scores are provided in Table 2.

**Table 2**

*Pre-Intervention Knowledge Answers*

<table>
<thead>
<tr>
<th>Item</th>
<th>Answered Correctly N (%)</th>
<th>Answered Incorrectly N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the height of the COVID-19 pandemic (2020-2021), depressive symptoms in American adults?</td>
<td>44 (95.65)</td>
<td>2 (4.35)</td>
</tr>
<tr>
<td>The U.S. Preventative Services Task Force (USPSTF) currently recommends depression screening for?</td>
<td>32 (69.57)</td>
<td>14 (30.43)</td>
</tr>
<tr>
<td>Medical providers have been shown to selectively screen patients for depression based on their presenting symptoms?</td>
<td>41 (89.13)</td>
<td>5 (10.87)</td>
</tr>
<tr>
<td>Which of the following depression screening tool is most often used in the primary care setting?</td>
<td>46 (100)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Medical provider review time of the Patient Health Questionnaire (PHQ-9) has been shown take?</td>
<td>33 (71.74)</td>
<td>13 (28.26)</td>
</tr>
</tbody>
</table>
Five questions were utilized to assess Florida APRNs’ confidence in accessing, using, and interpreting depression screening tools and treating and following up with patients with mild to moderate depression. The majority of participants identified as very or extremely confident in accessing, using, and interpreting screening tools and following up with patients after screening; however, when it came to effectively treating mild-to-moderate depression, the majority identified as slightly or somewhat confident (52.17%). Pre-intervention confidence scores are provided in Table 3.

**Table 3**

*Pre-Intervention Confidence Answers*

<table>
<thead>
<tr>
<th>Category</th>
<th>Not at all Confident N (%)</th>
<th>Slightly or Somewhat Confident N (%)</th>
<th>Very or Extremely Confident N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessing depression screening tools</td>
<td>2 (4.35)</td>
<td>14 (30.44)</td>
<td>30 (65.22)</td>
</tr>
<tr>
<td>Using depression screening tools in practice</td>
<td>2 (4.35)</td>
<td>13 (28.26)</td>
<td>31 (67.39)</td>
</tr>
<tr>
<td>Interpreting results of depression screening tools</td>
<td>0 (0)</td>
<td>19 (41.31)</td>
<td>27 (58.7)</td>
</tr>
<tr>
<td>Effectively treating patients with mild-to-moderate depression</td>
<td>5 (10.87)</td>
<td>24 (52.17)</td>
<td>17 (36.96)</td>
</tr>
<tr>
<td>Providing appropriate follow-up for patients with mild-to-moderate depression</td>
<td>5 (10.87)</td>
<td>18 (39.13)</td>
<td>23 (50)</td>
</tr>
</tbody>
</table>

**Aim 2. Assess for changes in Florida APRNs’ knowledge and confidence after engaging in an interactive educational presentation.**

A total of 25 participants completed the post-survey after participating in the educational presentation. According to the descriptive statistics, the majority of the mean differences in knowledge and confidence between the pre- and post-survey values were very small (< 0.01) (see Table 4).
Table 4

Descriptive Statistics

<table>
<thead>
<tr>
<th>Item/Category</th>
<th>Pre</th>
<th>M</th>
<th>SD</th>
<th>Post</th>
<th>M</th>
<th>SD</th>
<th>Mdn</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the height of the COVID-19 pandemic (2020-2021), depressive symptoms in American adults</td>
<td>Pre 46</td>
<td>2.957</td>
<td>0.206</td>
<td>Post 25</td>
<td>2.880</td>
<td>0.440</td>
<td>3</td>
</tr>
<tr>
<td>The U.S. Preventative Services Task Force (USPSTF) currently recommends depression screening for</td>
<td>Pre 46</td>
<td>2.935</td>
<td>0.611</td>
<td>Post 25</td>
<td>3.000</td>
<td>0.500</td>
<td>3</td>
</tr>
<tr>
<td>Medical providers have been shown to selectively screen patients for depression based on their presence</td>
<td>Pre 46</td>
<td>1.109</td>
<td>0.315</td>
<td>Post 25</td>
<td>1.120</td>
<td>0.332</td>
<td>1</td>
</tr>
<tr>
<td>Which of the following depression screening tools is most often used in the primary care setting</td>
<td>Pre 46</td>
<td>1.000</td>
<td>0.000</td>
<td>Post 25</td>
<td>1.000</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>Medical provider review time of the Patient Health Questionnaire (PHQ-9) has been shown take</td>
<td>Pre 46</td>
<td>1.348</td>
<td>0.604</td>
<td>Post 25</td>
<td>1.360</td>
<td>0.490</td>
<td>1</td>
</tr>
<tr>
<td>Confidence accessing depression screening tools</td>
<td>Pre 46</td>
<td>3.717</td>
<td>1.109</td>
<td>Post 25</td>
<td>4.000</td>
<td>0.957</td>
<td>4</td>
</tr>
<tr>
<td>Confidence using depression screening tools in practice</td>
<td>Pre 46</td>
<td>3.739</td>
<td>1.104</td>
<td>Post 25</td>
<td>3.920</td>
<td>0.997</td>
<td>4</td>
</tr>
<tr>
<td>Confidence interpreting results of depression screening tools</td>
<td>Pre 46</td>
<td>3.652</td>
<td>0.994</td>
<td>Post 25</td>
<td>3.640</td>
<td>1.036</td>
<td>4</td>
</tr>
<tr>
<td>Confidence effectively treating patients with mild-to-moderate depression</td>
<td>Pre 46</td>
<td>3.087</td>
<td>1.151</td>
<td>Post 25</td>
<td>3.240</td>
<td>1.165</td>
<td>3</td>
</tr>
<tr>
<td>Confidence providing appropriate follow-up for patients with mild-to-moderate depression</td>
<td>Pre 46</td>
<td>3.283</td>
<td>1.186</td>
<td>Post 25</td>
<td>3.480</td>
<td>1.122</td>
<td>3.5</td>
</tr>
</tbody>
</table>

A Paired samples t-test was conducted to determine if there were any significant changes in knowledge and confidence after engaging in the educational intervention. The results indicated no statistically significant differences at the 95% confidence interval for any category (see Table 5).

Table 5

Changes in Knowledge and Confidence

<table>
<thead>
<tr>
<th>Item/Category</th>
<th>Pre-Survey Mean (Std. Dev)</th>
<th>Post-Survey Mean (Std. Dev)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the height of the COVID-19 pandemic (2020-2021), depressive symptoms in American adults</td>
<td>2.96 (0.200)</td>
<td>2.88 (0.440)</td>
<td>0.327</td>
</tr>
</tbody>
</table>
The U.S. Preventative Services Task Force (USPSTF) currently recommends depression screening for patients with a risk of moderate to severe depression. Medical providers have been shown to selectively screen patients for depression based on their presence. The PHQ-9 has been shown to take less than 10 minutes for providers to review. Confidence accessing depression screening tools is moderately high, with 3.88 on a 5-point scale. Confidence using depression screening tools in practice is also moderately high, with 3.80 on a 5-point scale. Confidence interpreting results of depression screening tools is assessed as high, with 3.64 on a 5-point scale. Confidence effectively treating patients with mild-to-moderate depression is assessed as high, with 3.16 on a 5-point scale. Confidence providing appropriate follow-up for patients with mild-to-moderate depression is assessed as high, with 3.36 on a 5-point scale.

During the height of the COVID-19 pandemic (2020-2021), depressive symptoms in American adults? 24 (96) 23 (92) 0.327
The U.S. Preventative Services Task Force (USPSTF) currently recommends depression screening for? 18 (72) 19 (76) 0.574
Medical providers have been shown to selectively screen patients for depression based on their presenting symptoms? 22 (88) 22 (88) 1.000
Which of the following depression screening tools is most often used in the primary care setting? ±
Medical provider review time of the Patient Health Questionnaire (PHQ-9) has been shown to take: 1.28 (0.458) 1.36 (0.490) 0.327
Confidence accessing depression screening tools 3.88 (1.092) 4.00 (0.957) 0.376
Confidence using depression screening tools in practice 3.80 (1.080) 3.92 (0.997) 0.327
Confidence interpreting results of depression screening tools 3.64 (0.952) 3.64 (1.036) 1.000
Confidence effectively treating patients with mild-to-moderate depression 3.16 (1.068) 3.24 (1.165) 0.425
Confidence providing appropriate follow-up for patients with mild-to-moderate depression 3.36 (1.114) 3.48 (1.122) 0.265

± - correlation and t cannot be computed because the standard error of the difference is 0.

Similar to the pre-survey results, most participants answered the knowledge questions correctly post-survey, with 100% correctly identifying the PHQ-9 as the screening tool most often used in primary care. There was an increased percentage of correct answers regarding the current USPSTF depression screening recommendations; however, the results were not statistically significant (See Table 6).

### Table 6

**Comparison of Knowledge Questions Answered Correctly**

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre-Survey Answered Correctly N (%)</th>
<th>Post-Survey Answered Correctly N (%)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the height of the COVID-19 pandemic (2020-2021), depressive symptoms in American adults?</td>
<td>24 (96)</td>
<td>23 (92)</td>
<td>0.327</td>
</tr>
<tr>
<td>The U.S. Preventative Services Task Force (USPSTF) currently recommends depression screening for?</td>
<td>18 (72)</td>
<td>19 (76)</td>
<td>0.574</td>
</tr>
<tr>
<td>Medical providers have been shown to selectively screen patients for depression based on their presenting symptoms?</td>
<td>22 (88)</td>
<td>22 (88)</td>
<td>1.000</td>
</tr>
<tr>
<td>Which of the following depression</td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>
screening tool is most often used in the primary care setting? | 25 (100) | 25 (100) \\
Medical provider review time of the Patient Health Questionnaire (PHQ-9) has been shown take? | 18 (72) | 16 (64) | 0.327 \\

When comparing pre- and post-survey confidence rates, participants expressed higher levels of very or extreme confidence regarding accessing depression screening tools, interpreting depression screening results, and treating patients with mild-to-moderate depression; however, overall increases in levels of confidence were not statistically significant (See Table 7).

**Table 7**

*Comparison of Very or Extremely Confident Scores*

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre-Survey Very or Extremely Confident N (%)</th>
<th>Post-Survey Very or Extremely Confident N (%)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessing depression screening tools</td>
<td>18 (72)</td>
<td>19 (76)</td>
<td>0.376</td>
</tr>
<tr>
<td>Using depression screening tools in practice</td>
<td>17 (68)</td>
<td>17 (68)</td>
<td>0.327</td>
</tr>
<tr>
<td>Interpreting results of depression screening tools</td>
<td>14 (56)</td>
<td>15 (60)</td>
<td>1.000</td>
</tr>
<tr>
<td>Effectively treating patients with mild-to-moderate depression</td>
<td>9 (36)</td>
<td>10 (40)</td>
<td>0.425</td>
</tr>
<tr>
<td>Providing appropriate follow-up for patients with mild-to-moderate depression</td>
<td>12 (48)</td>
<td>12 (48)</td>
<td>0.265</td>
</tr>
</tbody>
</table>

**Aim 3. Determine the likelihood of Florida APRNs to increase depression screening in their current practice after participating in the project.**

The post-survey included an NPS question, which assessed APRNs’ likelihood of increasing depression screening in their current practice after participating in the project. The NPS question was answered by 25 participants resulting in 11 detractors, five passives, and nine
promoters. Detractors signify participants who, after participating in the project, are less likely to increase depression screening, passives are neither unlikely nor likely, and promoters are more likely to increase depression screening. Although there were more detractors than promoters, nine (36%) participants expressed that they were more likely to increase depression screening in their current practice after participating in the project.

Discussion

The purpose of this DNP project was to assess and describe Florida APRNs’ baseline knowledge about depression and confidence utilizing depression screening tools and to assess for a change in ideas after engaging in an interactive educational presentation. Another goal of this project was to determine the likelihood of Florida APRNs to increase depression screening in their current practice after engaging in the project. The major findings of this project did not show a significant change in Florida APRNs’ knowledge and confidence; however, 36% of participants who completed the post-survey did express a likelihood of increasing depression screening in their current practice after participating in the project. This should not be attributed to a change in knowledge or confidence but could be a result of exposure to the educational presentation.

Implications

The findings reveal that Florida APRNs maintain a high rate of knowledge about depression and confidence using depression screening tools before and after engaging in an interactive educational presentation. This differs from previous research showing that educational training increases healthcare professionals’ knowledge and confidence in managing mental health conditions (Bartlett et al., 2021; Byatt et al., 2021; Coppens et al., 2018; Lee et al., 2020). Of the participants who completed the post-survey, 36% did express a likelihood of
increasing depression screening in their practice after engaging in the project. This finding is relevant to clinical practice as it could translate to an actual increase in depression screening resulting in increased identification and management of patients with depression. Future studies will need to be conducted to confirm this hypothesis.

Limitations

A significant limitation of this study was the small sample size. Although 51 participants completed the demographic survey, 46 completed the pre-intervention survey, and only 25 completed the post-survey. Additionally, most participants correctly answered the knowledge questions in the pre-intervention survey, which could result from obvious question answers or imply that the questions did not appropriately target participants' knowledge deficits. Another limitation is that participants were not required to engage with every part of the interactive educational presentation before moving on to the post-survey. Interaction with the presentation was not tracked, and how little or how much participants engaged with it is unknown. Lastly, the educational presentation itself may have been flawed. It may not have included enough information to produce a change in knowledge and confidence, the interactive component may have been challenging to navigate, or the teaching strategies may have been ineffective.

Suggestions for Future Clinical Research

Additional studies with more participants should be conducted to investigate whether an increase in depression screening by healthcare providers after educational training is due to newfound knowledge and confidence, simply a reminder of familiar information, or another cause. Since a considerable proportion of participants were doctorly prepared (39.2%), it would be valuable to investigate if increased education contributes to baseline knowledge and confidence regarding the diagnosis of depression and utilization of depression screening tools.
For instance, participants' knowledge and confidence may have significantly improved post-educational training if the target population were new graduate APRNs.

Continuing research is needed to address patient barriers to receiving depression screening. The barriers addressed should focus on reducing depression screening disparities between populations, standardizing screening in primary care, and reducing mental health stigma (Colligan et al., 2020; Garcia et al., 2020, 2021; Heinz et al., 2021; Kato et al., 2018; Kluemper et al., 2021). Healthcare providers should focus on reducing personal biases and improving bedside manner (Colligan et al., 2020; Nollett et al., 2020; Samples et al., 2020).

**Conclusion**

Depression screening rates remain low in the United States despite national recommendations to increase screening (American Academy of Family Physicians, 2022; Bhattacharjee, 2018; Samples et al., 2020; U.S. Preventive Services Task Force, 2016, 2022). Increased job growth for APRNs places them in a unique position to increase depression screening in the adolescent and adult populations, particularly in a primary care setting (American Association of Nurse Practitioners, 2022; U.S. Bureau of Labor Statistics, 2022a).

This study hypothesized that APRNs’ knowledge and confidence would improve after engaging in an interactive educational presentation. No significant changes were observed; however, 36% of participants expressed a likelihood of increasing depression screening which could have positive implications in the future for patients suffering from depression.
References


Bhattacharjee, S., Goldstone, L., Vadiei, N., Lee, J. K., & Burke, W. J. (2018). Depression screening patterns, predictors, and trends among adults without a depression diagnosis in


for consultation and perceived depression stigma. *PLOS ONE, 16*(3), e0248069. https://doi.org/10.1371/journal.pone.0248069


Appendix A

Demographic Survey

1. Are you a practicing nurse practitioner in the state of Florida?
   - Yes
   - No. Please do not proceed with this study.

2. What is your gender?
   - M
   - F

3. How old are you?
   - 18-25
   - 26-35
   - 36-45
   - 46 and above

4. What is your primary NP certification area?
   - Family
   - Adult
   - Adult-Gerontology Primary Care
   - Psychiatric/Mental Health
   - Acute Care
   - Pediatric Primary Care
   - Adult-Gerontology Acute Care
   - Women’s Health
   - Gerontology
   - Neonatal
   - Pediatric Acute Care

5. How many years have you been a practicing NP?
   - < 2 years
   - 2-4
   - 5-7
   - 8-10
   - > 10 years

6. What is your level of graduate education?
   - Master's Degree
   - Doctorate Degree

7. Approximately what percentage of patients do you screen for depression over the course of 1 month?

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
</tr>
</tbody>
</table>

Choose a percentage.
Appendix B

Digital Recruitment Flier

Are you a FL Nurse Practitioner?

You are invited to participate!

Click to Participate!

Find Out More

Problem
Depression is a leading cause of disability globally. Since the COVID-19 pandemic, depression rates have increased.

Purpose
To increase your knowledge and confidence using depression screening tools.

Why Me?
You are a valued nurse practitioner of any specialty practicing in the state of Florida.

Risks?
There are no foreseeable risks for participation. Your participation is completely anonymous. This project has been reviewed by FSU’s IRB to ensure respondent confidentiality and safety.

Benefits?
To increase your knowledge and confidence using depression screening tools in your practice.

Informed Consent
By completing the pretest, posttest, and engaging in the interactive presentation you are agreeing to participate in this project. Your participation is completely voluntary. If you do not wish to participate, please disregard this flyer.

Scan with smartphone camera!

Increase Your Knowledge and Confidence Using Depression Screening Tools!

Participate Today!

Questions?
Contact Kristen Krimetz
DNP FNP Student
kk20ei@fsu.edu
Appendix C

Recruitment Email

Hi Florida Nurse Practitioners,

My name is Kristen Krimetz. I am a Family Nurse Practitioner student in the Doctor of Nursing Practice program at Florida State University. You are invited to participate in my DNP project, “Depression Screening Tools for Nurse Practitioners.” If you choose to participate, you will complete a pre-survey, engage in an interactive presentation, and complete a post-survey in a single sitting. In total, the surveys and presentation should take 10-15 minutes to complete. Please review the information below for details about the project. If any questions arise while participating in this project, please do not hesitate to contact me. I look forward to receiving your survey responses.

Link to participate: https://lsu.qualtrics.com/jfe/form/SV_dOFbNRCmMiyOzrk

Thanks for all that you do,

Kristen Krimetz, 3rd Year DNP FNP Student
Appendix D

Pre- and Post-Surveys

1. During the height of the COVID-19 pandemic (2020-2021), depressive symptoms in American adults:
   - Decreased
   - Stayed the same
   - Increased

2. The U.S. Preventative Services Task Force (USPSTF) currently recommends depression screening for:
   - Individuals of low socioeconomic status
   - Individuals with symptoms of depression
   - The general adult population, including pregnant and postpartum women
   - Adolescents, adults, and older adults with a family history of depression

3. Medical providers have been shown to selectively screen patients for depression based on their presenting symptoms:
   - True
   - False

4. Which of the following depression screening tools is most often used in the primary care setting?
   - Patient Health Questionnaire (PHQ-9)
   - Beck Depression Inventory (BDI)
   - Hamilton Depression Rating Scale (HAM-D)
   - Quick Inventory of Depressive Symptomatology-Self Report (QIDS-SR)

5. Medical provider review time of the Patient Health Questionnaire (PHQ-9) has been shown to take:
   - < 3 minutes
   - 5-7 minutes
   - 8-10 minutes
   - > 10 minutes

Please choose your confidence level for the following activities:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Not at all confident</th>
<th>Slightly confident</th>
<th>Somewhat confident</th>
<th>Very confident</th>
<th>Extremely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessing depression screening tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using depression screening tools in practice</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Interpreting results of depression screening tools</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Effectively treating patients with mild-to-moderate depression</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Providing appropriate follow-up for patients with mild-to-moderate depression</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Post-Survey Additional Question

How likely are you to increase depression screening in your current practice after participating in this study?

<table>
<thead>
<tr>
<th>Not at all likely</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Extremely likely</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Appendix E

Institutional Review Board (IRB) Letter of Exemption

FLORIDA STATE UNIVERSITY
OFFICE of the VICE PRESIDENT for RESEARCH

EXEMPTION DETERMINATION

August 25, 2022

Kristen Krimetz, 850-644-5260
kk20ei@fsu.edu

Dear Kristen Krimetz:

On 8/25/2022, the IRB staff reviewed the following submission:

<table>
<thead>
<tr>
<th>Type of Review:</th>
<th>Exempt (3)(i)(B) Benign behavioral interventions (low risk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>The Impact of an Educational Intervention on Nurse Practitioners’ Knowledge and Confidence in Utilizing Depression Screening Tools</td>
</tr>
<tr>
<td>Investigator:</td>
<td>Kristen Krimetz</td>
</tr>
<tr>
<td>Submission ID:</td>
<td>STUDY00003442</td>
</tr>
<tr>
<td>Study ID:</td>
<td>STUDY00003442</td>
</tr>
<tr>
<td>Funding:</td>
<td>None</td>
</tr>
<tr>
<td>Grant ID:</td>
<td>None</td>
</tr>
<tr>
<td>IND, IDE, or HDE:</td>
<td>None</td>
</tr>
<tr>
<td>Documents Reviewed:</td>
<td>• Demographics, Pretest, and Posttest, Category: Survey/Questionnaire;</td>
</tr>
<tr>
<td></td>
<td>• Determination of Human Subjects Research Form, Category: IRB Protocol;</td>
</tr>
<tr>
<td></td>
<td>• DNP Project Flyer, Category: Recruitment Materials;</td>
</tr>
<tr>
<td></td>
<td>• Invitation to Participate, Category: Recruitment Materials;</td>
</tr>
<tr>
<td></td>
<td>• Video Outline, Category: Other;</td>
</tr>
</tbody>
</table>

The IRB staff determined the protocol qualifies for exemption, and where applicable the IRB has determined that the protocol qualifies for approval in accordance with federal regulatory requirements for Limited IRB review, effective on 8/25/2022. Further IRB review and approval by this organization is not required.