PILOTING A CLINICAL MENTAL HEALTH PROCESS IN THE INTERMEDIATE SCHOOL SETTING

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Abstract

The COVID-19 pandemic has highlighted the need for increased adolescent mental health support in the school setting. This evidence-based quality improvement project aimed to determine if implementing a clinical mental health pathway increases the number of mental health screenings completed and increases school nurse practitioners' comfort and confidence in completing mental health screenings. A Mental Health Toolkit was developed to include program-specific management recommendations, a school collaboration flowsheet, and educational and community resources for the nurse practitioner, students, and school community. The 15-week pilot intervention was evaluated using quantitative pre-and post-survey and qualitative interviews. The intervention increased the number of depression screenings performed compared to the previous school year. In addition, the post-intervention interview provided clarity to the persistent system-level and clinic-level barriers and provided personal insights into performing mental health screenings within the school setting. This pilot project allowed the nurse practitioner to model the normalization of mental health discussions. It also provided an opportunity for increased collaboration between the nurse practitioner and school partners, which can substantially impact adolescent mental health outcomes.

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List of Abbreviations

AAP	American Academy of Pediatrics
CDC	Centers for Disease Control and Prevention
COVID-19	Coronavirus Disease-19
DOE	Department of Education
DOH	Department of Health
DSM-IV TR	Diagnostic and Statistical Manual of Mental Health Disorders, fourth edition, Text Revision
HMTSS	Hawaii Multi-Tiered Support System
IEP	Individualized Education Plan
LGBTQ+	Lesbian, Gay, Bisexual, Transgender, Queer+
MDD	Major Depressive Disorder
MHA	Mental Health of America
MH-TIPS	Mental Health Training Intervention for Health Providers in School
NASN	National Association of School Nurses
PHQ-9	Patient Health Questionnaire-9
SBBH	School-Based Behavioral Health
SHA	School Health Assistant
USPSTF	United States Preventative Services Task Force
WHO	World Health Organization

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PILOTING A CLINICAL MENTAL HEALTH PROCESS IN THE INTERMEDIATE SCHOOL SETTING

Adolescent mental health is a national priority (Office of Disease Prevention and Health Promotion, n.d.). Adolescents have experienced an increase in mental health challenges, anxiety, depression, suicide attempts, and completions which have all been compounded by the Coronavirus Disease (COVID-19) pandemic. The COVID-19 pandemic containment measures have affected the normal daily activities of adolescents. Adolescents have been unable to attend in-person school and participate in extracurricular activities that keep them connected to their peers. This has resulted in the loss of academic and social support and an increase in social isolation, most notably in adolescents of lower socioeconomic status (Rogers, Ha, & Ockey, 2021). The increase in the amount of time spent with family members has resulted in an increase in conflict and domestic violence among family members, especially in households that have experienced a loss of income or housing (Rogers et al., 2021). With students returning to in-person learning, school nurses must be prepared to identify at-risk students through mental health screening, collaboration with school and community mental health resources, and feel comfortable managing and referring students with anxiety, depression, and suicidal ideation. Procedures that support the school nurses' role within educational systems are critical to ensure proper management of students who screen positive for depression and possible co-occurring anxiety and suicidal ideation.

Background and Significance

Mental health disorders constitute 16% of the global disease burden in people aged 10 to 19 (World Health Organization [WHO], 2019). In the United States, one in five youth between the ages of 4 and 17 experience minor to severe behavioral health problems (American Academy

of Pediatrics [AAP], 2016). Hawaiʻi youth are not immune to this trend. The 2019 Hawaiʻi Youth Risk Behavior Survey reported an increase in depression symptoms, self-harming behaviors, suicidal thoughts, plans, and attempts in Hawaiʻi's middle schoolers (Hawaiʻi Health Data Warehouse, State of Hawaiʻi, 2021). Since the COVID-19 pandemic, there has been a higher incidence of adolescents screening positive for moderate to severe depression, especially those of ethnic minority backgrounds and members of the Lesbian, Gay, Bisexual, Transexual, Queer + (LBTQ+) community (Mental Health of America, 2020).

The implications of unidentified and untreated depression can have a far-reaching and lifelong impact on adolescents, their families, and the community. Reports have documented that adolescents with untreated depression struggle with poor academic outcomes, decreased employment prospects, and adverse health outcomes, including the risk of substance abuse, early pregnancy, and suicide (Bitsko et al., 2016; Lewandowski et al., 2013). Nationally, suicide remains one of the top three leading causes of mortality for adolescents (Centers for Disease Control [CDC], 2017). According to the Hawaiʻi Emergency Medical Services and Injury Prevention System Branch, suicide was the leading cause of death in youth aged 10 to 19. Approximately one-third of adolescents who committed suicide had a mental health disorder, with depression being the most common disorder (Hawaii State Department of Health [DOH], 2021). Unidentified and untreated depression may impact more than the individual. Families of depressed adolescents may experience a change in family dynamics, increased expenses due to disease progression, and an inability for an individual's parent or guardian to work due to progressing illness (Bhatta, Champion, Young, & Loika, 2018; Bitsko et al., 2016). The benefits of the early identification of students at risk for depression are increased engagement in education, decreased absenteeism, decreased dropout rates, reduction in mental health stigma,

and improvement in skills to build healthy and positive relationships (Dupere et al., 2018; Finning et al., 2019; Mental Health America [MHA], 2016).

Adolescent Development and Transition

Adolescence is a formative period in an individual's life. The associated changes in cognitive, physical, social, emotional, and psychological factors can influence long-term health outcomes. Adolescents typically undergo puberty between the ages of 10 to 16. During puberty, adolescents experience physical, hormonal, emotional, and social changes (Koch, McKone, Beam, & Mendle, 2020). Rates of mental health problems, including depression, anxiety, eating disorders, aggression, and substance abuse, can increase during this time (Mendle et al., 2020).

Another transition occurring at this age is the entrance to middle school. During this period of schooling, students are learning how to adjust from being in smaller individual contained classes to being integrated with unfamiliar peers, higher academic expectations, and less educator oversight (Hanewald, 2013). The perceived loss of peer support groups and feeling disconnected from parents and educators coupled with puberty can negatively affect school achievement and increase depressive symptoms, especially in at-risk adolescents (Forrest, Bevans, Riley, Crespo, & Louis, 2013; Hanewald, 2013).

Considering the long-term effects of depression and early intervention benefits, school nurses should prioritize depression screening among adolescents. The United States Preventive Services Task Force (USPSTF) (2016) recommends screening for major depressive disorder (MDD) in youth ages 12 to 18 when appropriate processes are in place for follow-up and resources are available. Additionally, the American Academy of Pediatrics recommends yearly mental health screening for all adolescents starting at age 12 and providing targeted screening for adolescents at a higher risk of depression (AAP Committee on Practice and Ambulatory

Medicine and AAP Bright Futures Periodicity Schedule Work Group, 2017). Adolescents may be considered at an increased risk for depression if they have had a history of a mental health crisis, a positive familial history of mental health disorders, trauma, and social stressors (Zuckerbrot, Cheung, Jensen, Stein, & Laraque, 2018). For adolescents living with depression, certified school nurses are the most accessible health professional and ideally situated to engage students in evidence-based mental health interventions to promote positive health outcomes (Law, McClanahan, & Weismuller, 2017; National Association of School Nurses [NASN], 2018).

School nurses within school-based health centers, based on their educational training, can help identify students at risk for mental health disorders and provide appropriate and timely access to school and community mental health partnerships. School nurses play a pivotal role in the interdisciplinary school team by providing necessary information to school personnel and community health partners to enhance care and advocate for students and families (National Association of School Nurses [NASN], 2018). To effectively assist students requiring mental health intervention, school nurses need clear guidelines regarding follow-up and referral criteria. Lewandowski et al. (2013) recommend using a systematic approach to assess adolescents who screen positive for depression.

Hawaiʻi Keiki: Healthy and Ready to Learn Program

The Hawaiʻi State Department of Education (DOE) and the University of Hawaiʻi at Mānoa School of Nursing developed a partnership in 2014, resulting in the establishment of the Hawaiʻi Keiki: Healthy and Ready to Learn Program (Hawaiʻi Keiki Program). The Hawaiʻi Keiki Program's goal is to assist the Hawaiʻi DOE in achieving student and school system success (Hawaiʻi Keiki Program, 2020). Since its inception in 2014, the program has grown to

employ 21 nurses, including nurse practitioners and registered nurses, to support all 15 complex area school districts across the State of Hawaiʻi. The Hawaiʻi Keiki Program nurses work to promote interdisciplinary collaboration among educators, school staff, students, families, and community health providers and are an asset to help identify and provide early intervention for students at risk for behavioral health disorders (Hawaiʻi Keiki Program, 2020; National Association of School Nurses [NASN], 2018). Currently, the Hawaiʻi Keiki Program Nurses work as contractors within the Hawaiʻi DOE system. The Hawaiʻi Keiki Program nurse practitioners have one primary clinical site per complex area within the Hawaiʻi DOE system, strategically placed in Title 1 schools. Title 1 is a federal education program that provides funding to schools with a high percentage of low socioeconomic status students to ensure students meet educational standards (DOE, n.d.). Placing Hawaiʻi Keiki Program nurses within schools with a high number of low socioeconomic status helps mitigate the risk of worsening health outcomes related to health disparities caused by social determinants of health (socioeconomic status, access to healthcare, access to resources, and culturally competent care) (Schroeder, Malone, McCabe, & Lipman, 2018). School nurses help increase access to health care services and increase student support for mental and behavioral health issues.

Site Information

The Hawaiʻi State DOE consists of 294 public and charter schools and is the oldest public school district West of the Mississippi River (DOE, n.d.). Of the 257 public schools within the Hawaiʻi State DOE, 158 schools are considered eligible for Title 1 services (Hawaiʻi State Department of Education [DOE], n.d.). In the 2020-2021 school year, the Hawaiʻi DOE serviced 162,491 students (DOE, n.d.). The Hawaiʻi DOE embraces the CDC's Whole School, Whole Community, Whole Child Model (WSCCC) model that encompasses ten components needed to

achieve student success. The ten components are health education, social and emotional climate, health services, counseling, psychological, and social services (CDC, 2021). The Hawaiʻi DOE recognizes that students may fail to achieve their full academic potential if physical and mental health concerns are not addressed and acknowledges the critical role mental health plays in students' ability to learn. In addition, schools have begun to integrate social-emotional learning into the middle school curriculum to help students better understand and manage their emotions (DOE, n.d.).

A complimentary support model integrated into the Hawaiʻi DOE to facilitate student support services is the Hawaiʻi Multi-Tiered Support System (HMTSS). The HMTSS framework guides intervention based on a continuum of services that utilizes a team-based approach integrating student data and monitoring to determine evidence-based interventions to achieve positive outcomes for all students. The HMTSS framework is a three-tiered system comprised of universal supports, targeted interventions, and intensive services, and it encompasses four domains: academic, behavioral, social-emotional, and physical well-being (DOE, n.d.; Panorama Education, n.d.).

The primary school support staff utilized by the Hawaiʻi Keiki Program nurse practitioners for the mental health support of students are the school counselors. Each school within the Hawaiʻi DOE has school-based counselors. Along with the school counselors, educators and school administrators can refer students to access additional behavioral health services within the educational system through the School Based Behavioral Health (SBBH) program. The Hawaiʻi Keiki nurse practitioners have varying levels of relationships with these school-level counselors and other service providers.

Needs Assessment

A needs assessment was completed with eight nurse practitioners who function primarily within the middle, intermediate, and high school settings. The needs assessment data was collected via an online survey tool, and the goal was to inform the developed intervention. Participants included one middle school nurse practitioner, three intermediate school nurse practitioners, and four high school nurse practitioners located on Oahu, Maui, and Hawaiʻi Island. All participants were female and the average length of employment in the Hawaiʻi Keiki Program was approximately 3.5 years. The needs assessment evaluated the nurse practitioner‘s perceptions of the importance of depression screening in the middle, intermediate, and high school populations, current screening practices, confidence in completing and interpreting Patient Health Questionnaire-9 (PHQ-9) results (described more in-depth later in this paper), current follow-up and referral practices, and potential barriers and facilitators experienced by the nurse practitioners. In addition, quantitative data was gathered on the needs assessment using a Likert scale of 1-5, with 5 being the most strongly affirmative answer. See Appendix 1 for Nurse Practitioner Needs Assessment questions.

The needs assessment revealed that although the nurse practitioners understood and appreciated the value of mental health screening in adolescents, they were only somewhat likely to complete a mental health screening. The nurse practitioners identified lack of time, failing to remember, lack of organization, and no official protocol to address a positive screening as barriers to completing a PHQ-9. The nurses also identified feeling uncomfortable initiating a mental health screening using the PHQ-9; however, they felt comfortable interpreting the results of the PHQ-9 when completed.

Most nurse practitioners did not have a formal process to determine the need for follow-up frequency or guide them in placing a referral. If nurse practitioners used the PHQ-9 score to

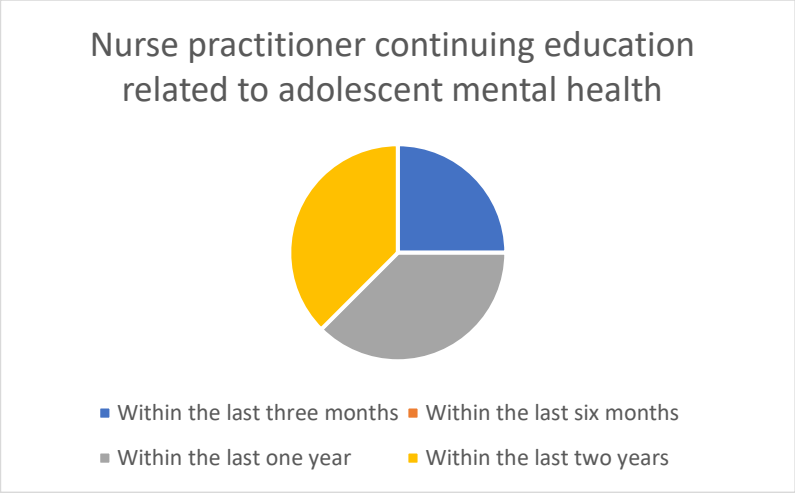
guide their decision-making process for the frequency and urgency of a follow-up visit or referral placement, typically, the higher the PHQ-9 score, the more urgently visits and referrals occurred. If the nurse practitioners did not rely on the PHQ-9 for guidance, they would often rely on their clinical judgment based on their clinical interview with students, including perceived severity of symptoms and assessing the student's identified family and social supports. Another factor that the nurse practitioners identified was that follow-ups and referrals occur more urgently if the student asked specifically for help. Occasionally, school input, such as academic performance and teacher feedback, was solicited in making this decision.

The nurse practitioners were most likely to follow up with students who screened positive for moderate and severe depression and were most likely to refer students for support when students screened positive for moderate-severe depression. Follow-up visits often involve check-ins with the student to evaluate their current emotional status but rarely involve rescreening for depression. The nurse practitioners identified the following barriers to completing follow-up visits with students: scheduling conflicts, lack of Hawaiʻi Keiki Program consent, lack of student support at home, and lack of a follow-up process for students who screen positive for depression. If the nurse practitioner found that the student’s symptoms were not improving, students were referred to their primary care provider and school counselors. The nurse practitioners cited the following factors when considering whether or not to refer students to mental health services: severity of symptoms, absence or presence of support systems, students' ability to adhere to the referral request, reoccurrence of symptoms, insurance status, and resource availability. The nurse practitioners identified trouble connecting with the community and some school-level services.

In general, the nurse practitioners endorsed not having adequate resources to support students with mental health concerns. When asked about what resources would facilitate mental

health screening and enhance the management of students who screened positive for depression, the nurse practitioner stated the following: Access to mental health professionals, referral contact information, and a process for managing students who screened positive for depression. A suggestion provided by the nurse practitioners for increasing mental health awareness and decreasing the stigma of mental health issues within the school setting was implementing a mental health awareness campaign. Most nurse practitioners have participated in mental health continuing education within the last two years. Continuing education courses completed by the nurse practitioners centered around substance abuse and mental health in adolescents, social anxiety, and the effect COVID-19 had on adolescent mental health. One nurse did complete the Mental Health Training Intervention for Health Providers in School (MH-TIPS) within the last two years. See Figure 1.

Figure 1 Nurse Practitioner Continuing Education



Student's unique needs and barriers to be considered before implementing a standardized mental health process within the school setting are cultural considerations, socioeconomic status, insurance status, access to care, and parental consent. In addition, one of the nurse practitioners identified that to treat students who screen positive for depression properly, the whole school community needs to be involved to ensure student success. Students also need to be evaluated holistically and ensure that services are accessible and affordable. See Table 1 for needs assessment mean scores.

Table 1

Needs Assessment

Needs Assessment Questions	**Mean score (n=8)**
How would you rate the importance of Hawaiʻi Keiki nurse practitioners screening for depression in middle/intermediate school students?	4.6
How would you rate the importance of Hawaiʻi Keiki nurse practitioners screening for depression in high school students?	4.75
How likely are you to complete a Patient Health Questionnaire (PHQ-9) on a student presenting to the clinic	3.5
I am confident completing a PHQ-9 screening	3.75
I am comfortable interpreting PHQ-9 results	4.0
How often do you follow up with a student who screened positive for mild depression?	3.0
How often do you follow up with a patient who screened positive for moderate depression?	4.25
How often do you follow up with a patient who screened positive for severe depression?	4.6
I am comfortable discussing mental health issues with students and families	3.75
I am confident in referring students for mental health concerns	3.8
I have adequate mental health resources for students and families	3.1

Note: Mean scores were obtained using a five-point Likert scale (5=the most strongly affirmative response).

Problem Statement

The long-term effects of adolescent depression on a student's educational outcomes and quality of life should make mental health screening and early intervention for symptoms a priority for school nurses. This quality improvement project will help Hawaiʻi Keiki Program

nurse practitioners working in the middle, intermediate, and high school settings establish a consistent screening, follow-up, and referral process for managing adolescent depression.

Patient Intervention Comparison Outcome and Time (PICOT)

For the Hawaiʻi Keiki Program nurse practitioners, (P) will the implementation of a standardized mental health screening, follow-up, and referral process (I) increase the rate of mental health screening, improve the referral and follow-up process, and increase nurse practitioner comfort and confidence with mental health screening (O) in the intermediate school setting for three months (T)?

Purpose and Objectives

This evidenced-based quality improvement pilot project aims to increase mental health screening rates among nurse practitioners, improve follow-up and referral processes, and increase nurse practitioners' comfort and confidence in performing mental health screenings. The objective will be to develop and pilot the standardized process in the intermediate school setting. The following steps will be or have been completed to achieve project goals: (1) The needs assessment, already conducted, was used to understand the current use of the PHQ-9, nurse practitioner comfort, and confidence in utilizing the PHQ-9 follow-up and referral practices. The needs assessment results will guide the development and implementation of the standardized process to increase school nurse practitioner consistency and follow-up for students who screen positive for depression. (2) A chart review to determine baseline rates of mental health screenings documented in the 2020-2021 school year. (3) A literature review to assess available evidence-based practice for referral and follow-up of positive mental health screening results. (4) Stakeholder engagement with key representatives from the Hawaiʻi Keiki Program administrative team and school counselors to hone the development of the standardized process for mental

health screening and referrals in the school setting. These elements will inform the development and refinement of the intervention to increase the rates of mental health screening and the effectiveness of the management and referral of students who screen positive for depression. In addition, it will help the Hawaii Keiki Program develop evidenced-based procedures around mental health screening of the adolescent population and collaboration with school-level support.

After developing the program-specific process, it will be pilot tested at an intermediate school in Maui. A post-intervention chart review will be completed to determine the number of mental health screenings completed at the implementation site. The number of pre-implementation mental health screenings will be compared to the number of post-implementation mental health screenings to determine if an increase in mental health screenings completed occurred. Finally, a post-intervention interview with the nurse practitioner at the intervention site will be completed to determine the intervention acceptability and identify barriers and facilitators of process utilization to inform long-term planning future adaptation of the process.

Conceptual Framework

The revised Iowa Model will be utilized as the framework to guide this quality improvement project. The Iowa Model was developed by nurses at the University of Iowa Hospital and Clinics in 1994 and subsequently revised in 2015 (Iowa Model Collaborative, 2017). The Iowa model encourages nurses to reflect on their current practice to identify a problem, develop problem-focused, evidence-based solutions for clinical practice (Doody & Doody, 2011). The revised Iowa model guides nurses in identifying an issue, clearly stating the inquiry aims, assessing for organizational need, forming a team, gathering and synthesizing the evidence, designing the pilot program, integrating change into current practice, and

disseminating the findings. In addition, the model allows for revision and realignment with organizational needs and project aims at each step.

Literature Review/Synthesis

An extensive literature search was conducted using a combination of PubMed, CINHAL, and Google Scholar databases. Key search terms included the following terms “adolescent OR teenager”, “depression screen”, “school health”, AND “patient health questionnaire”. Search term truncation and combinations of key terms were also utilized to refine the search further. The following filters were applied to obtain relevant articles, English language, geographic location, and the age of adolescents. This author also reviewed reference sections of related articles to ensure a complete list of all resources was collected. The search populated a total of 142 articles. Following a careful review of the articles and eliminating those not related to school health or pediatric primary care, a total of 28 articles were critically appraised and graded using Johns Hopkin’s level of evidence system (Oregon Health and Science University [OHSU], 2021). Most of the articles reviewed in this literature synthesis were level V articles (See Appendix 2). Based on the articles synthesized, the following six themes emerged: mental health screening, Patient Health Questionnaire-9 (PHQ-9) tool, school, parent and student perception, school nurse, and barriers and facilitators of depression screening in schools.

Mental Health Screening

Although the USPTF and the AAP’s Bright Future Guidelines recommend yearly depression screening, the literature suggests there may be barriers in clinical practice, resulting in variable rates of mental health screening and referral procedures within primary care and school-based health centers. A national study conducted by Zenlea, Milliren, Mednick, and Rhodes (2014) found that of the studies reviewed, 0.2% of visits completed by PCP’s included an

adolescent depression screening. However, Bhatta, Champion, Young, and Loika (2017) found that 55% of well-visits completed in a school-based pediatric primary care clinic included a discussion regarding depression; however, no formal screening tool was utilized by practitioners prior to the review. Referral processes within primary care settings and school-based health centers can also vary depending on the clinician's type, comfort, and experience (Kim et al., 2015; Taliaferro et al., 2013). Another factor that may contribute to a low screening rate is a decrease in health care utilization by the adolescent population, which decreases the opportunity for screening to occur (Bhatta, Champion, Young, & Loika, 2018). Leslie and Chike-Harris (2018) indicated that because of the decrease in contact between health care providers and adolescents, mental health screening should be opportunistic and should co-occur with any contact with the adolescent.

For depression screenings to be impactful and observe positive outcomes, they should be designed to identify early symptoms of depression and be combined with programs to support adolescents and families (McCormick, Thompson, Stoep, & McCauley, 2009). Zenlea et al. (2014) noted that although clinicians understand their responsibility to perform depression screenings, their completion of the screening may be inhibited by lack of time, training, lack of referral sources, and reimbursement. A survey completed by Taliaferro et al. (2013) revealed that health care providers endorsed administering a written assessment 79% of the time but typically only after concern of depression has arisen. Factors that increased the likelihood of clinicians performing depression screens were increased clinician comfort in addressing adolescent depression and having a clear protocol for follow-up (Taliaferro et al., 2013).

Implementing a standardized mental health pathway can help provide clinicians with guidance on follow-up and referral recommendations for adolescents who have screened positive

for depression and may also provide a level of clinician comfort (Honigfeld, Macary, & Grasso, 2017). To successfully implement such practices, providers require education and training regarding the mental health tool, a collaborative relationship with mental health resources, including referral sources, and a workflow that can be individualized for each unique environment is required (Honigfeld et al., 2017).

The assessment of an adolescent's mental health status should include a history of the concern and a family and social history. School functioning must also be considered as this may allow for services within the school setting. School assessment should include current school performance, changes in the ability to complete schoolwork, and relationships with teachers and peers (Hamrin, Antenucci, & Magorno, 2012). Confidentiality remains a prominent concern for students and parents accessing mental health services within the school setting (Samargia, Saewyc, & Elliott, 2006; Sekhar et al., 2021). When assessing students who screen positive for depression, it is essential to discuss confidentiality parameters. Adolescents must be reassured that information shared will remain confidential unless they are a danger to themselves or others or being abused (Hamrin et al., 2012). Management of depression in primary care often involved a follow-up visit, brief counseling sessions, lifestyle evaluation, and providing referrals to specialists as needed (Taliaferro et al., 2013). Follow-up visits for positive depression screening varied by the severity of the symptoms and depression score. Adolescents who screen positive for mild depression should be provided with education regarding depression, self-care strategies, therapeutic strategies such as cognitive-behavioral interventions, and coping skills (Bohnenkamp, Stephan, & Bobo, 2015; Selph & McDonagh, 2019). Healthcare providers should also provide family and caregiver education that includes handouts, web resources, books, hotlines, and local crisis centers (Chowdhury & Champion, 2020). For adolescents who screen

positive for moderate to severe depression, a referral to a mental health provider is warranted to discuss more intensive counseling and medication intervention (Chowdhury & Champion, 2020).

Patient Health Questionnaire-9 (PHQ-9)

The PHQ-9 is a 9-item self-administered screening tool for depression validated for use in 1999 in diverse populations. It is based upon the Diagnostic and Statistical Manual of Mental Disorders, fourth edition, Text Revision (DSM-IV TR) diagnostic criteria for Major Depressive Disorder (MDD) (Chowdhury & Champion, 2020; McMillan, Gilbody, & Richards, 2010; O'Byrne & Jacob, 2018). Although the DSM-V is currently in use, the diagnosis criteria for MDD have not changed, and therefore the use of the PHQ-9 is still appropriate (O'Byrne & Jacob, 2018). The 9-items are graded on a 0-3 Likert scale (0 – not at all to 3 – nearly every day). Once complete, the provider scores the questionnaire. A score of 5-9 indicates mild depressive symptoms, 10-14 moderate symptoms, 15-19 moderate-severe symptoms, and 20-27 severe depressive symptoms (O'Byrne & Jacob, 2018). The PHQ-9 tool is brief, self-administered, easy to understand, simple to score, and free to use (Law, McClanahan, & Weismuller, 2017; McMillan et al., 2010; O'Byrne & Jacob, 2018). It is also worth noting that patient self-administered tools have typically been more sensitive to mental health disorders than provider evaluation (Leslie & Chike-Harris, 2018). Among the adult population, the PHQ-9 has a sensitivity of 73% and a specificity of 98% (Richardson). In the adolescent population, the PHQ-9 has a sensitivity of 89.5% and a specificity of 77.5-78.8% (Chowdhury & Champion, 2020; Law et al., 2017).

The PHQ-9 can also be used within an algorithm that guides health care providers on assessing and managing individuals who screen positive for depression based on their scored questionnaire (Honigfeld et al., 2017). Rescreening an individual at each follow-up visit would

allow the health care provider to track symptoms and their response to intervention over time. The algorithm would assist health care professionals to provide care on a continuum, adjusting recommended interventions based on the score at each follow-up visit (McMillan et al., 2010; O'Byrne & Jacob, 2018). A referral to a mental health professional can occur at any point along the treatment path based on provider discretion (Selph & McDonagh, 2019). The literature suggests that health care providers would be able to ascertain a change in symptomology if there is a change in greater or less than 5 points (McMillan et al., 2010; Moore et al., 2012).

There are some limitations to utilizing the PHQ-9 as a screening tool. While the PHQ-9 was designed based upon the DSM-IV criteria for MDD, clinicians need to recall that it is a screening tool and not a diagnostic tool. Other clinical considerations are that the PHQ-9 was not designed to differentiate between a transient episode of depression or a chronic depressive disorder and that a negative screening result does not rule out a depressive episode. If there is any clinical suspicion of depressive symptoms, further clinical investigation and interviews should occur (O'Byrne & Jacob, 2018; Richardson et al., 2010). If clinicians are using the PHQ-2 for screening, an additional question evaluating suicidality should also be included with the screening questions (Richardson et al., 2010).

School

Historically, schools have been recognized as a major provider of mental health services, providing an entry point to 60% of students receiving mental health care (Bains & Diallo, 2016; Kim et al., 2015). Schools are highlighted as an opportune environment to promote early identification and intervention practices due to their access to children (Kim et al., 2015; Stephan, Connors, Arora, & Brey, 2013). The provision of mental health services within the school environment helps mitigate problems related to access to care, including transportation

and scheduling concerns. It may also help lessen mental health stigma by allowing care to occur in a safe, secure, and familiar environment (Kim et al., 2015; Stephan et al., 2013). These factors may contribute to an increase in adherence to medical plans. Combining school interventions with community support services provides students with an opportunity to improve social, emotional, and academic outcomes (Levitt, Saka, Romanelli, & Hoagwood, 2007).

Parent and Student Perceptions

Depression has consequences beyond the individual and also affects the family unit by altering the dynamics between members (Bitsko et al., 2016). While mental health screening within the school environment can arouse concerns, the all-encompassing nature of depression requires both parent and student participation in mental health interventions. In a study completed by Sekhar et al. (2021), 70.5% of parents responded positively to depression screening of their child completed at school. If screening was performed, parents overwhelmingly stated they would like to be notified of a positive mental health screening result. Interestingly, the survey revealed that parental race, sex, education level, and child's grade level affected a parent's preference for mental health screening. Parents of middle school children were 41.8 times more likely to prefer mental health screening begin in middle school versus in high school (Sekhar et al., 2021). Regarding parental consent for screening, Chartier et al. (2008) found that active consent affects student participation in depression screening, especially among high-risk populations. The lack of parental knowledge regarding mental health services provided at schools, the process for handling positive screening results, concerns about confidentiality, and concerns of mental health stigma may be contributing to the lack of parental consent or non-response (Chartier et al., 2008; Sekhar et al., 2021).

Although parental perception and participation in mental health care is essential, research reveals that parents typically underreport symptoms of depression in adolescents (Kuo, Stoep, Herting, Grupp, & McCauley, 2013). As a result, adolescents must be empowered to seek and engage in the mental health care they receive. The reported barriers to seeking mental health services reported by adolescents are the belief that the mental health concerns would resolve without intervention, the desire to handle problems on their own, embarrassment, confidentiality, stigma, and not knowing how to access mental health services (Leslie & Chike-Harris, 2018; Samargia, Saewyc, & Elliott, 2006). Other external barriers include the lack of parental involvement, lack of parental consent for treatment, lack of insurance coverage, and not knowing where to seek help (Samargia, Saewyc, & Elliott, 2006).

School Nurse

School nurses have been prominent supporters of providing mental health care services within schools and overwhelmingly view student mental health support as an integral part of their role (Pryjmachuk, Graham, Haddad, & Tylee, 2011; Ravenna & Cleaver, 2016). School nurses provide a valuable service to the school community by increasing access to care, bringing awareness to mental health issues within the student population, and are the prime candidate for leading the change on mental health issues within schools (Bains & Diallo, 2016; Pryjmachuk et al., 2011; Shannon, Bergren, & Matthews, 2010). The nurse's holistic approach and understanding of the link between physical well-being, mental well-being, and academic achievement helps bridge gaps between the student, family, school, and community health care providers (Allison, Nativio, Mitchell, & Yuhaz, 2013; Kim et al., 2015). The gaps in mental health services within schools provide an opportunity for nurse practitioners to strengthen their practice by implementing screening procedures, identifying adolescents at risk, and referring

students to mental health professionals for management of depression (Bhatta et al., 2018; Allison et al., 2013).

School nurses are often the first point of contact for students entering the mental health system and are often noted by adolescents to be the easiest to access and the most approachable school staff (Bains & Diallo, 2016; Kim et al., 2015; Law et al., 2017). In their position, school nurses have frequent contact with adolescents enabling them to identify potential students at-risk for mental health issues who present with somatic complaints (Ravenna & Cleaver, 2016; Shannon et al., 2010). Adolescents with somatic complaints will often spend a significant amount of time outside of the classroom setting and in the health office with complaints of headaches, tiredness, dizziness, and stomach aches and often have an underlying unaddressed anxiety or depression disorder (Shannon, Bergren, & Matthews, 2010). Shannon, Champion, Young, and Loika (2018) found that adolescents with a high number of somatic symptoms were 2.3 times more likely to develop depression. Although school nurses are skilled at developing relationships with adolescents and can assess physical ailments, they must also be trained to identify and screen adolescents at-risk for mental health disorders. It is essential to provide school nurses with training on coordinating services within the school environment and referral to community mental health resources for the best outcomes for students (Bohnenkamp et al., 2015; Law et al., 2017).

Once students are identified and screened positive for depression, they may require a referral to school-based or community resources. The referral decision-making process of school nurses can vary based on the knowledge and comfort of the school nurse. A study completed by Kim et al. (2015) found that school nurses' referral behaviors were variable. The decision to place a referral was sometimes based on intuition, and in other cases, the nurse collected

objective school data from school staff, such as educators, to determine follow-up and referral recommendations.

Some of the skills school nurses employ to assist students with mental health issues are facilitating conversations, helping develop skills such as effective communication, anger management, and cognitive-behavioral interventions (Bohnenkamp et al., 2015; Ravenna & Cleaver, 2016). While working with the student is of paramount importance, nurses can also help by fostering positive and open communication with the school staff, educators, and parents. Opening communication channels provide an opportunity for nurses to provide education to school staff, educators, and parents on the prevalence of mental health issues and their impact on school performance.

Barriers and Facilitators to Mental Health Screening in Schools

School nurses have identified internal barriers to performing mental health screening, including lack of time, size of their caseload, staffing issues, knowledge deficits, lack of guidance, and lack of training (Bhatta et al., 2018; Bohnenkamp et al., 2015; Hootman, Houck, & King, 2002; Kim et al., 2015; Law et al., 2017; Ravenna & Cleaver, 2016; Stephan et al., 2013; Taliaferro et al., 2013). External barriers identified by school nurses was a lack of recognition as a valuable partner on the school health team, lack of collaboration between school nurses and school staff, absenteeism rates, inadequate tools, referral wait time, lack of access to a mental health professional, and lack of family follow through with recommendations (Bohnenkamp et al., 2015; Kim et al., 2015; Pryjmachuk et al., 2011; Ravenna & Cleaver, 2016; Stephan et al., 2013; Taliaferro et al., 2013).

The themes that emerged from the literature that facilitated adolescent mental health screening were the education and training of school nurses and a collaborative relationship

between the school nurse and school personnel. The literature illustrates that mental health training improved healthcare providers' ability to identify and support adolescents with mental health issues and increased the number of documented depression screenings (Ravenna & Cleaver, 2016; Stephan et al., 2013; Taliaferro et al., 2013).

Good communication and a collaborative relationship between school nurses and school personnel were also highlighted as facilitators for adolescent depression screening in schools (Pryjmachuk, Graham, Haddad, & Tylee, 2011). Collaboration among the school nurse, student, student's family, school mental health team, school staff, and community mental health organizations helps decrease the fragmentation of care students receive (Bohnenkamp et al., 2015; Kuo et al., 2013). The process that increases communication quality between mental health partners and families should be developed and enhanced (Bains & Diallo, 2016). Some of the strategies the literature highlighted were nurse participation in learning collaboratives, team meetings, interprofessional education, and facilitating communication mechanisms (Bohnenkamp et al., 2015; Stephan et al., 2013). Education of students, families, school partners, and community health partners about the impact depression has on school performance and disclosing the depression screening process may help to increase awareness and collaboration among the school community (Kuo et al., 2013; Ravenna & Cleaver, 2016). Ensuring a solid foundation of communication and partnership among school nurses and partners will help to facilitate an efficient and effective continuation of care for students with mental health needs (Chartier et al., 2008).

Project Plan and Design

This evidenced-based quality improvement project was designed based upon the Iowa Model, which will also heledp to guide the implementation process. This DNP project was an

implementation of an evidenced-based healthcare improvement process determined through quality improvement initiatives or program/system evaluation and is deemed non-human studies research. To improve and further develop process improvement and program effectiveness, DNP project activities are related to quality improvement and do not produce generalizable knowledge. Therefore, based on the Common Rule, this project does not require IRB application or review. Approval from the Project Committee was obtained prior to initiating this quality improvement project (University of Hawaii Human Studies Program memorandum, 2021) (Appendix 3).

Project Setting/Timeframe/Participants

The quality improvement project was piloted at Samuel E. Kalama Intermediate School, a Title 1 School in Maui. As of Spring 2021, Kalama Intermediate School has approximately 890 students enrolled. The Hawaiʻi Keiki Program consent rate at this school is 29%. The implementation site nurse practitioner is a Family Nurse Practitioner employed with the Hawaiʻi Keiki Program for less than one year. The pilot occurred in the Fall academic semester of the school year 2021-2022.

Resource Toolkit and Process Development

This project utilized a multipronged intervention to meet the aims of the pilot project. First, two process flow charts were developed. The first process flow chart was a Hawaiʻi Keiki Program-specific process that guided the site nurse practitioner to determine appropriate clinical actions based on the PHQ-9 score (screening with the PHQ-9 is currently routine care). This included step-by-step clinical actions for the nurse practitioner to guide their practice for students who screened positive for mild depression, moderate-severe depression, and those who require crisis intervention. The second flow chart outlined suggested Hawaiʻi Keiki Program nurse

practitioner and school-level support personnel communication processes. This process flow chart was developed in collaboration with the site nurse practitioner and school-level counselors. Second, a Mental Health Screening Resources Toolkit was developed for the project. The pilot site nurse practitioner was provided with an orientation to the resource toolkit at the start of the program. The Mental Health Screening Resource Toolkit was Hawaiʻi Keiki Program specific and include all developed flowcharts, copies of the PHQ-9 screener and scoring instructions, educational materials about mental health screening among adolescents, and a list of existing community mental health resources. The community mental health resources list included hotline phone numbers, websites, and phone applications. Lastly, patient handouts were also collected to support the site nurse practitioner's ability to complete mental health screenings and provider follow-up resources.

Data Collection and Measures

The outcomes was evaluated in the following ways: 1) Quantitative chart review (data gathered after completion of the pilot period, Fall 2021) to obtain the number of mental health screenings documented in the Frontline School Health Management System. This was compared to the 2020-2021 school year to assess trends. 2) Interview of the pilot site nurse practitioner to determine the usefulness of flow charts, follow-up and referral practices, potential barriers and facilitators to performing mental health screening, and how the process may have increased the nurse practitioner‘s comfort and confidence in screening for depression (See Appendix 4 for semi-structured interview guide). 3) Pre- and post-implementation comparison of the pilot site nurse practitioner result to themselves as well as to the pre-implementation needs assessment results of all nurse practitioners working within middle and high school settings.

Data Analysis Plan

The quantitative electronic data collected was analyzed using descriptive statistics, including mean and percentages for nominal data. The Fall 2021 rates of screening was compared to the 2020-2021 academic year rates to examine trends over time. This de-identified data was extracted from the electronic medical record and managed using a Microsoft Excel spreadsheet and aggregate data tables (See Appendix 5, Electronic Record Data Abstraction Tool). Qualitative data collected from the interview with the pilot site nurse practitioner was analyzed using a limited and simple conventional content analysis. This process included reading all of the responses for overall orientation, identifying prominent themes, labeling responses into initial codes, and combining them into broader categories. There was limited qualitative data so that the analysis will identify only overall general categories.

If the project produces optimistic and feasible outcomes, the practice ideally would be formalized across the Hawaiʻi Keiki Program middle/intermediate and high school settings. Future evaluations can include optimizing this procedure and enhancing collaboration with school-level counselors and behavioral health providers. The dissemination of findings will include a report and presentation to the Hawaiʻi Keiki Program and the Hawaiʻi DOE representatives, a poster presentation at the University of Hawaiʻi, and potentially publishing findings in the National Association of School Nurse Journal.

Ethical Considerations

No identifiable quantitative data was shared with Hawaiʻi Keiki Program or the Hawaiʻi DOE administration. The site nurse practitioners reviewed the summarized findings from the interview to approve prior to sharing any qualitative data. Only general comments was shared. The information provided by the nurse practitioners (site nurse practitioner and others during the needs assessment) did not affect job performance reviews or evaluations. No student data,

identified or de-identified, was collected for this quality improvement project. The data collected was count data only. Aggregate data collection did not harm any participants of this project. Although Internal Review Board approval was not required for this quality improvement project, this writer has completed the Collaborative Institutional Training Initiative training for research ethics and compliance. The Office of Data Governance and Analysis at the Hawaiʻi DOE has approved this project and data collection methods to further ensure that no harm to students and their data will occur.

Finalized Intervention

The finalized mental health screening intervention consisted of three elements. (1) The first was Hawaii Keiki Program-specific Management Recommendations based on the student's PHQ-9 score (See Appendix 6). This document was created to guide the nurse practitioner in the follow-up and referral practices. For each PHQ-9 score range, normal, mild, moderate to severe, and crisis intervention, the flow sheet provided follow-up recommendations, charting requirements, student, parental, and school-level notifications, and recommended actions. For students who indicated a positive score on question 9 of the PHQ-9, screening for suicidal ideation was also recommended. (2) The second flowsheet created was a Hawaiʻi Keiki nurse practitioner and School Collaboration Flowsheet, which outlined recommended school level intervention based on role (nurse practitioner or school counselors) and severity of screening score (See Appendix 7). This document guided a discussion with the school-level administration, including the principal, school counselors, and SBBH health personnel. Actions may include scheduling check-in visits with the school counselors, assessing if the student was experiencing a change in grades or school attendance based on a potential mental health concern and if so, initiating the process for considering a 504 plan or Individualized Education Plan (IEP). This

document also clarified roles and recommendations for action based on screening severity and ideas on how the nurse practitioner and school could work together to ensure students with potential mental health concerns were provided with comprehensive support within the school setting. Lastly, (3) a Mental Health Screening Toolkit was created. The toolkit included the following elements: digital copies of the flow sheets mentioned earlier sheets, screening tools currently used by the organization, including web links to videos on how to use the tools, nurse-focused education and resources regarding mental health topics, potential referral sources including mental health providers within the community, and student, family, and community resources.

A refresher of the mental health toolkit and updates were provided to the pilot site nurse practitioner eight weeks after the start of the 15-week project. The mental health toolkit resources were reviewed at this meeting, and updates to the toolkit resources sections were highlighted. We also discussed and problem-solved current barriers and facilitators to completing mental health screenings.

Results

The pilot project was implemented, and data were collected from September 1, 2021, to December 17, 2021. On August 5, 2021, the pilot site nurse practitioner at the intermediate school was provided education about process utilization of the three-pronged intervention (Management Recommendation Flowsheet, School Collaboration flowsheet, and Mental Health Screening Toolkit). In addition, a refresher on the intervention protocols was provided to the nurse practitioner on October 25, 2021 (8 weeks after the start of the intervention).

Quantitative Chart Review Results

During the 15-week intervention, a total of five mental health screenings were conducted (zero before the intervention refresher and five after the refresher). Per chart review, there were 21 opportunities for a mental health screening to occur. Only approximately 24% of students eligible to be screened were screened. However, compared to the 2020-2021 school year, this post-intervention data documented is a five-fold increase in the number of mental health screenings completed at this pilot site. There were no documented referrals for mental health follow-ups or counseling sessions provided by the nurse practitioner during the intervention time frame.

Qualitative Interview Results

Qualitative data collected from the pilot site nurse practitioner interview were analyzed using a limited and simple conventional content analysis. Three categories of findings emerged in the data these included: 1) system-level barriers, 2) clinic-level barriers, and 3) personal insights. These themes primarily focused on barriers to completing mental health screenings within the school setting at the system and clinic level.

System-level barriers. The system-level barriers highlighted the need for clear communication across the different stakeholders at the school level, including school administration, school counselors, and behavioral health specialists. Although prior to implementing the pilot project, a meeting was convened with the school principal, counselors, and behavioral health specialists to inform them of the project and briefly review the process, the nurse practitioner fielded many follow-up questions regarding the mental health screening process. The nurse practitioner identified that a few counselors expressed anxiety about performing mental health screening in the school. The nurse practitioner also indicated that there appeared to be confusion and concern about the roles of the school-based counselors in

supporting students who screened positive for depression. Another area of concern noted by the nurse practitioner was the lack of follow-up regarding referrals for students to school-based services. For example, after identifying a potentially at-risk student and notifying the school counselors, the nurse practitioner noted that there was no initiation by the school staff to close the communication loop between them. Although the nurse practitioner encountered resistance from the school-based counselors related to the mental health screening, there was some improvement over time in the relationship between the nurse practitioner and school-based counselors. The nurse practitioner attributed this improvement to the increase in the frequency of communication between the two groups.

Clinic-level barriers. At the clinic level, the nurse practitioner identified three main barriers. These were lack of Hawaiʻi Keiki Program general consent for services, clinic process barriers related to COVID-19, and lack of student follow-up. The nurse practitioner stated that following up on collecting general Hawaiʻi Keiki Program consents from the students/parents in general and from specific students identified as needing screening was cumbersome. The nurse practitioner indicated it would have been easier if universal mental health screenings could be completed on all students who presented to the health room yearly. Another identified barrier was the decrease in the number of students visiting the health room due to school-level COVID-19 containment measures. The COVID-19 mitigation strategies within the school decreased the number of students seeking care in the health room, and most students were sent home prior to the nurse practitioner being able to assess them. Lastly, lack of student follow-up/return for follow-up appointments after a positive screen was identified as a barrier. One positive finding by the nurse practitioner was that parents appeared grateful that the nurse practitioners were

completing mental health screening. Some parents were unaware their child had increased feelings of anxiety and depression.

Personal insights. The final category highlighted personal revelations during the pilot program. The nurse practitioner indicated that getting to know the students (in general) is one of the key factors in mental health screening when working with the adolescent population. They described their realization that screening is more than asking the questions and assessing their support system; it is building trust and relationships. The nurse practitioner indicated that because the time spent with students was limited, she could not always build rapport with students in that short time. The nurse practitioner acknowledged there would be times that they would not be the person students confided in. So being able to find out who the safe adults are in the student's life, with the help of the family, and communicating with them some of the needs of the students may be helpful.

Comparison of pre-implementation survey (needs assessment) and implementation site nurse practitioner pre- and post-survey results

The pre-intervention needs survey of all nurse practitioners was compared to the pilot site nurse practitioner survey. The needs assessment findings of all nurse practitioners practicing within a middle and high school setting were discussed earlier in this paper. Compared to the nurse practitioners surveyed in the pre-intervention needs assessment, the pilot site nurse practitioner rated most survey items with greater strength (i.e., strongly agree) (mean = 5.0) except for the likelihood of following up with students who screened positive for mild depression. For this question, the pilot site nurse practitioner scored the question sometimes (mean =3.0). The pilot site nurse practitioner also indicated that she felt strongly she had

adequate mental health support prior to the intervention and attended a mental health educational session within the last year related to adolescent depression (see Table 2).

Post-intervention survey results for pilot site nurse practitioner. The post-intervention scores for the pilot site nurse practitioner largely remained unchanged from the pre-intervention scores. One exception was a decrease in the likelihood of follow-up for students who screened positive for mild, moderate, and severe depression. The nurse practitioner continued to strongly believe that nurse practitioners should screen students for anxiety and depression and maintained comfort and confidence in completing PHQ-9 screenings within the school setting. However, the likelihood of follow-up changed in the post-survey. The likelihood of follow-up with students who screened positive for mild depression dropped by one point on the five-point Likert scale (pre-test mean = 3; post-test mean= 2). The likelihood of following up with students who screened positive for moderate depression dropped by two points (pre-test mean= 5; post-test mean= 3). Finally, the likelihood of following up with students with severe depression dropped by one point (pre-test mean = 5; post-test mean= 4). Interestingly, the PHQ-9 score that triggered a referral initiation also decreased from a moderate-severe score range (PHQ-9 score of 15-19) to a mild depression score range (PHQ-9 score of 5-9) (see Table 2).

The qualitative section of the survey revealed that although the nurse practitioner had indicated adequate resources for mental health support for students who screened positive for depression on the presurvey, she could identify more resources on the post-survey. The nurse practitioner also indicated that the project has also prompted her to seek further education related to adolescent mental health and attend Youth Mental Health First Aid Training within the last month. The post-survey revealed barriers such as obtaining parental consent for program participation, students failing to follow up after positive screening, and lack of school support for

mental health screenings. The post-survey identified the importance of ensuring school support staff, such as school counselors and other school administrators, are knowledgeable about the process. Their role in supporting screening should be discussed at initiation and throughout implementation.

Table 2: Pre and Post Intervention Survey Data

Survey Question	Pre-implementation of all nurse practitioners practicing within middle and high school settings Mean Scores n=8	Pre-test intervention site nurse practitioner n=1	Post-test intervention site nurse practitioner n=1
Mean scores			
How would you rate the importance of Hawaiʻi Keiki APRNʻs screening for depression in middle/intermediate school?	4.6	5.0	5.0
How would you rate the importance of Hawaiʻi Keiki APRNʻs screening for depression in high school students?	4.75	5.0	5.0
How likely are you to complete a Patient Health Questionnaire-9 (PHQ-9) on a student presenting to the clinic?	3.5	5.0	5.0
I am confident in completing a PHQ-9 survey.	3.75	5.0	5.0
I am comfortable interpreting PHQ-9 survey results.	4.0	5.0	5.0

How often do you follow up with a patient who screens positive for mild depression?	3.0	3.0	2.0
How often do you follow up with a patient who screened positive for moderate depression?	4.25	5.0	3.0
How often do you follow up with a patient who screened positive for severe depression?	4.6	5.0	4.0
I am comfortable discussing mental health issues with students and families.	3.75	5.0	5.0
I am confident in referring students for mental health issues?	3.8	5.0	5.0
I have adequate mental health resources for students and families.	3.1	5.0	5.0
At what PHQ-9 score do you initiate a mental health referral?	--	15-19	5-9

Note. Mean scores were obtained using a five-point Likert scale (5=the most strongly affirmative response).

Discussion

The results of this project suggest that nurse practitioners in school-based clinics believe strongly that students should be screened for mental health issues; however, they need to have clear guidance regarding mental health screening, management and referral, and a network of resources to support their mental health screening efforts. The project intervention (Management Recommendation, School Collaboration Flowsheet, Screening Toolkit) successfully increased screening rates for mental health issues compared to the previous year; however, barriers to

screening were evident. The findings from this project highlighted and added clarity to persistent barriers to mental health screening at the system, clinic, and individual levels. These barriers align strongly with the Bronfenbrenner‘s Ecological System Theory, which helps us understand the interdependent relationship of the multiple systems needed to support adolescent health within the school setting, and this model should be considered for future work (National Cancer Institute, 2005).

System Level

The perceived lack of school support for mental health screening within the school was noted at the system level in both the post-survey and the interview. Opposition at the system level may contribute to provider hesitancy to complete mental health screening for adolescents. Previous research has examined system-level lack of support and found it negatively impacted provider behavior. For example, von der Embse, Kligus, Eklund, Ake, and Levi-Neilsen (2018) reported that resistance to mental health screening in schools was related to lack of capacity, resources (including budgetary constraints), and the perception that school-based staff lacks expertise in managing students with mental health concerns effectively. The lack of screening in this project indicates the need for further collaboration between school nurses and school staff, such as counselors and behavioral health staff, to effectively manage students

Another barrier noted in this project was the lack of formal collaborative systems between the nurse practitioner and other school-based staff/counselors. Similarly, Reutersward and Hylander (2016) discussed school nurses and their experiences of working collaboratively with school staff regarding students with mental health concerns. They noted that although school-based health centers were increasing in number, there continues to be a lack of school nurse participation on interprofessional teams within the school setting. Other factors that

affected the ability of the school nurse and school staff to collaborate were vague: collaboration guidelines, lack of understanding of roles within the interprofessional team, confidentiality guidelines of the school nurse prohibiting the sharing of information, and the lack of personal familiarity between the school nurse and school staff (Reutersward & Hylander, 2016). Kuo et al. (2013) stated that maintaining communication between the school nurse, school staff, parents, and students was imperative for processes to remain effective and answer questions promptly. Without collaborative effort among the school nurse, school staff, and parents, the care of students is fragmented and creates barriers for students to receive the care they require (Kuo et al., 2013). One positive outcome of this project is that it has improved the familiarity of the nurse practitioner and school counselors, resulting in increased opportunities for collaboration in the future.

Clinical Level Barriers

At the clinical level, one of the reasons the rate of mental health screenings remained relatively low was the Hawaiʻi Keiki Program general consent rate at the time of this pilot. This school began the school year with a 29% consent rate. The low number of consents limits the number of students the nurse practitioner can service within that school. Chartier et al. (2008) noted that having parents sign a consent in advance for care disproportionately affected students in high-risk groups participating in school-based programs, unintentionally excluding the most vulnerable students in the population. Additionally, Chartier et al. noted that for successful parental consent to occur, parents must be provided with adequate information regarding the screening program, parents understand the program and the pros and cons, and parents should be allowed to choose whether their child participates in screening programs (2008).

The COVID-19 pandemic also was noted as a barrier to screening in the pilot. The mitigation strategies to decrease COVID-19 transmission within the school decreased the number of opportunities for the nurse practitioner to screen. Most students who presented to the health room for any symptoms associated with cough, headache, fever, body aches, or rhinitis were sent home immediately by the school health assistant (SHA) and prior to evaluation by the nurse practitioner. Decreased patient volumes in school-based health centers have been noted as a factor that diminishes rates of mental health screening previously (Bhatta et al., 2018). One factor that could have been considered and should be considered in the future is the level of mental health training and awareness for the SHA regarding the need for screening all youth. The SHA is the front-line staff in the Hawaiʻi public school health rooms and is often the first staff to greet and identify students for referral to the Hawaiʻi Keiki nurse practitioner. Future programs should integrate the SHA into the screening protocols for students within the Hawaii Keiki Program.

Individual Level Barriers

School Nurse Practitioner Factors. The intention of the nurse practitioner to screen students remained high throughout the pilot period; however, the likelihood of follow-up decreased significantly in the post-survey. This finding may have been related to the unexpected barriers the nurse practitioner noted related to her inability to follow up with students. Additionally, the nurse practitioner threshold for referral decreased from pre- to post-survey. This decrease in threshold could have been related to an increase in sensitivity of the nurse practitioner to mental health screening scores and a worry about potentially overlooking students with a positive depression screening. In the qualitative interview with the nurse practitioner after the pilot, the nurse practitioner indicated a deeper understanding of the need for building patient-

provider relationships so that students have greater trust in disclosing mental health concerns. This revelation may also have affected the nurse practitioner's intention to screen, refer, and follow-up with students who screened positive for depression or any other mental health concern.

Screening reminder systems might also facilitate routine screening. During the qualitative interview, the nurse practitioner indicated that a reminder to complete mental health screenings would be helpful. Bhatta et al. (2018) noted that one remedy for forgetting to complete mental health screenings is frequent reminders. Unfortunately, the current school-based electronic record does not include a function to alert nurses to follow best practices. However, the Hawaiʻi Keiki Program also utilizes another specific medical charting system (EPIC) that allows for reminders and alerts for screenings. However, not all student charts are documented in EPIC due to limitations to missing parental consent regarding sharing health information.

Lastly, the COVID-19 pandemic was a barrier at the individual level as well. Since the onset of the COVID-19 pandemic, the school nurses have experienced an increased workload related to supporting schools to build healthy environments. Within the past two years, extra burdens for nurses have included developing COVID-19 education, mitigation strategies, screening, and contact tracing protocols. These extra demands on time and energy likely decreased the nurse practitioner's ability to prioritize and create opportunities to screen for mental health. Unfortunately, there is a paucity of data related to the increased burden of COVID-19 on school nurses related to the shifting of focus from individual health activities to public health-focused activities.

Student Factors. For students, the lack of follow-up after a positive mental health screening may indicate persistent stigma related to mental health. Gronholm, Nye, and Michelson (2018) noted that students experienced a fear of stigma related to accessing mental

health services in a space where peers and teachers may discover their reason for their visit to the clinic. The nurse practitioner noted similar sentiments during the interview and stated that after a positive screen, one student constructed a physical reason to be reevaluated. Gronholm et al. (2018) recommended discussing confidentiality with students who access mental health services from the school clinic and developing a trusting relationship with the adolescent to mitigate the concerns of stigma.

Another barrier that the nurse practitioner identified was that students forgot to come in for follow-up visits. To help avoid the potential loss of valuable follow-up, future programs should consider a new system to remind students of appointments. Although the number of mental health screenings completed during this project was small, it normalized mental health as a health care issue and increased the opportunities for students to discuss mental health concerns with the nurse practitioner. In addition, it provided the students with an opportunity to establish a relationship with the nurse practitioner.

Parental Factors. One surprising finding by the nurse practitioner was that when they called the parents to inform them of a positive mental health screening, the parents expressed gratitude that the mental health screening was completed and that the nurse practitioner notified them of the results. In addition, some parents requested further follow-up and check-ins with their child with the nurse practitioner following a positive mental health screening. Sekhar et al. (2021) completed a cross-sectional survey that found that more than half of parents supported having mental health screenings completed within the school setting, starting in the sixth and seventh grades. One factor that may increase the support of mental health screening within the school setting is parental engagement. Stuckey et al. (2021) found that although parents and adolescents acknowledged the gravity of adolescent depression, they remained unaware of where

and how to seek help for these issues and agreed that screenings only completed within a primary care clinic setting were inadequate to identify at-risk youth. Bhatta et al. (2018) suggested that integrating mental health screening into the routines of the school-based health clinic and distributing materials regarding mental health disorders to adolescents may increase the awareness of mental health disorders in adolescents. Increasing awareness of mental health disorders and the services available to the students and families may increase engagement and the opportunity for students and families to seek help when needed.

Stuckey et al. (2021) state that adolescents and parents shared concerns regarding the confidentiality of services provided. Parents strongly indicated that they would like to be notified of a positive screening result (Sekhar et al., 2021; Stuckey et al., 2021). Beyond the notification of positive results, parents also indicated that resources and services should be provided to students identified with mental health needs (Stuckey et al., 2021). The findings from adolescents and families strongly support the need for clear management and referral guidance for nurse practitioners and resources for at-risk youth.

Strengths and Limitations

A strength of this quality improvement project is that it highlighted the need for increased collaboration with school-based partners (counselors, teachers, administrators). In this particular school, the project helped increase the familiarity between the school nurse and school-based counselors and staff, which may increase opportunities for future collaboration. This project also allowed the nurse practitioner to understand the importance of building relationships with students, establishing a trusting clinical environment, and providing an opportunity for mental health concerns to be discussed with students in a safe, non-judgmental space.

This project was not without limitations. First, the project was limited to only one site. Second, the rate of Hawaiʻi Keiki consents also limited the ability of the nurse practitioner to perform screening on students presenting to the school's health room. Secondly, the COVID-19 pandemic also presented multiple barriers for students to engage with the nurse practitioner. Another potential limitation is the updated organizational recommendations regarding the mental health screening of adolescent students. Finally, at the time of the project implementation, the Hawaiʻi Keiki Program registered nurses, and nurse practitioners all received further mental health educational sessions, guidance on follow-up and referrals, and further mental health support, which may have had an unknown influence on this pilot project results.

Conclusion

The COVID-19 pandemic has enlightened school nurses, administrators, counselors, and behavioral health specialists to the disparities of care related to the mental health care of our students. In addition, the increased demand for mental health services within the schools amplifies the need for inter-professional collaboration among school health providers and school-based staff. This quality improvement pilot project clarified the system-level, clinical-level, and personal barriers to providing mental health screening services within the school setting. It has also highlighted the importance of inter-professional collaboration between the school nurse practitioner and the school-based administration, counselors, and behavioral health specialists to ensure students receive holistic mental health services.

Although this project identified persistent barriers to mental health screening, it also provided some positive opportunities for the students and parents. This pilot project allowed the nurse practitioner to demonstrate normalization of the discussion of mental health concerns with students and parents. Normalizing discussions around mental health concerns help combat

stigmatization, and as a result, students and parents will begin to feel more engaged and supported in their mental health experiences. The project also provided an opportunity for relationship-building between the nurse practitioner and school counselors, resulting in enhanced communication and collaboration in the future. Collectively, these small changes make a substantial impact on adolescent mental health initiatives.

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Appendix 1

Nurse Practitioner Needs Assessment

What school is your clinic located? _____

Check the box that most applies.

	1 Unimportant	2 Slightly Important	3 Moderately Important	4 Important	5 Very Important
How would you rate the importance of Hawaiʻi Keiki nurse practitioners screening for depression in middle/intermediate school students?					
How would you rate the importance of Hawaiʻi Keiki nurse practitioners screening for depression in high school students?					

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always
How likely are you to complete a Patient Health Questionnaire on a student presenting to your clinic?					

What barriers currently prevent you from initiating a PHQ-9? -

_____

	1 Strongly Disagree	2 Disagree	3 Undecided	4 Agree	5 Strongly Agree
I am confident completing a PHQ-9.					
I am comfortable interpreting PHQ-9 results					

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Always
How often do you follow up with a patient who has screened positive for mild depression?					
How often do you follow up with a patient who has screened positive for moderate depression?					
How often do you follow up with a patient who has screened positive for severe depression?					

What do your follow up visits entail? _____

Please identify any facilitators or barriers for following up with students: _____

At what PHQ-9 score do you initiate a referral (check all that apply):

__A score of 0-4

__A score of 5-9

__A score of 10-14

__A score of 15-19

__A score of 20-27

When completing a PHQ-9 survey, how do you determine the frequency of follow-up or need for referral? _____

If PHQ-9 score is not used, what other factors determine the frequency of follow-up or need for referral? _____

	1 Strongly Disagree	2 Disagree	3 Undecided	4 Agree	5 Strongly Agree
I am comfortable discussing mental health					

issues with students and families.					
I am confident in referring students for mental health issues.					

If a student needs a referral for mental health services, to whom do you most often refer students? (Check all that apply)

__Primary care provider (PCP)

__School based behavioral health (SBBH)

__Community mental health provider

__School counselor

__Crisis Line

__Other

What factors influence who you refer to? _____

	1 Strongly Disagree	2 Disagree	3 Undecided	4 Agree	5 Strongly Agree
I have adequate mental health resources for students and families.					

What are those resources? _____

What other resources do you feel you need to properly manage students with depression in the school setting? _____

If a structured way to screen, identify, and refer students with mental health needs to mental health services was developed, what unique needs should be considered about your school setting? _____

How long ago was your last conference/training/continuing education for mental health in the adolescent population?

__Within the last three months

__Within the last six months

__Within the last one year

__Within the last two years

What was the topic? _____

Appendix 2

Johns Hopkins Nursing Evidenced-Based Practice: Levels of Evidence and Number of Articles

Johns Hopkins Nursing EBP Levels of Evidence	Number of Articles (Total 28)
Level I: Experimental studies and random control trials	1
Level II: Quasi-experimental study	1
Level III: Non-experimental study	11
Level IV: Expert opinion and clinical guidelines	1
Level V: Experiential and non-research evidence	14

Appendix 3

University of Hawai'i Human Studies Program Memorandum

Office of Research Compliance
Human Studies Program

UNIVERSITY of HAWAI'I SYSTEM

August 6, 2021

MEMORANDUM

TO: Rick Ramirez, DNP, APRN-Rx, AG-ACNP-BC, FNP-BC, ENP-C, CEN, CPEN
Doctor of Nursing Practice Program Director and Assistant Professor
AG-PCNP Specialty Coordinator
APRN Clinical Course Series Faculty Coordinator
University of Hawai'i at Mānoa
School of Nursing and Dental Hygiene

FROM: Victoria Rivera
Director, Office of Research Compliance, Human Studies Program
University of Hawaii

SUBJECT: Doctor of Nursing Practice Program

This memorandum intends to clarify the University of Hawaii (UH), Human Studies Program (HSP) position regarding the quality improvement (QI) project required by the UH School of Nursing and Dental Hygiene's Doctor of Nursing (DNP) Program.

Based on our discussions, students enrolled in the DNP Program are required to complete a QI project in order to meet the *AACN Essentials of Doctoral Education for Advanced Nursing Practice* for this professional degree. According to the AACN guidelines, since this is a practice doctorate, "requiring a dissertation or other original research is contrary to the intent of the DNP. The DNP primarily involves mastery of an advanced speciality within nursing practice."

Therefore, by definition, the DNP quality improvement project required by the UH School of Nursing is not considered human subjects research as defined under federal regulations at 45 CFR 46. To very briefly summarize, *research* is a systematic investigation designed to contribute to generalizable knowledge, and *human subject* means a living individual about whom an investigator conducting research obtains 1) data through intervention or interaction with the individual or 2) identifiable private information. Quality improvement/program evaluation focuses on making judgements about the program, to improve or further develop program effectiveness, and inform decisions about future programming. As part of the DNP program, students are familiarized with the difference between conducting a QI project and a research project.

Given the purpose of the DNP quality improvement project, it is the position of the UH Human Studies Program that these projects are considered "NOT human subjects research" (NHSR) and as such, does not require IRB review. To be clear, this is not a determination of "Exempt" status under 46.101, as these are categories of *research* considered to be exempt from IRB review. Please ensure that DNP students understand that the results of these types of QI projects may be presented or published, but must not be labled as human subjects research.

Please feel free to contact our office for any questions.

cc: Alice Tse, SODNH Department Chair and Graduate Chair

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Appendix 4

Semi-Structured Post-Interview Questions

Tell me about your experiences using the Hawaiʻi Keiki Program-specific process and toolkit.
Overall, what were your impressions of the proposed process?
What were some of the facilitators and barriers to performing depression screenings on our students?
What interventions may increase the completion of depression screenings?
Do you feel like this project enhanced communication between school partners (Hawaiʻi Keiki, counselors, and behavioral health specialists?
In your opinion, what school partners need to be involved in the initial discussions prior to implementation?
Was the toolkit useful?
Did you use any of the nurse/student/parent educational resources in the toolkit? If so, which did you use?
Did you refer to any of the community resources in the toolkit?
Was there something that was not included in the toolkit that may have been helpful to include?
How could this project have been improved?

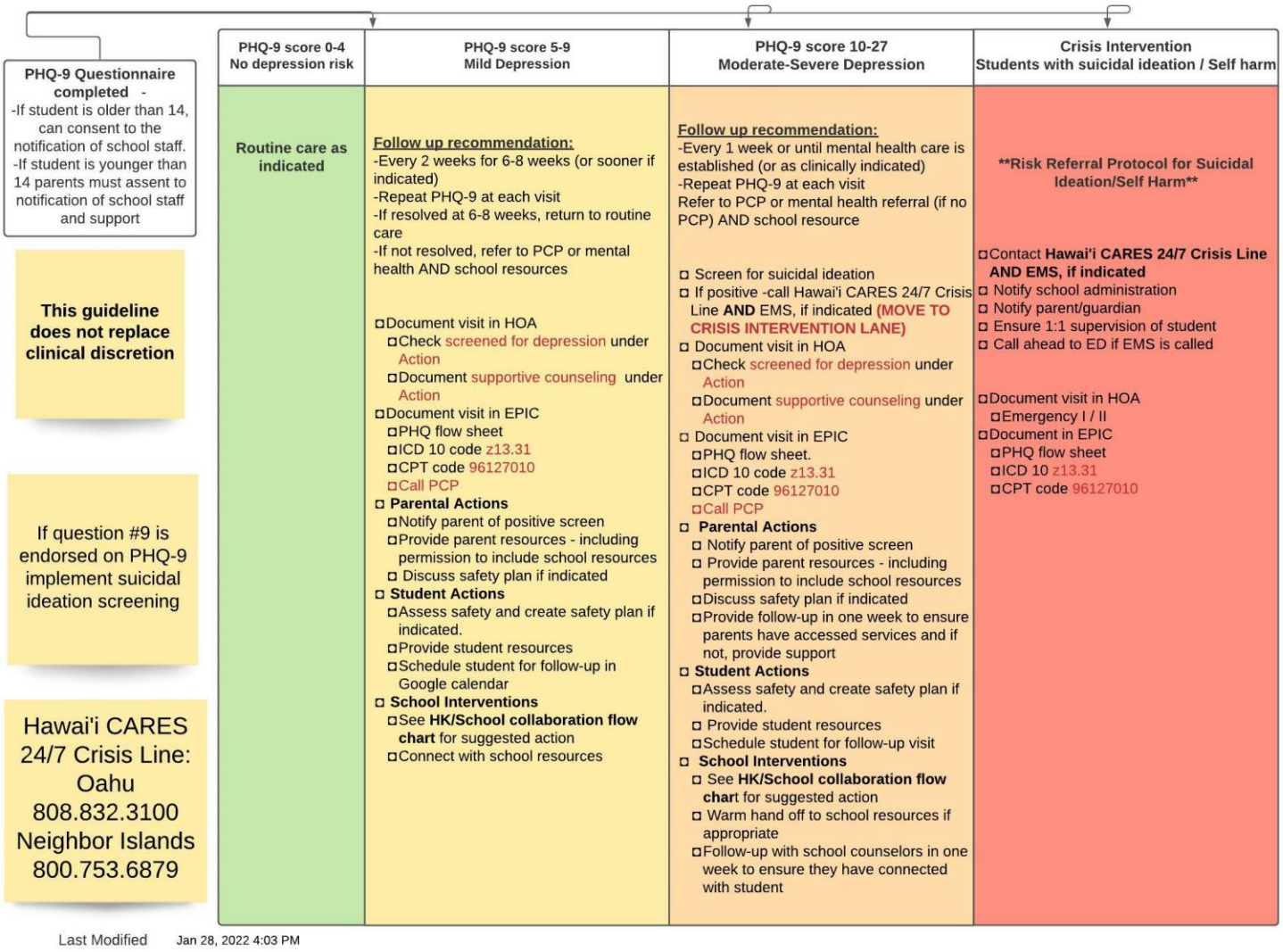
Appendix 5

Electronic Record Data Abstraction Table

Data Location	Variable	Description of the Process
Health Office Anywhere	Total APRN visits completed	Identify the total number of visits completed by the APRN at the intermediate school.

Appendix 6

Hawaiʻi Keiki Program-Specific Management Recommendations



Appendix 7

School Collaboration Flowsheet