SCREENING FOR DEPRESSION IN ADOLESCENCE IN A PRIMARY CARE CLINIC

by

Antonia Hernandez

Copyright © Antonia Hernandez 2019

A DNP Project Submitted to the Faculty of the COLLEGE OF NURSING

In Partial Fulfillment of the Requirements For the Degree of DOCTOR OF NURSING PRACTICE

In the Graduate College

THE UNIVERSITY OF ARIZONA

2019
As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Antonia Hernandez, titled Screening for Depression in Adolescence in a Primary Care Clinic and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

Carolyn E. Hickman  
Date: Nov 24, 2019
Carolyn E. Hickman, PhD, RN, CPNP

Gloanna Peek  
Date: Nov 24, 2019
Gloanna J. Peek, PhD, RN, CPNP

Sondra Raubacher, DNP, CPNP-PC  
Date: Nov 25, 2019

Final approval and acceptance of this DNP project is contingent upon the candidate’s submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

Carolyn E. Hickman  
Date: Nov 24, 2019
Carolyn E. Hickman, PhD, RN, CPNP
DNP Project Committee Chair
College of Nursing
ACKNOWLEDGMENTS

I would like to thank my professors for pushing me and helping me along this journey. A special thanks to Dr. Hickman, Dr. Peek and Dr. Raubacher for their willingness to assist with my project and for their support along the way. Dr. Hickman, you are a busy woman and despite that you were willing to help, and I can’t say thank you enough.

I want to thank the ongoing support from my family, friends, and co-workers, encouraging, and motivating me to persevere through a challenging journey. I am so very thankful for the knowledge and time that my preceptors have given to me. I could not have done this without them.

I thank my children for putting up with mom being away, studying, and overly stressed. They are the most important pieces of my life. They continued to see me through and gave me the strength on the days I didn’t think I could take any more. Additionally, I would like to thank my sister for always listening to me rant about school and even crying with me on occasions when I doubted myself and Michael for always sticking by my side and listening even when you had no idea of what I was complaining or worried about.
DEDICATION

I want to dedicate my project to those children whom have felt lost, alone, or deeply saddened that they thought the only option was to commit suicide. I wanted to shed light that as we see children it is okay to talk about issues that may cause a child to be depressed and to seek out interventions that can change a child’s life. I hope to learn and continue to assess and help children with depression and hopefully one day the stigma will not be present.
TABLE OF CONTENTS

LIST OF FIGURES ........................................................................................................... 8
LIST OF TABLES .............................................................................................................. 9
ABSTRACT...................................................................................................................... 10

INTRODUCTION ........................................................................................................... 12
Background Knowledge .............................................................................................. 13
Clinical Problem .......................................................................................................... 14
Local Problem ............................................................................................................. 16
Purpose and Aims of Project ...................................................................................... 17
Stakeholders ................................................................................................................ 18
Study Question ............................................................................................................ 19
Theoretical Framework ............................................................................................... 19
  Structure ................................................................................................................... 20
  Process ...................................................................................................................... 21
  Outcome ................................................................................................................... 21
Major Concepts Defined ............................................................................................. 21
  Education ............................................................................................................... 21
  Adolescents ........................................................................................................... 22
  Primary Care Providers (PCP) ............................................................................. 22
  Depression ............................................................................................................ 22
  Core Symptoms ................................................................................................. 22
  Associated Symptoms ....................................................................................... 22

Literature Review ........................................................................................................ 23
Screening Tools ............................................................................................................ 25
  Depression Screening Outcomes ...................................................................... 26
  Provider Knowledge and Practice Behaviors ................................................... 28

Key Findings ................................................................................................................. 28
  Strengths ............................................................................................................... 29
  Limitations ............................................................................................................ 30
TABLE OF CONTENTS – *Continued*

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaps in the Literature</td>
<td>30</td>
</tr>
<tr>
<td>METHODOLOGY</td>
<td>31</td>
</tr>
<tr>
<td>Project Design</td>
<td>31</td>
</tr>
<tr>
<td>Participants, Setting and Sample</td>
<td>31</td>
</tr>
<tr>
<td>Recruitment, Inclusion and Exclusion Criteria</td>
<td>31</td>
</tr>
<tr>
<td>Intervention Condition</td>
<td>32</td>
</tr>
<tr>
<td>Ethical Considerations</td>
<td>32</td>
</tr>
<tr>
<td>Beneficence</td>
<td>32</td>
</tr>
<tr>
<td>Respect for Persons</td>
<td>32</td>
</tr>
<tr>
<td>Justice</td>
<td>33</td>
</tr>
<tr>
<td>Data Collection</td>
<td>33</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>34</td>
</tr>
<tr>
<td>RESULTS</td>
<td>35</td>
</tr>
<tr>
<td>Description of the Sample Population</td>
<td>35</td>
</tr>
<tr>
<td>Scores of Pre- and Post-Test</td>
<td>36</td>
</tr>
<tr>
<td>Questions Related to Provider Knowledge</td>
<td>38</td>
</tr>
<tr>
<td>Questions Related to Provider Behavior</td>
<td>39</td>
</tr>
<tr>
<td>Chart Review</td>
<td>41</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>44</td>
</tr>
<tr>
<td>Findings Related to Research Questions</td>
<td>45</td>
</tr>
<tr>
<td>Relationship to Clinical Framework</td>
<td>45</td>
</tr>
<tr>
<td>Clinical Implications</td>
<td>46</td>
</tr>
<tr>
<td>Strengths and Limitations</td>
<td>47</td>
</tr>
<tr>
<td>Strengths</td>
<td>47</td>
</tr>
<tr>
<td>Limitations</td>
<td>47</td>
</tr>
<tr>
<td>Dissemination and Future Implications for Practice</td>
<td>48</td>
</tr>
<tr>
<td>Relevance to DNP Essentials</td>
<td>49</td>
</tr>
<tr>
<td>Conclusion</td>
<td>49</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS – *Continued*

| APPENDIX A: | EVIDENCE APPRAISAL TABLE | 51 |
| APPENDIX B: | PRE-TEST SURVEY | 65 |
| APPENDIX C: | POST-TEST SURVEY | 70 |
| APPENDIX D: | PRE- AND POST-TEST ANSWERS | 75 |
| APPENDIX E: | DEMOGRAPHIC QUESTIONNAIRE | 78 |
| APPENDIX F: | INVITE AND DISCLOSURE EMAIL | 80 |
| APPENDIX G: | SITE AUTHORIZATION | 82 |
| APPENDIX H: | PRIMARY DISCLOSURE STATEMENT | 84 |
| APPENDIX I: | THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD APPROVAL LETTER | 86 |

REFERENCES | 88 |
LIST OF FIGURES

FIGURE 1. Donabedian model. ................................................................. 20
FIGURE 2. Evidence hierarchy................................................................. 24
LIST OF TABLES

TABLE 1. Participant demographics. ........................................................................................................35
TABLE 2. Pre- and posttest scores. ..............................................................................................................37
TABLE 3. Descriptive statistics for correct answers. .....................................................................................37
TABLE 4. Analysis of providers knowledge pre- and post-test intervention for depression symptoms (N=3). ........................................................................................................................................38
TABLE 5. Analysis of providers practice behaviors pre- and post-test intervention for depression symptoms (N=3). ........................................................................................................................................39
TABLE 6. Knowledge comparison. ..............................................................................................................41
TABLE 7. Wilcoxon signed rank test statistics. ............................................................................................41
TABLE 8. Paired t-test of chart reviews. ......................................................................................................42
TABLE 9. Depression screening by visit. .....................................................................................................43
TABLE 10. Breakdown of age and depression screening. ..............................................................................44
ABSTRACT

Background: Primary care visits account for 70% of all adolescent visits each year, with nearly 75% of adolescents who completed suicide being seen by a medical professional within four months of doing so (Forman-Hoffman et al., 2016; Maslow, Dunlap, & Chung, 2015). Primary care providers can have a meaningful impact on this burden by increasing depression screening and increasing knowledge about depression. These two interventions can aid in closing the gap of adolescents not receiving timely and appropriate treatment for their mental health condition and early recognition of mental health conditions.

Purpose: This project provided insight on the knowledge and practice behaviors of primary care providers regarding screening adolescents for depression in the primary care setting. This project aided in validation that teaching providers a clinical guideline increases provider knowledge and screening practices to better identify adolescents with depression.

Methods: The design of this DNP project was a one-group pre- and post-test quantitative descriptive design. A chart review was done to assess provider behavior for screening for depression post educational intervention. These results were compared to a previous chart review that was done in December 2018. Participants were recruited from Rehoboth College Clinic in Gallup, New Mexico.

Results: The overall results revealed that participant (n=3) knowledge increased after the evidence-based educational intervention with a mean score of 59.93% on the pretest and an average score of 77.77% on the posttest. The chart reviews showed a decline in providers screening for adolescent depression. More children were screened at preventative visits (86%) than at any other types of visits.
Discussion: The results of this study provide evidence that pediatric primary care providers had a change in knowledge after evidence-based education was provided. However, it did not increase provider behavior in administering depression screening. The statistical significance of the changes could not be determined due to very small sample size.
INTRODUCTION

Depression is a common problem in adolescence with approximately 20% of adolescents experiencing a bout of depression by the time they reach adulthood. Given this, adolescence is a key period for prevention of depression and suicidal behaviors; although, suicide and depression rates continue to rise in this target population. In the United States, the annual prevalence of depression among adolescents increased from 8.7% in 2005 to 11.3% in 2014 (Gijzen et al., 2018; Aalsma et al., 2017). In 2016, an estimated 2.2 million adolescents aged 12 to 17 years of age had at least one major depressive episode, representing 9% of the U.S. adolescent population (National Institute of Mental Health [NIH], 2017) and a slight decrease from previous years. In addition, 70% of adolescents with depression had a severe impairment such as suicide (NIH, 2018; NIH, 2017).

Suicide is the second leading cause of death during childhood and adolescence (Thapar, Collishaw, Pine, & Thapar, 2012; Cha, Franz, Guzman, Glenn, Kleiman, & Nock, M.K., 2017). Suicide trends have increased over time with a 28% increase over the past decade in youth (NIH, 2018). Ninety percent of adolescence who attempted suicide had an underlying psychiatric diagnosis such as depression, bipolar, substance abuse, or anxiety and 85% of those with major depressive disorder (MDD) or dysthymia (a lesser form of depression) had suicidal ideation with 32% attempting suicide (Maslow, Dunlap, & Chung, 2015; Cash & Bridge, 2009). In the United States (US), 32% of adolescents will attempt suicide during this period of ages 10-19 (Cash & Bridge, 2009). A key to depression and suicide prevention is early identification through screening, and ongoing evaluation to include regular follow-ups, as
well as non-pharmacological interventions such as cognitive behavior therapy, counseling, and family therapy.

The Healthy People 2020 objectives was established to attain high-quality care, to provide longer lives free of preventable disease, disability, injury, and premature death by eliminating disparities and improving health of all ages (Healthy People [HP] 2020, 2018). The objective of this quality improvement initiative is to improve primary care providers’ behavior in the screening of adolescents for depression. “Increasing the proportion of primary care providers office visits where youth aged 12-17 years are screened for depression” (Healthy People [HP] 2020, 2018) is also one of Healthy People 2020 objectives. Depression left untreated can lead to problems in school, reckless social behavior, substance abuse, anxiety, suicide, and other health and social issues. Depression is a major risk factor for suicide, with more than half of those who committed suicide having a diagnosis of a depressive disorder at time of death (Thapar, Collishaw, Pine, & Thapar, 2012); therefore, screening and identification of depression is imperative.

**Background Knowledge**

Major depressive disorder (MDD) is common in childhood and adolescence and has been unrecognized and undertreated with approximately 75% of adolescents not receiving treatment (Maslow, Dunlap, & Chung, 2015). Adolescents are at risk for committing suicide if depressed in that their amygdala (emotional center) and prefrontal cortex, which are responsible for rational thinking, decision-making, judgement, impulse control and emotion, are not fully developed until the mid-twenties, hence they act on impulse. Because of the immature brain, adolescents may exemplify behaviors such as irritability, withdrawal, and
fluctuating attitude, which can be mistaken for age appropriate behaviors; and thereby, the need to evaluate for depression may go unrecognized. Adolescence is a key period to employ prevention as the potential sequelae of depression is associated with functional impairment and suicide (Forman-Hoffman et al., 2016).

The burden of adolescent depression and suicide is tremendous, both economically and socially. The cost of depression can be a burden because of the expenses associated with lifelong comorbidities such as diabetes, anxiety, pain, suicidal behavior as well as social problems such as substance abuse, crime, and unemployment (Thapar, Collishaw, Pine, & Thapar, 2012). A survey of the top five most costly conditions among children (ages 0-17) in 2012, by the Agency for Healthcare Research and Quality (AHRQ), estimated that treatment of mental disorders accounts for the highest childhood medical expenditures, totaling $13.9 billion that year, far more than other costly conditions such as chronic obstructive pulmonary disease, trauma, and respiratory diseases (Tyler, Hulkower, & Kaminiski, 2017). From a social perspective, depression impacts adolescents socially interfering with their ability to create strong personal relationships and to maintain normal functioning.

**Clinical Problem**

Depression is common in adolescents and despite preventative guidelines that have been established by U.S. Preventative Services Task Force, the rates of screening remain low with only 34.5% of providers providing screening (Aalsma et al., 2017). Pediatricians have reported discomfort with screening and diagnosis of depression as well as lack of resources if they have an adolescent that screens positive (Forman-Hoffman et al., 2016). Two-thirds of
pediatricians’ report lack of training in treatment of children with mental health disorders, and 70% report lack of time to treat (Tyler, Hulkower, & Kaminiski, 2017).

A survey conducted by Taliaferro et al. (2013) was distributed to providers in Minnesota to evaluate their perceptions and practices in the identification and management of depression in adolescence. Two factors emerged from this survey associated with administering a standardized instrument that included having clear protocols for follow-up after depression screening and feeling better prepared to address depression among adolescents. Barriers included long waiting times for behavioral health referrals, stigmas surrounding depression, lack of time, and available resources when faced with an adolescent in crisis (Taliaferro et al., 2013). It was concluded that addressing facilitators and barriers to screening for and effectively managing depression will help ensure that contacts with primary care no longer represent missed opportunities to help distressed youth (Taliaferro et al., 2013).

Primary care providers can have a meaningful impact on this burden by increasing depression screening and management. These two interventions can aid in closing the gap of adolescents not receiving timely and appropriate treatment for their mental health condition and early recognition of mental health conditions. Treatment and screening can yield significant changes in both long-term and short-term outcomes of depression (Maslow, Dunlap, & Chung, 2015). A practice guideline can aid providers in addressing depression screening. The National Institute for Health and Care Excellence (NICE) (2017), developed a guideline entitled ‘Depression in Children and Young People: Identification and Management’ that provide quality standards, which are a concise set of prioritized actions to drive measurable quality improvements within an area of health or care. This is based on a
stepped care model that aims to improve recognition and assessment and promote effective treatments for mild, moderate and severe depression for adolescents (NICE, 2017). The format is easy to follow and would be easy to implement in a training intervention for providers. Adequate training of primary care providers that incorporates assessment, diagnosis and treatment of adolescents with depression can increase knowledge and screening behaviors of primary care providers thereby, aiding in the identification of more adolescents with depression (Zuckerbrot, Cheung, Jensen, Stein, & Laraque, 2018).

**Local Problem**

Given that adolescents are not being consistently screened for depression by their primary care providers on a national level, it is imperative to explore practice behaviors of primary care providers in screening for depression in this population within this geographic area and implement change if needed. A strong relationship with the primary care provider and his/her patients and their families creates trust, which promotes communication about difficult situations and feelings, such as depression, and gives the provider insight into behavioral changes that the patient may be exhibiting (Foy, 2010).

Gallup, New Mexico is a rural city surrounded by Indian reservation. The community is diverse but there is a large population of Native Americans. Indian youth have the highest rate of suicide among all ethnic groups in the US with suicide being the second-leading cause of death for Native youth aged 15-24 (NCAI, 2019). Native Americans experience serious psychological distress at 1.5 times more than the general population (Mental Health America, 2018). They experiment with and abuse alcohol at a younger age than any other ethnicity (Mental Health America, 2018). There is little to no mental health services in the isolated communities on the
reservation. It is extremely important for primary care providers to educate their patients about depression and to screen for depression. Native American families are likely to seek preventive care but when it comes to mental health, they are more likely to turn to family, spiritual leaders, and traditional practices, which are based on the philosophy of treating the patient as a whole and not excluding one aspect of health (American Psychiatric Association [APA], 2010). Thus, it is very important as a primary care provider to establish good rapport, integrate culture, and establish trust with the patient and their family. According the NICE Guidelines (2018), a thorough history is indicated for quality of care to include confidentiality, family involvement, risky behavior, events leading up to depression, as well as family history. Risky behavior, poverty levels, inadequate resources, lack of transportation, as well as isolation, place the Native American youth at a higher risk for depression and suicide.

**Purpose and Aims of Project**

The justification for this education intervention is the increasing rates of adolescent suicide and depression, which are serious public health problems. The purpose of the DNP project was to develop an evidence-based education intervention for primary care providers about depression and depression screening. The aims of this DNP project were to: 1) assess providers knowledge on depression and screening for depression in adolescents (pre-test); 2) educate primary care providers about depression and the importance of screening for depression utilizing the NICE guideline, which is a clinical practice guideline that outlines the identification and management of depression in adolescents (intervention); and, 3) assess primary care providers knowledge of depression and depression screening practices following the intervention (post-test). The expectation was that primary care providers in this setting...
would screen adolescents for depression at every clinic visit to include preventative visits as well as sick or acute visits. It is recommended that all adolescents be screened yearly except for those at-risk teenagers (those with high risk factors or previous positive screens) who may require a more frequent, systematic, targeted screening during other health care visits (i.e., well-child visits and urgent care visits (Zuckerbrot et al., 2018); however, given that this is a high-risk group of adolescents, screening at every visit was desired. Screening for depression is just as important as the vital signs. The education provided was from the NICE clinical practice guideline entitled “Depression in young children and young people: Identification and management.” The goal was to increase provider screening for depression in adolescents. The anticipated outcome of the project was to increase provider knowledge of depression and depression screening. The ultimate goal was for depression screening in 100% of adolescents seen at this primary care clinic.

**Stakeholders**

Stakeholders are keys to success in that they play a pivotal role in development and implementation of clinic-based changes. The goal was to gain insight from those within the clinic and the patients and their families whom will be affected by the change. The key stakeholders were the providers, the front office including receptionist, families, adolescents, the community, and the head of the clinic. It was considered beneficial to include mental health providers and traditional Native American medicine men as stakeholders. This encompassed a realm of people with interest in the children and provide good support and input. Outreach to the community would aid in decreasing stigma surrounding depression and the indices of suicide related to depression, however; this was beyond the scope of this study.
Study Question

The study question for this DNP project was “How does an educational intervention to primary care providers in a pediatric clinic on a Native American reservation in the southwest region of the United States affect provider knowledge of depression and their screening for depression?” This would be evident by: 1) improvement in post-test responses in provider knowledge of depression and depression screening compared to pre-test responses and 2) an increase in the number of adolescents screened for depression at a primary care clinic one month following the intervention.

Theoretical Framework

The Donabedian Model of Quality Improvement (Donabedian Model) was the framework that guided this quality improvement initiative. The quality improvement framework of the Donabedian Model focuses on three main categories: structure, process, and outcome. The Donabedian Model has been utilized to examine health services and evaluate quality of care (Moran, Burson, & Conrad, 2014). Structure refers to the quality of the attributes of an organization or entity; Process refers to how care is delivered, and ultimately the test of quality is in the product produced; Outcomes refer to the improvement of the health status of patients and populations (Moran, Burson, & Conrad, 2014). Figure 1 displays the Donabedian Model of Quality Improvement. Through the guidance of the Donabedian Model, this assessment provided an identification of providers’ behavior in adolescent depression screening as well as provider knowledge of depression before and after and education intervention.
Structure reflects attributes of the provider/clinic that impacts the outcome, which may be provider knowledge, available depression screening tools, practice standards, and other office resources. In this study, the structure was the knowledge and behavior practices of pediatricians in relation to adolescent depression screening. Effective change requires leadership, staff engagement and input from all the staff involved (Finkelman, 2018). As previously stated, the primary care providers were structural components of the project. Another necessary structural component was the availability of the appropriate number of depression screening tools. A preliminary review of provider screening behavior was conducted via retrospective chart review in order to evaluate their past adolescent depression screening rates. Assessment of provider knowledge of adolescent depression was done via pre-education survey.
**Process**

Process is the method or system that will be used to obtain the desired outcome (Moran, Burson, & Conrad, 2014). In this study, process entailed a chart review of whether or not adolescents were assessed for depression at time of well child or sick visits in this clinic. A second process measure was an educational intervention which was done to provide information to providers about adolescent depression. The goal of the process was to assess primary care providers knowledge of depression and depression screening practices following the intervention.

**Outcome**

Outcome reflects the impact of the quality improvement initiative and whether it ultimately achieved its desired aim (Moran, Burson, & Conrad, 2014). The goal of this project was that depression screening would occur in all adolescents seen in primary care by their primary care provider for well and sick visits.

**Major Concepts Defined**

The major concepts for this DNP project are as follows:

**Education**

Education is defined as the process of receiving or giving systematic instruction (Oxford Dictionary, 2019). For this DNP project, a thorough review of the literature on screening for adolescent depression, the NICE guidelines for adolescent depression, and common signs and symptoms of adolescent depression were the basis for an evidence-based educational presentation.
Adolescents

Adolescents are defined as a transitional stage of physical and psychological development that generally occurs during the period from puberty to legal adulthood (Oxford Dictionary, 2019). In this project, an adolescent was defined as children between ages 12-17 years.

Primary Care Providers (PCP)

In the context of this DNP project, primary care providers were defined as advanced practice nurse practitioners, physician assistances, and medical doctors.

Depression

Depression is defined as feelings of severe despondency and dejection (Oxford Dictionary). This DNP project refers to depression according the DSM-5 criteria for depression.

Core Symptoms

This includes core symptoms (at least two must be present); depressed mood present for most of the day and almost every day; Loss of interest or pleasure in activities; decreased energy or increased susceptibility to fatigue (Thapar, Collishaw, Pine, & Thapar, 2012).

Associated Symptoms

Loss of confidence or self-esteem; unreasonable feelings of self-reproach or excessive inappropriate guilt; recurrent thoughts of death or suicide, or any suicidal behavior; diminished ability to think or concentrate; change in psychomotor activity, agitation, or retardation; sleep disturbance; change in appetite with corresponding change in weight (Thapar, Collishaw, Pine, & Thapar, 2012). At least four of these symptoms must be present for two weeks to diagnose a
mild depressive episode, six to diagnose a moderate depressive episode, or eight for a severe depressive episode (Thapar, Collishaw, Pine, & Thapar, 2012).

**Literature Review**

Literature review is helpful to explore the current evidence-based literature regarding the phenomena of interest (Moran, Burson, & Conrad, 2014). Three different research databases were used to evaluate adolescent depression screening in primary care offices, knowledge of depression by providers, effective depression screening tools, as well as, educational interventions for healthcare providers faced with adolescent depression. This review of the literature helped identify best practices for guiding primary care providers in depression screening behaviors and the knowledge of depression of primary care providers. In addition, this literature review provided insight as to gaps in the research, strengths in the research, as well as limitations in research regarding depression screening in adolescents. The search terms used for this literature review were screening for depression in children, depression, diagnosis, screening, adolescent, provider knowledge, and provider behaviors.

The search engines of Google Scholar, CINHAL, and PubMed were used in this literature review to successfully yield evidence-based articles that related to providers behaviors in adolescent depression screening and provider knowledge of adolescent depression. Inclusion criteria were articles within the last 10 years, full article access, human subjects, and English articles. Based on the clinical question, the related articles were retained and utilized to gain insight on evidence-based practices of pediatric providers (Appendix A). The level of evidence ranged from level I (highest level of evidence to include random control trials) to level V (lowest level of evidence with single case studies) with few random control trials (RCT) found. Evidence
hierarchies (Figure 2) rank evidence sources according to the strength of the evidence they provide; systematic reviews are at the highest level of evidence followed by randomized controlled trials and the last in order of hierarchy is case reports (Polit & Beck, 2017). A total of 27 articles were reviewed and a total of 10 full text articles related to this DNP project were utilized and are summarized in Appendix A. The key themes identified in the review of the literature were screening tools, depression screening outcomes, and minimal harms associated with screening adolescents for depression.

*FIGURE 2. Evidence hierarchy.*
**Screening Tools**

Screening for depression in adolescence aged 12-18 years is recommended by the American Academy of Pediatrics and the U.S. Preventive Task Force in children at their well visits to include systems of acute diagnosis, treatment, and follow-up (Weitzman & Wegner, 2015). Administering a standardized depression-screening instrument can increase the likelihood of identifying adolescents in distress by opening lines of communication as well as scores that signal the need for further assessment, which can include counseling and referrals (Taliaferro et al., 2013). When screening becomes a routine, PCPs report satisfaction with screening processes and little resistance among patients and parents (Taliaferro et al., 2013). Research has indicated that when depression screening is utilized it leads to higher rates of mental health interventions and the interventions within primary care are associated with improvements in adolescent depression (Ozer et al, 2008). Clinicians that have established higher self-efficacy with training and clinical tools are more likely to deliver clinical services across multiple risk areas and counseling to adolescents with risky health behaviors (Ozer et al., 2008).

Numerous instruments have been developed for depression screening for use in primary care and have been used in adolescents. Two of the most often studied instruments are the patient health questionnaire for adolescents (PHQ-A or PHQ-9) and the primary care version of the Beck depression inventory (BDI), which both continue to outperform other screening tools (Forman-Hoffman et al, 2016). The H.E.A.D.S.S. screening tool (Home, Education/Employment, Activities, Sex & Suicide) (Dreyer, n.d.) has also been helpful in determining risky behavior that can be associated with depression. It is important to pick the screening tool that the practice is familiar and comfortable with. These screening tools are to
raise awareness of distress that might otherwise be undetected and therefore, provide an objective approach for longitudinal monitoring (Maslow, Dunlap, & Chung, 2015).

The PHQ-9 is the most widely used tool for screening of depression in pediatric patients. The psychometrics of the PHQ-9 shows lower sensitivity (73%) than specificity (94%); positive predictive value of 56%, and a negative predictive value of 97% (Forman-Hoffman et al., 2016). The Severity Measure for Depression—Child Age 11–17 (adapted from PHQ-9 modified for Adolescents [PHQ-A]) is a nine-item measure that assesses the severity of depressive disorders and episodes (or clinically significant symptoms of depressive disorders and episodes) in children ages 11–17. The measure is completed by the child prior to a visit with the clinician; each item asks the child to rate the severity of his or her depression symptoms during the past seven days.

Among instruments for depression, BDI has the highest sensitivity (81%) and specificity (92%) (Forman-Hoffman et al., 2016; Jain, 2019). BDI-II, which is a revision from the first scale in 1996, consists of 21 items of multiple choice that are rated on a four-point scale ranging from ‘0’ to ‘3’ based on severity of each item, the maximum total score is 63 (Jain, 2019). Bright futures recommend a preliminary assessment of adolescents that is the H.E.A.D.S.S. questionnaire; this includes Home & Environment; Education & Employment; Activities; Drugs; Sexuality; Suicide/Depression (Dreyer, n.d.). This is more of an interviewing technique to allow more information to be exchanged from provider and patient.

Depression Screening Outcomes

Foreman-Hoffman et al. (2016) conducted a systemic review for screening for major depressive disorder in children and adolescence for evidence on the benefits and harms of
screening and the accuracy of feasible screening test. It was concluded that the PHQ for adolescence and the BDI had the highest sensitivity and outperform other screening tools, also that screening was not associated with any harm, and that primary care providers need to be aware of potential risk factors for MDD and attempt early intervention especially for those whom already had an episode of major depression (Foreman-Hoffman et al., 2016).

Roseman et al. (2012) conducted a systemic review to determine outcomes of depression screening in children and adolescents. The authors of the study concluded that there were no direct RCT evidence that support screening for depression in adolescents but that it can improve patient outcomes beyond standards of care and ensuring that healthcare professionals are adequately trained to recognize, access, and treat depression (Roseman et al., 2012).

Aalsma et al. (2017) examined the use of a computer-based screening and provider feedback to guide adolescent depression management. The study concluded that it is important to identify youth at risk for depression given poor outcomes, primary care is an ideal setting, and that use of a computer-based program helped providers adhere to guidelines and support when an adolescent was screened positive for depression (Aalsma et al., 2017).

Fallucco et al. (2015) completed a pre-/post-design to assess changes in adolescent patient reports of PCP screening for depression at baseline versus two to eight months and versus 18 to 24 months after training. The study concluded that training significantly improved the frequency of PCP screening for adolescent depression at well visits and was associated with improvements in SAT-D confidence and knowledge, which had persisted across follow up intervals. The increase in confidence as well as training primary care providers to screen for depression helped with early identification of depression in adolescents.
Provider Knowledge and Practice Behaviors

The utilization of the research review has concluded that major depressive disorder is unrecognized and untreated (Bhatta, Champion, Young, & Loika, 2017). Depression that is not treated increases risk for obesity, somatic symptoms increasing use of PCP’s, decline in academic performance, suicidal thoughts, attempts, and completion (Bhatta, Champion, Young, & Loika, 2017). The epidemiology of missed opportunities of diagnosis to include screening for depression has led to increased morbidity and higher cost, in fact, out of 60 children with probable mental health diagnoses, only 15 (25%) were identified by pediatricians, and in only 14% did pediatricians consider a psychiatric referral (Rinke et al., 2017). In synthesis of the supportive research, common factors associated with increased likelihood of administering a standardized depression instrument and asking about depressive symptoms included: 1) female gender, 2) being a family clinician, 3) having clear protocols for follow-up after depression screening, 4) feeling better prepared to address depression among adolescents, 5) believing that PCPs should be responsible for addressing depression among adolescents, and 6) being more familiar with official recommendations regarding screening for depression.

Key Findings

The main themes identified in the literature include minimal evidence of harm for screening adolescence for depression (Forman-Hoffman et al., 2016), screening can decrease the detrimental effects of depression (Roseman et al., 2017; Aalsma et al., 2017) and early screening allows for early detection of depression (Gijzen et al., 2018; Forman-Hofman et al., 2016; Bhatta et al., 2017; Fallucco et al., 2015). Another repetitive theme in the research was that depression is a major risk factor for suicide and associated with unsafe health behaviors that are linked to
morbidity and mortality among adolescents (Ozer et al., 2008; Rinke et al., 2018; Gijzen et al., 2018; Aalsma et al., 2017, Fallucco et al., 2015; Taliaferro et al., 2013). Roseman et al. (2017) noted that screening can improve patient outcomes beyond those of standard care. Aalsma and colleagues (2017) concluded that when a guideline or clinical decision support is in place, providers are more willing to screen and treat adolescents for depression.

Multimodal stepped-prevention proves to be effective in reducing suicidal behavior and preventing depressive symptoms in adolescents as well as community involvement, which help to identify more youth with depression and decrease the stigma associated with depression (Gijzen et al., 2018). Goodyear-Smith et al., (2017) indicated that core components for the development and implementation of a screening tool includes a stepped-care resource provided for possible intervention at each domain. This approach has proven to be successful and to aid in provider involvement. Similarly, Aalsma and colleagues (2018) concluded that with education, providers behavior can be supported or modeled to reflect guidelines for the treatment of adolescent depression. Fallucco et al. (2015) examined the effects of a PCP training program in the screening, assessment, and treatment of adolescent depression (SAT-D) on adolescents’ reports of PCP screening for adolescent depression at annual well visits and PCP SAT-D confidence and knowledge. Results of that study concluded that PCP SAT-D training resulted in significant increases in primary care screening for adolescent depression that were maintained up to 24 months after training.

**Strengths**

The strength of the current evidence is that there are multiple studies that indicate that screening in the primary care setting is beneficial to aid in identifying teens with depression. The
research appraisal concluded that training in depression assessment and management is critical for primary care providers, is widely accepted, and has resulted in improved confidence for screening and managing adolescent depression. Another strength among the studies is that the PHQ-9 was used frequently and had reasonable accuracy for identifying MDD (Forman-Hoffman et al., 2016). Adolescents often will not present with a psychological concern placing initiative on PCP’s to elicit a conversation about depression in which a screening tool can aid in breaking the ice. Low attrition was an additional strength in these studies.

Limitations

A limitation of the current evidence is the lack of consistency in screening tools used for assessing depression in adolescents. Another major weakness of the current literature was that there is a lack of RCT’s and quasi-experimental studies on depression screening in adolescents and relevant harms of adolescents that go without being screened. The difficulty in recruitment of adolescents into research studies may drive limitations such as small sample sizes, high attrition, and biased ascertainment of the standard screening as well as, risks in the vulnerable population can limit funding and enrollment (Forman-Hoffman et al., 2016). Other limitations are small sample sizes of the current studies, use of convenience samples, and use of self-reports. Ozer et al. (2008) concluded that not only self-reports but the timing of those reports can limit the information, this study screened adolescents three months after seeing the provider.

Gaps in the Literature

Gaps in the literature exist regarding best practices for depression screening, barriers to implementation of depression screening, and management practices in the clinic such as protocols (Bhatta, Champion, Young, & Loika, 2017; Taliaferrio et al., 2013). As depression
continues to rise in adolescents, it is imperative to develop evidence-based education for pediatric primary care providers on the depression and the screening of adolescents for depression in the primary care setting.

**METHODOLOGY**

**Project Design**

The design of this DNP project was a one-group pre- and post-test quantitative descriptive design for evaluating provider knowledge of depression and their practice behaviors regarding depression screening in adolescents.

**Participant, Setting and Sample**

The convenience sample consisted of three primary care providers in a pediatric clinic located on a Native American reservation in the southwestern region of the United States and review of medical records. Some 143 medical records were reviewed after the intervention for assessment of their screening behaviors post-intervention and was compared to previously collected data in December 2018, which was collected by the clinic staff from 105 medical records examining provider depression screening practices.

**Recruitment Inclusion and Exclusion Criteria**

The head of the department was a major stakeholder in this DNP project and aided in buy-in of other participants. Recruitment was done in the clinic with the primary providers during the morning rounds. Inclusion criteria for this DNP project were: a) pediatric primary care providers (i.e., NP or MD) at RMCH; and, b) English speaking. The chart review inclusions were: a) children between 12-17 age range; and, b) children seen for a well or sick visit. Exclusion criteria for this DNP project was: a) non pediatric primary care provider; b)
non-English speaking; c) children seen for a nurse visits; and, d) children in the clinic only for a teleconference visit.

**Intervention Condition**

The intervention for this DNP project consisted of a 20-minute evidence based educational presentation on depression and provider knowledge of depression screening. A pre-test was administered prior to the education intervention and a post-test was administered following the education intervention to assess provider knowledge regarding depression.

The second phase of this DNP project was a retrospective chart review. There were 143 charts reviewed to assess provider behavior with adolescent depression screening.

**Ethical Considerations**

This quality improvement project was conducted with approval through the University of Arizona Institutional Review Board (IRB) and with permission from RMCH clinic. No personal information was included on the pre- and post-education questionnaires. The providers completed surveys pre and post education. The providers’ participation in the education offering is was considered their implied consent.

**Beneficence**

Beneficence was implemented in this project by increasing provider knowledge of screening adolescence for depression with the intent to minimize harm due to the sequelae of depression.

**Respect for Persons**

Respect for persons was established by creating a disclosure prior to participation that allows providers the choice to participate and the choice to withdraw from the study at any
time with the understanding that they will be treated equality regardless of level of participation.

**Justice**

Justice was obtained by protecting those of vulnerable groups, which were not represented in this study. The participants of the study were not a vulnerable group such as children, mentally or emotionally disabled or institutionalized (Pilot & Beck, 2017); however, the information review for this study was sensitive information about provider practice behavior, which pertained to children.

**Data Collection**

Data was collected via a pre and post-test. The pre-test/post-test questions were based on the evidence-based recommendations found through literature review. The pre-test and post-test were comprised of 15 identical questions to assess the participants knowledge of adolescent screening and current screening practices. In addition, the pre-test included four demographic questions which consisted of: age, gender, years of practice, and highest educational degree. The post-test included the same 15 knowledge question. After completion of the pre-test, a 20-minute evidence-based educational intervention using the NICE guidelines for depression and signs and symptoms of depression was delivered via PowerPoint presentation during morning rounds. After delivery of the educational intervention, a post-test survey was administered to determine if there was an increase in provider knowledge of adolescent depression.

This investigator conducted a retrospective chart review of implementation of adolescent depression screening tool at time of visit from 143 charts one month post
educational intervention. This data was compared to a previous chart review done in December 2018 by the clinic prior to educational intervention to identify practice behaviors of the providers in the clinic pre- and post-educational intervention.

**Data Analysis**

Data analysis began with a review of the data and descriptive statistics (i.e., means, SDs, frequencies, distributions, etc.). Educational outcomes were determined by measuring the pre-and post-test assessments of provider knowledge and practice behaviors after the evidence-based educational intervention session. The means of the pre- and post-test were compared. The Wilcoxon Signed Rank Test was used to evaluate the efficacy of the intervention from baseline to post-intervention. The data was nonparametric so, the Wilcoxon Signed Rank Test was the best test to analyze this data (Pilot & Beck, 2017). The level of significance was set at the 0.05 level.

A paired t-test was used to analyze data from the two chart reviews. The t-test is an appropriate test for measuring the differences between means when the data is parametric (Pilot & Beck, 2017).
RESULTS

Description of the Sample Population

The survey was distributed to four providers at the RMCH clinic located in the center of the Navajo nation. Providers were employed at RMCH and work in the pediatric clinic. The projected sample size was eight; however, at time of presentation, there were only four providers left at the clinic. One provider did not complete any of the surveys. Of the three that did, there was one male (33%) and two females (66%). All three were medical doctors (MD) (100%). The years of practice was 16-20 years (66%) and 21 plus years (33%). The age of the providers that participated was one in the range of 42-52 (33%), 52-62 (33%), and 62-72 (33%). The demographics of the participants (n=3) are reflected in Table 1.

TABLE 1. Participant demographics.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Sample N=3 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profession</td>
<td></td>
</tr>
<tr>
<td>• MD</td>
<td>3 (100%)</td>
</tr>
<tr>
<td>• PNP</td>
<td>0 (0)</td>
</tr>
<tr>
<td>• DO</td>
<td>0 (0)</td>
</tr>
<tr>
<td>• FNP</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>• 22 – 32 years</td>
<td>0 (0)</td>
</tr>
<tr>
<td>• 32 – 42 years</td>
<td>0 (0)</td>
</tr>
<tr>
<td>• 42 – 52 years</td>
<td>1 (33%)</td>
</tr>
<tr>
<td>• 52 – 62 years</td>
<td>1 (33%)</td>
</tr>
<tr>
<td>• 62 -72 years</td>
<td>1 (33%)</td>
</tr>
<tr>
<td>• 72 and older</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>• Male</td>
<td>1 (33)</td>
</tr>
<tr>
<td>• Female</td>
<td>2 (66)</td>
</tr>
<tr>
<td>Years of Practice</td>
<td></td>
</tr>
<tr>
<td>• 0 to 5 years</td>
<td>0 (0)</td>
</tr>
<tr>
<td>• 6 to 10 years</td>
<td>0 (0)</td>
</tr>
<tr>
<td>• 11 to 15 years</td>
<td>0 (0)</td>
</tr>
<tr>
<td>• 16 to 20 years</td>
<td>2 (66)</td>
</tr>
<tr>
<td>• 21 years or more</td>
<td>1 (33)</td>
</tr>
</tbody>
</table>
Scores of Pre- and Post-Test

The pre- and post-surveys consisted of 15 identical multiple choice, yes/no questions. Each survey had a unique identification label on both the pre- and post-test. The surveys were analyzed by content experts prior to the distribution for validity. The average score on the pre-test was 59% with the lowest score being 47%. The post-test scores were improved compared to the pre-test. None of the providers scored 100%. There were a few questions (n=3) that were left blank or had two or more answers (n=7). These questions were not included in the analysis. The average score on the post-test was 77% with a low of 73%. After a 20-minute educational PowerPoint that focused on knowledge of depression as well as interventions for adolescent depression, the mean test scores did increase by 17.84%. See Table 2 for the pre- and post-test results. Table 3 shows the descriptive statistics for the correct answers to the pre- and post-survey.
TABLE 2. Pre- and post-test scores.

![Average Test Score Graph](image)

TABLE 3. Descriptive statistics for correct answers.

<table>
<thead>
<tr>
<th></th>
<th>Number of Correct Responses - Pre</th>
<th>Number of Correct Responses - Post</th>
<th>Percent Correct Responses - Pre</th>
<th>Percent Correct Responses - Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Valid</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>N-Missing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>9.0</td>
<td>11.66</td>
<td>60.0</td>
<td>77.77</td>
</tr>
<tr>
<td>Median</td>
<td>10.0</td>
<td>12.0</td>
<td>66.6</td>
<td>80.0</td>
</tr>
<tr>
<td>Mode</td>
<td>10.0</td>
<td>12.0</td>
<td>66.67</td>
<td>80.0</td>
</tr>
<tr>
<td>Std Deviation</td>
<td>1.73</td>
<td>.577</td>
<td>11.54</td>
<td>3.84</td>
</tr>
<tr>
<td>Minimum</td>
<td>7.0</td>
<td>11.0</td>
<td>46.67</td>
<td>73.3</td>
</tr>
<tr>
<td>Maximum</td>
<td>10.0</td>
<td>12.0</td>
<td>66.67</td>
<td>80.0</td>
</tr>
</tbody>
</table>
Questions Related to Provider Knowledge

Table 4 is a breakdown of how the providers answered each question at pre- and post-intervention.

TABLE 4. Analysis of providers’ knowledge pre- and post-test intervention for depression symptoms (N = 3).

<table>
<thead>
<tr>
<th>Aim: Concussion Symptoms</th>
<th>Content of Question</th>
<th>Pre-Test Correct Response(s) / %</th>
<th>Post-Test Correct Response(s) / %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1</td>
<td>Depression is underrecognized and undertreated in adolescents with close to ___ % of adolescents not receiving treatment?</td>
<td>2 / 66.6%</td>
<td>3 / 100%</td>
</tr>
<tr>
<td>Question 2</td>
<td>Behaviors and developmental problems that can be missed but are due to depression include?</td>
<td>3 / 100%</td>
<td>3 / 100%</td>
</tr>
<tr>
<td>Question 3</td>
<td>Cardinal features of adolescent depression are?</td>
<td>3 / 100%</td>
<td>3 / 100%</td>
</tr>
<tr>
<td>Question 5</td>
<td>Does a child with a family history of depression or substance abuse has increased likelihood for depression?</td>
<td>2 / 66.6%</td>
<td>3 / 100%</td>
</tr>
<tr>
<td>Question 6</td>
<td>According to DSM-5, how many of the key features present over at least a 2-week period are needed for a diagnosis of depression?</td>
<td>1 / 33.4%</td>
<td>0 / 0%</td>
</tr>
<tr>
<td>Question 7</td>
<td>How many children with depression have a comorbidity?</td>
<td>2 / 66.6%</td>
<td>3 / 100%</td>
</tr>
<tr>
<td>Question 9</td>
<td>What places an adolescent at risk for depression?</td>
<td>3 / 100%</td>
<td>3 / 100%</td>
</tr>
<tr>
<td>Question 11</td>
<td>Depression screening tools are used for?</td>
<td>2 / 66.6%</td>
<td>3 / 100%</td>
</tr>
<tr>
<td>Question 14</td>
<td>What is the black box warning when prescribing an SSRI to an adolescent?</td>
<td>3 / 100%</td>
<td>2 / 66.6%</td>
</tr>
</tbody>
</table>

Questions (11, 9, 7, 5, 1) showed that the providers did gain knowledge about depression form pre- to post-intervention with increase understanding of screening tools for depression, risk factors for depression in adolescents, prevalence of co-morbidities with depression in children, impact of family history on depression, and the proportion of adolescents not receiving treatment
for depression. Questions 2 and 3 were correctly answered on both the pre- and post-test so there was no change in providers’ knowledge of behaviors and developmental problems that may be comorbid with depression and clinical features of depression. There was decline in providers’ knowledge from pre- to post-test on questions 6 and 14, which relates to DSM criteria for depression and black box warnings for SSRIs.

**Questions Related to Provider Behavior**

Table 5 provides a breakdown of providers’ pre- and post-intervention practice behaviors.

**TABLE 5. Analysis of providers’ practice behaviors pre- and post-test intervention for depression symptoms (N = 3).**

<table>
<thead>
<tr>
<th>Aim: Practice Behaviors</th>
<th>Content of Question</th>
<th>Pre-test Correct Response (s)/ %</th>
<th>Post-test Correct Response(s)/ %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 4</td>
<td>When a child comes in with headache, abdominal pain, musculoskeletal pain, or problems in school or relationships with family, do you consider depression as a diagnosis?</td>
<td>3 / 100%</td>
<td>3 / 100%</td>
</tr>
<tr>
<td>Question 8</td>
<td>Do you offer information packets, self-help groups, religious groups or complementary therapies for those with depression?</td>
<td>1 / 33.4%</td>
<td>1 / 33.4%</td>
</tr>
<tr>
<td>Question 10</td>
<td>How often do you offer advice on the benefits of exercise, sleep hygiene, anxiety management, and benefits of a well-balanced diet?</td>
<td>0 / 0%</td>
<td>1 / 33.4%</td>
</tr>
<tr>
<td>Question 12</td>
<td>Key education components for the patient and family after a diagnosis of depression include all of the following except?</td>
<td>3 / 100%</td>
<td>2 / 66.6%</td>
</tr>
<tr>
<td>Question 13</td>
<td>If a child is unresponsive to low interventions such as lifestyle modifications and/or CBT, what is the next recommended action?</td>
<td>1 / 33.4%</td>
<td>2 / 66.6%</td>
</tr>
<tr>
<td>Question 15</td>
<td>Do you reach out or follow up with patients that miss their appointments or refuse interventions?</td>
<td>3 / 100%</td>
<td>3 / 100%</td>
</tr>
</tbody>
</table>
Providers showed consistency in their understanding of signs and symptoms of depression and in their follow-up with patients that missed appointments or refused interventions, measuring 100% at pre- and post-test, respectively. There was some improvement from pre- (33.4%) to post-test (66.6%) in providers’ understanding of a referral to counseling as the next steps of treatment after failure of CBT therapy, indicating that providers had some improvement in their adherence to the NICE guidelines following the educational intervention. Question 12 had the same disproportion with none of the providers responding correctly. Only one provider responded to the question that asked how often providers offered advice on the benefits of exercise (3x week, 45min-1hour), sleep hygiene, anxiety management, and benefits of a well-balanced diet on post-test. None of the providers responded to this measure on the pre-test so, therefore; there was no comparison measure for the post-test.

Table 6 is a knowledge comparison between the pre- and post-test responses for the survey questions. The educational PowerPoint regarding depression did not have a significant impact on provider’s knowledge of depression and depression screening (p = 0.109). The Wilcoxon signed rank test statistics are in Table 7.
Chart Review

The final component of this DNP project was to do a chart review to see if the educational intervention made a difference on the number of adolescences that were being screened for depression. The chart extraction was done by the clinical analyst in the clinic to include age, visit, and if a depression screen was conducted at that visit. The study had waiver of informed consent as per guidelines of the Institute Ethics Committee and identifying information was not disclosed.
In the month after the intervention 143 patients aged 12-17 years of age that met criteria for the study were seen at the RMCH clinic for sick or well visits. The number of adolescents screened for depression was 49 (34%). This was compared to a previous review done in December 2018 with 105 charts of adolescents aged 12-17 years where 95 (90%) were screened for depression. A paired t-test was done. The p-value of the previous review and current review was 0.57. This number is not statistically significant. The implication of this finding is that provider screening for depression in this age group did not improve following the depression intervention; however, statistical significance could not be established due to small sample size.

**TABLE 8. Paired t-test of chart reviews.**

<table>
<thead>
<tr>
<th></th>
<th>Previous Review</th>
<th>Current Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>70</td>
<td>95.33333333</td>
</tr>
<tr>
<td>Variance</td>
<td>2725</td>
<td>2210.333333</td>
</tr>
<tr>
<td>Observations</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.120201497</td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Df</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>-0.66564307</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>0.287067225</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>2.91998558</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.57413445</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>4.30265273</td>
<td></td>
</tr>
</tbody>
</table>

Of the adolescents that were screened for depression, 86% (n =42) were screened at preventative visits. It was less likely that they were screened on acute/sick visits or for a recheck.

Table 9 is the breakdown of depression screening in sick and well visits in this primary clinic.
Screening of gender revealed that 23 (46.9%) of those screened were female and 26 (53%) of those screened were males. In regards to age, there was a total of 20 (13.9%) 12 year olds with four (8.1%) being screened for depression; 30 (20.9%) 13 year olds with 12 (24.4%) being screened; and 19 (13.2%) 14 year olds with five (10.2%) being screened. A total of 21 (14.6%) 15 year olds were seen with 9 (18.3%) being screened. But 16 year olds (n = 39; 27.2%) represented the largest group and had the highest screening rate (32.6%). The smallest group was the 17 year olds with only 14 (9.8%) being seen and 3 (6.1%) having evidence of depression screening. See Table 10 for the breakdown of age and screening behaviors.
TABLE 10. *Breakdown of age and depression screening.*

<table>
<thead>
<tr>
<th>Age</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>14</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>15</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>16</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>17</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The implications of these findings for the advanced practice nurse (APN) is that providers are in a prime area to identify, educate, council and treat adolescence with depression. They can act as change agents to implement screening protocols, provide education, and refer adolescents for further management of depression (Bhatta, Champion, Young, & Loika, 2017). Depression is common in adolescents and despite preventative guidelines the rates of screening remain low with only 34.5% of physicians providing screening (Aalsma et al., 2017). Indian youth have the highest rate of suicide among all ethnic groups in the US and is the second-leading cause of death for Native youth aged 15-24 (NCAI, 2019). The current research reveals that due to the lack of availability of mental health providers, primary care providers will be the ones to detect and initiate management for children with depression. It is prudent that primary care providers are knowledgeable on the current guidelines as well the signs and symptoms of depression. Therefore, the purpose of
this DNP project was to develop an evidence-based education for pediatric primary care providers about depression signs and symptoms that manifest as well as the current evidence-based recommendation on depression screening.

**Findings Related to Research Questions**

The goal of this DNP project was to increase provider knowledge on depression and the NICE guidelines for depression screening. The second goal was for depression screening in 100% of adolescents seen at this primary care clinic. The data did show that providers had an increase in knowledge after the educational intervention with the mean score increasing from 59% to 77%; however, statistical significance was not established due to small sample size (n=3). One study indicated that with provider education there was an increase in screening behavior and an increase in self-efficacy improved providers confidence to not only screen but to counsel teens on risky behaviors (Ozer et al., 2009). In this study, fewer adolescents were screened following the intervention than were screened before the intervention; although, the findings were not statistically significant (p= 0.57). The reason for this decline is not fully known; however, it may be due to providers not being identified in either the pre- or post-intervention chart reviews, which made it difficult to determine whether or not the three providers that participated in this post-intervention chart review had improvement in their screening for depression.

**Relationship to Clinical Framework**

Primary care providers are the gateway for adolescence in distress and it is of upmost importance that they are prepared to recognize the risk factors and warning signs of an adolescent that is depressed (Maslow, Dunlap, & Chung, 2015). The framework for this DNP
project was the Donabedian model for quality of care. The Donabedian Model focuses on three main categories: structure, process, and outcome. This DNP project first focused on structure by asking the question, if an educational intervention with guidelines for adolescent depression was given to providers would the knowledge-learned increase the depression screens of adolescence aged 12-17. Secondly, this project focused on the process. This was the educational interventions with pre- and post-questionnaires. The final measure was the outcome, which measured whether or not there was an increase in adolescent depression screening for this clinic. Unfortunately, the structure was not strong at the time of intervention as providers were leaving and the staff left was few in number. The Donabedian model in this DNP project was used to guide the intervention with goals of promoting improved outcomes.

Clinical Implications

This DNP project did provide insight on the knowledge and practice behaviors of primary care providers regarding screening adolescents for depression in the primary care setting at RMCH College Clinic. Primary care providers’ function as a first person of contact to an adolescent when in a crisis, for well exams, and somatic complaints, making their role in screening and identifying depression vital. Primary care visits account for 70% of all adolescent visits each year, with nearly 75% of adolescents who completed suicide being seen by a medical professional within four months of doing so (Forman-Hoffman et al., 2016; Maslow, Dunlap, & Chung, 2015). The goal of this DNP project was to increase provider knowledge of depression and depression screening in the pediatric primary care setting via an educational PowerPoint. Offering the educational PowerPoint to family practice providers may help to further increase depression knowledge. According to the Academy of Pediatrics, a provider’s willingness to
listen and ask sensitive and probing questions and avoiding judgement is critical for teens that are in distress (Maslow, Dunlap, & Chung, 2015). In relation, providers should be screening at sick visits when it is likely that a child is actively in distress.

**Strengths and Limitations**

**Strengths**

There was improved knowledge of depression screening in adolescents among providers, which was clinically significant but was not statistically significant due to small sample size. The pre- and post-test method is helpful to examine change quickly (Pilot & Beck, 2017). The number of charts reviewed were ample to evaluate provider behavior in administering depression screens. It is likely that the knowledge gained regarding depression screening among providers was related to the utilization of the educational presentation and exposure to the information about depression on the pre-test. Findings revealed that 86% (N=42) of those screened were during a well child visit. An additional strength is the enhancement of awareness of the primary care providers as a result of the educational offering regarding depression screening.

**Limitations**

One of the limitations of this project was the small sample size of the primary care providers. The initial plan was to have at least eight providers but a few retired and a few left the practice. The clinic is in the rural town of Gallup, New Mexico, where staffing and resources are problematic. The survey relied on self-report of the providers, which raises concern about reliability of the data. A one-group design was used with no comparison group; therefore, internal validity may have been affected. Additionally, internal validity may have
been threatened due to the pre-test sensitizing participants in unforeseen ways impacting their performance on post-test due to pre-test exposure and not because of the educational intervention.

**Dissemination and Future Implications for Practice**

The results of the DNP project will be shared with the providers at RMCH College Clinic through a PowerPoint presentation. It is important to discuss the results of the survey as well as the decline in the depression screens.

The recommendations for future research identified by this investigator includes replicating the study on a larger scale to reflect all providers in a small community that care for pediatric patients. Providers need to have up to date evidence-based information about depression in adolescence and screening recommendations without bias. Furthermore, providers sharing that knowledge among each other and the community would help to reduce stigma and open a dialogue that is a safe zone. Initiating a DNP project in the community of Gallup, New Mexico was a start to decrease that stigma as the providers care for underserved, lower socioeconomic population and they did show an increase in knowledge among the few participants after the intervention.

Future research that includes the providers that conducts telemedicine conferences would be helpful as these providers see a large portion of the children in the clinic. Future research examining family medicine providers’ knowledge and behaviors regarding depression screen would be valuable since they also see pediatric patients.
Relevance to DNP Essentials

This DNP project aligns with the *DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice*. This research demonstrated the use analytic methods to critically appraise existing literature as well as design and implement processes to evaluate outcomes of practice, practice patterns, and systems of care within a practice setting. This researched demonstrated the DNP Essential III by appraisal of the current literature about adolescent depression and developed an educational PowerPoint that used evidence-based information about guidelines and presentation of adolescent depression. Lastly, the researcher evaluated practice behavior of providers at a local clinic to determine variances in practice outcomes and population trends.

Conclusion

In conclusion, this DNP project aimed to increase provider knowledge of adolescent depression and behavioral practices regarding depression screening through use of an educational PowerPoint that focused on evidence-based guidelines specifically directed to pediatric primary care providers. Adolescent depression is often missed because they are not asked specifically about depression or are not being screened as often as they could be. Primary care providers are in a unique position to be the gateway for children to present in distress. The providers can educate patients on depression, set up safe zones, and discuss adverse effects that depression can have on an adolescence life. By being up to date on evidence-based practice and enforcing current depression screen guidelines, providers can help decrease the stigma and identify teens at risk for depression.
The findings of this study were limited due to sample size. What can be concluded is that providers did have an increase in knowledge after the educational intervention with the mean score increasing from 59% to 77%; however, statistical significance was not established due to small sample size. An intervention to include more guidance that recommends every adolescent be screened for depression no matter what they are coming to the clinic for would be helpful. This study showed that majority of adolescence that were screened for depression were at the clinic for a preventative visit (86%). Screening of depression in adolescents at sick visits is an opportunity to identify depression in adolescents. A larger sample size is needed for a more robust examination of provider behaviors and knowledge regarding depression.
APPENDIX A:

EVIDENCE APPRAISAL TABLE
<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Sample &amp; Setting</th>
<th>Methods for Data Collection &amp; Data Analysis</th>
<th>Findings</th>
<th>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aalsma, M.C., Zerr, A.M., Etter, D.J., Ouyang, F., Gilbert, A.L., Williams, R.L., Hall, J.A., &amp; Downs, S.M. (2017).</td>
<td>Prospective Cohort Study</td>
<td><strong>Sample:</strong> 2,038 youth (51% female; 60% black; mean age = 14.6 years [standard deviation = 2.1]). Over 20% of youth screened positive for depression on the Patient Health Questionnaire-2 and 303 youth (14.8%) screened positive on the Patient Health Questionnaire-9 (PHQ-9). <strong>Setting:</strong> two clinics of the computer-based depression screening and physician feedback algorithm among youth aged 12–20 years between October 2014 and October 2015 in Marion County (Indianapolis), Indiana.</td>
<td><strong>Data Collection:</strong> Data on physician responses were captured through the CHICA system. Data from the chart review were added to the database and included in the final analysis. <strong>Data Analysis:</strong> Descriptive statistics (means, standard deviations [SD], and frequencies) were calculated for patient demographics, clinic site, clinic type, PHQ-9 scores, and reported physician follow-up at the first visit during the study time frame for both the overall sample and the subset that screened positive for depression symptoms.</td>
<td>The objective of the study was to determine the effectiveness of computer-based screening and physician feedback to guide adolescent depression management with in primary care. Of the 434 youth with a positive PHQ-2 screen, 121 scored 0–4 on the PHQ-9 (27.8%) and 303 (69.8%) scored 5 or above (63% female; 60% black; mean age = 15.2 years [SD = 2.1]), indicating possible depression. Of those 303 youth, 149 scored in the mild range (5–10, 49.1%), 132 scored in the moderate range (11–15, 43.5%), and 22 scored in the severe range (above 15, 7.2%). Mental health referrals significant predictors were clinical site (40.2% vs 73.9%);</td>
<td>Representation: Adequately evaluates adolescents with positive depression screens and validates the need for screening. Replication: Done at two separate sites which can be easily replicated. Endorses that when a guideline or clinical decision support is set up then providers are more willing to screen and treat adolescents for depression. <strong>Grade of the Evidence:</strong> Type of Evidence-Cohort study; Moderate Identifies two groups (cohorts) of patients, these cohorts forward for the outcome of interest <strong>Final Grade of Recommendation:</strong> B</td>
</tr>
</tbody>
</table>
Reference | Type of Study | Sample & Setting | Methods for Data Collection & Data Analysis | Findings | Credibility & Grade of Evidence, Design, and Theoretical Framework
---|---|---|---|---|---
Ozer, E.M., Zahnd, E.G., Adams, S.H., Husting, S.R., Wibbelsman, C.J., Norman, K.P., & Smiga, S.M. (2008). | Case Control Study | Two large independent datasets among clinic-based and population-based sample in California. Adolescent data collected in outpatient pediatric clinics within a large managed care organization (N=1089) and adolescent data collected from the 2003 CHIS (N=899) | Secondary data analysis utilizing data from well visits in pediatric clinics and the 2003 California health interview survey, a state population sample. Logic regression, controlling or age, gender, race/ethnicity, and adolescent depressive symptoms were performed. | p<.0001) and PHQ-9 scores (severe range 77.8% vs mild range 47.5%; p<.01). When a computer-based decision support system algorithm focused on adolescent depression was implemented in two primary care clinics, most physicians utilized screening results to guide clinical care. | Conclusion: Primary care clinicians/systems need to better utilize the primary care visit to screen adolescents for emotional health. Credibility: first study to include adolescent report findings of screening practices. Making it more reliable. Replication: large study with significant results. Can be replicated in other sites using a retrospective approach. |
<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Sample &amp; Setting</th>
<th>Methods for Data Collection &amp; Data Analysis</th>
<th>Findings</th>
<th>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</th>
</tr>
</thead>
</table>
| Rinke, M.L., Singh, H., Heo, M., Adelman, J.S., O’Donnell, H.C., Choi, S.J.,...,Bundy, D.G. (2018). | Quality Improvement Collaborative Study -Cohort Study with RCT | 25 Primary pediatric practices were randomized to collect 5 months of retrospective data on DE or MOD. 8 to investigate BP, 9 to abnormal lab values, and 8 to adolescent depression evaluation. Total of N=1170 patients. | Relationships between DE or MOD proportion and age, gender and insurance states were explored with mixed-effects logistic regression models. | DE or MOD rates in pediatric primary care were found to be 54% for patients with elevated BP (n=389), 11% for patients with abnormal laboratory values (n=381), and 62% for adolescent with an opportunity to evaluate for depression (n=400). | Grade of the Evidence: Type of Evidence- Case control study; Moderate
Identifies two groups (cohorts) of patients, these cohorts forward for the outcome of interest
Conclusion: DE’s and MOD’s occur at an appreciable frequency in pediatric primary care. These errors may contribute to care delays and patient harm.
Representation: Not representative of all practices. Those enrolled wanted to improve DE and MOD’s in their practice and were university affiliated. |
<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Sample &amp; Setting</th>
<th>Methods for Data Collection &amp; Data Analysis</th>
<th>Findings</th>
<th>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forman-Hoffman, V., McClure, E., McKeeman, J., Wood, C.T., Middleton, J.C., Skinner, A.C., Viswanathan, M. (2016).</td>
<td>Systematic Review</td>
<td><strong>Sample:</strong> Several electronic searches (May 2007 to February 2015) and searches of reference lists of published literature.</td>
<td><strong>Data Collection:</strong> Trials and recent systematic reviews of treatment, test–retest studies of screening, and trials and large cohort studies for harms. <strong>Data Analysis:</strong> Data were abstracted by 1 investigator and checked by another; 2 investigators independently assessed study quality.</td>
<td><strong>Findings:</strong> <strong>Data Synthesis:</strong> Limited evidence from 5 studies showed that such tools as the Beck Depression Inventory and Patient Health Questionnaire for Adolescents had reasonable accuracy for identifying MDD among adolescents in primary care settings. Six trials evaluated treatment. Several individual fair- and good-quality studies of fluoxetine, combined fluoxetine and cognitive behavioral treatment.</td>
<td>Moderate Final Grade of Recommendation: B</td>
</tr>
</tbody>
</table>

**Conclusion:** No evidence was found of a direct link between screening children and adolescents for MDD in primary care or similar settings and depression or other health-related outcomes. Evidence showed that some screening tools are accurate, and some treatments are beneficial among adolescents (but not younger children), with no evidence of associated harms.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Sample &amp; Setting</th>
<th>Methods for Data Collection &amp; Data Analysis</th>
<th>Findings</th>
<th>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gijzen, M.W.M., Creemers, D.H.M., Rasing, S.P.A., Smit, F., &amp; Engels, C.M.E. (2018).</td>
<td>Cluster RCT</td>
<td><strong>Sample</strong>: Two parallel groups (experimental and control). Experimental N=2764 in 43 schools and the control group n=2933 in 43 schools</td>
<td><strong>Data Collection</strong>: Multi-modal stepped-prevention program assessments done at baseline, post-intervention and 6,12, and 24-month follow-up. <strong>Data Analysis</strong>: An independent statistician will randomly assign the</td>
<td>therapy, escitalopram, and collaborative care demonstrated benefits of treatment among adolescents, with no associated harms. <strong>Limitation</strong>: The review included only English-language studies, narrow inclusion criteria focused only on MDD, high thresholds for quality, potential publication bias, limited data on harms, and sparse evidence on long-term outcomes of screening and treatment among children younger than 12 years.</td>
<td>Generalization was limited due to it being a review with only 5 studies. Limitations: Only English language studies, high thresholds for quality, potential publication bias and limited data on harm <strong>Grade of the Evidence</strong>: Type of Evidence-Systematic Review (high) <strong>Final Grade of Recommendation</strong>: A</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Study</td>
<td>Sample &amp; Setting</td>
<td>Methods for Data Collection &amp; Data Analysis</td>
<td>Findings</td>
<td>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------</td>
<td>-----------------</td>
<td>---------------------------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participants are aged from 11-15 years of age and Dutch language</td>
<td>participating school location to the intervention or the control. Target clinical outcome of suicidal behaviors will be evaluated in the agreement with the intention to treat principle using linear mixed modeling with VOZZ at baseline and CONSORT for results.</td>
<td>simultaneously</td>
<td>Replication: Can easily be replicated as this study was randomized and included multiple sites, it could be implemented in schools on a large scale. Gaining buy-in in the community was strong in this study and allowed for teaching of what they called as gatekeeper training (Question, persuade, and refer) Limitation: Did not include a pre-measurement only a post.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Setting: Multiple schools were chosen from secondary level, vocational schools and pre-university level</td>
<td></td>
<td></td>
<td>Grade of the Evidence: Type of Evidence- RCT (high) Final Grade of Recommendation: A</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Study</td>
<td>Sample &amp; Setting</td>
<td>Methods for Data Collection &amp; Data Analysis</td>
<td>Findings</td>
<td>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
<td>------------------</td>
<td>---------------------------------------------</td>
<td>----------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Roseman, M., Nazanin, S., Riehm, K.E., Kloda, L.A., Boruff, J., Ickowicz, A., Thombs, B.D. (2017).</td>
<td>Systematic Review</td>
<td><strong>Sample:</strong> Data retrieved from databases in 2017 for RCTs of adolescents 6-18 years who underwent depression screening. <strong>Setting:</strong> NA</td>
<td><strong>Data Collection:</strong> MEDLINE, EMBASE, PsychINFO, Cochrane central and lilacs databases searched through Feb 2, 2017 using peer-review search strategy. <strong>Data Analysis:</strong> Two investigators independent review titles/abstracts for eligibility.</td>
<td><strong>Findings:</strong> 522 articles were identified but all excluded due to no RCT’s of depression screening. Concludes that recommended screening should carefully consider potential harms, as well as the use of scarce health resources, that would occur with the implementation of screening programs.</td>
<td><strong>Trustworthiness:</strong> Limitation: No other pre-post or other non-randomized controlled trials were identified and excluded. This correlates to the lack of RCT studies for adolescent depression screening in the primary care clinic. Also identifies the need for specific management tools be readily available such as pediatric mental health experts to decrease harm. <strong>Grade of the Evidence:</strong> Type of Evidence-systematic review (high) <strong>Final Grade of Recommendation:</strong> C</td>
</tr>
</tbody>
</table>

**Reference**

<table>
<thead>
<tr>
<th>Type of Study</th>
<th>Sample &amp; Setting</th>
<th>Methods for Data Collection &amp; Data Analysis</th>
<th>Findings</th>
<th>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</th>
</tr>
</thead>
</table>
| Quantitative study | **Sample:** 30 participants aged 16-25-year-old, 27 female and 3 males  
**Setting:** Health clinic located at a low-decile school with a high Maori population in a rural New Zealand | **Data Collection:** Youth CHAT questions were delivered to youth on an e-tablet that covered 13 domains from depression, risky behavior, and anxiety. Results transferred to EMR via a secure sever then results. Participants also were invited to complete a survey after their consultations.  
**Data Analysis:** Descriptive statistics were analyzed using excel and SPSS. Qualitative data underwent thematic analysis using general inductive approach. | **Findings:** Youth CHAT is found to be acceptable to study participants and as effective as a HEEADSSS assessment, it could be an innovative and more efficient means of routine screening for common psychosocial health issues in young people with and without long-term physical conditions.  
27 (90%) screened positive on one domain, 19 (67%) had one to three issues, 16 (53%) wanted help with at least one issue, either immediately or later.  
Patients gave Youth Chat high acceptability rating (M=8.29/10) indicating it was easy and brought up questions to ask or talk to their doctor about. Physicians concluded | **Trustworthiness:** Limitations: More female participants than male  
Despite the ratio of female to male participants it was appropriate for adolescents and gave them privacy when filling out the form. Also allowing it in the waiting room prior to the office visits aids in questions that may be addressed.  
Replication: Ongoing study with significant results, should be able to apply it to other sites  
Generalization: Focus groups were held with patients after to elicit feedback to improve the system. This is very helpful to get insight of what the patient needs to be successful. |
<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Sample &amp; Setting</th>
<th>Methods for Data Collection &amp; Data Analysis</th>
<th>Findings</th>
<th>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taliaferro, L.A., Hetler, J., Edwall, G., Wright, C., Edwards, A.R., &amp; Borowsky, I.W. (2013).</td>
<td>Quantitative Study</td>
<td><strong>Sample:</strong> A sample of 552 eligible PCPs. Few did not respond to all questions and were removed, final total was 537 participants <strong>Setting:</strong> Survey sent to PCP’s via survey monkey to providers in Minnesota</td>
<td><strong>Data Collection:</strong> The survey consisted of 28 general question categories and 92 potential response options. The instrument included yes or no, multiple-choice, and mark-all-that-apply questions, and 5-point Likert scales of agreement (strongly agree to strongly disagree), level of preparation (not at all prepared to extremely well prepared), and frequency of engaging in a behavior (never to almost always). The instrument took about 10 minutes to complete <strong>Data Analysis:</strong> The survey consisted of 28 general question categories and 92 potential response options. The instrument included yes or no, multiple-choice, and mark-all-that-apply questions, and 5-point Likert scales of agreement (strongly agree to strongly disagree), level of preparation (not at all prepared to extremely well prepared), and frequency of engaging in a behavior (never to almost always). The instrument took about 10 minutes to complete.</td>
<td>that Youth Chat was acceptable for the age and reinforced privacy.</td>
<td>Type of Evidence-Quantitative study (moderate) <strong>Final Grade of Recommendation:</strong> B <strong>Trustworthiness:</strong> Investigators have demonstrated positive effects of training programs on clinicians’ ability to recognize adolescents in distress, yet multifaceted approaches are likely required to substantially change professional practice. PCPs felt least prepared to address non-suicidal self-injury and most prepared for knowing when to refer depressed adolescents for mental health services. Clinicians felt strongly that PCPs should be responsible for identifying, comanaging, and initiating specialty referrals for adolescents</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Study</td>
<td>Sample &amp; Setting</td>
<td>Methods for Data Collection &amp; Data Analysis</td>
<td>Findings</td>
<td>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
<td>------------------</td>
<td>--------------------------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and frequency of engaging in a behavior (never to almost always). The instrument took about 10 minutes to complete</td>
<td>vs 32%; P &lt; .01. Pediatric clinicians were significantly more likely than family providers to report greater familiarity with official recommendations regarding depression screening (54% vs 43%; P &lt; .05), yet they were less likely to routinely administer a standardized, written depression screening instrument (44% vs 53%; P = .06).</td>
<td>experiencing depression. Limitations: Only done in Minnesota. Many PCP’s did not finish or do the survey and may not represent all PCP’s. The study indicates that addressing facilitators and barriers to screening for and effectively managing depression will help ensure that contacts with primary care no longer represent missed opportunities to help distressed youth. <strong>Grade of the Evidence:</strong> Type of Evidence- Quantitative study (moderate) <strong>Final Grade of Recommendation:</strong> C</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Study</td>
<td>Sample &amp; Setting</td>
<td>Methods for Data Collection &amp; Data Analysis</td>
<td>Findings</td>
<td>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>---------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Bhatta, S., Champion, J.D., Young, C., &amp; Loika, E. (2017).</td>
<td>Prospective study</td>
<td><strong>Sample:</strong> Retrospective chart review (N = 256 cases) documented PHQ-9 depression screening outcomes among adolescents accessing school-based pediatric primary care clinic services for episodic illness and wellness visits  <strong>Setting:</strong> project occurred at a pediatric school-based primary care clinic located in the southwestern US.</td>
<td><strong>Data Collection:</strong> Data was collected prior to intervention and then again after.  <strong>Data Analysis:</strong> The data were analyzed using SPSS 24.0 software. The study was combination of descriptive and non-parametric statistics.</td>
<td><strong>Findings:</strong> Examination of associations between screening status and gender, age, ethnicity, payer source, and visit purpose was conducted. A significant association between payer source and screening status was found ($\chi^2 = 7.45$, $p = 0.024$). Similarly, there was a statistically significant relationship between visit purpose and screening status ($\chi^2 = 3.997$, $p = 0.046$); 66% ($n = 50$) were screened during wellness visits while 52.2% ($n = 94$) were screened during episodic illness visits.</td>
<td><strong>Trustworthiness:</strong> Provided that PHQ-9 is a reliable indicator of adolescent depression. Limitations: Only one clinic was used and only children with episodic concerns were screened. It would be more beneficial if they screened all adolescents. Concluded that reminders or follow-ups to providers helps to remind them to screen adolescents for depression. <strong>Grade of the Evidence:</strong> Type of Evidence-Prospective study (Moderate) <strong>Final Grade of Recommendation:</strong> B</td>
</tr>
<tr>
<td>Reference</td>
<td>Type of Study</td>
<td>Sample &amp; Setting</td>
<td>Methods for Data Collection &amp; Data Analysis</td>
<td>Findings</td>
<td>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
<td>------------------</td>
<td>--------------------------------------------</td>
<td>----------</td>
<td>------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Fallucco, E.M., Seago, R.D., Cuffe, S.P., Kraemer, D.F., Wysocki, T. (2015). | Quantitative Study | **Sample:** PCP (n = 31) attended one SAT-D training program consisting of a 60-minute SAT-D seminar and a 60-minute standardized patient session where PCP practiced SAT-D skills.  
**Setting:** A pre–post design evaluated effects of training on PCP depression screening practices as reported by 3 groups of adolescent patients at well visits (n = 582 before, n = 525 at 2 to 8 months after training, n = 208 at 18 to 24 months after training) | **Data Collection:** The Adolescent Report of PCP Practices (AROP) is an anonymous 19-item patient-report measure that includes questions about whether their PCP screened them for depression, diagnosed them with depression, and discussed evidence-based depression treatment options (i.e., antidepressant medication, referral to therapy, psychiatry) with them. Secondary data collection consisted of This secondary outcome measure is a 17-item scale with acceptable face, content, discriminant, and construct validity that has been previously used to determine pediatrician self-rated confidence and objectively tested knowledge about depression and suicide risk assessment.  
**Data Analysis:** Regression analysis, PCP screening for adolescent depression increased significantly from pretraining (49%) to 2 to 8 months after training (68%), odds ratio 2.78, 95% confidence interval 2.10–3.68) and 18 to 24 months after training. | **Findings:** PCP SAT-D training resulted in significant increases in primary care screening for adolescent depression that were maintained up to 24 months after training.  
Given multiple barriers to accessing specialty mental health care and the shortage of mental health clinicians, skills in depression assessment and management will be increasingly critical for PCP. The training intervention was widely accepted by PCP and resulted in improved PCP confidence and screening for depression, and discussion of depression treatment.  
On a scale of 1 to 5, PCP reported low mean confidence at baseline in depression | **Trustworthiness:** Generalization: Included both interpretation of patient and provider giving more perspective of incidence and treatment of depression.  
**Limitation:** Not one adolescent was included in both the baseline and 2,8 months follow ups. Making it hard to see progress in providers.  
**Educational interventions in this study increased provider confidence which is relevant to the project proposed.** |
<table>
<thead>
<tr>
<th>Reference</th>
<th>Type of Study</th>
<th>Sample &amp; Setting</th>
<th>Methods for Data Collection &amp; Data Analysis</th>
<th>Findings</th>
<th>Credibility &amp; Grade of Evidence, Design, and Theoretical Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>training (74%, odds ratio 3.17, 95% confidence interval 2.16–4.67; both P &lt; .0001). PCP SAT-D confidence and knowledge also significantly improve</td>
<td>assessment (mean [SD]; 2.7 [0.6]) and depression treatment (2.4 [0.9]). Immediately after training, PCP reported moderate to high mean confidence in depression assessment (3.9 [0.6]) and treatment (3.6 [0.7], both P &lt; .0001), representing significant improvements. These significant improvements were maintained at 4 to 6 months after training (depression assessment 3.7 [0.5]; depression treatment 3.4 [0.6], both P &lt; .0001).</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B:

PRE-TEST SURVEY
1. Below, please indicate your decision to either participate in the study or withdraw from the study.
   a. I agree (participate in study and take test)
   b. I disagree (withdraw from study and end test)

2. Please make a unique identifier by using the following information: first two letters of first name, year of high school graduation (YYYY), and first two letters of mother’s maiden name.
   (Fill in the blank). __________

**PRE-TEST SURVEY**
Survey: Pediatric Providers knowledge survey

**Code:** _______

**Pre-Test**

**Q1:** Depression is underrecognized and undertreated in adolescents with close to _____ of depressed adolescents not receiving treatment?

a. 25%

b. 50%

c. 75%

d. 15%

**Q2:** Behaviors and developmental problems that can be missed but are due to depression include? Select all that apply

a. sexual behavior

b. substance use

c. Acting out at school

d. Fatigue

**Q3:** Cardinal features of adolescent depression are

a. Sadness, irritability and loss of interest or pleasure in activities
b. Sexual activity, taking back to parents, and skipping school  
c. hyperactivity, hypersexuality, and substance abuse  
d. headaches, bouts of illnesses, and muscle soreness/tension  

**Q4:** When a child comes in with headache, abdominal pain, musculoskeletal pain, or problems in school or relationships with family do you consider depression as a diagnosis?  
   a. Yes  
   b. No  

**Q5:** Does a child with a family history or depression or substance abuse increase the likelihood of that child having depression?  
   a. True  
   b. False  

**Q6:** According to the DSM-5 how many of the key features present over at least a 2-week period are needed for a diagnosis of depression?  
   a. one  
   b. three  
   c. five  
   d. two  

**Q7:** How many children with depression have a comorbidity?  
   a. None  
   b. 25%  
   c. 50%  
   d. 100%
Q8: Do you offer information packets, self-help groups, religious groups or complementary therapies for those with depression?

a. Yes
b. No

Q9: What places an adolescent at risk for depression?

a. first-degree family history
b. An undesirable event (bereavement, divorce, separation, or disappointing experience)
c. Negative coping measures
d. All the above

Q10: How often do you offer advice on the benefits of exercise (3x week, 45min-1hour), sleep hygiene, anxiety management, and benefits of a well-balanced diet?

a. Every visit
b. Only on well visits
c. only on sick visits
d. Only when I think the child has depression

Q11: Depression screening tools are used for

a. Diagnosis
b. Raise awareness of patient distress
c. To assess suicide risk
d. Learn more about the patient

Q12: Key education components for the patient and family after a diagnosis of depression include all the following except?
a. Causes of depression and associated symptoms
b. natural history and expectations
c. lethality risk and safety planning
d. Assess school problems

Q13: If a child is unresponsive to two interventions such as lifestyle modifications and or CBT what is recommended to do next?
   a. Refer them to counseling
   b. Start an SSRI
   c. Encourage exercise
   d. Have them return in 1 week

Q14: What is the black box warning when prescribing an SSRI to an adolescent?
   a. That the treatment may not work
   b. usually takes 2 to 4 weeks to work, and often, symptoms such as sleep, appetite, and concentration problems improve before mood lifts, so it is important to give medication a chance before reaching a conclusion about its effectiveness.
   c. People under 25 may experience an increase in suicidal thoughts or behavior when taking antidepressants, especially in the first few weeks after starting or when the dose is changed
   d. If discontinued abruptly it can cause withdrawal symptoms

Q15: Do you reach out or follow up with patients that miss their appointment or refuse interventions?
   a. Yes
   b. No
APPENDIX C:

POST-TEST SURVEY
Code: ______
Post-Survey

Q1: Depression is underrecognized and undertreated in adolescents with close to _____ of depressed adolescents not receiving treatment?

a. 25%
b. 50%
c. 75%
d. 15%

Q2: Behaviors and developmental problems that can be missed but are due to depression include? Select all that apply

a. sexual behavior
b. substance use
c. Acting out at school
d. Fatigue

Q3: Cardinal features of adolescent depression are

a. Sadness, irritability and loss of interest or pleasure in activities
b. Sexual activity, taking back to parents, and skipping school
c. hyperactivity, hypersexuality, and substance abuse
d. headaches, bouts of illnesses, and muscle soreness/tension

Q4: When a child comes in with headache, abdominal pain, musculoskeletal pain, or problems in school or relationships with family do you consider depression as a diagnosis?

a. Yes
b. No
Q5: Does a child with a family history or depression or substance abuse increase the likelihood of that child having depression?

a. True

b. False

Q6: According to the DSM-5 how many of the key features present over at least a 2-week period are needed for a diagnosis of depression?

a. one

b. three

c. five

d. two

Q7: How many children with depression have a comorbidity?

a. None

b. 25%

c. 50%

d. 100%

Q8: Do you offer information packets, self-help groups, religious groups or complementary therapies for those with depression?

a. Yes

b. No

Q9: What places an adolescent at risk for depression?

a. first-degree family history

b. An undesirable event (bereavement, divorce, separation, or disappointing experience)
c. Negative coping measures
d. All the above

**Q10:** How often do you offer advice on the benefits of exercise (3x week, 45min-1hour), sleep hygiene, anxiety management, and benefits of a well-balanced diet?

a. Every visit
b. Only on well visits
c. only on sick visits
d. Only when I think the child has depression

**Q11:** Depression screening tools are used for

a. Diagnosis
b. Raise awareness of patient distress
c. To assess suicide risk
d. Learn more about the patient

**Q12:** Key education components for the patient and family after a diagnosis of depression include all the following except?

a. Causes of depression and associated symptoms
b. natural history and expectations
c. lethality risk and safety planning
d. Assess school problems

**Q13:** If a child is unresponsive to two interventions such as lifestyle modifications and or CBT what is recommended to do next?

a. Refer them to counseling
b. Start an SSRI

c. Encourage exercise

d. Have them return in 1 week

**Q14:** What is the black box warning when prescribing an SSRI to an adolescent?

a. That the treatment may not work

b. usually takes 2 to 4 weeks to work, and often, symptoms such as sleep, appetite, and concentration problems improve before mood lifts, so it is important to give medication a chance before reaching a conclusion about its effectiveness.

c. People under 25 may experience an increase in suicidal thoughts or behavior when taking antidepressants, especially in the first few weeks after starting or when the dose is changed

d. If discontinued abruptly it can cause withdrawal symptoms

**Q15:** Do you reach out or follow up with patients that miss their appointment or refuse interventions?

a. Yes

b. No
APPENDIX D:

PRE- AND POST-TEST ANSWERS
Q1: Depression is underrecognized and undertreated in adolescents with close to _____ of depressed adolescents not receiving treatment? Answer: c. 75%

Q2: Behaviors and developmental problems that can be missed but are due to depression include? Select all that apply. Answer: A, B, C, and D, sexual behavior, substance use, Acting out at school and Fatigue

Q3: Cardinal features of adolescent depression are? Answer: a. Sadness, irritability and loss of interest or pleasure in activities

Q4: When a child comes in with headache, abdominal pain, musculoskeletal pain, or problems in school or relationships with family do you consider depression as a diagnosis? Answer: a. Yes

Q5: Does a child with a family history or depression or substance abuse increase the likelihood of that child having depression? Answer: A, True

Q6: According to the DSM-5 how many of the key features present over at least a 2-week period are needed for a diagnosis of depression? Answer: c, five

Q7: How many children with depression have a comorbidity? Answer: c, 50%

Q8: Do you offer information packets, self-help groups, religious groups or complementary therapies for those with depression? Answer: a. Yes

Q9: What places an adolescent at risk for depression? Answer: d. All the above

Q10: How often do you offer advice on the benefits of exercise (3x week, 45min-1hour), sleep hygiene, anxiety management, and benefits of a well-balanced diet? Answer: a. Every visit

Q11: Depression screening tools are used for? Answer: b. Raise awareness of patient distress

Q12: Key education components for the patient and family after a diagnosis of depression include all the following except? Answer: d. Assess school problems
Q13: If a child is unresponsive to two interventions such as lifestyle modifications and or CBT what is recommended to do next? Answer: a. Refer them to counseling

Q14: What is the black box warning when prescribing an SSRI to an adolescent? Answer: c. People under 25 may experience an increase in suicidal thoughts or behavior when taking antidepressants, especially in the first few weeks after starting or when the dose is changed

Q15: Do you reach out or follow up with patients that miss their appointment or refuse interventions? Answer: a. Yes
APPENDIX E:

DEMOGRAPHIC QUESTIONNAIRE
Demographic Questionnaire

Please answer the following questions about yourself. PLEASE DO NOT WRITE YOUR NAME ANYWHERE ON THIS FORM.

1. How old are you? Please check appropriate range:
   _____22 – 32 years
   _____32 – 42 years
   _____42 – 52 years
   _____52 – 62 years
   _____62 -72 years
   _____72 and older

2. Gender: Male _______ Female___________

3. Please select your appropriate degree:
   MD _______ PNP _________
   DO________ FNP _________

4. How many years have you been practicing:
   _____ 0 to 5 years
   _____ 6 to 10 years
   _____ 11 to 15 years
   _____ 16 to 20 years
   _____21 years or more
APPENDIX F:

INVITE AND DISCLOSURE EMAIL
Invite and Disclosure Email

*An email will be sent to Dr. Thomas Herr, M.D., a health care provider at RMCH College Clinic. Dr. Thomas Herr will send the email to the remainder of the pediatric primary care providers at RMCH College Clinic in Gallup, New Mexico. The email will be sent with the Primary Disclosure Statement (Appendix B).

Hello,

You are invited to participate in a DNP project with an educational PowerPoint presentation on the topic of Adolescent Depression. There will be a pretest and posttest. The pretest, intervention and posttest will be provided to you the day of the presentation. In total, the project will take about 35 minutes to complete and it is being conducted by Antonia Hernandez, a DNP-PNP student through the University of Arizona College of Nursing. A demographic questionnaire, which will provide information about the characteristics of the participants, will be administered and should take approximately 3 to 4 minutes to complete.

I look forward to hearing from you all.
APPENDIX G:

SITE AUTHORIZATION
RMCH College Clinic
2111 College Drive
Gallup, New Mexico 87301

July 21, 2019

University of Arizona Institutional Review Board
c/o Office of Human Subjects
1616 E Helen St
Tucson, AZ 85721

Please note that Ms. Antonia Hernandez, UA Doctor of Nursing Practice student, has permission of the RMCH College Clinic to conduct a quality improvement project at our facility for her project, “Screening for Depression of Adolescence in a Primary Care Clinic.”

Ms. Hernandez will conduct a survey of health care providers at RMCH College Clinic. She will recruit providers through email. The email will provide a description of the project, what they will be asked to do, the time involved, and will be provided a survey in person on the day of the educational presentation. Ms. Hernandez’s activities will be completed by November 20, 2019.

Ms. Hernandez has agreed to provide to my office a copy of the University of Arizona Determination before she recruits participants. She will also will present aggregate results to the providers at their monthly staff meeting.

If there are any questions, please contact my office.

Signed, [Signature]
RMCH Head of Pediatrics [Signature]
APPENDIX H:

PRIMARY DISCLOSURE STATEMENT
Primary Disclosure Statement

Adolescent Education for Providers in a Pediatric Primary Care Setting

This educational presentation and pre/post-test are a part of a DNP project to assess the pediatric primary care provider’s knowledge on Adolescent Depression and Screening guidelines from the National Institute of Health Care Excellence. The educational presentation and pre/post-test will be completed within 35 minutes. A demographic questionnaire, which will provide information about the characteristics of the participants, should take approximately 3 to 4 minutes to complete. There are no foreseen risks with participating in this project. Participation for the pre/post-test is voluntary and will remain anonymous. If you chose to participate, you may discontinue participation at any time.

If you choose to participate in the project, participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw at any time from the project. In addition, you may skip any question that you choose not to answer. By participating, you do not give up any personal legal rights you may have as a participant in this project.

For questions, concerns, or complaints about the project, you may contact at 505-862-2424 or email at antoniah@email.arizona.edu
APPENDIX I:

THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD APPROVAL LETTER
Date: August 30, 2019
Principal Investigator: Antonia Marie Hernandez
Protocol Number: 1908925339
Protocol Title: Screening for Depression in Adolescence in a Primary Care Clinic
Determination: Human Subjects Review not Required

Documents Reviewed Concurrently:
- HSPP Forms/Correspondence: Hernandez; determination; v2019-8-23.pdf
- Other Approvals and Authorizations: DNP Site Authorization_Horr.pdf

Regulatory Determinations/Comments:
- Not Human Subjects Research as defined by 45 CFR 46.102(e): as presented, the activities described above do not meet the definition of research involving human subjects as cited in the regulations issued by the U.S. Department of Health and Human Services which state that "Human subject means a living individual about whom an investigator (whether professional or student) conducting research: (i) Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or (ii) Obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens."

The project listed above does not require oversight by the University of Arizona.

If the nature of the project changes, submit a new determination form to the Human Subjects Protection Program (HSPP) for reassessment. Changes include addition of research with children, specimen collection, participant observation, prospective collection of data when the study was previously retrospective in nature, and broadening the scope or nature of the study activity. Please contact the HSPP to consult on whether the proposed changes need further review.

The University of Arizona maintains a Federalwide Assurance with the Office for Human Research Protections (FWA #00004218).
REFERENCES


