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Implementation and evaluation of a mental health referral pathway for school nurses.

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Implementation and Evaluation of a Mental Health Referral Pathway for School Nurses

by

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Dedication

This manuscript is dedicated to my son, Spindle Johnson Jr. You inspire me to make the world a better place. Thank you for your patience and encouragement these past three years. You are amazing and the reason for everything I do.

Acknowledgments

I would like to extend a special thanks to the developers of the MH-TIPS program for allowing me to utilize their instruments in developing this quality improvement project. I would also like to thank my project mentors, Dr. Lynette Galloway and Dr. Whitney Nash, for their support and guidance.

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Abstract

Nearly one in six American children between the ages of six and 17 have a treatable mental disorder (American Academy of Family Physicians [AAFP], 2020). Still, less than half do not receive help from a mental health professional (Whitney & Peterson, 2019). School nurses have an opportunity to bridge the gap by improving youth access to mental health care. **Purpose:** The purpose of this quality improvement project was to implement and evaluate a mental health referral pathway for school nurses. The specific aims were to improve school nurses' preparedness to recognize and address mental health concerns and to increase the proportion of school nurses that made mental health referrals in a large metropolitan public school district**.** **Intervention**: School nurses received weekly informative presentations regarding resource mapping, identification of common mental health "red flags," utilization of a mental health triage tool, and documentation of student referrals to mental health resources over five weeks. **Methods:** Outcome measures included preparedness to identify and address mental health concerns, the proportion of school nurses that made mental health referrals and feedback from participating nurses. Self-Rated Preparedness Surveys and retrospective chart audits were conducted pre-intervention and post-intervention. Background data and feedback were collected via questionnaires. **Results**: The results revealed an increase in the participating school nurses' self-rated preparedness to recognize when a student's appearance indicates psychological distress. The results demonstrated an increase in the proportion of participating school nurses that made mental health referrals, although this increase was not statistically significant. The results of this study support further evaluation of barriers to school nurses making mental health referrals, development of additional programs to help address barriers, and further evaluation of similar programs in other settings.

Keywords: mental health care, children, adolescents, school nurses

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Implementation and Evaluation of Mental Health Referral Pathway for School Nurses

Introduction

Mental health issues account for up to 16 percent of the global burden of disease and injury in school-aged children (World Health Organization [WHO], 2020). Children with mental disorders may suffer at home, in school, and in interpersonal relationships (Center for Disease Control and Prevention [CDC], 2020). Childhood psychiatric disorders are associated with educational failure, underachievement in school, frequent absences, and elevated odds of dropping out of high school (Allison et al., 2019; Breslau et al., 2008; Riglin et al., 2013; Tempelaar et al., 2017). Healthy People 2030 (Office of Disease Prevention and Health Promotion [ODPHP], 2020) set a goal to increase the proportion of children with mental health problems who receive treatment over the next ten years.

Background

Problem

Despite school nurses' competency to identify mental health problems, many report little comfort or pre-service training to help assess, refer, and provide intervention for mental health concerns (Stephan & Connors, 2013). The developer of the quality improvement project presented in this manuscript surveyed the participating school nurses regarding their perception of barriers to making mental health referrals. The responding nurses identified a lack of knowledge as a significant barrier to making referrals to mental health resources within their school system. When surveyed, more than 53% of respondents reported that they were unaware of the resources available within the school system offered by mental health professionals (Mental Health Referrals by School Nurses, 2020). An additional 10 percent of respondents reported that they were unaware of how to make mental health referrals once a need is identified (Mental Health Referrals by School Nurses, 2020).

Definition of Terms

Psychological/ Mental Health Distress/Concerns. The negative impact or risk of negative impact because of any psychotic disorder, anxiety disorder, depressive disorder, mood dysregulation disorder, trauma/stress-related disorder, somatoform disorder, dissociative disorder, disruptive, impulse-control, conduct disorder, substance-related, personality disorder, or any other mental health disorder.

Mental Health Crisis. Any threat of imminent harm to self or others, such as suicidal ideation, self-mutilation, self-harm behaviors, homicidal ideation, or destruction of property.

Mental Health Referral pathway. A series of steps or actions taken after identifying a child or adolescent with potential mental health concerns.

School-aged child. Children or adolescents aged 5-18 and in grade K-12.

Mental Health Resources. Family resource center, youth services center, school counselor, school mental health practitioner, or mental health provider.

Significance

According to the American Academy of Pediatrics (2020), most young children with emotional, relationship, or behavioral problems do not receive any helpful interventions even after a pediatrician identifies a mental health concern. Mental health disorders rank among the top five most costly medical conditions for those under 18 years of age (Soni, 2014). Students with disproportionately more frequent health care visits may be more likely to experience mental health problems, including depression and anxiety (Campo et al., 2004; Shannon et al., 2010).

Across the lifespan, up to 20% of years of disability globally and up to one trillion dollars of economic losses each year are associated with mental health conditions (World Health Organization [WHO], 2019). Early mortality of 10-20 years is associated with mental health conditions, according to World Health Organization (2019).

State Data

Kentucky ranks 16th for youth depression (Data and Statistic on Children's Mental Health, 2020) and 48th in the United States for youth mental health access (Florell, 2018). The Kentucky Department of Education survey demonstrated that more than 20% of middle and high school students reported severe psychological distress (Clark, 2020). Up to 15% of Kentucky high school students and more than 17% of Kentucky middle school students reported seriously considering suicide in the previous 12-month period (Clark, 2020). Although officials have recognized the dire state of youth mental health, access to treatment continues to be a barrier to improvement.

Local Data

A local survey revealed that in 2015, two out of every 1,000 students (aged 11-20) attending the participating school district had previously been hospitalized for depression, and one in every 1,000 students experienced hospitalization for a suicide attempt or self-inflicted injury (Jefferson County Metro Government, 2019). In 2019, the leading cause of all inpatient hospitalizations for preteens and adolescents in the school district's surrounding city was emotional disorders (Jefferson County Metro Government, 2019).

Rationale for the Project

The educational system can bridge the gap in addressing youth mental health by improving youth access to mental health care through early identification and referral. Healthy People 2030 (ODPHP, 2020) set a goal to increase the number of schools with at least one counselor, social worker, or psychologist on staff over the next ten years. The participating school district implemented a district-wide initiative in 2019 which added a mental health practitioner to each school to increase youth access to mental health care.

Implementation of referral pathways has proven effective in other areas of healthcare. Srivastava et al. (2019) demonstrated that implementing a referral pathway in primary care significantly decreased the number of inappropriate referrals and increased the number of appropriate referrals to specialty care. Referral pathways provide the next steps once a need is identified, promote coordination, and improve student outcomes through early identification and intervention (Krusback et al., 2019).

Facilitators for Project Implementation

Facilitators for this project included the Director of Health Services and school nurses working within a large metropolitan school district.

Barriers to Project Implementation

Restrictions within the school district limited the project developer's access to school personnel except for school nurses. The project developer did not have access to any student records. The project developer did not implement any interventions with mental health providers, teachers, or other staff within the school district.

The participating school district's health services department adopted a new electronic medical record (EMR) system in August 2021. School nurses were still learning the new EMR during the planning and implementation of this quality improvement project. The EMR system did not have the capability of communicating with the EMR used by mental health providers during the planning and implementation of this project.

Synthesis of the Literature

Method

To review the current literature on this topic, the author searched PubMed, CINAHL, Cochrane Database of systematic reviews, and Google Scholar databases for current literature on mental health referrals among school nurses. After a MeSH term search, the following string was

created with Boolean terms: ((((((("Decision Trees"[Mesh]) AND "School Nursing"[Mesh]) AND "Mental Health"[Mesh]) OR "Mental Health Services"[Mesh]) OR "School Mental Health Services"[Mesh]) AND "Referral and Consultation"[Mesh] AND ((y_5[Filter]) AND (child[Filter]))) AND ((psychology) OR (social worker)), yielding 57 results. Results were limited to participants age six to 12, randomized control trials, and systematic reviews. In the CINAHL database, the keywords searched were "school nursing," "mental health," or "mental health services," "referral and consultation," and "psychology" or "social worker." Results were limited to age: all child, academic journals, and publications through the “NASN school nurse." The Cochrane Database was searched for systematic reviews containing the keywords "school mental health services." Keywords were limited to title and abstract, yielding five systematic reviews. Google Scholar was searched using the keywords "mental health," "school nurses," and "training” and was limited to the first page, which yielded ten results.

All databases were limited to publications within the last five years. Four articles met Johns Hopkins criteria for low-level evidence (VII) and were eliminated. Excluded articles described a potential program change, but the author used two resources from a review of references that exceed the five-year publication criteria but were relevant.

The literature review excluded articles involving subjects with pre-existing psychiatric diagnoses, provider attitudes, provider perceptions, special populations, specific therapeutic interventions, tobacco smoke, and obesity. The following literature review included four articles for review.

Literature Review

Evidence on interventions that increase the frequency of referrals to mental health practitioners within the school system is scarce. While many expert recommendations focus on improving school personnel training, few studies can be considered high-level evidence. This

literature review revealed only one relevant randomized controlled trial, several expert opinions, and stakeholder focus groups.

Effective referral pathways define the roles and responsibilities of all partners, establish clear procedures for managing referrals, promote sharing of information, monitoring of effectiveness, and collaboration (Guttman-Lapin, 2015). Utilization of resource mapping to help identify available resources within the school system was recommended in the literature (Bohnenkamp et al., 2019; Guttman-Lapin et al., 2015; Krubsack et al., 2019). Assessments of individual student needs should be based on a list of “mental health red flags" (Bohnenkamp et al., 2019) and aided by the development of decision criteria for appropriate intervention (Krubsack et al., 2019). Kim et al. (2015) recommended providing psychoeducation, providing supportive services, and planning for referral to mental health services. Established guidelines encouraged the development of an established referral management system and monitoring of its effectiveness (Guttman-Lapin et al., 2015; Krubsack et al., 2019).

The previous studies did not use a standardized tool to evaluate outcomes. Kim et al. (2015) developed a school nurse background questionnaire to determine basic demographic information, training background, and experience with students presenting with mental health concerns. Bohnenkamp et al. (2019) and Kim et al. (2015) measured baseline comfort and preparedness of school nurses to identify and address mental health needs, discuss mental health concerns, and make mental health referrals. Surveys in both studies relied on Likert-type scales, and Bohnenkamp et al. (2019) also depended on participant interviews to obtain feedback about helpfulness and knowledge increases.

Purpose and Specific Aims

The purpose of this quality improvement project was to implement and evaluate a mental health referral pathway for school nurses. The main aim of this quality improvement project was

to increase the proportion of school nurses that made mental health referrals in the four weeks after completion of the intervention. The secondary aim was to improve scores on a Self-Rated Preparedness Survey immediately post-intervention.

Theoretical Framework

The Community Readiness Model assesses a community's capacity to act on a specific issue (Donnermeyer et al., 1997). The Community Readiness Model consists of nine stages that communities must move through when developing and implementing a new intervention. According to this model, the first stage is community tolerance or the "no awareness" stage in which an issue is unrecognized (Fertman et al., 2017). The second stage is denial or resistance when there is recognition of a problem but little concern for addressing it (Fertman et al., 2017). Vague awareness, which entails a lack of specific knowledge about the issue, is followed by preplanning. The preplanning stage involves the clear recognition of a problem but no clear or focused effort to address it (Fertman et al., 2017). The following stages are preparation and initiation in which individuals actively engage in a plan of action to address the issue (Fertman et al., 2017). After creating a plan of action, evaluating, and increasing support of individuals and leaders, the community moves through the institutionalization, confirmation/expansion, and professionalism stages (Fertman et al., 2017). In the professionalism stage, staff and leaders use data to adjust practices based on the community's needs.

A needs assessment revealed that the participating school nurses do not receive specific training to address mental health concerns among students. Based on this finding, it was determined that this sample of school nurses was in the third stage of the Community Readiness Model; their responses showed awareness that mental health is a concern among school-aged children, but more specific interventions were needed to address this issue.

To move from the vague awareness stage to the preplanning stage, Edwards et al. (2000) suggested raising awareness. By providing school nurses with available resources for mental health issues and empowering them to make appropriate referrals, the aim was to move this community through the pre-planning stage into the initiation stage. By progressing school nurses through the Community Readiness Model stages of readiness, the project developer sought to promote engagement and investment of the community in this initiative.

Procedures

Setting

This project occurred in a large metropolitan public school district of 167 elementary, middle, and high schools serving roughly 96,000 students. Only schools designated A1 schools that served grades K-12 were included in the outcome measures of this project. A1 schools are defined as “regular schools” under a principal’s leadership and are not operated as part of another school or organization. Alternative schools were excluded due to a higher proportion of students with pre-existing diagnoses potentially managed outside of the school system.

Sample

The population of interest in this quality improvement project was 137 nurses who worked within the eligible schools in a large metropolitan school district. School nurses' participation was voluntary but incentivized by a chance to win a gift card.

Intervention

The intervention for this quality improvement project was a five-week informative presentation series for school nurses, which was distributed in a weekly newsletter and one Zoom meeting. This five-week series included five phases: the introductory phase, the resource mapping phase, the identification phase, the documentation phase, and the summary phase.

In the introductory phase, the project developer presented the purpose and aims of this quality improvement project, the requirements, and incentives for participation. During this phase, the project developer collected background information and consent from participating nurses. Participating nurses were prompted to create unique identifiers for all subsequent surveys. A list of all participating nurses and their corresponding identifiers were recorded in an excel spreadsheet and stored in a secure data storage. Distribution of the pre-intervention Self-Rated Preparedness Survey occurred during this phase.

In the resource mapping phase, school nurses received an overview of mental health resources available within their school district. A resource mapping tool (See Appendix E) was provided for participating nurses to compile a list of resources available within their affiliated schools.

A review of common mental health warning signs, also known as mental health “red flags," was presented in the identification phase. The project developer introduced a mental health triage tool (See Appendix F), which served as a visual decision-making aid and differentiated the crisis response pathway (initiated when a student presented in a mental health crisis) from the mental health referral pathway.

During the documentation phase, the project developer presented a list of documentation options that facilitate thorough documentation of office visits involving mental health concerns. The project developer demonstrated step-by-step instructions for documenting a mental health referral in the EMR. A question-and-answer segment followed the documentation presentation.

The summary phase highlighted essential points of the informative series. Distribution of the post-intervention Self-Rated Preparedness Survey occurred at this time.

A retrospective chart audit was conducted for the four weeks before and after the completion of the presentation series. Data regarding the proportion of participating nurses that made mental health referrals in the EMR was manually extrapolated.

Instruments

School Nurse Background Questionnaire

Kim et al. (2015) designed a questionnaire used as a model to develop the background questionnaire for this quality improvement project (See Appendix G). Background information collected included educational background, years of experience as a nurse, years of experience as a school nurse, and previous experience in mental health**.**

Preparedness

A Self-rated Preparedness Survey (Bohnenkamp et al., 2019), found in Appendix H, was used to evaluate nurses' preparedness to recognize and address mental health concerns. A modified version of this survey was used in this quality improvement project: an adapted 4-item Likert-style survey. The survey assessed preparedness to recognize behavior that may indicate psychological distress, preparedness to recognize appearance that may indicate psychological distress, preparedness to recommend mental health support services to students exhibiting signs of psychological distress, and preparedness to coordinate with mental health support services. Reliability and validity have not yet been established for this survey.

Referrals

A retrospective chart audit was conducted for the four weeks before and after the intervention. The project developer manually extrapolated data regarding mental health referrals made by participating nurses. Participating school nurses were categorized by the presence or absence of mental health referrals documented in the EMR.

Feedback

The project developer distributed a nurse feedback survey (See Appendix I) four weeks post-intervention. This feedback survey assessed for utilization of the resource mapping tool, a self-reported number of mental health referrals made post-intervention, any perceived increase in the number of referrals made post-intervention, any perceived increase in documentation of referrals post-intervention, and any confirmation of a follow-up by mental health providers for referrals made. Feedback was assessed in an open-ended question format. The project developer evaluated responses and categorized feedback as positive, negative, or neutral.

Analysis Plan

SPSS Version 28.0.1.1 was used to evaluate the statistical significance of the outcome measures for this quality improvement project. Self-Rated Preparedness Surveys were analyzed using the Wilcoxon Signed-Rank Test. Retrospective chart audits were analyzed using the McNemar's Test. Background data and feedback were collected via questionnaires and analyzed using frequency statistics.

Results

Background Demographic Questionnaire

Of the 137 school nurses eligible to participate, 44 background questionnaire responses were received, demonstrating a response rate of 32%. Table 1 summarizes the characteristics of survey respondents.

The sample population of school nurses was divided almost equally between Licensed Practical Nurses (31.8%), Associate degree nurses (31.8%), and Bachelor's degree nurses (36.4%). Most of the sample population had ten or more years of nursing experience (59.1%), one to five years of school nursing experience (77.3%), and no prior mental health experience (95.5%).

Self-Rated Preparedness Survey

A total of five pre-intervention and post-intervention responses were matched based on unique identifiers, demonstrating a response rate of less than four percent. Table 2 illustrates the results of the statistical analyses. No difference was observed in the school nurses' self-rated preparedness to recognize when a student's behavior is a sign of psychological distress from Time 1 (Md=4.0) to Time 2 (Md=4.0), and a Wilcoxon Signed-Rank Test revealed no statistical significance (z=-1.414, p>0.05). The increase observed in the school nurses' self-rated

Table 1

Background Characteristics

		n	%
Level of Education	LPN	14	31.8%
	AND	14	31.8%
	BSN	16	36.4%
Years of Nursing Experience	1-5 YRS	13	29.5%
	5-10 YRS	5	11.4%
	10+ YRS	26	59.1%
Years of School Nursing Experience	1-5 YRS	34	77.3%
	5-10 YRS	2	4.5%
	10+ YRS	8	18.2%
Mental Health Experience	Yes	2	4.5%
	No	42	95.5%

preparedness to recognize when a student's appearance is a sign of psychological distress from Time 1 (Md=3.00) to Time 2 (Md=4.00) was statistically significant (Z=-2.00, p<0.05). The effect size was large (r=0.893). No difference was observed in the school nurses' self-rated preparedness to recommend mental health support services to a student exhibiting psychological distress from Time 1 (Md=4.00) to Time 2 (Md=4.00), and a Wilcoxon Signed-Rank Test

revealed no statistical significance (Z=-1.00, p>0.05). The Wilcoxon Signed-Rank Test revealed no statistically significant difference in the school nurses' self-rated preparedness to coordinate with mental health support services in their school or community around student mental health care (Z=-1.00, p>0.05), and no differences were observed in this data from Time 1 (Md=4.00) to Time 2 (Md=4.00).

Table 2
Self-Rated Preparedness Survey

	Preparedness to recognize when a student's behavior is a sign of psychological distress (Post-test) - Preparedness to recognize when a student's behavior is a sign of psychological distress (Pre-test)	Preparedness to recognize when a student's appearance is a sign of psychological distress (Post-test) - Preparedness to recognize when a student's appearance is a sign of psychological distress (Pre-test)	Preparedness to recommend mental health support services to a student exhibiting signs of psychological distress (Post-test) - Preparedness to recommend mental health support services to a student exhibiting signs of psychological distress. (Pre-test)	Preparedness to coordinate with mental health support services in your school or community around student mental health care (Post-test) - Preparedness to coordinate with mental health support services in your school or community around student mental health care (Pre-test)
Z	-1.414[b]	-2.000[b]	-1.000[b]	-1.000[b]
Asymp. Sig. (2-tailed)	.157	.046	.317	.317

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Mental Health Referrals

A McNemar's Test was conducted to evaluate any difference in the proportion of participating school nurses that made student mental health referrals before and after the intervention. Although an increase was observed from Time 1 (n=4) to Time 2 (n=8), no statistically significant change ($X^2(1, N=137)=3.030$, p=.082) was observed after the intervention. McNemar's test results for this outcome measurement are illustrated in Table 3.

Table 3

Mental Health Referrals by School Nurses

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distributions of different values across Presence of Mental Health Referrals made by School Nurse Pre-intervention and Presence of Mental Health Referrals made by School Nurse Post-intervention are equally likely.	Related-Samples McNemar Change Test	.344[c]	Retain the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

c. Exact significance is displayed for this test.

Nurse Feedback Survey

Of the 137 school nurses eligible to participate, 24 Nurse Feedback Survey responses were received, demonstrating a response rate of 17.5%. The results of the Nurse Feedback Survey are illustrated in Table 4. Most school nurses indicated that they had completed the resource mapping tool (75.0%). Most school nurses reported making one to ten mental health referrals in the previous four weeks (62.5%). Participating school nurses reported no perceived increase in the number of mental health referrals in the previous four weeks (70.8%) and no increase in the number of mental health referrals documented in the previous four weeks (75.0%). Of the feedback received, 33.3% was categorized as positive and 66.7% as neutral.

Positive responses included, "I have not had to make any mental health referrals as of yet. I do feel more prepared and have more information to do this when needed," "Thankful," "All positives on both parental response and counselors," "They are very thankful that they have another set of eyes in the building to help since mental health problems are on the rise," "Encouragement to have appropriate students seen during the summer break," "Only one referral, and it was very helpful. I started to see a change in the student. But I'm a little worried now because she has been absent for the last two days," "I am elementary, so I am looking out for appreciate it, and it helped me a lot." Neutral responses included "N/A," "None," and "I have not received much feedback."

Table 4

Nurse Feedback Survey Results

		N	%
Did nurse complete resource mapping tool?	Yes	18	75.0%
	No	6	25.0%
How many referrals have you made in the last week?	0	9	37.5%
	1-10	15	62.5%
	10-20	0	0.0%
	More than 20	0	0.0%
In the past 4 weeks, has the number of mental health referrals you made increased?	Yes	7	29.2%
	No	17	70.8%
In the past 4 weeks, has the number of mental health referrals you documented increased?	Yes	6	25.0%
	No	18	75.0%
Was Feedback Positive, negative, or neutral?	Negative	0	0.0%
	Positive	8	33.3%
	Neutral	16	66.7%

Theoretical Framework

The results were used to evaluate the population of school nurses' advancement through the stages of community readiness. The high levels of preparedness demonstrated by the school nurses and the increase in the proportion of school nurses who made mental health referrals indicate that this population has progressed from the third stage of community readiness into the sixth stage of the Community Readiness Model.

Discussion

Consistent with existing literature, this population of school nurses demonstrated a high level of preparedness to recognize students experiencing psychological distress, recommend mental health services, and coordinate with mental health support services both pre-intervention and post-intervention. The lack of positive shift in the participating school nurses' preparedness on these three items may be attributed to the high pre-intervention levels of preparedness demonstrated. The increase observed in the participating nurses' preparedness to recognize when a student's appearance is a sign of psychological distress was an unexpected finding. This result may have been impacted by the small sample size. A different mental health initiative co-occurring with this quality improvement project also may have affected the result of this outcome measure.

The results of a McNemar's Test analysis revealed an increase in the proportion of school nurses that made mental health referrals. Although not statistically significant, the results are in congruence with the anticipated effects of this quality improvement project. These results are consistent with the hypothesis of Bohnenkamp et al. (2019) that school personnel education increases intervention of mental health issues among children and adolescents. The results of this project coincided with literature demonstrating that the implementation of referral pathways increases referrals made to specialty care (Srivastava et al., 2019) and promotes early

intervention (Krusback et al., 2019). The concurrent mental health initiative may have partially attributed to the increase in mental health referrals by increasing the awareness of mental health issues among the sample population.

The results of the Nurse Feedback Survey indicated that most participating nurses utilized the tools provided as a part of this quality improvement project. The lack of self-reported increase in the number of mental health referrals made and documented during the four weeks after implementation may have been impacted by the length of the implementation period; the nurses' practices may have slowly changed over the ten weeks of implementation, decreasing their perception of any change.

The results of this quality improvement project support the current literature in highlighting the critical role that school nurses play in promoting early intervention and access to mental health resources. The results of this quality improvement project encourage training to address barriers of school nurses in referring students to mental health resources.

Limitations

This quality improvement project had several limitations. The nature of covid screening and contact tracing limited time available to address mental health concerns. All school nurses in had less than one year of experience with the new EMR system, which could have impacted the rates of documentation of mental health referrals during the implementation of this quality improvement project.

The sample sizes for Self-Rated Preparedness Surveys (n=5) and Nurse Feedback Surveys (n=24) were small when compared to the Background Questionnaire (n=45), which reflects a 45% attrition rate. This small sample size does not allow for the generalizability of these results to this population. Self-Rated Preparedness Survey responses indicated high levels of preparedness pre-intervention which left a narrow margin for improvement. The psychometric

properties of the instruments used to measure self-rated preparedness have not yet been established.

Next Steps

This quality improvement project demonstrated feasibility and sustainability and should be repeated with larger sample size. Pre-intervention and post-intervention measures should be evaluated after school nurses have become proficient with the EMR. The project developer recommends that this quality improvement project be repeated at a time when no other mental health initiatives are occurring. A more thorough evaluation of barriers to student mental health referrals is warranted.

The project developer recommends a follow-up study involving mental health practitioners to evaluate the referral management system and the appropriateness of referrals made by school nurses. Student outcomes should be considered in future studies to assess for any improvement of problems associated with childhood psychiatric disorders in the student population.

Implications for Nursing Practice

School nurses must be included in the mental health referral pathway to improve early identification and intervention in the school-aged population. School nurses should be aware of the mental health resources available to their students and should be knowledgeable about how to help students access those resources.

Conclusions

School nurses have a unique opportunity to positively impact early access to mental health services for children and adolescents. Referral pathways similar to the one developed in this quality improvement project are a valuable tool for school nurses. Supporting school nurses' preparedness to identify and refer students to mental health services can positively impact the

rates of early intervention for children and adolescents experiencing mental health issues. Early recognition and intervention can increase the proportion of students who access mental health services and decrease the burden of mental health disorders. This quality improvement project addressed a gap in the literature by implementing and evaluating a mental health referral pathway for school nurses.

References

Allison, M. A., Attisha, E., Lerner, M., De Pinto, C. D., Beers, N. S., Gibson, E. J., Gorski, P., Kjolhede, C., O'Leary, S. C., Schumacher, H., Weiss-Harrison, A., Allison, M., Ancona, R., Holmes, B. W., Okamoto, J., Young, T., Chang, H., Seeley, K., Adkins, S. H., … Council Sch Hlth. (2019). The link between school attendance and good health. *PEDIATRICS*, *143*(2). https://doi-org.echo.louisville.edu/10.1542/peds.2018-3648

American Academy of Family Physicians. (2020). *Study: One in six U.S. children has a mental illness*. AAFP Foundation. https://www.aafp.org/news/health-of-the-public/20190318childmentalillness.html.

Baisch, M. J., Lundeen, S. P., & Murphy, M. K. (2011). Evidence-based research on the value of school nurses in an urban school system. *Journal of School Health*, 81, 74-80.

Bohnenkamp, J. H., Hoover, S. A., Connors, E. H., Wissow, L., Bobo, N., & Mazyck, D. (2019). The mental health training intervention for school nurses and other health practitioners in schools. *Journal of School Nursing*, *35*(6), 422–433.

Breslau, J., Lane, M., Sampson, N., & Kessler, R. C. (2008). Mental disorders and subsequent educational attainment in a U.S. national sample. *Journal of Psychiatric Research*, *42*(9), 708–716. https://doi-org.echo.louisville.edu/10.1016/j.jpsychires.2008.01.016

Campo, J.V., Bridge, J., Ehmann, M., Altman, S., Lucas, A., Birmaher, B., Brent, D.A. (2004) Recurrent abdominal pain, anxiety, and depression in primary care. *Pediatrics*, 113 (4), 817–824.

Center for Disease Control and Prevention. (2020, June 15). Children's Mental Health Report. *Data and statistics on Children's Mental Health*. https://www.cdc.gov/childrensmentalhealth/data.html.

Clark, P. M. (2020). Suicide prevention support, support available to schools. *Kentucky Teacher - A Publication of the Kentucky Department of Education.* https://www.kentuckyteacher.org/subjects/health-and-physical-education/2017/08/suicide-prevention-programming-support-available-to-schools/

Craven, M. A., & Bland, R. (2002). Shared mental health care: a bibliography and overview. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie*, *47*(2 Suppl 1), 1S–103S.

Data and Statistics on Children's Mental Health. (2020, June 15). Retrieved September 24, 2020, from https://www.cdc.gov/childrensmentalhealth/data.html

Donnermeyer, J.F., Plested, B.A., Edwards, R.W., Oetting, E., & Littlethunder, L. (1997). Community readiness and prevention programs. *Journal of the Community Development Society*, 28(1),65–83

Edwards, R. W., Jumper-Thurman, P., Plested, B. A., Oetting, E., & Swanson, L. (2000). Community readiness: Research to practice. *Journal of Community Psychology*, 28(3), 291–307.

Engelke, M. K., Swanson, M., Guttu, M., Warren, M. B., Lovern, S. (2011). School nurses and children with diabetes: A descriptive study. *North Carolina Medical Journal*. 72, 351-358.

Fertman, C. I., Allensworth, D. D. M., Grim, M., & Hortz, B. (2017). Health promotion programs: From theory to practice. (2nd ed., pp. 53–81). Jossey-Bass, a Wiley brand.

Florell, D. (2018, November 27). Getting Kentucky youth help with depression, mental health. https://www.richmondregister.com/community/getting-kentucky-youth-help-with-depression-mental-health/article_4b8661f5-5c2b-558e-8d71-b1c3565e951e.html.

Gask, L., Sibbald, B., & Creed, F. (1997). Evaluating models of working at the interface between mental health services and primary care. *The British Journal of Psychiatry, 170*(1), 6–11.

Guttman-Lapin, D., Nickerson, A., O'Malley, M., Renshaw, T., Silva, K., & Sockalingam, S. (2015). School mental health referral pathways (SMHRP) Toolkit. Rockville, MD; Substance Abuse and Mental Health Services Administration.

Haddad, M., Pinfold, V., Ford, T., Walsh, B., & Tylee, A. (2018). The effect of a training programme on school nurses' knowledge, attitudes, and depression recognition skills: The QUEST cluster randomized controlled trial. *International Journal of Nursing Studies, 83*, 1–10. https://doi-org.echo.louisville.edu/10.1016/j.ijnurstu.2018.04.004

Hofmarcher, M. M., Oxley, H., & Rusticelli, E. (2007). Improved health system performance through better care coordination. *OECD Papers, 7*(12), 1–85.

Hoover, S., & Bernstein, L. (2019). University of Maryland behavioral health: MHTIPS overview. *University of Maryland Behavioral Health*. https://mdbehavioralhealth.com/MHTIPS/Overview.

JCPS Facts. JCPS facts | JCPS. (2018). https://www.jefferson.kyschools.us/about/newsroom/jcps-facts.

Jefferson County Metro Government. (2019). Suicide Prevention. *LouisvilleKy.gov*. https://louisvilleky.gov/government/health-wellness/suicide-prevention.

Kim, R. E., Becker, K. D., Stephan, S. H., S. H., Apocada, D., Escudero, P. V., & Chorpita, B. F. (2015). Connecting students to mental health care: Pilot findings from an engagement program for school nurses. *Manuscript submitted for publication, University of California, Los Angeles*.

Krubsack, L., Caldwell, M., Collins, R., Herlitzke, T., & Schoening, J. (2019). School mental health referral pathways guide. Madison, WI; Wisconsin Department of Public Instruction.

MacDonald, K., Fainman-Adelman, N., Anderson, K. K., & Iyer, S. N. (2018). Pathways to mental health services for young people: a systematic review. *Social Psychiatry and Psychiatric Epidemiology*, *53*(10), 1005–1038. https://doi-org.echo.louisville.edu/10.1007/s00127-018-1578-y

McClanahan, R., & Weismuller, P. C. (2015). School nurses and care coordination for children with complex needs: An integrative review. *Journal of School Nursing*, *31*(1), 34–43.

Mcintosh, C. E., Thomas, C. M., & Maughan, E. (2015). Introduction to the special issue: Increasing the collaboration between school nurses and school personnel. *Psychology in the Schools*, *52*(7), 631–634. https://doi-org.echo.louisville.edu/10.1002/pits.21852

Office of Disease Prevention and Health Promotion. (2020). Mental health and mental disorders. https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives.

Riglin, L, Frederickson, N, Shelton, K.H., Rice, F. A longitudinal study of psychological functioning and academic attainment at the transition to secondary school. J Adolesc 2013; 36: 507–17

Stephan SH, Connors EH. School nurses' perceived prevalence and competence to address student mental health problems. *Advances in School Mental Health Promotion*. 2013; 6:174–188.

Soni, A. (2014). The five most costly children's conditions, 2011: Estimates for U.S. civilian noninstitutionalized children, ages 0-17 (Statistical Brief # 434). Rockville, MD: *Agency for Healthcare Research and Quality*.

Srivastava, A., Gailer, R., Tanwar, S., Trembling, P., Parkes, J., Rodger, A., Suri, D., Thorburn, D., Sennett, K., Morgan, S., Tsochatzis, E. A., & Rosenberg, W. (2019). Prospective evaluation of a primary care referral pathway for patients with non-alcoholic fatty liver disease. *Journal of Hepatology*, *71*(2), 371–378. https://doi-org.echo.louisville.edu/10.1016/j.jhep.2019.03.033

Tempelaar, W. M., de Vos, N., Plevier, C. M., van Gastel, W. A., Termorshuizen, F., MacCabe, J. H., & Boks, M. P. M. (2017). Educational level, underachievement, and general mental health problems in 10,866 adolescents. *Academic Pediatrics*, *17*(6), 642–648. https://doi-org.echo.louisville.edu/10.1016/j.acap.2017.04.016

The Center for Civil Rights and Remedies. (2020). (rep.). Nationwide suspension rates at U.S. schools (pp. 1–1). *Los Angeles, CA: The Civil Right Project*.

Weaver, C., Rogers, K., Gomez, M., Gilder, R., & Yoder-Wise, P. S. (2019). Implementing MH-TIPS: A growing need for mental health services for school-age children. *NASN School Nurse*, *34*(1), 25–28. https://doi-org.echo.louisville.edu/10.1177/1942602X18789250

Whitney, D. G., & Peterson, M. D. (2019). U.S. national and state-level prevalence of mental health disorders and disparities of mental health care use in children. *JAMA Pediatrics, 173*(4), 389. doi:10.1001/jamapediatrics.2018.5399

World Health Organization. (2020). Adolescent mental health. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health.

Appendix A: Permission Letter from JCPS Director of Health Services, Dr. Eva Stone

From: Stone, Eva C.
Sent: Wednesday, September 22, 2021 1:23 PM
To: Rivera,Jessica Marie
Subject: DNP Project

Jessica,
It was great to meet with you today to discuss your DNP project on increasing school nurse knowledge and comfort with addressing metal health needs (and referral options) for students. I support and am excited about this work and look forward to continued work with you.

Eva

Dr. Eva Stone, DNP, APRN

Manager District Health

Jefferson County Public Schools

4309 Bishop Lane

Louisville KY 40218

Appendix B: Letter of Permission for use of Instruments

MH-TIPS

BL **Bernstein, Larraine <Lbernste@som.umaryland.edu>**
10/6/2021 12:08 PM

To: Rivera,Jessica Marie Cc: Bohnenkamp, Jill

You don't often get email from lbernste@som.umaryland.edu. Learn why this is important

CAUTION: This email originated from outside of our organization. Do not click links, open attachments, or respond unless you recognize the sender's email address and know the contents are safe.

Hi Jessica,

I have reached out to Dr. Jill Bohnenkamp and she has approved you using the "Mental Health Red Flags" and the Triage Tool resource listed in the MH-TIPS training. Please be sure to acknowledge and cite the tool and share any products (e.g. new tool) and publications with Dr. Bohnenkamp who is copied on this email.

Thank you.
Larraine

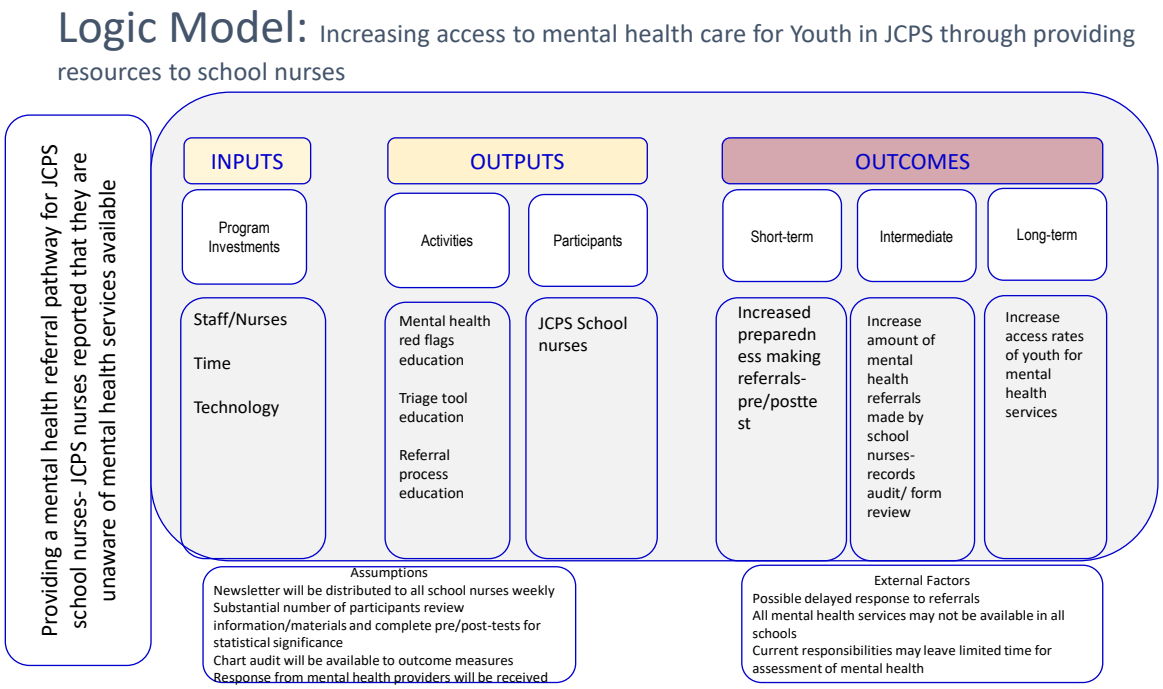
Larraine Bernstein, MS
Policy Analyst
National Center for School Mental Health
Division of Child and Adolescent Psychiatry
University of Maryland School of Medicine
737 W. Lombard Street, Room 444
Baltimore, Maryland 21201
443-465-3725

(Available Tuesday through Thursday)

Appendix C: Community Readiness Model

(Donnermeyer, J.F., Plested, B.A., Edwards, R.W., Oetting, E., & Littlethunder, L. (1997). Community readiness and prevention programs. Journal of the Community Development Society, 28(1), 65–83)

Appendix D: Logic Model



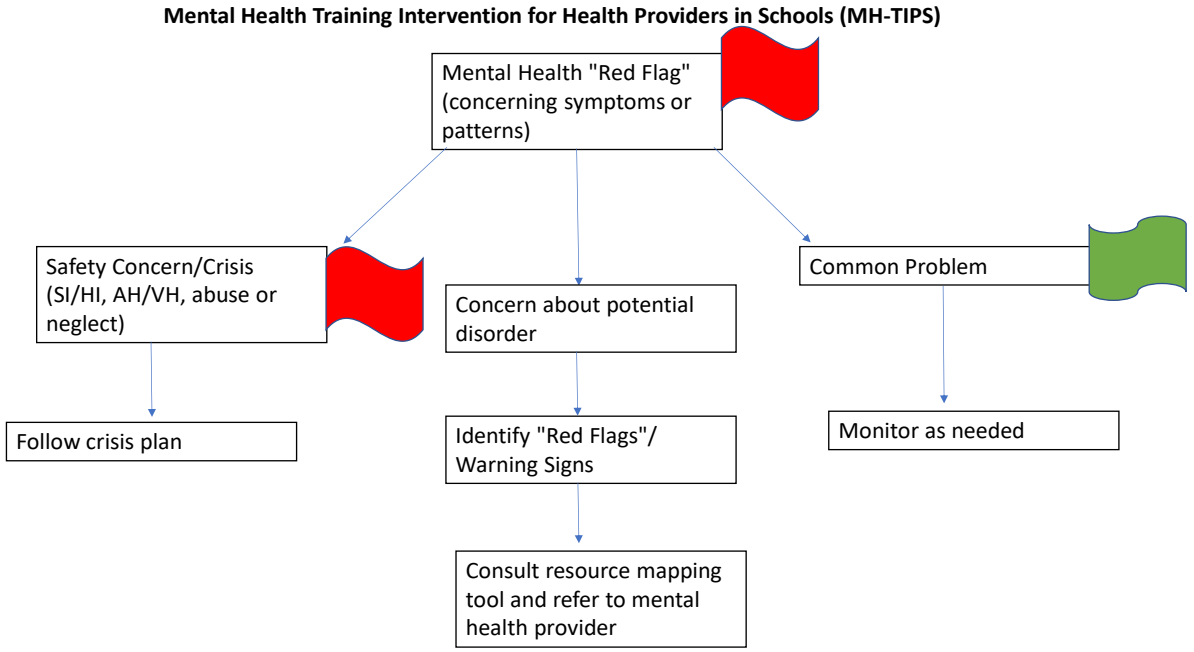
Appendix E: Resource Mapping Worksheet

Mental Health Training Intervention for Health Providers in Schools (MH-TIPS)

On-Site Resources		Community Resources	
School psychologists:		Mental health clinics:	
School counselors:		Therapists and psychiatrists:	
School mental health therapists:		Social workers:	
School social workers:		Addiction specialists:	
IEP coordinators:		Hospitals:	
Department of Social Services liaisons:		Food banks:	
University, community partner agencies:		Shelters:	
Others:		Others:	

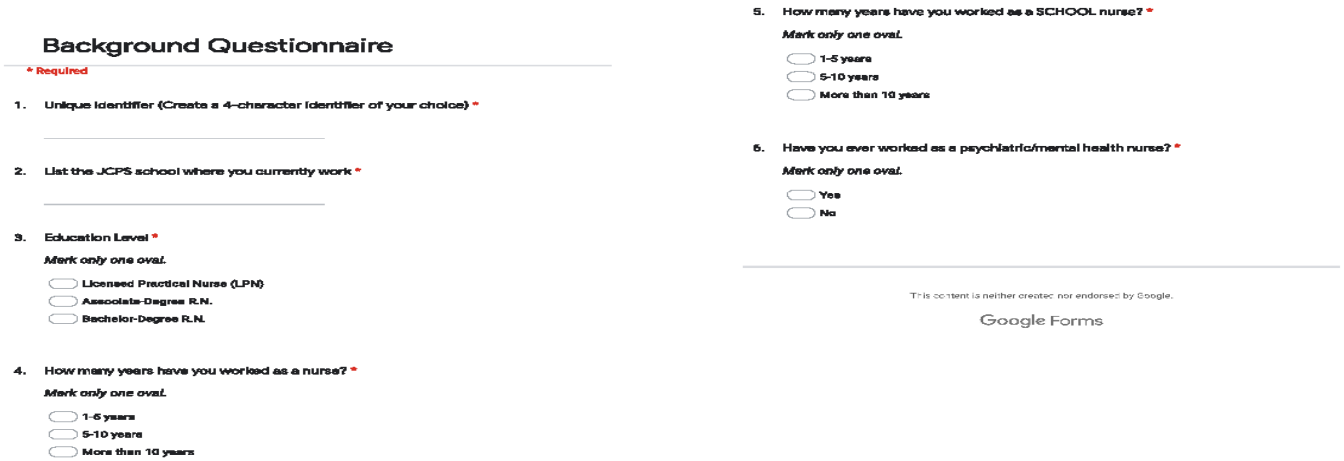
Bobo, N., Cammack, N., Bohnenkamp, J.H., Harrison, J., Hoover, S. (2019). Resource mapping worksheet. University of Maryland: School of Medicine. University of Maryland Behavioral Health | Materials (mdbehavioralhealth.com)

Appendix F: Mental Health Triage Tool



Triage tool. Modified from Bobo, N., Cammack, N., Bohnenkamp, J.H., Harrison, J., Hoover, S. (2019). Triage tool. University of Maryland: School of Medicine. University of Maryland Behavioral Health | Materials (mdbehavioralhealth.com)

Appendix G: School Nurse Background Questionnaire and Codebook



Background Questionnaire

* Required

1. Unique Identifier (Create a 4-character identifier of your choice) *

2. List the JCPS school where you currently work *

3. Education Level *
Mark only one oval.
- Licensed Practical Nurse (LPN)
- Associate Degree R.N.
- Bachelor Degree R.N.

4. How many years have you worked as a nurse? *
Mark only one oval.
- 1-5 years
- 5-10 years
- More than 10 years

5. How many years have you worked as a SCHOOL nurse? *
Mark only one oval.
- 1-5 years
- 5-10 years
- More than 10 years

6. Have you ever worked as a psychiatric/mental health nurse? *
Mark only one oval.
- Yes
- No

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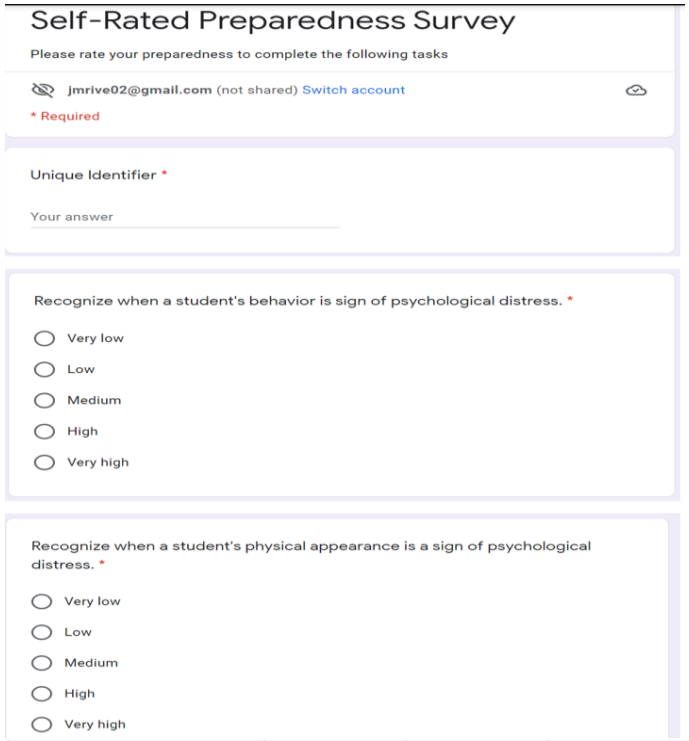
Variable Name	Width	Decimals	Variable Label	Value or Coding	LOM
ID			Participant Unique Identifier		Nominal
Sch			School		Nominal
Ed			Education Level	1= LPN 2= ADN 3= BSN	Ordinal
NursEx			Nursing Experience	1= 1-5 years 2= 5-10 years 3= 10+ years	Ordinal
SchNursEx			School Nursing experience	1= 1-5 years 2= 5-10 years 3= 10+ years	Ordinal
MHEx			Mental Health Nursing Experie	1= Yes 2= No	Ordinal

Appendix H: Self-rated Preparedness Survey



Self-Rated Preparedness Survey

Please rate your preparedness to complete the following tasks

jmrive02@gmail.com (not shared) Switch account

* Required

Unique Identifier *

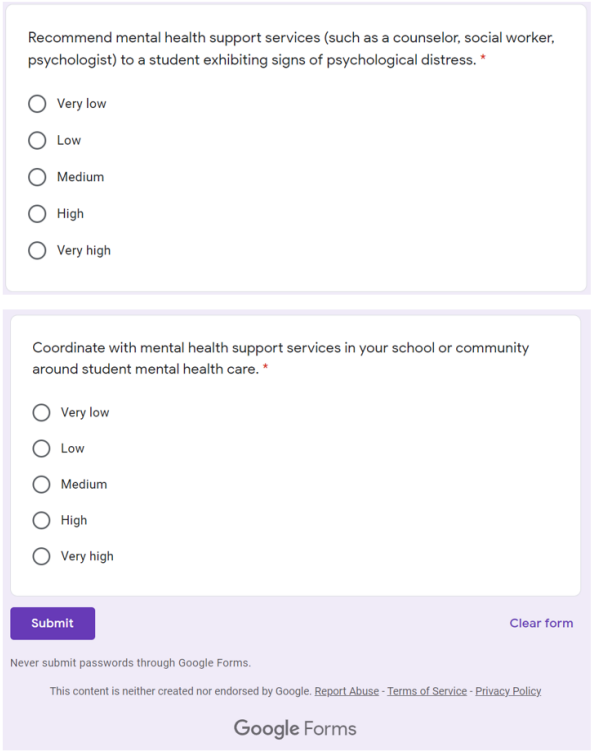
Your answer

Recognize when a student's behavior is sign of psychological distress. *

- Very low
- Low
- Medium
- High
- Very high

Recognize when a student's physical appearance is a sign of psychological distress. *

- Very low
- Low
- Medium
- High
- Very high



Recommend mental health support services (such as a counselor, social worker, psychologist) to a student exhibiting signs of psychological distress. *

- Very low
- Low
- Medium
- High
- Very high

Coordinate with mental health support services in your school or community around student mental health care. *

- Very low
- Low
- Medium
- High
- Very high

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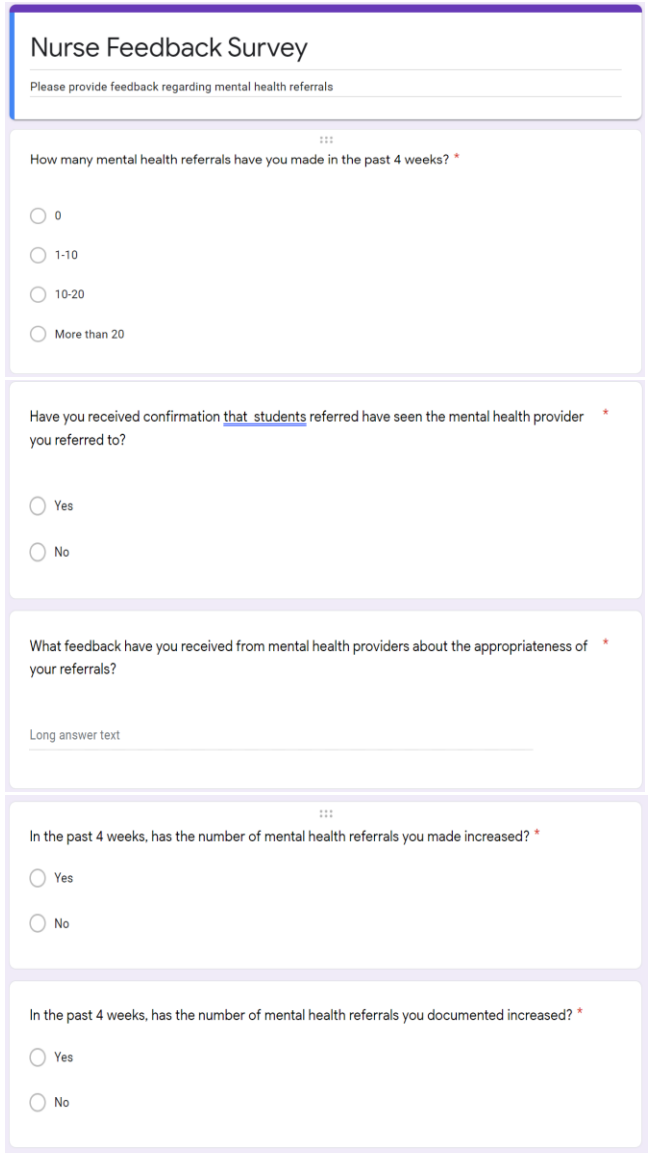
Google Forms

Variable Name	Width	Decimals	Variable Label	Value or Coding	LOM
ID			Unique Identifier		Nominal
StuBeh			Student Behavior as sign of psychological distress	1=Very low 2=Low 3=Medium 4=High 5=Very high	Ordinal
StuApp			Student appearance as sign of psychological distress	1=Very low 2=Low 3=Medium 4=High 5=Very high	Ordinal
MHRec			Recommend mental health services	1=Very low 2=Low 3=Medium 4=High 5=Very high	Ordinal
MHCoo			Coordinate with mental health services	1=Very low 2=Low 3=Medium 4=High 5=Very high	Ordinal

Appendix I: Nurse Feedback Survey and Codebook



Nurse Feedback Survey

Please provide feedback regarding mental health referrals

How many mental health referrals have you made in the past 4 weeks? *

- 0
- 1-10
- 10-20
- More than 20

Have you received confirmation that students referred have seen the mental health provider you referred to? *

- Yes
- No

What feedback have you received from mental health providers about the appropriateness of your referrals? *

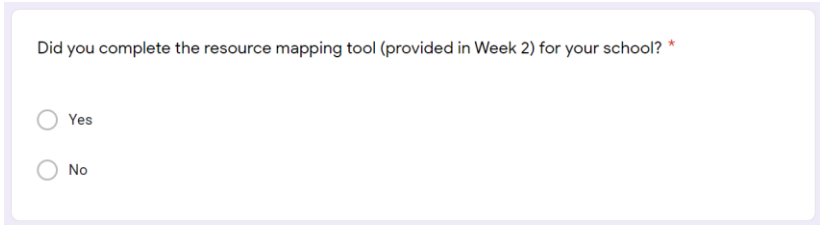
Long answer text

In the past 4 weeks, has the number of mental health referrals you made increased? *

- Yes
- No

In the past 4 weeks, has the number of mental health referrals you documented increased? *

- Yes
- No



Did you complete the resource mapping tool (provided in Week 2) for your school? *

- Yes
- No

Variable Name	Width	Decimals	Variable Label	Value or Coding	LOM
NumMHref			Self-reported number of MH referrals	0=0 10=1-10 20=10-20 30=More than 20	Ordinal
IncMH			Self-reported increase in mental health referrals	1=Yes 2=No	Nominal
DocuMH			Self-reported increase in documentation of mental health referrals	1=Yes 2=No	Nominal
MHFU			Confirmation of mental health referral follow-up from MHP	1=Yes 2=No	Nominal
MHFB			Feedback form MHP	1=Appropriate 2=Inappropriate	Nominal
ResMap			Confirmation of resource mapping tool completion	1=Yes 2=No	Nominal