

Adolescent Suicide Risk Screening in the Pediatric Primary Care Setting

Carli Paperi

University of Missouri-Kansas City, School of Nursing and Health Studies

N5629 Clinical Institute III

August 2, 2022

In Partial Fulfillment of the Doctor of Nursing Practice

Project Faculty Mentor, Dr. Cheri Barber, DNP

Table of Contents

Abstract	3
Significance	4
Local Issue	5
Diversity Consideration	5
Problem, Purpose	5
Facilitators, Barriers	6
Inquiry	7
Review of Evidence	7
Search	7
Themes	8
Theory	17
Methods	19
IRB	19
Setting, Participants	20
EBP Intervention	20
Change Process	22
EBP Model	23
Design	23
Validity	23
Outcomes	23
Measurement Tools	24
Quality of Data	24
Analysis	25
Conclusions	25
References	35
Appendices	
Cost Table for Project.....	42
Definition of Terms	43
PRIMSA	44
Synthesis of Evidence	45
Evidence Grid	60
Theory Application	62
Logic Model	63
Project Timeline	64
Intervention Flow.....	65
Intervention Tools	66
Faculty DNP Project Proposal Letter.....	68
IRB Approval Letter.....	69
Data Collection Template	70
Statistical Analysis Template	71

Abstract

Adolescent suicide is a major health concern in the United States, with numbers continuing to rise each year. The literature suggests that there may be a lack of screening, detection, and recognition of adolescent suicide risk factors in the primary care setting. Primary care providers have an important responsibility to proactively screen for suicidality in their adolescent patients given that they see most of their patients at least once a year. This evidence-based quality improvement project aimed to address adolescent suicide risk screening in the primary care setting through the implementation of a validated, evidence-based screening tool called the Ask Suicide-Screening Questions questionnaire. The targeted population for this project was adolescents age 11-21 years old seeking care in a rural primary care clinic. The targeted outcomes included increasing the number of adolescents being screened specifically for suicidal ideation at well child checks and episodic visits in addition to improving the number of referrals and follow-up appointments made to mental health professionals. The outcomes were measured through the implementation of the Ask Suicide-Screening Questions questionnaire and post-implementation surveying. Statistical analysis was completed following data collection through Jamovi. Chi-squared analysis comparing pre-implementation data to post-implementation data revealed that the use of a suicide risk screening tool successfully increased the number of adolescents being screened for suicide risk. This project highlights the importance of early detection and recognition of adolescent suicide risk in order to improve follow-up and referral rates.

Keywords: adolescent suicide, prevention, suicide risk screening, primary care

Adolescent Suicide Risk Screening in the Pediatric Primary Care Setting

Suicide has been a leading cause of death for adolescents ages 15-19 years old for the past five years, second only to unintentional injuries from accidents (CDC, 2021). It is estimated that the majority of adolescents who die by suicide have had direct contact with a medical professional within the previous three months of killing themselves (Horowitz, 2020).

Furthermore, it is estimated around 38 percent of those adolescents had contact with a health care professional within the previous four weeks (Horowitz, 2020). The primary care provider is in an exceptionally important position to accurately screen for suicidal ideation during contacts made at well child and episodic appointments (Wolters Kluwer Health, 2015). While many pediatric emergency rooms and primary care practices have started screening for mental health concerns, there is not a standardized practice for suicide risk screening, leaving many adolescents struggling with suicidal ideation without the proper screening needed for detection (Milliman et al., 2021). Isolation related to the COVID-19 pandemic, increased use of social media and other online forms of communication that may yield cyberbullying, and elevated stressors within American family households all perpetuate an elevated level of concern towards adolescent mental health (Fegert et al., 2020; Milliman et al., 2021; Neves et al., 2014). It is imperative that pediatric primary care providers accurately screen adolescents for concerns of suicide risk at each office visit.

Significance

Data suggests that over 3,703 adolescents in grades 9-12 attempt to commit suicide daily (The Parent Resource Program, 2021). It is noted that this number would be greater if 7th and 8th-grade students were included in the data (The Parent Resource Program, 2021). Research shows

that adolescent self-harm accounts for over 157,000 emergency room visits each year (CDC, 2017).

Local Issue

In the state of Kansas, the suicide rate is higher than the national average for female and male adolescents (America's Health Rankings, 2021). The suicide rate for females ages 15-19 years old in the state of Kansas is 11.4 deaths per 100,000 adolescent females (America's Health Rankings, 2021). The national average for this age group is 5.2 deaths per 100,000 adolescent females (America's Health Rankings, 2021). Furthermore, the suicide rate for males ages 15-19 in the state of Kansas is 23.8 deaths per 100,000 adolescent males, while the national average is 16.7 deaths per 100,000 adolescent males (America's Health Rankings, 2021). Based on the statistical evidence, there is a clear need for earlier recognition and better screening for suicide risk in adolescents ages 11 to 21 years old. This is especially true in Kansas where rates of suicide continue to be well above the national average.

Problem & Purpose

Problem

The literature supports that there is a lack of consistent, effective screening for mental health concerns and suicide risk in adolescent patients in the primary care setting (Etter et al., 2018; Milliman et al., 2021; Missouri Department of Health and Senior Services, 2011; Wolters Kluwer Health, 2015). While pediatric suicide screening is becoming more prevalent, it is not yet a universal practice nationwide (Ballard et al., 2017). Evidence suggests that this is an issue that needs to be addressed at each patient encounter in the primary care setting (Milliman et al., 2021).

Purpose

The purpose of this project was to implement an evidence-based, validated screening tool into practice to improve provider screening of adolescent suicide risk factors within the primary care setting. The screening tool implemented was the Ask Suicide-Screening Questions (ASQ) Questionnaire. The goal of this project was to improve the number of adolescents being accurately screened for suicide risk in addition to improving the number of referrals and follow-up appointments being scheduled for adolescents who had a positive screen.

Facilitators, Barriers, & Sustainability

There were several facilitators related to this project. Many primary care providers have the ability to develop relationships with their patients which can facilitate an environment in which adolescents feel comfortable disclosing concerns of suicidal ideation (Bridge & Ackerman, 2018). Additionally, a study completed by Wintersteen (2010) found that the detection of suicidal indicators in patients increased fourfold when an evidence-based tool was utilized for screening. This highlights an important consideration regarding the potential benefit of suicide risk screening tools in the primary care setting. Furthermore, adolescent suicide risk screening can be completed quickly, limiting the disruption to workflow in the primary care clinic which could also be seen as a major facilitator to the project (Bridge & Ackerman, 2018). Lastly, the financial component of this project was considered a facilitator due to the projected low cost of the project. No grant funding was needed due to the low projected cost.

There were several hypothesized barriers and actual barriers for this project. For example, potential parental attitudes was seen as a predicted barrier. There are many different beliefs regarding adolescent suicide screening. Some parents may be concerned that asking specific questions about suicide could “plant the seed” of suicidal ideation (Lanzillo et al., 2019).

Another predicted barrier to the project was the adolescent's willingness to accurately answer the questions out of fear of what his or her parent may think. This project involved the use of children, which can be a complicated process. Therefore, gaining IRB approval and appropriate clearance was an imperative part of this process and was seen as a potential barrier. During the project implementation, the most significant barrier was the nursing's ability to actually administer the tool to every patient who met the criteria for implementation.

The project's sustainability is significant given how easily the screening tool fits into the normal workflow of a clinic. It takes less than a minute to administer, it can be administered during the rooming process, and it allows time for the provider to review the score before entering the patient's room. Additionally, the low projected cost is a major sustainability factor.

Review of the Evidence

Inquiry

For adolescents, 11-21 years old seen during primary care visits (P), will the addition of a validated suicide risk screening tool (I), compared with a typical office visit utilizing no suicide risk screening tools (C), increase the number of adolescents being accurately screened for suicide risk and subsequent intervention and referral (O) over 4 months (T) at a primary care clinic (S)?

Literature Search Strategies

The literature search for the inquiry was conducted through the University of Missouri-Kansas City's health sciences online library research search tool. Databases included CINAHL, Science Direct, Ebsco Host, Complementary Index, Wiley Online Library, APA, Springer Link, PsycArticles, and Academic Search Complete. The search included keywords utilized alone and in various combinations of adolescent suicide, suicide screening, primary care, COVID-19 impacts, ASQ screening, and suicide prevention.

There were 30 studies chosen for synthesis. Studies included met the following requirements: pediatric-focused, focus on adolescent suicide prevention, and study date of 2001 and later. Exclusion criteria included adult studies, study date of earlier than 2001, and focus outside of suicide risk screening. The levels of evidence range from Level I to Level VII. Appendix B outlines the types of studies utilized for review. Of note, there were two levels I evidence studies: one systematic review and one classification tree analysis. There were multiple quantitative single studies, literature reviews, retrospective chart reviews, and randomized control trials. There were several cross-sectional studies, as well.

Evidence by Themes

Five themes were noted throughout the literature surrounding adolescent suicide risk screening and prevention within the primary care setting. These themes included method of screening, prevention as intervention, education, referral/follow-up appointments, and COVID-19 implications. Method of screening involved the discussion upon which suicide screening tool was implemented and whether or not it was effective for detecting suicidality. Prevention as intervention focused on the use of preventative measures as a means to combat adolescent suicide in the primary care setting. Education entailed teaching suicide, suicide risk screening and best practice for the primary care provider and healthcare staff. Referrals and follow-up included a standardized process of intervention and referral with positive suicide screenings to improve patient outcomes. Lastly, COVID-19 implications noted the special considerations for adolescent suicide screening during the COVID-19 pandemic where the less face-to-face time between providers and adolescents could affect patient outcomes.

Method of Screening.

There were several different screening tools utilized for adolescent suicide risk screening that were discovered throughout the literature. These tools ranged from two-question questionnaires given before the primary care appointment began to lengthier computerized questionnaires provided before or during the appointment (Etter et al., 2018; King et al., 2017). Many studies sought to examine the effectiveness of utilizing depression screening tools already being used in practice to also detect suicidal ideation in adolescent patients (Bhatta et al., 2018; Bittle et al., 2010; Davis et al., 2020; Joiner et al 2001; King et al., 2017; Lanzillo et al., 2017). The Patient Health Questionnaire (PHQ) is an excellent depression screening tool often used in clinical practice (Bhatta et al., 2018). Bhatta et al. (2018), King et al. (2017), Lanzillo et al. (2017) and Davis et al. (2020) all studied the effectiveness of the PHQ specifically for suicidal ideation screening. While the tool did show effectiveness for detecting mental health concerns, the evidence supports that validated suicide risk screening tools, such as the Ask Suicide-Screening Questions (ASQ), may be more effective for suicide screening (Davis et al., 2020; Milliman et al., 2021). Lanzillo et al. (2017) and Milliman et al. (2021) demonstrate that relying on depression screening tools alone is not sufficient for detecting suicidality in all cases because not all depressed youth also have suicidal ideation, and an evidence-based suicide risk screening tool is more effective.

Hill et al. (2017) utilized a classification tree analysis (CTA) to provide primary care providers a model to improve adolescent suicide screening. 4,799 subjects, with a mean age of 16.15 years, were chosen to complete waves one and two of the National Longitudinal Study of Adolescent to Adult Health (Hill et al., 2017). CTA helped to develop a set of standards that should be utilized in order to identify adolescents at risk for reporting feelings of suicide in wave

two. This study supported three solutions for identifying adolescent risk and supports the need for improved adolescent screening in the primary care setting (Hill et al., 2017).

Aguinaldo et al. (2021) looked specifically at the use of the ASQ screening tool for use in outpatient specialty and primary care clinics, finding excellent results for the validity of the tool. For example, the ASQ was found to have 100% sensitivity in the outpatient specialty and primary care clinics utilized for the study (Aguinaldo et al., 2021). The ASQ showed 91.2% specificity in outpatient specialty care clinics and 87.9% specificity in primary care clinics (Aguinaldo et al., 2021). This tool has also produced excellent results in pediatric urgent care and emergency room settings (Ballard et al., 2017; Horowitz et al., 2012; Lanzillo 2019).

Prevention as Intervention.

Prevention as intervention is a critical theme in the study of adolescent suicide screening, given the gravity of suicidal ideation and the potential outcomes. Bilsen (2018) and Boden et al. (2021) noted that developing effective preventative measures through integrative primary, secondary, and tertiary preventive initiatives is the key to reducing the rising rates of suicide. Bilsen (2018) discussed that suicide attempts occur 10-20 times more often than a suicide death and that flagging risk factors early is crucial for patient outcomes. Ballard et al. (2017) supported that a past history of attempted suicide may actually be the best indicator of predicting suicide within the next year, demonstrating the importance of prevention through effective screening. Further, Ferrin (2019) noted that in 12 percent of adolescents who struggle with suicidal ideation, about 33 percent will attempt suicide within the next year. This also demonstrated the importance of prevention through effective screening. Fegert et al. (2021) discussed that improving access to healthcare is an especially important part of prevention, especially during the COVID-19 pandemic. Suicide screening through telemedicine

appointments was highly recommended so that adolescents did not slip through the cracks during this time of limited access to healthcare (Carney, 2021; Szlyk et al., 2020).

Education.

Universal suicide screening in adolescent primary care is not currently standard practice, despite recommendations from the American Academy of Pediatrics (AAP) (Ballard et al., 2017). The literature supported the need for proper education for healthcare providers, nurses, and parents regarding adolescent suicide screening (LeCloux, 2018; Millman et al., 2021; Patel et al., 2018; Sheftall et al., 2016; Sisler et al., 2020). LeCloux (2018) noted that in a study of 16 primary care providers completing an online training program for suicide screening in rural communities, only 56 percent felt that universal screening seemed appropriate, but that 73 percent felt that it was applicable to their practice. The literature supports that education regarding suicide risk factors and treating all suicidal thoughts seriously needs to be discussed with providers and families (Neves et al., 2014; Sisler et al., 2020; Sheftall et al., 2016).

A common misconception regarding suicide is that asking about suicide directly can increase the risk of attempted suicide. The literature showed that many parents fear that speaking about suicide could increase the risk (Lanzillo et al., 2019). Sisler et al. (2020) and Milliman et al. (2021) stressed the importance of teaching families and health care providers that screening for adolescent suicide does not increase the risk to the adolescent but is rather a crucial tool in detecting the risk. Additionally, Patel et al. (2018) supported that in almost 90 percent of suicide attempts, the parents were completely unaware of their child's suicidal ideation, demonstrating a lack of knowledge in discussing these difficult conversations as a family and knowing the risk factors associated with suicidal ideation.

Patel et al. (2018) and Sheftall et al. (2016) discussed that many adolescents may present to the primary care provider with somatic complaints. Suicide screening tools are associated with a fourfold increase in discovering risk for adolescent patients, demonstrating the importance of, especially when the chief complaint is not specifically related to mental health concerns (Sheftall et al., 2016). Of note, Patterson et al. (2016) supported that screening tools alone may not be enough to screen for adolescent suicide if the staff is not well educated on the tool being used. Diamond et al. (2011) noted that primary care providers who were properly educated on suicide risk assessments were five times more likely to consistently screen their patients, regardless of chief complaint. Lanzillo (2019) discussed the importance of educating providers about the screening of pre-teens and adolescents despite the common belief that pre-teens don't necessarily need to be routinely screened. Lanzillo et al. (2019) demonstrated that 29.1% of 10-12-year-olds screened positive for suicidal ideation, noting the importance of early suicide screening in the primary care setting.

Sisler et al. (2020) discussed very important education items between providers and families, most notably safety planning and prevention. Safety planning includes a contract that the adolescent signs including outlining the warning signs of worsening suicidal ideation, coping strategies to utilize during a crisis, important phone numbers of trusted adults, and professional numbers to call in an emergency (Sisler et al., 2020). Family education about removing medications and lethal weapons from the home, assigning roles to each family member for emergency scenarios, and having immediate access to emergency numbers to use in crisis were all part of the safety plan (Sisler et al., 2020).

Referral and Follow-up

Proper referral and follow-up care are extremely important for patient outcomes (Bhatta et al., 2018; Etter et al., 2018; Hacker et al., 2014; Sisler et al., 2020). Coordination of care between primary care providers and mental health professionals is crucial in the appropriate management of patients suffering from suicidal ideation's needs (Sisler et al., 2020). Evidence suggested that the separation of behavioral and medical health needs in the primary care setting results in under-detection of mental health conditions (Richardson et al., 2018). Twenty-one existing research articles were analyzed in this systematic review to examine behavioral health in primary care settings and to discover further needs of research related to the phenomenon (Richardson et al., 2018). Results show a significant lack of high-quality research regarding integrated behavioral health in the primary care setting for 13-25 aged people in addition to a need for additional research related to developmental stage and mental health intervention (Richardson et al., 2018). There is a need for collaborative care between primary care and mental health experts, including seamless referral and follow-up care.

Furthermore, Etter et al. (2018) studied the relationship between computerized suicide screening tools and follow-up assessments. In this study, 83 percent of the positive suicide screenings attended the follow-up appointment (Etter et al., 2018). Interestingly, 93 percent of the patients at the follow-up appointments no longer endorsed suicidal feelings at that time (Etter et al., 2018).

Hacker et al. (2014) studied the outcomes of positive mental health screening implementation in-clinic visits. This retrospective chart review was completed on 117 adolescents who scored positive on a Youth-Pediatric Symptom Checklist (Y-PSC) during clinic appointments (Hacker et al., 2014). About seven percent of the total number of subjects (2,778 subjects) tested positive, but 80 subjects were excluded from the study due to underlying current

mental health treatment (Hacker et al., 2014). This study supports that people were much more likely to obtain the help of a mental health professional when testing positive on the Y-PSC, with 54 percent of positive subjects being referred and 67 percent of subjects accepting the referral suggestion (Hacker et al., 2014). Hacker et al. (2014) stressed the importance of proper coordination of care. Of note, 75 percent of the positive screens had never been diagnosed with any type of mental health disorder, and 39 percent were diagnosed at the time of screening (Hacker et al., 2018).

Sisler et al. (2020) discussed the importance of safety planning, referral, and inpatient needs. These needs are often accomplished with the help of a whole multidisciplinary team, including the primary care provider, nursing, social work, school counselor, and mental health professionals (Sisler et al., 2020). Sisler et al. (2020) support that following an acute increase in suicidal risk, the primary care provider should follow up with a clinic visit. This was important due to the inherently increased risk of suicide following acute events (Sisler et al., 2020). Ferrin (2019) supported this idea, stressing that youth with previous suicidal ideation should warrant close surveillance at subsequent primary care appointments.

COVID-19 Implications.

The COVID-19 pandemic complicated adolescent mental health, striking a major concern amongst healthcare professionals. Fegert et al. (2019), Boden et al. (2021), and Szlyk et al. (2020) discussed the increased suicidal risk factors due to the COVID-19 pandemic including, increased isolation, domestic abuse, child abuse, financial strain, increased risk of online and sexual exploitation, and increased anxiety related to death and dying. Major health disparities were noted because some families do not have access to telehealth options, limiting their ability to get a proper well-child and episodic health care needs during the pandemic (Fegert et al.,

2019; Szlyk 2020). Furthermore, Fegert et al. noted that self-harm behavior is increased during times of recession. Szlyk (2020) addressed the fact that while many adolescents may prefer mental health appointments via telehealth, coverage may vary, limiting access. Carney (2021) noted that while COVID-19 has changed the way that healthcare is accessed, it doesn't change the fact that adolescents need to be screened for suicidal ideation. Carney (2021) stressed the importance of parental conversations with primary care providers about any behavior or mood changes noticed in the home. Carney (2021) also discussed protecting the privacy of adolescent patients, noting that information divulging occurs best when this is accomplished.

Evidence Discussion

Direct Evidence.

The direct evidence provided in the synthesis of evidence came from a variety of levels of evidence. While a few level I studies were utilized, the majority of the data came from retrospective chart reviews, qualitative and quantitative single studies, and literature reviews. More evidence from systematic reviews and level I evidence studies would have been beneficial to the PICOTS inquiry.

Limitations and Gaps in the Evidence.

There were several limitations and gaps within the literature. For example, Etter et al. (2018) noted the inability to see the patient outcomes once referred to mental health professionals from the primary care setting. Additionally, a limitation in this study was the inability of the researchers to know whether the guardian or subject completed the pre-visit screener which would influence issues such as subject compliance, the subject's desire to seek help, the attitude of the subject to be forthcoming with information, and the likelihood of the subject to adhere to follow-up appointments or referrals (Etter et al., 2018). These factors may

have contributed to bias, which weakens the study. Furthermore, Hacker et al. (2017) noted that some primary care offices are only able to make referrals to mental health practices within the network. Limitations of this study included the small sample size and the fact that referrals were only possible if they were within the same provider network (Hacker et al., 2014). As mentioned previously, more evidence from systematic reviews and other Level I evidence studies would be beneficial to the research inquiry.

Summary of Evidence.

The literature showed that there is not only a lack of effective suicide screening in the primary care setting but that there are tools available that have the ability to quickly and accurately assess for suicidality in adolescent patients that need to be utilized. With an accurate assessment of suicidal indicators, appropriate intervention and referral can be made. While most studies examined do not recommend the use of depression screening tools for the detection of suicidal risk in pediatrics, evidence-based suicide risk screening tools were highly praised in the literature. For example, the ASQ was mentioned in several studies with strong support and validity to recommend use in pediatric primary care settings, pediatric urgent care, pediatric specialty care clinics, and pediatric emergency rooms (Aguinaldo et al., 2021; Horowitz et al., 2012; Ballard et al., 2017; Lanzillo 2019).

The literature also supported the need for prevention as an intervention due to the nature of suicide and the possibility of grave outcomes. Detecting at-risk youth early is important since 33 percent of youth struggling with suicidal ideation will go on to attempt suicide within the following year (Ferrin, 2019). Prevention through accurate screening in the primary care setting is critical.

Education for the health care provider, support staff, and families is another crucial theme throughout the literature. Diamond et al. (2011) noted that primary care providers who were properly educated on suicide risk assessments were five times more likely to consistently screen their patients, regardless of chief complaint, demonstrating the importance of properly educating providers about the tools that they are administering to their patients. Providing families with the proper tools at home is critical, especially following an acute suicidal episode (Sisler et al., 2020).

The literature showed that there is a need for improvement in coordination of care between primary care providers and mental health professionals (Etter et al., 2018; Hacker et al., 2014; Richardson et al., 2017). Sisler et al. (2020) made a case for close primary care surveillance following acute episodes. Proper referral and follow-up care will be an important study theme moving forward.

The COVID-19 pandemic has made a ripple in adolescent suicide detection and management. Major health disparities were noted throughout the literature due to the lack of telehealth options and families having limited ability to get proper well-child and episodic health care needs during the pandemic (Fegert et al., 2019; Szlyk 2020). Emphasis on recognizing suicidal warning signs at home and via telehealth was noted throughout the literature (Carney, 2021).

Theory

The theory chosen for this project is the interpersonal-psychological theory of suicide (IPTS). IPTS was developed by Thomas Joiner (Joiner, 2009). This theory discusses the mental framework that an individual seriously considering ending one's own life might possess. Joiner (2009) argued that fatal suicide stems from a triad of an individual living in a state of perceived

burdensomeness, demonstrating a low sense of belongingness, and developing the rare ability to lethally harm oneself (Joiner, 2009). This theory is important in the context of adolescent suicide prevention because it attempts to provide important precursor information about an individual who is seriously considering suicide. Joiner (2009) specifically noted that perceived burdensomeness is a strong predictor of suicide ideation and attempt and that the feeling of social alienation is a major factor in adolescent suicide. This theory correlates very closely with Fegert et al. (2019), Boden et al. (2021), and Szlyk (2020), where social alienation related to COVID-19 is a major focal point of study and discussion.

This theory was a strong foundation for developing a strategy for proactive screening of suicidal warning signs in the primary care setting. The concepts of prevention as intervention, culture, and knowledge are embedded within this theory. If providers have the knowledge base to recognize the dangerous mental framework that an adolescent struggling with thoughts of suicide possesses, essential preventative care can be provided. King, Arango, and Foster (2019) noted that suicide prevention strategies are on a societal, community, relationship, and individual level. Cultural factors may play into the mental framework of adolescent suicide ideation. Furthermore, being educated on the three major factors that contribute to adolescent suicidality is essential for healthcare providers caring for adolescents in the primary care setting. These relate to the studies of Neves et al. (2014), Sisler et al. (2020), and Sheftall et al. (2016), where proper education of the provider is a focal point of research.

Methods

IRB Approval, Site Approval, Ethical Issues, Funding

IRB Approval & Site Approval.

This project was approved by the UMKC IRB. Site approval was obtained through a rural pediatric primary care practice.

Ethical Issues.

This project included the use of adolescents for study. Therefore, special considerations were taken into consideration regarding the age and potential vulnerability of the subjects. Each participant and parent or legal guardian were educated on the goals of the study and was allowed to make the decision of whether to participate. The participant was educated on the ability to withdraw from participation at any time and was not coerced into participating.

This project included adolescents from varying socioeconomic backgrounds, ethnicities, and cultures for study. A variety of underserved adolescents were assessed due to the geographical location of the clinical sites being chosen for consideration. Adolescent suicide affects adolescents from all walks of life, and therefore the study of evidence-based suicide risk screening tools included all adolescents 11 years of age and older regardless of gender, age, socioeconomic background, ethnicity, and culture.

Funding.

The total projected cost for this project was \$31,000. The itemized outline of the projected costs can be found in Appendix A. Cost was viewed as a facilitator to this project.

Setting & Participants

The clinical site for project implementation was located at a rural pediatric primary care office. This clinic accepts patients from birth to 21 years of age. This practice does not currently

utilize a validated suicide risk screening tool. The ASQ questionnaire was administered to patients 11 years of age and older. The goal was to implement the use of the ASQ for all well-child and episodic patient encounters, as long as they haven't already been screened in the past month.

Sampling Method.

The sampling method utilized in this project was convenience sampling. This type of sampling was chosen given the age of the target population and ethical considerations regarding adolescent research participants. The participants were selected out of a pool of adolescent patients attending the clinic who met the criteria for inclusion and wished to participate in the study.

Inclusion and Exclusion Criteria.

Inclusion criteria for this project included adolescent patients aged 11-21 years old who were cognitively able to complete a survey, who were present for a well or sick child appointment, and who had not been previously screened within the past month. Exclusion criteria included patients outside the listed age range, patients who had already been screened within the past month, and patients cognitively unable to accurately answer the screening questions. The goal was to achieve at least 50 participants for the study.

EBP Intervention

The literature supported that there is a lack of consistent, effective screening for mental health concerns and suicidality in adolescent patients in the primary care setting (Etter et al., 2018; Missouri Department of Health and Senior Services, 2011; Milliman et al., 2021; Wolters Kluwer Health, 2015). While pediatric suicide screening is becoming more prevalent, it is not yet universal across the nation (Ballard et al., 2017). Evidence suggested that this is an issue that

needs to be addressed at each patient encounter in the primary care setting (Milliman et al., 2021). By implementing an evidence-based tool for screening, the goal was to improve the rate and efficacy of adolescent suicide risk screening in the primary care setting. The evidence-based practice intervention for this project included the administration of the ASQ screening tool for all participants who qualified and agreed to participate in the study. This validated screening tool has been studied thoroughly throughout the literature and was selected due to its sensitivity and specificity rates (Aguinaldo et al., 2021; Ballard et al., 2017; Horowitz et al., 2012; Lanzillo 2019).

Intervention.

After the IRB and site location approval was obtained, the pediatric practice's healthcare team was properly educated on the use of the ASQ screening tool, goals of the project, and a brief timeline of the project. This education was performed through a staff meeting at the site location, utilizing copies of the ASQ screening tool.

Data collection began in March, 2022 and lasted until June, 2022. Adolescent patients who met the criteria for inclusion were asked to participate in the study. When the medical assistant brought the patient back to their room and obtained a brief history and vital signs, the form was given to the patient to privately answer. The screens were purposefully administered before the provider entered the room so that notification of positive screens could occur. If there was a positive screen, the provider would address the need for referral to an emergency room, referral to a mental health care professional, or a scheduled follow-up appointment specifically in the clinic. A brief survey was completed following this evaluation marking if the patient was referred to another provider, if a follow-up appointment was made, or neither.

Change Process, EBP Model

The evidence-based practice model that was utilized in this project was the PDSA model. This model consists of a four-part cycle: plan, do, study, act (Institute for Healthcare Improvement, 2021). In this model, clinical intervention is created to improve patient outcomes and implemented into practice following a cyclical path (Institute for Healthcare Improvement, 2021). For the purposes of this project, the clinical intervention mentioned was the administration of the ASQ screening tool. Planning of the proposed project led to the implementation of the project in the clinical setting which was the intended goal of the project (Institute for Healthcare Improvement, 2021). The process included studying the effects of the implementation of the ASQ screening tool and led to the action of whether the intervention was needed (Institute for Healthcare Improvement, 2021). This intervention included circling back for another PDSA cycle. The PDSA model was chosen due to the ability to adjust the implemented project as needed throughout the process in order to produce the best results.

The sustainability of the project following completion was a very important factor to consider. Any quality improvement project or evidence-based practice project needs to implement a change with the intention of being able to utilize the practice changes following the completion of the project. Given the feasibility and validity of the ASQ screening tool implemented, there is reason to believe that this tool can be effectively utilized following the completion of the project (Aguinaldo et al., 2021; Horowitz et al., 2012; Ballard et al., 2017; Lanzillo 2019). Based upon provider and medical team staff feedback, the tool was easy to administer, and did not impede the natural workflow of the clinic. Sustainability was favored following the completion of the project.

Project Design

A quasi-experimental design was utilized for this study. This type of study design was preferred because it specifically addressed quality improvement for the sake of improving patient outcomes (Toulany et al., 2013). The fact that this design does not require randomization, or a control group was also a benefit that positively impacted this project (Toulany et al., 2013). Due to ethical concerns, it would not be right to have a control group and an experimental group for implementing an adolescent suicide screening tool. Therefore, a quasi-experimental design was ideal.

Validity

The study design was the most important part of protecting the internal and external validity of this project. A major goal of this project was to protect the external validity because implementing an evidence-based suicide screening tool for adolescents needs to be transferable to different settings and ages. Therefore, having a large sample size with participants from different socioeconomic and racial backgrounds was crucial to the validity of this project. Since this study did not have a control group, internal validity could have been threatened. However, as previously mentioned, a control group would not be ethical given the gravity of adolescent suicide screening. Additionally, convenience sampling was utilized for this study which also could have posed a threat to the internal validity.

Outcomes

This evidence-based project aimed to implement several interventions in order to obtain specific outcomes. The primary outcome of this project was to increase the number of adolescents being screened specifically for suicide risk. The secondary outcome is to improve the

referral and follow-up rates for those adolescents who have a positive suicide risk screen. These outcomes are measurable and fit within the timeframe of the project.

Measurement Instruments

The first tool of measurement utilized in the project was the ASQ screening tool, which was used to measure suicide risk in the adolescent participants. The ASQ screening tool has been shown throughout the literature to be a validated tool and can be found in Appendix J (LeCloux et al., 2020). It has been tested in different healthcare settings with different patient populations with much success and reliability (LeCloux et al., 2020). As mentioned in the intervention section above, this tool was distributed from the nursing staff as the patients were roomed. This is a free tool developed by the National Institute of Mental Health and is available for use through their website (NIMH, 2021). The second tool of measurement was the post-survey that was completed by the provider stating whether the patient was referred or scheduled for a follow-up appointment. This measured the secondary outcome of improving referral and follow-up rates and can be found in Appendix K.

Quality of Data

Baseline data was obtained in order to draw a comparison from the intervention proposed. This project intended to have a sample size of at least 50 participants in order to provide appropriate quality of data. The data was collected over a four-month period. In a benchmark study, Ballard et al. (2017), the authors specifically addressed the implementation of the ASQ screening tool through the use of a retrospective chart review that was completed over several years. Due to the time constraints of this project, baseline data from four months leading up to intervention was utilized to draw comparisons.

Results

Setting & Participants

The study was implemented at a rural pediatric primary care practice. Data collection began in March of 2022 and concluded in June of 2022. Overall, there were 59 participants included in the study. Participants of the study ranged from 11 to 17 years of age. The reported genders of the participants included males and females. There were no reported transgender or non-binary participants. The reported races of the participants included White, Bi-racial, and Asian. 27 of the participants were female and 32 of the participants were male. 52 of the study participants were White, one participant was Bi-Racial, four participants were Asian, and one participant's race was unknown.

Intervention Course, Actual

Project intervention began in March of 2022, and data collection occurred over a four-month period, as previously discussed. Data collection was slow to start, with the majority of the screenings occurring between May and June, the last month of data collection. There were a possible 103 adolescents who could have been eligible for inclusion in the study, but only 59 were ultimately screened. 31 of the 59 participants were screened within the last month of data collection. Moreover, 31 of the 45 missed opportunities to screen were in the first three months of data collection.

In order for statistical analysis to occur, pre-implementation data for the four months leading up to the intervention was also needed. A retrospective chart review yielded 94 potential adolescents who would have met the criteria for suicide risk screening. Of these adolescents, there were 58 males and 36 females. 86 of these adolescents were reported as being White, four as Hispanic, three as African American, and one as Bi-Racial.

Outcome Data by Sub-Topic

The first outcome the study aimed to address was increasing the number of adolescents being screened for suicide risk. This outcome was measured using a chi-squared test where retrospective data was compared with post-implementation data. The retrospective data showed that none of the 94 adolescents in the retrospective cohort were specifically screened for suicide risk. While they were all given the PHQ-2 screen, none were specifically asked about suicide risk. In comparison, 59 of the possible 103 patients in the post implementation grouping were successfully screened for adolescent suicide risk via the ASQ screening tool. A chi-squared test resulted in a p-value of $<.001$, yielding a statistically significant result of the project implementation of the ASQ screening tool. The results of this can be found in Appendix N.

The second outcome that the project aimed to accomplish was to improve referral and follow-up care for patients who had a positive screen. Data for this portion was collected through the use of post-screening implementation surveying. There were three positive suicide risk screens during data collection. All three patients had previously tried to harm themselves. One of the participants was ultimately deemed safe for follow-up care with the provider in the clinic after a deeper mental health evaluation. Two participants were referred on to their already established mental health providers. Therefore, three out of the three positive screens had appropriate action was taken regarding follow-up care, and a 100 percent compliance with planning intervention. Of the three positive screens that were obtained during data collection, none of the participants had acute thoughts of harming or killing themselves at the time of the screen. Therefore, there was no need to ever refer the patient to the emergency room. Data analysis regarding this outcome can be found in Appendix N.

Missing data would include the missed opportunities for screening. As previously mentioned, 45 adolescents who would have fit the criteria for screening were not screened. This means 43.6 percent of possible participants were left unscreened which could have ultimately yielded another four to 5 percent positive screens if the results were to reflect a similar rate.

Successes, Most Important

There were several important successes that should be discussed regarding the project's outcomes. First, 59 participants who would have not have otherwise been screened for suicide risk were successfully screened through the implementation of this project. Five percent of these patients ended up having a positive screen, which may not have been caught had the implemented tool not been utilized into practice.

Furthermore, all three positive screens led to a more thorough mental health examination where the provider was able to further assess whether further action must be taken. Fortunately for the participants, there were no acutely positive screens leading to an emergency referral. However, there were plans in place to handle that type of scenario if it had come into play during the patient encounter.

Study Strengths

There were several strengths that allowed for a productive project to be implemented. For example, there was significant buy in from the setting's provider and medical staff regarding the desire to have a validated suicide risk screening tool implemented into the practice. With mental health cases rising and limited resources in the community, being able to quickly and accurately screen for suicide risk was a major motivator for the practice. With strong organizational leaders having stakes in project, it allowed for implementation to occur quickly and easily once the approval process was completed.

The implementation of the ASQ screening into practice was successful, and improved as the data collection continued. While there were missed opportunities to screen and clear room for improvement, the results still yielded statistically significant results regarding the implementation of the tool and the ultimate effect that it had on adolescent suicide risk screening. As the data collection process continued, the percentage of adolescents being screened for suicide risk continued to improve, as evidenced by 52.5 percent of the total number of adolescents being screened occurred during the last month of data collection.

Results Compared to Evidence in the Literature

Aguinaldo et al. (2021) studied the validity of the ASQ screening tool in pediatric outpatient and primary care clinics. When specifically looking at the primary care setting, 28 of the 180 total pediatric participants screened had a non-acute positive ASQ screen (Aguinaldo, 2021). This means about 15.5 percent of the total number of adolescents screened in the primary care setting had a non-acute positive screen which is comparable to the 5 percent positive screen result of this study. Furthermore, all the positive screens for the primary care location in Aguinaldo et al. (2021) were non-acute positive screens. This is similar to the results of this study in that all of the positive results were non-acute positive screens.

The demographic results including gender and race differed between the two studies. For example, this study had about 54 percent female participants and 46 male participants. Aguinaldo et al. (2021) had 58.3 percent female and 41.7 percent male represented in the primary care setting portion of the study. Furthermore, Aguinaldo had 15.6 percent White, 58 percent Black, 66 percent Hispanic, and 12.8 percent Asian, and 5 percent unknown ethnicity represented in the primary care setting portion of the study. 88 percent of the participants of this

study were White, 6.7 percent were Asian, 1.6 percent were Bi-Racial, and 3.3 percent were either listed as other or unknown.

Limitations

Internal Validity Effects

The largest impact to the internal validity of the project was convenience sampling. It was not ethical to have one control group who was not offered the suicide risk screening tool. Therefore, convenience sampling was the only option to gain participants, which in turn does affect the validity of the project.

External Validity Effects

There were several possible threats to the external validity of this project. First, while the sample size ended up being larger than the original goal of 50 participants, it is overall still a small sample size. The project took place in a rural setting, and consequently 88 percent of the participants were White. While there were several other races represented, the overwhelming majority of the study participants were White which could be considered a barrier in the transferability of the intervention into other areas of study, and a threat to the external validity of the study.

As previously mentioned, the number of screened participants was highest in the last month of data collection. This could have been related to the fact that it was a summer month and that adolescents were not in school or to the fact that many students were needing to be seen by their primary care provider for sports physicals. It could be inferred that less adolescent patients would be seen in office once school begins again in September and October. Therefore, having an implementation plan in place in order to accurately and quickly screen for every patient who fits the criteria for screening would be important. Furthermore, nurse visits only for

shots or covid tests could also be used as opportunities for screening if observed gains were to weaken in the future.

Sustainability of Effects and Plans to Maintain Effects

The implementation of the ASQ screening tool into clinical practice did make a substantial impact to the practice and participants. As previously mentioned, 59 adolescents were successfully screened for suicide risk within a four month time frame which would not have occurred without the implementation of the of project. Having the physical paper form of the screening tool prepared before each patient visit of a participant who met the criteria helped staff remember to administer the screening tool. The completed screens were then scanned into the patient chart for documentation. This helped to limit missed opportunities for screening.

Efforts to Minimize the Study Limitations

Missed opportunities for screening was the greatest limitation to the study. 44 participants who would have had the opportunity to be screened for suicide risk were not. This missed opportunity could have led to more positive suicide risk screens. The missed opportunity to assess these adolescents specifically for suicide risk unfortunately limited their opportunity to get the early intervention and referrals had they needed them.

Interpretation

Expected & Actual Outcomes

This study aimed to increase the number of adolescents being screened for adolescent suicide risk. By implementing the ASQ tool, the expected result was to increase the number of adolescents being screened specifically for suicide risk, as well as improving the plan for referral or follow-up care. The study ultimately reflected an improved number of adolescents being screened for suicide risk when comparing post-implementation data to the retrospective data.

Furthermore, all three participants who had non-acute positive screens had a plan in place for either referral or follow-up care within the clinic.

This study aimed to have a diverse sample in order to favor transferability, but as previously mentioned 88 percent of the participants were White. There was an excellent balance between male and females, however no transgender participants were reported in the data. Adolescent suicide risk screening is incredibly important for transgender children and adolescents given the high rates of mental health disorders and suicide for that population (Toomey et al., 2018). The lack of diversity in the sample can likely be attributed to the project setting location. The small sample size can likely be attributed to the limited time frame of the project.

Intervention Effectiveness

Implementing the ASQ screening tool into the natural workflow of the primary care practice was pivotal to the effectiveness of the project. Given that the screen takes less than a minute to complete and can be given to the patients from the nursing staff during the rooming process, the provider was able to know the results of the screening before entering the room. These factors certainly assisted with the intervention's effectiveness. Furthermore, the education provided to the medical team before data collection began was a critical component because it allowed for a smooth data collection process in addition to creating buy in from the provider and nursing staff.

Other settings that would be effective for the project intervention would include outpatient pediatric clinics, primary care clinics, urgent care locations, and emergency rooms as was reflected in the literature (Aguinaldo et al., 2021). Settings that have access to social workers in clinic would be extremely helpful, as well. There was no social worker available at this project

setting which was seen as a barrier due to the added time the provider ultimately had to take with patients with positive screens.

Intervention Revision

As previously mentioned, the greatest barriers to the implementation of the project were high census clinic days and frequent schedule changes that resulted in missed opportunities to screen. One modification that could improve the primary outcome would be to have printed screening tools in each exam room, easily accessible for staff to administer during the rooming process if the patient was a candidate for screening. Another modification to consider would be adding an electronic version of the screening tool into the office's electronic charting system so that a task would automatically fire to nursing for patients who meet the criteria for suicide screening. This could save time for the office staff and allow for a reduction in missed opportunities for screening.

Expected and Actual Impact to Health System, Costs, and Policy

The expected impact of the implementation of the ASQ screening tool into the primary care setting was to improve the number of adolescent patients who were specifically screened for suicide risk in order to provide earlier intervention and subsequent referral. This evidence-based project was able to successfully complete this goal as evidenced by the results of the study. The literature supports the need for standardized suicide risk screening with a validated suicide risk screening tool (Aguinaldo et al., 2021). This project supports these findings. There was a five percent positive suicide risk screening rate over the course of four months. Even if one patient is flagged for suicide risk and given the proper resources needed, it is one life that potentially could have been saved. These findings are critical to the support that standardized suicide risk screening should be a part of every adolescent visit because of the severity of suicide.

As previously predicted, the costs for the study were minimal. Printed materials were ultimately the only cost. There would not be a perceived need for any sort of funding to continue moving the project forward. The ASQ is a free screening tool developed by the NIMH and can often be integrated into the electronic medical record (NIMH, 2021).

Conclusions

Practical Usefulness of Intervention

In conclusion, the evidence supports the need for standardized adolescent suicide screening in the primary care setting. When using an evidence-based suicide screening tool, the literature supports that concise and valid suicide screening can be accomplished in a matter of minutes (NIMH, 2021). The literature supports a significant increase in detection of suicidal ideation through validated screening tools (Sheftall et al., 2016; Wintersteen, 2010). The ASQ questionnaire has been demonstrated in the literature to assess adolescents accurately and quickly for concerns of suicidal ideation and can easily fit into the typical workflow of primary care clinic settings (Aguinaldo et al., 2021). This project reflected an improvement in the ability of the primary care provider to accurately screen adolescent patients for suicidal ideation so that proper referral and subsequent management could be accomplished.

Further Study of Intervention

Further plans for the project would be to continue implementing this screening tool into the project setting. Due to the time restraints of the project, the sample size was small. However, including the 4 months of retrospective data and the missed opportunities for screening during the implementation of the project, there were a total of 197 possible opportunities to screen for adolescent suicide risk over an eight-month time frame. For a small, rural pediatric practice, this allows for a significant amount of reach to provide early intervention for adolescents struggling

with thoughts of self-harm or suicidal ideation. Primary care providers have a duty to properly screen for concerns for suicidality in their adolescent patients, and this project allows this to occur in a valid and efficient manner.

Dissemination

Dissemination of this evidence-based practice project occurred at the 2022 National Nurse Practitioner Symposium in Keystone, Colorado. A poster presentation was developed and presented during four breakout sessions at the conference. The project's inquiry, theoretical framework, literature review, methods, and findings were discussed among nurse practitioners and nurse practitioner students at the conference who were interested in viewing the poster. Questions were answered and education was provided for those who participated.

References

- Aguinaldo, L.D., Sullivant, S., Lanzillo, E.C., Ross, A., He, J., Bradley-Ewing, A., Bridge, J.A., Horowitz, L.M., & Wharff, E.A. (2021). Validation of the ask suicide-screening questions (ASQ) with youth in outpatient specialty and primary care clinics. *General Hospital Psychiatry, 62*, 52-58. <https://www.sciencedirect.com.proxy.library.umkc.edu/science/article/pii/S0163834320301535?via%3Dihub>
- America's Health Ratings. (2021). Public health impact: Teen Suicide. https://www.americashealthrankings.org/explore/health-of-women-andchildren/measure/teen_suicide/state/KS
- Ballard, E.D., Cwik, M., Van Eck, K., Goldstein, M., Alfes, C., Wilson, M.E., Virden, J., Horowitz, L.M., & Wilcox, H.C. (2017). Identification of at-risk youth by suicide screening in a pediatric emergency department. *Prevention Sciences, 18*. <https://link-springer-com.proxy.library.umkc.edu/article/10.1007/s11121-016-0717-5>
- Bhatta, S., Champion, J.D., Young, C., & Loika, E. (2018). Outcomes of depression screening among adolescents accessing school-based pediatric primary care clinic services. *Journal of Pediatric Nursing, 38*, 8-14. doi: 10.1016/j.pedn.2017.10.001
- Bilsen, J. (2018). Suicide and youth: risk factors. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsy.2018.00540>
- Bittle, V.A., Sekula, K., Zoucha, R., & Pushkar, K. (2010). Identification of suicide risk among rural youth: implications for the use of HEADSS. *Journal of Pediatric Health Care, 24*(3), 152-167. doi: 10.1016/j.pedhc.2009.03.003
- Boden, M., Zimmermann, L., Azevedo, K.J., Ruzek, J.I., Gala, S., Abdel Magid, H., Cohen, N.,

- Walser, R., Mahtani, N., Hoggatt, K., Mclean, C.P. (2021). Addressing the mental health impact of COVID-19 through population health. *Clinical Psychology Review*, 85.
<https://www-sciencedirect-com.proxy.library.umkc.edu/science/article/pii/S0272735821000490?via%3Dihub>
- Bridge, J, & Ackerman, J. (2018). *Screening for suicide in pediatric primary care settings*. [PowerPoint slides]. Nationwide Children's Hospital.
File:///Users/appleuser/Downloads/Screening%20for%20Suicide%20in%20Pediatric%20Primary%20Care%20Settings_%20Webinar%201%20(3).pdf
- Carney, C. (2021). Reducing the rise in adolescent suicide during COVID-19. *Mental Health Weekly*. <https://onlinelibrary-wiley-com.proxy.library.umkc.edu/doi/10.1002/mhw.32711>
- Center for Disease Control and Prevention. (2021). Adolescent health. <https://www.cdc.gov/nchs/fastats/adolescent-health.htm>
- Center for Disease Control and Prevention. (2017). Suicide among youth.
<https://www.cdc.gov/healthcommunication/toolstemplates/entertainmented/tips/SuicideYouth.html>
- Davis, M., Rio, V., Farley, A.M., Bush, M. L., Biedas, R.S., Young, J.F. (2020). Identifying adolescent suicide risk via depression screening in pediatric primary care: an electronic health record review. *Psychiatry Online*. <https://ps-psychiatryonline-org.proxy.library.umkc.edu/doi/full/10.1176/appi.ps.202000207#?>
- Diamond, G. O'Malley, A., & Wintersteen, M.B. (2011). Attitudes, practices, and barriers to adolescent suicide and mental health screening: a survey of pennsylvania primary care providers. *Journal of Primary Care & Community Health*. <https://doi-org.proxy.library.umkc.edu/10.1177/2150131911417878>
- Etter, D.J., McCord, A., Ouyang, F., Gilbert, A.L., Williams, R., Hall, J.A., Tu, W., Downs,

- S.M., & Aalsma, M.C. (2018). Suicide screening in primary care: use of an electronic screener to assess suicidality and improve provider follow-up for adolescents. *Journal of Adolescent Health, 62*(2), 191-197. doi:10.1016/j.jadohealth.2017.08.026
- Fegert, J.M., Vitiello, B., Plener, P.L., & Clemons, V. (2020). Challenges and burden of the coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: a narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child and Adolescent Psychiatry and Mental Health*. <https://eds-b-ebshost-com.proxy.library.umkc.edu/eds/pdfviewer/pdfviewer?vid=6&sid=0575db36-d724-40ec-a7df-5fffd1087a9b%40pdc-v-sessmgr01>
- Ferrin, S.N., Shan, M., & Garbuz, T. (2019). Suicide screening and intervention among adolescents in the primary care setting. *Journal of Adolescent Health, 64*.
[https://www.jahonline.org/article/S1054-139X\(18\)30613-X/pdf](https://www.jahonline.org/article/S1054-139X(18)30613-X/pdf)
- Hacker, K., Arsenault, L., Franco, I., Shaligram, D., Sidor, M., & Goldstein, J. (2014). Referral and follow-up after mental health screening in commercially insured adolescents. *Journal of Adolescent Health, 55*(1), 17-23. doi: 10.1016/j.jadohealth.2013.12.012
- Hill, R., Oosterhoff, B., & Kaplow, J. (2017). Prospective identification of adolescent suicide ideation using classification tree analysis: models for community-based screening. *Journal of Consulting and Clinical Psychology, 85*(7), 702-711. doi: 10.1037/ccp0000218
- Horowitz, L.M, Bridge, J.A., Teach, S.J., Ballard, E., Klima, Jennifer, Rosenstein, D.L., Wharff, E.A., Ginnis, K., Cannon, E., Paramjit, J., Pao, M. (2012). Ask suicide-screening questions (ASQ): a brief instrument for the pediatric emergency department.
<https://pubmed.ncbi.nlm.nih.gov/23027429/>

- Horton, S.E., Hughes, J.L., King, J.D., Kennard, B.D., Westers, N.J., Mayes, T.L., Steward, S.M. (2015). Preliminary examination of the interpersonal psychological theory of suicide in an adolescent clinical sample. *Journal of Abnormal Child Psychology*, 44(6), 1133-1144. <https://link-springer-com.proxy.library.umkc.edu/article/10.1007%2Fs10802-015-0109-5>
- Institute for Healthcare Improvement. (2021). Science of improvement: testing change. <http://www.ihl.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChanges.aspx>
- Joiner, T. (2009). The interpersonal-psychological theory of suicidal behavior: Current empirical status. <http://www.apa.org/science/about/psa/2009/06/sci-brief.aspx>
- Joiner Jr., T.E., Pfaff, J.J., & Acres, J.G. (2001). A brief screening tool for suicidal symptoms in adolescents and young adults in general health settings: reliability and validity data from the Australian National General Practice Youth Suicide Prevention Project. *Behaviour Research and Therapy*, (40), 471-481. Retrieved from https://ac-els-cdn-com.proxy.library.umkc.edu/S0005796701000171/1-s2.0-S0005796701000171-main.pdf?_tid=92e86641-fe9b-49bc-b8d3-2e2836249165&acdnat=1524801892_baa72763f8700b5d737fcd353fbe9ff5
- King, C.A., Horwitz, E.C., & Lindsay, R. (2017). Suicide risk screening in healthcare settings: identifying males and females at risk. *Journal of Clinical Psychology in Medical Settings*, 24(1), 8-20. doi: 10.1007/s10880-017-9486-y
- King, C. A., Arango, A., & Ewell Foster, C. (2018). Emerging trends in adolescent suicide prevention research. *Current opinion in psychology*, 22, 89–94. <https://doi.org/10.1016/j.copsyc.2017.08.037>
- Lanzillo, E.C., Powell, D., Bridge, J.A., Wharff, E.A., Ross, A., Solanges, M., Nelson, S., Pao,

- M., & Horowitz, L. (2017). 3.16 Detecting suicide risk on pediatric inpatient medical units: is depression screening enough? *Journal of the American Academy of Child & Adolescent Psychiatry*, 65(10). <https://doi.org/10.1016/j.jaac.2017.09.209>
- Lanzillo, E.C., Horowitz, L.M, Wharff, E.A., Sheftall, A.H., Pao, M., & Bridge, J.A. (2019). The importance of screening preteens for suicide risk in the emergency department. *Hospital Pediatrics*, 9(4). <https://doi-org.proxy.library.umkc/10.1542/hpeds.2018-0154>
- LeCloux, M. (2018). The development of a brief suicide screening and risk assessment training webinar for rural primary care practices. *Journal of Rural Mental Health*, 42(1). <https://dx.doi.org/10.1037/rmh0000087>
- Le Cloux, M.A., Weimer, M., Culp, S., Bjorkren, K., Service, S., Campo, J.V. (2020). The feasibility and impact of a suicide risk screening program in rural adult primary care: pilot test of the ask suicide-screening questions toolkit. *Psychosomatics*, (62), 6. <https://www.sciencedirect.com/science/article/abs/pii/S0033318220301407>
- Milliman, C.C., Dwyer, P.A., & Vassey, J.A. (2021). Pediatric suicide screening: A review of the evidence. *Journal of Pediatric Nursing*, 59. <https://doi.org/10.1016/j.penn.2020.12.011>
- Missouri Department of Health and Senior Services (2021). Adolescent suicide. [Powerpoint slides]. https://health.mo.gov/living/families/mch-block_grant/pdf/adolescentsuicide_final.pdf
- National Institute of Mental Health. (2021). Ask suicide-screening (ASQ) toolkit. <https://www.nimh.nih.gov/research/research-conducted-at-nimh/asq-toolkit-materials/index.shtml>
- Neves, M.G. & Leanza F. (2014). Mood disorders in adolescents: diagnosis, treatment, and

- suicide assessment in the primary care setting. *Primary Care: Clinics in Office Practices*, 41(3). <https://doi.org/10.1016/j.pop.2014.05.008>
- Patel, A., Watts, C., Shiddell, S., Couch, K., Smith, A.M, Moran, M.J., & Conners, G.P. (2018). Universal adolescent suicide screening in a pediatric urgent care center. *Archives of Suicide Research*. <https://eds-a-ebSCOhost-com.proxy.library.umkc.edu/eds/pdfviewer/pdfviewer?vid=1&sid=91f1d439-85e7-404c-8119-0e42b974b7c9%40sdc-v-sessmgr02>
- Patterson, S. (2016). Suicide risk screening tools and the youth population. *Journal of Child and Adolescent Psychiatric Nursing*, 29(3), 118-126. doi: 10.1111/jcap.12148
- Parab, S., & Bhalerao, S. (2010). Choosing statistical test. *International Journal of Ayurveda Research*, 1(3), 187–191. <https://doi.org/10.4103/0974-7788.72494>
- Richardson, L.P., McCarty, C.A., Radovic, & A., Suleiman, A.B. (2017). Research in the integration of behavioral health for adolescents and young adults in primary care settings: a systematic review. *Journal of Adolescent Health*, 60(3), 261-296. doi: 10.1016/j.jadohealth.2016.11.013
- Sisler, S.M., Schapiro, N.A., Nakaishi, M., & Steinbuchel, P. (2020). Suicide assessment and treatment in pediatric primary care settings. *Journal of Child and Adolescent Psychiatric Nursing*. <https://doi-org.proxy.library.umkc.edu/10/1111/jcap.12282>
- Shearer, A., Herres, J., Kodish, T., Squiteri, H., James, K., Russon, J...Diamond, G. (2016). Differences in mental health symptoms across lesbian, gay, bisexual, and questioning youth in primary care settings. *Journal of Adolescent Health*, 59(1), 38-43. doi: 10.1016/j.jadohealth.2016.02.005
- Sheftall, A.H, Asti, L., Horowitz, L.M., Felts, A., Fontanella, C.A., Campo, J.V., & Bridge, J.A.

- (2016). Suicide in elementary school-aged children and early adolescents. *Pediatrics*, 138(4). <https://doi-org.proxy.library.umkc.edu/10.1542/peds.2016-0436>
- Szlyk, H.S., Berk, M, Peralta, A.O., & Miranda, R. (2020) COVID-19 takes adolescent suicide prevention to less charted territory. *Journal of Adolescent Health*, 67(2). <https://www-sciencedirect-com.proxy.library.umkc.edu/science/article/pii/S1054139X20303025?via%3Dihub>
- The Jamovi Project. (2021). (Version 2.2) [Computer Software]. Retrieved from <https://jamovi.org>.
- The Parent Resource Program. (2021). Youth suicide statistics. <http://prp.jasonfoundation.com/facts/youth-suicide-statistics/>
- Toomey, R.B., Syvertsen, A.K. & Shramko, M. (2018). Transgender adolescent suicide behavior. *American Academy of Pediatrics*, 142(4). <https://doi.org/10.1542/peds.20174218>
- Toulany, A., McQuillan, R., Thull-Freedman, J.D., & Margolis, P.A. (2013). Quasi-experimental designs for quality improvement research. *Implement Sci.*(8), 3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3633025/>
- Wintersteen, M. (2010). Standardized screening for suicidal adolescents in primary care. *Pediatrics*, 125(5). Doi:10.1542/peds.2009-2458
- Wolters Kluwer Health. (2015). High rates of healthcare visits before suicide attempts. *Science Daily*. <https://www.sciencedaily.com/releases/2015/04/150415112427.htm>

Appendix A

Cost Table

Item	Item Description	Quantity	Unit Cost	Anticipated Cost
Print materials	ASQ Screening Tool	100	\$0.10 per copy	\$10.00
Print materials	Education for Providers	10	\$0.10 per copy	\$1.00
Print materials	Education for patients	100	\$0.10 per copy	\$10.00
Print materials	Education for parents	100	\$0.10 per copy	\$10.00
DNP Project Time	Time allocated towards project	500	No cost	
Total				\$31.00

Appendix B

Definition of Terms

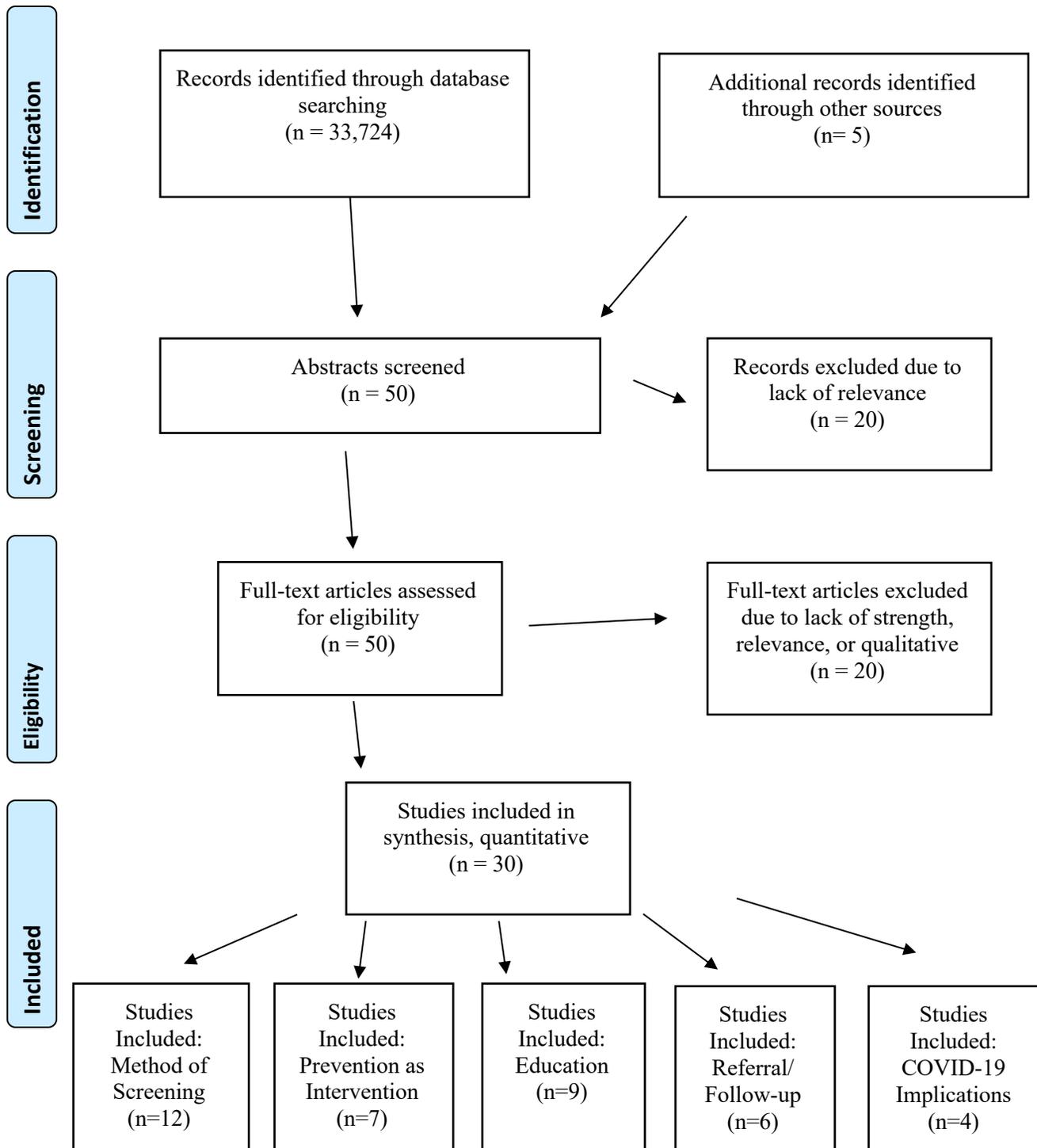
ASQ: Ask Suicide Questions Screening Tool utilized to screen for adolescent suicidality (National Institute of Mental Health, 2021).

ITPS: Interpersonal Psychological Theory of Suicide. Developed by Thomas Joiner Jr. in 2009. Theory suggests that fatal suicide stems from a triad of an individual living in a state of perceived burdensomeness, demonstrating a low sense of belongingness, and developing the rare ability to lethally harm oneself (Joiner, 2009)

Suicidal Ideation: Term used to describe contemplations, wishes, thoughts, and preoccupations related to death and suicide (Harmer et al., 2021).

Appendix C

Adapted Prisma Flow Diagram



Adapted from Moher D., Liberati A., Tetzlaff J., & Altman, D.G. The PRISMA Group (2009). *Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement*. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

Appendix D

Evidence Table

First author, Year, Title, Journal	Purpose	Research Design ¹ , Evidence Level ² & Variables	Sample & Sampling, Setting	Measures & Reliability (if reported)	Results & Analysis Used	Limitations & Usefulness
Method of Screening						
Milliman (2021). Pediatric suicide screening: a review of the evidence. Journal of Pediatric Nursing.	Review the evidence related to adolescent suicide screening to determine if adolescents should be screened at every encounter.	Literature Review Level V evidence	n=10 articles convenience sampling Pediatric inpatient, emergency, and outpatient settings	Literature review of 10 articles that were critically appraised for use	Adolescents have significant rates of suicidal ideation, anxiety, and depression. A specific suicide screening tool should be used to measure teens at risk for SI. The ASSQ is an easy, highly sensitive tool for use.	Limitations: Gray literature was excluded which could result in bias Usefulness: ASSQ only takes 20 seconds to administer No evidence shows that asking patients about suicide increases risk
Etter (2018) Suicide screening in primary care: use of an electronic screener to assess suicidality and improve provider follow up for adolescents. Journal of Adolescence	Assess the use of a computerized screening program to provide adolescent suicide screening and to provide follow-up assessments in primary care settings.	Quantitative Prospective Cohort Study Level II Evidence Independent : use of computerized suicide screening tool Dependent: Improved assessment and	n=2,134 Trait: Mean age= 14.6 years 51% female 49% male Outpatient setting.	The suicide screening tool was utilized in two clinics that use CHICA A prospective cohort study was used to examine the CDSS	-6 % of patients screened positive for suicidality -follow-up appointment documented for 83% of patients who tested positive -Of the 131 pts who tested positive, 17% lacked documentation showing a follow-up and 93% were found to be “not suicidal” after a follow-up assessment -In the 16 patients who tested positive, 10 were admitted into an inpatient psychiatric unit, - 9 referrals to a crisis center were made	Strengths: Directly relates to PICOT Prospective Cohort Studies are held with great weight in research Limitations: This study couldn't examine whether patients

<p>t Medicine</p>		<p>provider follow-up of adolescents testing positive for suicidality</p>				<p>benefited from the referrals or follow-up appointments</p> <p>Study doesn't know if it was the patient or guardian who filled out the PSF— creates bias</p>
<p>Aguinaldo (2021). Validation of the ask suicide-screening questions (ASQ) with youth in outpatient specialty and primary care clinics. General Hospital Psychiatry</p>	<p>Determine if ASQ is effective with youth in outpatient PCCs</p>	<p>Cross Sectional Instrument Validation Study</p> <p>Level IV Evidence</p> <p>Independent : Implementing ASQ</p> <p>Dependent: Effective screening of suicidality</p>	<p>n=515</p> <p>convenience sampling</p> <p>outpatient specialty and primary care clinics</p>	<p>ASQ SIQ/SIQ Jr.</p>	<p>ASQ showed 100% sensitivity</p> <p>And 91.2% specificity in the specialty care clinic</p> <p>ASQ showed 100% sensitivity and 87.9% specificity.</p> <p>13.4% percent of outpatient specialty clinic participants endorsed suicidality.</p> <p>15.6% of primary care clinic participants screened positive</p>	<p>Usefulness: Provides excellent data regarding ASQ and its validity</p>
<p>King (2017). Suicide risk screening in healthcare settings: identifying males and females at risk. Journal of Clinical Psychology in</p>	<p>The goal of the study is to improve suicide screening to identify males and females at risk.</p>	<p>Literature Review</p> <p>Level V Evidence</p> <p>Independent : Implementing suicide screening</p> <p>Dependent: Optimized recognition and management</p>	<p>N/A</p>	<p>-PHQ-9 -PHQ-2 -Suicide Behaviors Questionnaire -Revised -Columbia Suicide Severity Rating scale -ASQ -Tri Factor Screen for Youth Suicide Risk</p>	<p>Universal suicide screening is highly recommended through the literature.</p> <p>More research is needed to optimize screening for gender differences.</p> <p>There are higher rates of suicide in men than in females in the United States.</p> <p>Computerized adaptive screenings may be helpful</p>	<p>Not focused solely on adolescent patients</p> <p>Great information on gender concerns of suicide</p> <p>General information related to suicide screening and</p>

Medical Settings.		t of males and females who have tested positive for suicidal risk factors			in the screening process based on gender.	prevention of all ages, gender, and ethnicities
Lanzillo (2019). The importance of screening preteens for suicide risk in the emergency department. Hospital Pediatrics.	To determine positive suicidality in 10-12-year olds in the ED	Prospective, cross sectional, multisite study Level IV Evidence Independent : implementing the ASQ or SIQ-JR Dependent: Positive suicide screen	n=79 Convenience sample 3 EDs	ASQ SIQ-Jr SPSS version 21	Overall positive screenings were 29.1% 54% presenting with psychiatric complaints screened positive 7.1% of non-psychiatric complaints screened positive	Usefulness: Excellent data Provides important information related to preteens and suicide ideation. Expresses need for PCP suicide screening in preteen and adolescents
Lanzillo (2017). Detecting suicide risk on pediatric inpatient medical units: is depression screening enough? Journal of American Academy of Child & Adolescent Psychiatry .	Children with primary health conditions are at a heightened risk for suicidality. Is PHQ-A questionnaire enough to screen?	Quantitative single study Level II Evidence Independent : Implementing PHQ Dependent: Positive for suicidality	n=400 convenience sampling adolescent inpatient setting	ASQ PHQ-A SIQ/SIQ-JR	9.8% screened positive for depression only 4% screened positive for suicide risk only 9% screened positive for both depression and suicide risk	Usefulness: depression screening alone would have missed ¼ of screened patients. This study shows that there is a relationship between suicide and depression but that a few at risk youth could slip through the cracks is suicidality is only screened through PHQ
Hill (2017)	The goal of the	Quantitative	Trait:	Design:	The study was able to develop a data-driven	Strengths:

Prospective identification of adolescent suicide ideation using classification tree analysis: models for community-based screening. Journal of Consulting and Clinical Psychology.	study is to provide primary care providers a model to improve adolescent suicide screening.	Classification Tree Analysis Level I Evidence Independent : Variety Dependent: Improved identification of adolescents at risk for suicide	Mean age= 16.15 years 52% female 48% male	Participants completed Waves 1 and 2 of the National Longitudinal Study of Adolescent to Adult Health. CTA was used to develop a set of standards that should be used to identify adolescents at risk for reporting suicide in wave 2.	model for identifying adolescents at risk for suicidal ideation. 3 solutions were found for identifying adolescents at risk for suicide. Tree with the highest sensitivity and lowest specificity was related to adolescents' history of suicide ideation. Tree with moderate sensitivity and high specificity was based upon social support, feelings and signs of depression, and history of family or friends who had committed suicide.	Large sample size Very high-quality study with results that can be implemented into practice easily Excellent for PICOT question
Ballard (2017). Identification of at-risk youth by suicide screening in a pediatric emergency department. Prevention Science.	Examine nursing compliance with ASQ screening, discover relationship between chief complaint and SI, identify value in ASQ, and evaluate link between ASQ and repeated ED visits.	Retrospective Review Level IV Evidence Independent : Implementing ASQ at psychiatric ED visits Dependent: ASQ screening results	n=970 convenience sample psychiatric ED	ASQ SPSS version 21	Over ¾ of the patients were screened correctly female patients with suicide-related complaints screened more often over ½ of patients screened were positive	Usefulness: Important information regarding nursing behavior and ASQ screening Limitations: Sample is psychiatric ED pts which skews data related to PICOT
Horwitz (2012). Ask suicide-screening questions (ASQ): a brief instrument for the pediatric	Develop suicide screening instrument for pediatric emergency department .	Prospective, cross-sectional instrument development study. Level V Evidence Independent : SIQ screening	n=524 convenience sample 3 urban pediatric emergency rooms	SIQ ASQ	ASQ accurately assess the risk of suicide in young ED patients with chief complaints of medical surgical or psychiatric. ASQ has good content validity Positive responses to 1 or more of the 4 ASQ answers identified 97% of youth at risk for suicide.	Limitations: Urban tertiary care teaching hospitals- may not relate to all ED settings. Usefulness: Excellent ASQ data

emergency room.		Dependent: Number of positive suicidal indicators				
Bhatta (2018) Outcomes of depression screening among adolescents accessing school-based pediatric primary care clinic services. Journal of Pediatric Nursing.	Implement a depression screening tool for adolescents in a primary care clinical setting in order to improve early detection and referral.	Quantitative Retrospective Chart review Level IV evidence Independent : Implementation of PHQ-9 Dependent: Identification of MDD	n=256 137 females 119 males Urban outpatient clinic Convenience sampling.	PHQ-9 administration	87.5% of subjects scored <10 12.5% of subjects scored >10 83.3% of subjects scoring >10 were referred to a mental health professional 16.7% of subjects scoring >10 refused referral 8% of subjects reported a history of feelings of suicide	Limitations: Only 56% of adolescents at the clinic were screened during the implementation of the project Tracking of follow-up appointments will strengthen study. Extend to more culturally diverse areas—96% of subjects studied were of Hispanic ethnicity.
Bittle (2010) Identification of suicide risk among rural youth: implications for the use of HEADSS. Journal of Pediatric	Determine if HEADSS is an appropriate suicide screening tool for rural adolescents in PA	Qualitative Secondary Qualitative Analysis Level VI Evidence Independent : HEADSS interview instrument Dependent: Effective	n=466 97% white, rural PA high school students Convenience sampling Setting was primary care in a	Home, Education, Activities, Drug use and abuse, Sexual behavior, and Suicidality and depression (HEADSS) Child Behavior Checklist	The study examined rural adolescent high school student's psychosocial concerns. The concerns were compared with known risk factors of suicide for adolescents. Themes of safety and death were prominent throughout study. Most of the themes identified in this study	Strengths: Relates to the screening aspect of the PICOT question Demonstrates the need for suicide screening and early intervention

<p>Health Care.</p>		<p>suicide screening tool for rural adolescents</p>	<p>rural PA city</p>	<p>Screen for Child Anxiety Emotional Disorders</p>	<p>correlate with risks for suicide. High school students in rural PA completed questions from the Child Behavior Checklist and the Coping Response Inventory. Qualitative analysis was performed.</p>	<p>for adolescents Limitations: The study doesn't focus on the primary care aspect of my PICOT question. The study doesn't give feedback on outcomes of the screening implementation. Secondary analysis of the study didn't allow for research in the clinical setting.</p>
<p>Joiner (2001). A brief screening tool for suicidal symptoms in adolescents and young adults in general health settings. Behaviour Research and Therapy.</p>	<p>To evaluate the validity and reliability of three different suicide screening tools</p>	<p>Quantitative RCT Level I Evidence Independent : Administration of one of the screening tools Dependent: Comparison of self-reported symptoms with provider's assessment</p>	<p>n=2,851 Randomized sampling</p>	<p>DSI-SS GHQ-12 CES-D</p>	<p>-measurement findings were favorable -scale used was internally cohesive -DSI-SS construct validity was supported strongly -Depressed males scored higher than depressed females</p>	<p>Strengths: Excellent information regarding the PICOT Directly discusses validity and reliability of suicide screening tools Limitations: -low scorers on the DSI-SS -suicidal ideation may not</p>

						<p>equate to suicidal behavior</p> <p>-possible biased sample because the providers were not randomly selected to participate</p>
<p>Davis (2020). Identifying adolescent suicide risk via depression screening in pediatric primary care: an electronic health record review. Psychiatric Services.</p>	<p>To determine whether or not suicidality can be effectively screened for through depression screening tools for adolescents.</p> <p>Measure PCP ability to ask suicidality follow-up questions</p> <p>Determine Monitoring and care coordination, referrals, intervention</p>	<p>Retrospective Chart Review.</p> <p>Level IV Evidence</p> <p>Independent : PHQ-9 assessments</p> <p>Dependent: Follow-up care in year following SI endorsement</p>	<p>n=12,690</p> <p>Convenience sampling Primary Care Setting</p>	<p>PHQ-9 Manual Chart Review</p>	<p>5.1% of participants endorsed thoughts of death or self-harm.</p> <p>3.6% participants had previously attempted suicide</p> <p>2.4% of participants had SI in past month</p>	<p>Usefulness: Evidence-based suicide assessment may be more effective than screening for suicide through depression screening alone</p> <p>Building resources into EHR (screenings, follow up steps etc.) will be very helpful to the PCP</p>
<p>Prevention As Intervention</p>						
<p>Ballard (2017). Identification of at-risk youth by suicide</p>	<p>Examine nursing compliance with ASQ screening,</p>	<p>Retrospective Review</p> <p>Level IV Evidence</p>	<p>n=970</p> <p>convenience sample</p>	<p>ASQ SPSS version 21</p>	<p>Over ¾ of the patients were screened correctly</p> <p>female patients with suicide-related complaints screened more often</p>	<p>Usefulness: Important information regarding nursing behavior</p>

screening in a pediatric emergency department. Prevention Science.	discover relationship between chief complaint and SI, identify value in ASQ, and evaluate link between ASQ and repeated ED visits.	Independent : Implementing ASQ at psychiatric ED visits Dependent: ASQ screening results	psychiatric ED		over 1/2 of patients screened were positive	and ASQ screening Limitations: Sample is psychiatric ED pts which skews data related to PICOT
Ferrin (2019). Suicide screening and intervention among adolescents in the primary care setting.	Identify adolescents at risk for suicide in the primary care setting in order to develop a management plan	Retrospective Chart Review Level IV evidence Independent : implement CDSS in primary care setting Dependent: Suicidality in adolescents	n=113 Convenience sampling primary care setting	CDSS Descriptive analytics	113 screened positive for suicidality; 76 had clinic visits 12 months pre-visit; 83 had a visit 12 months post-incident Behavioral health diagnoses: Depression, ADHD, anxiety 83 seen post visit- 56 were considered low risk; 12 were considered high risk Youth with previous SI should warrant continued surveillance at each following PCP appointment	Usefulness: Shows the importance of follow-up appointments, referrals, and management of SI in adolescents
Bilsen (2018). Suicide and youth: risk factors. Frontiers in Psychology.	Examine risk factors related to adolescent suicide to determine best practice from public health.	Literature Review. Level VII Evidence	N/A	N/A	Risk factors of adolescent suicide: Age, mental health disorders, substance abuse, previous attempts, impulsivity, poor problem solving, life events	Limitations: Lower Level of evidence Usefulness: Excellent risk factor data for adolescent suicide
Boden (2021). Addressing the mental health impact of COVID-19	Increase reach to vulnerable populations for mental health support during the	Level VII Evidence-evidence from expert opinion	N/A	N/A	Underserved and vulnerable populations will suffer even further during COVID-19 pandemic.	Usefulness: Interesting and useful COVID-19 implications on mental health on particular populations

through population health. Clinical Psychology Review.	COVID-19 pandemic					
Educatio n						
Sisler (2020). Suicide assessment and treatment in pediatric primary care settings. Journal of Child and Adolescent Psychiatric Nursing.	To provide the best tools and practice guidelines for screening of suicidality in adolescent patients in the primary care setting.	Clinical Practice Guidelines Funding through US Dept of Health and Human Services Level VII Evidence	N/A	N/A	Primary Care Application -clinic based protocols for safety plans, and proper referral of youth at increased risk for suicide	Usefulness: Excellent clinical practice guidelines. Directly relates to PICOT
Patel (2018). Universal adolescent suicide screening in a pediatric urgent care center. Archives of Suicide Research.	Identify adolescent patients at risk for suicide in the urgent care setting utilizing a two-question screening tool	Retrospective Chart Review Level IV Evidence Independent : implementing of 2 question screening Dependent: Screening of suicidality in adolescents	n=4,786 Convenience sampling Pediatric urgent care setting	Content analyses from 12-fdmonth retrospective review	95 adolescents screened positively Only 7% of these positive screens were kids being seen for mental health concerns	Usefulness: Quick, easy to administer, and simple form to screen adolescent suicide before patient is even seen.
Sheftall (2016). Suicide in elementary school-aged children and early adolescent	Discover the characteristics and precipitating circumstances of suicide in adolescent	Retrospective Surveillance study Level IV Evidence	n=693 Convenience sampling 5-14-year olds decedents in the US	Exact fisher's test	Characteristics of those who died from suicide were more likely to be black, male, died at home, died from hanging/strangulation/suffocation Most likely had relationship problems	Usefulness: Breaks down the precipitating circumstances of suicide Discusses need for

<p>s. Pediatrics.</p>	<p>s and elementary school-aged children.</p>				<p>with family/friends not so much intimate relationship issues.</p> <p>210 had known mental health issues.</p> <p>59% had ADHD symptoms</p> <p>33% had depression/dysthymia</p>	<p>primary care screening</p>
<p>Patterson (2016). Suicide risk screening tools and the youth population. Journal of Adolescent Psychiatric Nursing.</p>	<p>The goal of the study is to inform nurses about different suicide screening tools available to assess adolescent suicidality.</p>	<p>Literature Review.</p> <p>Level V Evidence</p>	<p>N/A</p>	<p>Beck Scale Suicide Probability Scale Reasons for Living Inventory Columbia Suicide Severity Rating Scale Tool for Assessment of Suicide Risk Modified Scale for Suicidal Ideation SAD Persons Scale Suicidal Behaviors Questionnaire</p>	<p>Nurses are encouraged to utilize a screening tool only during the patient risk intake assessment.</p> <p>Using a tool alone is not a productive way to diagnose and treat behavioral and mental conditions.</p>	<p>Great information from many different databases.</p> <p>Not as strong of evidence as some of the other articles that I have looked at.</p>
<p>Diamond (2011). Attitudes, practices, and barriers to adolescent suicide and mental health screening: a survey of Pennsylvania primary care providers.</p>	<p>Identify rate of suicide and mental health screening in the primary care setting and attitudes related to the results.</p>	<p>Qualitative</p> <p>Level IV Evidence</p> <p>Independent : survey administration</p> <p>Dependent: attitudes towards suicide screening</p>	<p>n=671</p> <p>Convenience sampling</p> <p>Primary Care Setting</p>	<p>Descriptive Statistics calculated for all items included in survey</p> <p>Analysis of variance and X2 analyses</p> <p>Logistic regression models</p>	<p>Over 40% had a pt attempt suicide in last year</p> <p>68.6% reported pt with SI</p> <p>85% agreed that adolescent mental health part of their approach</p> <p>67% screen for mental health</p>	<p>Usefulness: Very important information regarding PCP attitudes and compliance with suicide screening</p>

Journal of Primary Care & Community Health.						
LeCloux (2018). The development of a brief suicide screening and risk assessment training webinar for rurally primary care practices. Journal of Rural Mental Health.	To determine PCP beliefs and behaviors toward suicide screening via training webinar for rural primary care practices.	Quantitative single-study Level VI Evidence Independent : Implementing a training program for HCPs about suicide screening Dependent: acceptability of training by HCP	n=16 Rural primary care providers Random sampling	Survey rating scale	85% said they treat pediatric and adult patients 73% felt it was applicable to practice 75% said they would recommend it to a colleague	Limitations Very small sample size Adult population Usefulness- Need for PCP education regarding need for suicide screening
Neves (2014). Mood disorders in adolescents: diagnosis, treatment, and suicide assessment in the primary care setting. Primary Care: Clinics in Office Practice.	Discuss proper detection management, and screening for adolescent mood disorders in the primary care setting.	Clinical practice guidelines Level VII Evidence-evidence from expert opinion	N/A	N/A	Risk factors for adolescent suicide risk include: Psychiatric disorder (mood, anxiety, conduct, alcohol use, substance use disorder), family factors (exposure to stressful events, family history of death or suicide), LGBTQ (family rejecting preferences), bullying/cyberbullying (both victim and bully have increased risk)	Usefulness: Excellent data on risk factors to be screening for in the primary care setting. Provides a blueprint for PCPs on safety plans, parent education etc.
Shearer (2016). Differences in mental health symptoms across lesbian, gay,	The goal is to examine differences between adolescent LGBTQ mental health symptoms against	Quantitative Ad hoc analysis Level IV Evidence Independent :	n=2,513 Convenience sampling Primary care setting	Web-based screening tool, BHS, assessed psychiatric symptoms and risk behaviors during well-exam visits	Bisexual/questioning females had higher scores on depression, anxiety, and traumatic stress scales when compared to heterosexual females Lesbians, questioning females, and bisexual females had higher	Strengths: Very important information regarding adolescent LGBTQ mental

<p>bisexual, and questioning youth in primary care settings. Journal of Adolescent health.</p>	<p>heterosexual peers.</p>	<p>Administration of the BHS to adolescents of whom providers have mental health concerns</p> <p>Dependent: increased awareness and identification of mental health concerns with LGBTQ adolescents</p>		<p>Analysis of results of BHS</p>	<p>lifetime suicide scores when compared to heterosexual females.</p> <p>Gay and bisexual men had higher depression and traumatic distress scores when compared with heterosexual men</p>	<p>health scores.</p> <p>Shows that bisexuality is a unique identity that needs possibly to be assessed in different ways.</p> <p>Study shows the importance of BHS or other mental health screenings in primary care. This is very important to my PICOT question</p> <p>Limitations:</p> <p>BHS was not designed for LGBTQ individuals specifically</p> <p>Some patients may not have felt comfortable disclosing their sexuality on a questionnaire which could have skewed results.</p> <p>PC providers need to be prepared to engage in conversations and help</p>
--	----------------------------	---	--	-----------------------------------	---	---

						patients feel comfortable sharing information in order to really assess for mental health status.
Referral/ Follow-up						
Richardson (2017). Research in the integration of behavioral health for adolescents and young adults in primary care settings: a systematic review.	Evaluate research related to models of integrated behavioral health in primary care settings for adolescents Discover further needs of research regarding behavioral health in adolescents and young adults.	Systematic Review Level I Evidence Independent : Integrated behavioral health for adolescents Dependent: Better Assessment and management for behavioral health issues in adolescents	n=21 articles Convenience sampling Primary Care Setting	Medline PsycInfo	17 studies fell into the “coordinated care” category 0 studies fell into the “co-located care” category 4 studies fell into the “integrated care” category	Describes in detail the problem with the current segregated treatment of mental illness for adolescents. Very strong source of evidence since it is a systematic review. Discusses important gaps in the literature surrounding my PICOT question. Raises important questions regarding the proper treatment and management of behavior health for adolescents, and where healthcare is currently

						falling short.
Hacker (2014) Referral and follow-up after mental health screening in commercially insured adolescents. Journal of Adolescent Health.	The goal of the study is to examine predictors of mental health referral for commercially-insured adolescents who exhibit positive indicators in the primary care setting.	Quantitative Retrospective Chart Review Level IV evidence Independent : Positive Y-PSC testing education and referral Dependent Variable: Referral and follow-up	n=2,788 Convenience sampling Outpatient setting	Youth Symptom Checklist (PSC) Youth-Pediatric Symptom Checklist (Y-PSC) SAS Macro	197 (7.1%) teens tested positive, but 80 of these subjects were removed from study due to current mental health treatment. Of 117 positive youth in sample, 75% had never been diagnosed with a mental disorder, and 39% received a diagnosis at the time of the screening. 3% of sample had suicidal ideation. 12% appeared at a mental health visit during follow-up period. Positive testing subjects were significantly more likely to be referred. 54% of the positive sample were referred and 67% accepted the referral.	Limitations: Referrals could only be made if they were within network Strengths: Shows the importance of mental health screening in PCP appointments. Suggests that PCPs and mental health professionals need to coordinate to ensure compliance with referrals and follow-up appointments.
COVID-19						
Carney (2021).	Highlight a multifaceted, highly collaborative approach to meeting adolescent mental health needs during the COVID-19 pandemic	Level VII Evidence-evidence from expert opinion	N/A	N/A	Perform suicide screenings during pediatric visits, increase mental health resources in the community, develop programs that teach adolescents resilience	Usefulness: Notes the importance in suicide screening during PCP visits during this pandemic.

Fegert (2020). Challenges and burden of the COVID-19 pandemic for child and adolescent mental health. <i>Child and Adolescent Psychiatry and Mental Health</i>	Evaluate the way the COVID-19 pandemic is affecting the mental health of children and adolescents.	Literature Review Level V	N/A	N/A	COVID has unique effect on childhood and adolescent mental health. Increase stress levels related to economic stress, fear/anxiety of illness, isolation, domestic violence/abuse. Increased risk of suicidal behavior and self-injury	Usefulness: Very important info regarding adolescent mental health due to the Pandemic
Szlyk (2020)	Determine effective suicide prevention for adolescents during COVID-19 pandemic	Level VII Evidence-evidence from expert opinion	N/A	N/A	COVID-19 has had an effect on healthcare access, affordability Adolescents may be at an increased risk for suicide during this time Disparities are highlighted	Usefulness: Excellent COVID related information regarding adolescent suicide

Appendix E

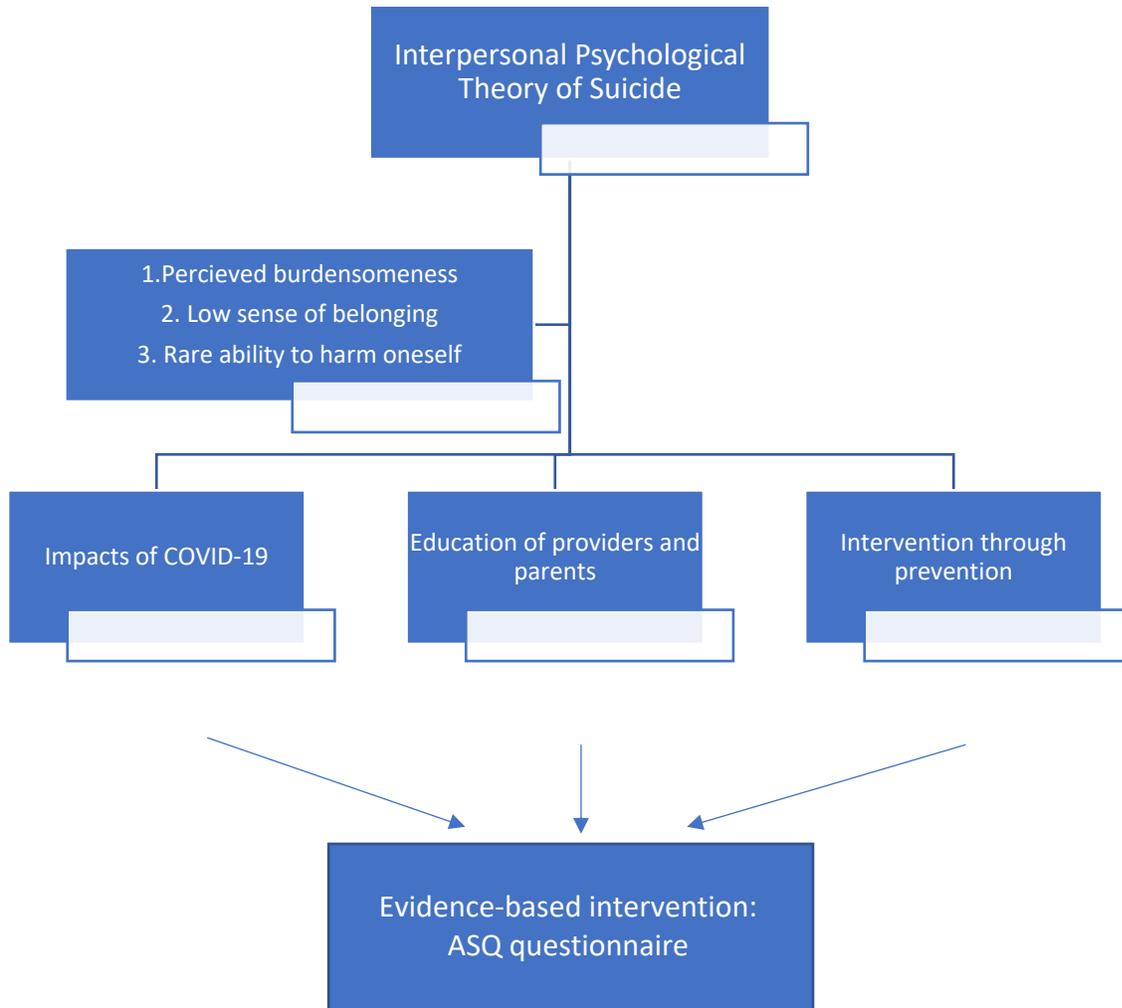
Evidence Grid

	Theme	Theme	Theme	Theme	Theme
Article (last name of first author, date)	Method Of Screening	Prevention as Intervention	Education	Referral/ Follow-up	COVID-19 Impacts
Anguinaldo (2021)	X			X	
Bhatti (2018)	X			X	
Davis (2021)	X				
Boden (2021)			X		X
Etter (2018)	X	X	X		
Ferrin (2019)	X	X	X		
Lanzillo (2019)	X				
Hacker (2014)				X	
Hill (2017)	X		X		
Horowitz (2012)	X	X		X	
Horton (2015)		X	X		
King (2017)	X	X	X		
LeCloux (2018)			X		
Ballard (2017)	X				
Patterson (2016)	X	X			
Richardson (2017)		X	X	X	
Shearer (2016)			X		
Sisler (2020)	X	X	X	X	
Syzlyk (2020)	X	X	X	X	
Lanzillo (2017)	X				

Bilsen (2018)			X		
Diamond (2012)	X		X		
Ferget (2020)					X
Carney (2021)					X
Sheftall (2016)			X		
Patel (2018)	X				
Neves (2014)	X				
Milliman (2021)	X	X	X		
Joiner (2001)	X				
Bittle (2010)	X		X		

Appendix F

Theory to Application Diagram



Appendix G

Logic Model

Logic Model for DNP Project

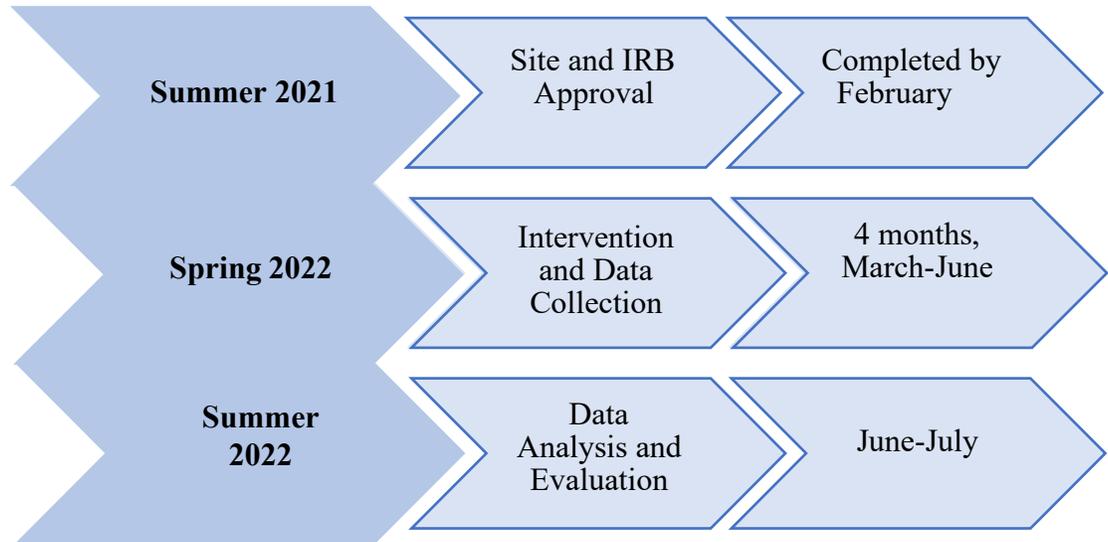
Student: Carli Paperi

Inquiry: For adolescents 11-21 years old seen during primary care visits (P), will the addition of a validated suicide risk screening tool (I), compared with a typical office visit utilizing no suicide risk screening tools (C), increase the number of adolescents being accurately screened for suicide risk and given subsequent intervention and referral (O) over a 4-month time period (T) at a primary care clinic (S)?

Inputs	Intervention(s) Outputs		Outcomes -- Impact		
	Activities	Participation	Short	Medium	Long
<p>Evidence, sub-topics</p> <ol style="list-style-type: none"> 1. Method of Screening 2. Intervention as Prevention 3. Education 4. Referral/Follow-up 5. Covid-19 implications <p>Major Facilitators or Contributors</p> <ol style="list-style-type: none"> 1. Feasibility 2. Quick to administer <p>Major Barriers or Challenges</p> <ol style="list-style-type: none"> 1. Provider Beliefs 2. Parental Beliefs 3. Ethics regarding pediatric patients 	<p>EBP intervention</p> <p>Provide ASQ questionnaire for all adolescents ages 11-19 at WCC and episodic appointments.</p> <p>Major steps of the intervention</p> <ol style="list-style-type: none"> 1. Project design and proposal. 2. Consent for implementation 3. Implement proposed intervention 4. Study the results. 5. Make adjustments as needed 	<p>The participants</p> <p>Adolescent patients 11-21</p> <p>Site</p> <p>Pediatric Primary Care</p> <p>Time Frame</p> <p>4 months of intervention</p> <p>Consent or assent Needed</p> <p>Yes</p> <p>Other person(s) collecting data</p> <p>Yes</p> <p>Others consenting</p> <p>No</p>	<p>Primary outcome(s) to be measured during project.</p> <ol style="list-style-type: none"> 1. How often screening tool utilized 2. Referral rates <p>measures:</p> <ol style="list-style-type: none"> 1. Increase number of adolescents screened for suicide risk 2. Improve plan for referral or follow-up <p>Measurement tool(s)</p> <p>ASQ screening tool and post-evaluation survey</p> <p>Statistical analysis</p> <p>Chi-squared test</p>	<p>Outcomes to be measured beyond project time.</p> <ol style="list-style-type: none"> 1. Adherence to suicide screening upon all well child checks/episodic visits greater than 11 years old 2. Compliance with referral and follow-up 	<p>Outcomes to be measured beyond project time.</p> <ol style="list-style-type: none"> 1. Adherence to suicide screening upon all well child checks/episodic visits greater than 11 years old 2. Compliance with referral and follow-up

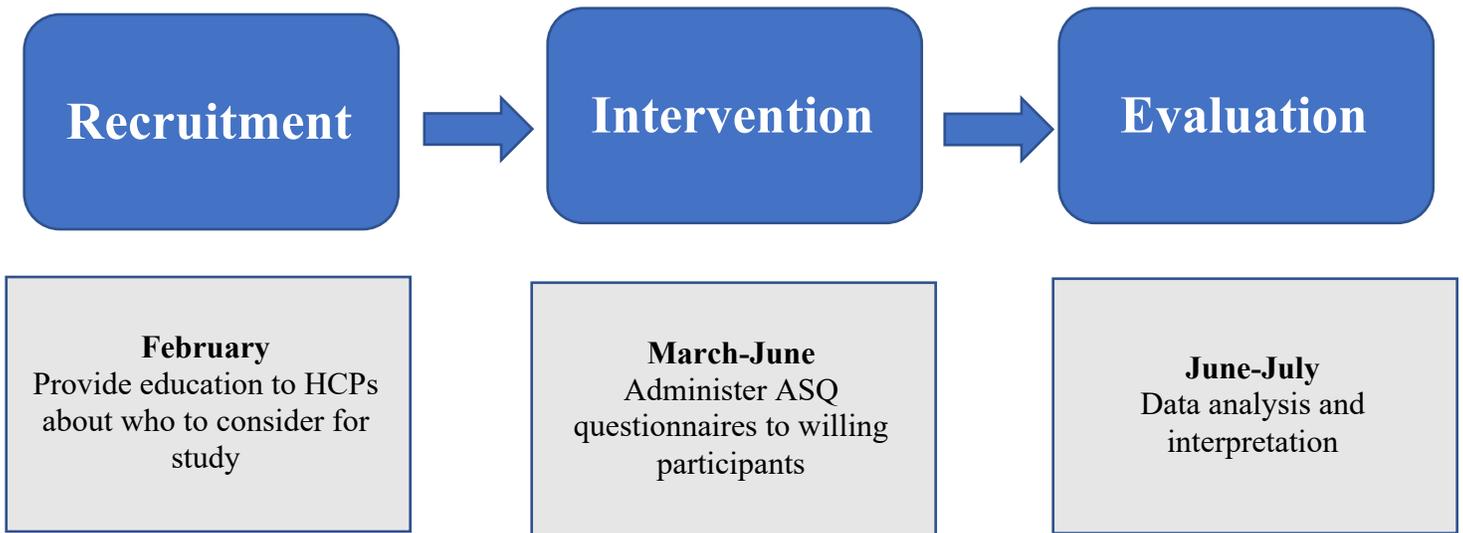
Appendix H

Timeline Flow Chart



Appendix I

Intervention Flow Diagram



Appendix J

Intervention Materials



NIMH TOOLKIT

Suicide Risk Screening Tool

Ask Suicide-Screening Questions

Ask the patient:

1. In the past few weeks, have you wished you were dead? Yes No
2. In the past few weeks, have you felt that you or your family would be better off if you were dead? Yes No
3. In the past week, have you been having thoughts about killing yourself? Yes No
4. Have you ever tried to kill yourself? Yes No
 If yes, how? _____

 When? _____

If the patient answers **Yes** to any of the above, ask the following acuity question:

5. Are you having thoughts of killing yourself right now? Yes No
 If yes, please describe: _____

Next steps:

- If patient answers "No" to all questions 1 through 4, screening is complete (not necessary to ask question #5). No intervention is necessary (*Note: Clinical judgment can always override a negative screen).
- If patient answers "Yes" to any of questions 1 through 4, or refuses to answer, they are considered a **positive screen**. Ask question #5 to assess acuity:
 - "Yes" to question #5 = **acute positive screen** (imminent risk identified)
 - Patient requires a **STAT safety/full mental health evaluation**.
 - Patient **cannot leave until evaluated for safety**.
 - Keep patient in sight. Remove all dangerous objects from room. Alert physician or clinician responsible for patient's care.
 - "No" to question #5 = **non-acute positive screen** (potential risk identified)
 - Patient requires a **brief suicide safety assessment to determine if a full mental health evaluation is needed**. Patient **cannot leave until evaluated for safety**.
 - Alert physician or clinician responsible for patient's care.

Provide resources to all patients

- 24/7 National Suicide Prevention Lifeline 1-800-273-TALK (8255) En Español: 1-888-628-9454
- 24/7 Crisis Text Line: Text "HOME" to 741-741

asQ Suicide Risk Screening Toolkit NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH)  7/5/2020

Appendix K

Post-Evaluation Survey

	YES	NO
Referral to Emergency Department		
Referral to Mental Health Professional		
Follow-up appointment scheduled		

Appendix L

Faculty DNP Project Proposal Letter



June 29, 2021

UMKC DNP Student: Carli Paperi

Congratulations. The UMKC Doctor of Nursing Practice (DNP) faculty has approved your DNP project proposal, *Adolescent Suicide Screening in Primary Care*.

You may proceed with IRB application

Sincerely,

A handwritten signature in black ink that reads "Cheri Barber".

Cheri Barber, DNP, RN, PPCNP-BC, FAANP
Clinical Assistant Professor
DNP Program Director
UMKC School of Nursing and Health Studies barberch@umkc.edu

A handwritten signature in purple ink that reads "Lyla Lindholm".

Lyla Lindholm, DNP, RN, ACNS-BC
Clinical Assistant Professor, DNP Faculty
MSN-DNP Program Coordinator
UMKC School of Nursing and Health Studies lindholml@umkc.edu

Debbie C. Pankau DNP, APRN, FNP-BC
Clinical Assistant Professor
DNP Faculty
UMKC School of Nursing pankaud@umkc.edu

DNP Faculty Mentor Cheri Barber, DNP, RN, PPCNP-BC, FAANP
UMKC School of Nursing and Health Studies

Appendix M

IRB Approval Letter



Institutional Review Board
University of Missouri-Kansas City

5319 Rockhill Road
Kansas City, MO 64110
816-235-5927
umkcirb@umkc.edu

Dear Cheri Ann Barber,

A member of the UMKC Research Compliance Office screened your QI project #2066142-QI entitled "Adolescent Suicide Screening in Primary Care " and made the following determination:

QI Determination: The project has been determined to be a quality improvement activity not requiring IRB review.

If you have any questions regarding this determination, please feel free to contact our office at 816-235-5927, umkcirb@umkc.edu, or by replying to this notification.

Note Regarding Publications: It is appropriate to disseminate and replicate QI/program evaluation successes, including sharing the information external to an organization. This may include presentations and publications. The mere intent to publish the findings does not require IRB review as long as the publication does not refer to the activity as research.

Thank you,
UMKC Institutional Review Board

Appendix N

Data Collection Template

<u>Group</u>	<u>Age</u>	<u>Race</u>	<u>Gender</u>	<u>Ethnicity</u>	<u>ASQ</u> <u>Score</u>	<u>Referral/Follow-up</u>
--------------	------------	-------------	---------------	------------------	----------------------------	---------------------------

Appendix N

Statistical Analysis

Outcome Measure with Tool	Tool Validity & Reliability	Statistical Analysis Plan
<ul style="list-style-type: none"> • Increase number of adolescents screened for suicide risk • Tool: ASQ Screening Tool 	<ul style="list-style-type: none"> • 100% sensitivity • 87.9% specificity (Aguinaldo et al., 2021) 	<ul style="list-style-type: none"> • Chi-squared test analyzing retrospective data to post-implementation data
<ul style="list-style-type: none"> • Improve plan for Referral/follow-up rates after positive suicide risk screen • Tool: Post-Evaluation Survey 	<ul style="list-style-type: none"> • n/a 	<ul style="list-style-type: none"> • Assess for statistical significance within focus practice

Results

Contingency Tables

Contingency Tables

Groupings		Intervention		Total
		0	1	
Retro	Observed	94	0	94
	Expected	66.0	28.0	94.0
	% within row	100.0%	0.0%	100.0%
Post	Observed	45	59	104
	Expected	73.0	31.0	104.0
	% within row	43.3%	56.7%	100.0%
Total	Observed	139	59	198
	Expected	139.0	59.0	198.0
	% within row	70.2%	29.8%	100.0%

χ^2 Tests

	Value	df	p
χ^2	76.0	1	<.001
N	198		

(The Jamovi Project, 2021)

Frequencies

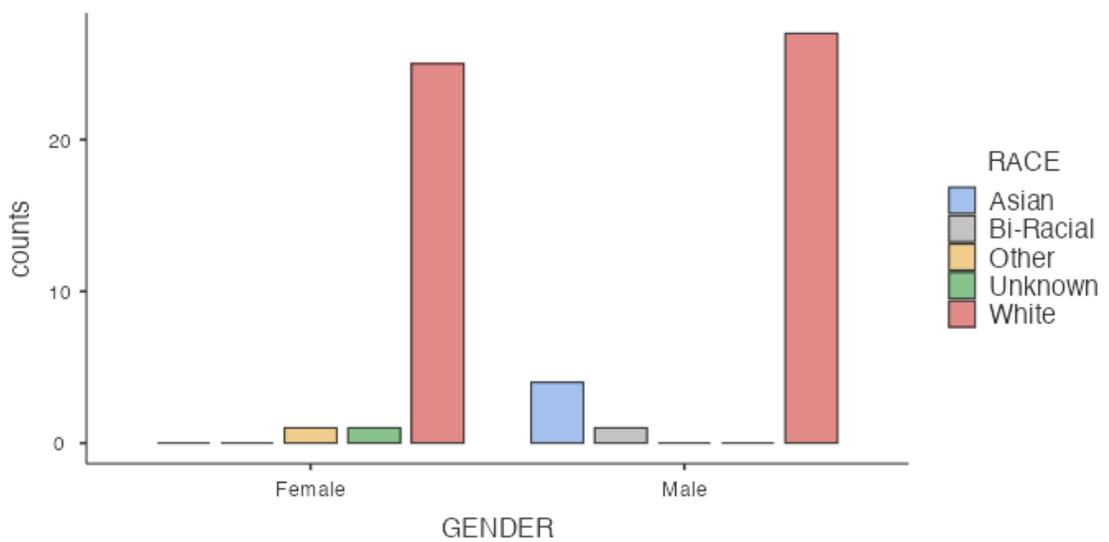
Frequencies of GENDER

Levels	Counts	% of Total	Cumulative %
Female	27	45.8%	45.8%
Male	32	54.2%	100.0%

Frequencies of GENDER

GENDER	RACE				
	Asian	Bi-Racial	Other	Unknown	White
Female	0	0	1	1	25
Male	4	1	0	0	27

GENDER



(The Jamovi Project, 2021)

Post-Screening Survey Results for Positive ASQ Scores

<u>Age</u>	<u>Race</u>	<u>Gender</u>	<u>Score</u>	<u>Referral/Follow-up Plan</u>
------------	-------------	---------------	--------------	--------------------------------