An Evidence-Based Education to Improve Adolescents' Mental Health

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Abstract

Background and Purpose: An alarming number of youth have mental health concerns, but of those who are diagnosed, only half receive treatment. Using Bandera's social cognitive theory, one can achieve behavioral changes through self-efficacy and control their actions by self-regulation. Mindfulness activities, when implemented early, can decrease stress, and improve well-being in youth. ***Methods:*** This project was implemented among students attending an alternative high school in Arizona. Nine students participated in four different mindfulness, hands-on activities during two classes- 1 hour each. Participants completed a pre and a post-test with the 10-item questionnaire Perceived Stress Scale (PSS), and a 3-question survey to evaluate the program at the end of the second week. ***Results:*** Among the 9 participants (mean age = 16 SD=2.06), the stress levels were considered low to moderate in the pretest (mean=16.56) and the post-test (mean=15.89). Stress level scores were reduced after the education although the difference was not statistically significant. Furthermore, all participants agreed that the content and activities were appropriate, 88.9% agreed they had a "better understanding of how to reduce stress," and 77.8% stated their "knowledge of stress has improved." ***Discussion/Conclusion:*** This project aimed to help reduce vulnerable adolescents' stress level through mindfulness activities. Mental health education like this may help adolescents better manage stress and consequently promote their overall well-being. Future projects should recruit a larger sample and implement a longer time for larger and longer effects.

Keywords: mindfulness-based programs, adolescents, behavioral changes, stress

Improving Mental Health by Decreasing Stress in Adolescents

Stress occurs at any age and affects every person differently, whether it is acute, episodic, or chronic. Chronic stress poses adverse behavioral outcomes, especially in early childhood. Untreated and prolonged stress can lead to mental health issues among adolescents and negatively affect their adulthood. Many health benefits can be achieved when reducing stressors, such as improving sleep and mental health, increasing concentration, (CDC, 2021). Adolescents with adverse childhood experiences (ACE) are more prone to stressful life situations. By recognizing and treating stress at a young age, adolescents will recognize triggers of stress and learn how to handle them effectively.

Mental disorders are changes in how adolescents learn, control their emotions, and behave, which leads to distress. Many health benefits can be achieved when reducing stressors, such as improving sleep, mental health, increasing concentration, and more. By learning how to cope with stress at an early age, overall wellbeing may be improved.

Background and Significance

According to the Center of Disease Control (2021), adolescents ages 2-17, 5 million are diagnosed with a behavior problem, 4.4 million with anxiety, and 1.9 million adolescents with depression in the U.S. However, only 36.9% of those diagnosed with anxiety disorders are getting treatment. Adolescents' mental health challenges are impacted by social factors, family, and learning difficulties. Early diagnoses and timely treatments can make a big difference in adolescents, which impacts their adulthood. With timely treatment and education on stress management, adolescents can learn how to effectively cope with stress and consequently improving their overall well-being.

Purpose and Rationale

This project aimed at reducing stress in vulnerable adolescents who come from low socioeconomic backgrounds through an evidence-based mindfulness-based education. Adolescents experiencing socioeconomic (SES) hardships such as finances and social relations are more likely to develop mental health problems (Reiss et al., 2019). Childhood mental illnesses have been associated with general health problems and family and peer relationships (Vohra et al., 2019). Educating adolescents from the low socioeconomic background on coping with stress is vital to prevent mental health problems. While medications are a treatment of choice for childhood disorders nonpharmacological methods such as mindfulness activities have shown promising results in reducing adolescents' stress and promoting mental health with none or few side effects.

Epidemiological data to support significance of problem

There is an alarming number of youths with mental health concerns, but only half of those diagnosed seek help and receive treatment. Therefore, it is essential to start implementing stress relief/management interventions early.

Population

ACEs refer to adversity that children face in their home environment such as traumatic experiences like household violence, abuse, neglect, substance use problems, mental health problems, or instability. In addition, ACEs can have adverse health effects, leading to health problems such as diabetes, suicide, teen pregnancy, and more (CDC, 2021).

Adolescents who live below the poverty line are 1.5-2 times more likely to have mental health concerns (Lescheid et al., 2019). In addition, adolescents spend most of their time in school, making it an important place to discuss mental health. If schools can find a way to

implement strategies to reduce stress and improve mental health, adolescents will make better choices, get more sleep, live with a positive outlook, and even have better weight management.

There are universal screening tools for providers to utilize when screening for ACEs and associated toxic stress in the pediatric population. These tools are still evolving with some difference in opinions and training among providers as to when to screen, along with what is the best tool to screen patients based on the needs of their patient population and clinical workflow. For example, the American Academy of Pediatrics has issued a policy on screening that helps identify risk factors for children and families. The study was able to identify the risks factors, but there was not much evidence on if anything was done about those risks or how to act proactively when risks are identified (Barnes et al., 2020).

Interventions

One national initiative for mental health is the Substance Abuse and Mental Health Services Administration (SAMHSA). SAMHSA offers treatment and services for children and families who have experienced traumatic events. They provide resources such as education, locations of treatment centers, and helpline numbers. In addition, there is specific information for educators, military, and caregivers, along with information in Spanish (SAMHSA, 2021).

Numerous studies explore SES regarding increased mental health problems. Boe et al. (2017) conducted a study in Norway investigating whether those with lower SES and exposure to adverse life effects impacted mental health and found negative life effects correlated to lower SES backgrounds. The findings showed that families with lower SES were associated with symptoms of inattention, peer, and emotional problems (Boe et al., 2017). Therefore, when providing care to these patients, extra care needs to be considered when discussing interventions. This may include extra time, patience, and emotional support.

The Arizona Health Care Cost Containment System, AHCCCS, is Arizona's Medicaid system which has resources such as a behavioral system that promotes psychotherapeutic interventions, including family therapy, child-parent psychotherapy, circle of security, or applied behavioral analysis. In addition, the system promotes different assessment tools such as the Modified Checklist for Autism in Toddlers, Connor's Early Childhood Assessment, and Traumatic Symptom Checklist for Young Children (AHCCCS, 2016).

Comparison

In a study completed by Lee et al., (2020) they noticed that Hispanics and African Americans were exposed to a higher percentage of ACEs. The study suggested that racial minorities have less access and health insurance, which creates added stress and negatively impacts mental health. In addition, the study found that community violence was a distinct class of ACEs and was found to be associated with mental disorders (Lee et al., 2020).

There is a gap between mental health and the use of services. According to the CDC (2020), 53.5% of youth were diagnosed with behavior disorders, 59.3% were diagnosed with anxiety, and 78.1% were diagnosed with depression seeking treatment. Early intervention is essential to prevent prolonged mental health disorders, but even so, there are few youth or parents who seek out treatment. This gap creates an opportunity for providers to help better meet the needs of youth by focusing more on mental health. Studies show that familial support increases early treatment's likeliness for success (Sawrikar et al., 2020).

Stress has direct effects on the development and hormones that affect the brain. The toxic stress that youth experience without adequate support can damage the brain. Multiple models have been created to organize the complexity of stress related to the brain. In the 1900s, the CDC-Kaiser Permanente conducted the ACE study using a pyramid as the design. At the bottom

of the pyramid, was ACEs. Above that are social/emotional impairment, adoption of health risk behaviors, disease/social problems, with early death at the top of the pyramid (Hays-Grudo & Morris, 2020). This model illustrates that targeting youth with ACEs and initiating early treatment can help decrease behaviors leading to the top of the pyramid which can result in early death.

There are five federal programs and policies to help support initiatives in the U.S. This includes Medicaid, Child Care Development Block Grant, Individuals with Disabilities Education Act, Head Start, and Every Student Succeeds Act (Mental Health Organization, 2022). However, there are challenges. For example, families may have limited access to resources due to financial hardships, transportation, or time. There is stigma associated with mental health which makes people less likely to seek treatment. In medical settings, there has been increased attention for screening and the need for treatment, but adherence is difficult due to the limited resources that families have.

Outcomes

A child's stress can occur for various reasons, but one recent culprit is the pandemic. Since the breakout of the COVID-19, the world has been experiencing a psychological impact on well-being, especially in youth. Countries were forced to shut down, which caused social isolation, distancing, and fear. As a result, youth were vulnerable to frustration, increased domestic abuse, and lack of in-person contact. Youth were impacted hard because they had fewer past experiences to cope with stress. Depression in youth jumped from 22.6% to 43.7% (Mohler-Kuo et al., 2021). Anxiety was increased along with stress. Factors include youth not being able to play sports, see friends, or attend normal social activities like prom or graduation. Due to the impact of COVID-19, schools had to shift to a home learning environment, which increased

stress in youth and the families and caregivers. Adults still had to work, and not every child has internet or a working computer. All of these factors contribute to unnecessary pressure put on both parents and youth. Research suggests acting early is key to boosting youth's relationships, flexibility to manage stress, and communication (Crew, 2020).

In conclusion, common themes that emerge from data and research are that youth who experience ACEs and increased stress negatively impact mental health and, if not treated early, can be detrimental to adulthood. Unfortunately, there is a gap between the number of youth with mental illnesses and those who seek treatment. There is a large need for child psychiatric healthcare providers before the pandemic and now it's even worse. The waiting list for youth to seek mental health treatment is long. Youth are experiencing more tension, which further explains the need for better management. This may be due to a lack of resources, education, or knowledge. In addition, uncontrolled stress negatively impacts hormones and the brain, leading to increased behavioral problems.

Internal Data

This project was implemented in an alternative high school with students from low SES backgrounds. These youth are likelier to come from homes that experience abuse, neglect, or dysfunction. After the pandemic, the principal started to incorporate some mental health ideas. There were posters set up in every room with four colors. Each of the colors was filled with words that described emotions. Youth were to point out what color they felt they were in and where they wanted to be. The principal stated that she was hopeful more students would use the resource, but it could have been more effective due to a lack of motivation.

PICOT Question

This inquiry leads to the development of the PICO question- In youth from low SES backgrounds does and mindfulness-based education improve youth's ability to manage stress?

Evidence Synthesis

Search Strategy. The databases used were PubMed, CINAHL, and PsycInfo due to their credible information.

There are seven levels of evidence that research articles are categorized in. Level 1, which is the best type of evidence, includes systematic reviews, meta-analyses, and randomized controlled trials. Level 2 includes cohort studies. Level 3 include controlled trials without randomization such as quasi-experimental designs. Level 4 include well designed case control studies. Level 5 includes systematic reviews and qualitative designs. Level 6 include a single descriptive study and level 7 incudes expert opinions *(LibGuides: Evidence-Based Practice Toolkit for Nursing: Levels of Evidence*, 2012). When researching articles, it is essential to include credible sources with a higher level of evidence to back up the discussion. For example, mental health is a topic gaining a lot of traction recently, which means there is a handful of articles on the subject. Therefore, finding reliable, valid, trustworthy information will come from a higher level of evidence research than lower-level evidence.

Keyword Selection. The selection of keywords is based on each aspect of the PICOT question. Keywords included *ACEs, mental disorders, children, school-age, psychiatric illness, stress management, awareness, education, screening tools, untreated stress, effects on childhood,* and *knowledge of mental health*, g*ood behaviors, gaps,* and *benefits*.

During the initial search, at least three keywords were used, allowing the database to filter out articles. Advanced settings were applied to add more keywords and set a time to show only articles dated 2016 or earlier.

Initial and Final Search Yields. Each database was searched with the same keywords. Initially searching *ACEs, mental health,* and children yielded 520 results in PubMed, 634 results in PsycInfo, and 215 results in CINAHL. Setting limits aided in narrowing the search yield. Due to the large number of studies discovered with the initial PubMed search, *stress* was added, decreasing the number of articles to 104 results in PubMed, 180 results on PsycInfo, and 62 results on CINAHL.

Next, the second round of searches was conducted with the keywords *mental health, intervention, mindfulness, benefits, children,* and *strategies*. Limits of publishing years 2018-2022 yielded 10-138 results on CINAHL and 300-400 results on PubMed. The second round of searches was not limited to *effects, experimental,* and *schoolchildren.*

Inclusion criteria included mindfulness in children with ACEs. Exclusion criteria included only school-age youth, not infants or college students, which helped narrow down results. After reviewing the articles from all three databases, ten articles were chosen as essential studies to evaluate further. The rapid critical appraisal checklists were utilized to determine the top ten highest quality articles. These articles included: one random controlled trial, three systematic reviews, one cross-sectional study, and five cluster randomized controlled trials. Highest level of evidence was prioritized in picking the ten articles.

Critical Appraisal and Synthesis of Evidence. A thorough search was conducted to obtain ten studies supporting mindfulness-based programs in stress management. All included studies were evaluated by the rapid critical appraisal tool to quickly determine the value of the study (Melnyk & Fineout-Overholt, 2015). Only articles with a high level of evidence were considered and prioritized. Designs of individual studies include cross-sectional, several randomized controlled trials, systematic trials, and two arm mixed-method randomized controlled trials (See

Appendix A, Table A1 and A2). Out of the ten studies, eight studies displayed a Level of Evidence of one. This represents the highest quality of designs in research.

A majority of the studies displayed a moderate degree of homogeneity concerning demographics and setting. The demographics focused mainly on children and adolescents under the age of 18 in school settings (see Appendix A, Table 3). Two studies included ACEs as a factor contributing to behavioral problems. This is critical to the research process because evidence shows that ACEs are an increased factor of stress. One study focused on mental health-related to school youth impacted by COVID-19 (See Appendix A, Table 2), which describes the most recent factor contributing to increased stress in school-age youth.

Most of these studies focused on implementing mindfulness-based programs to evaluate behavioral changes compared to no interventions or a relaxation program. The behavioral issues that may contribute to mental health issues include social cues, stress, anxiety and depression, physical well-being, and the ability to internalize problems (see Appendix A, Table 3). All studies showed a high degree of homogeneity regarding behavior and stress. Each study looked at how stress was impacted by the interventions implemented. While only two of the studies had interventions that included family sessions, it is noted that there was positive feedback and a high response rate.

Many results had smaller sample sizes, but as expected, classroom sizes are usually small since most studies were at schools. In addition, the programs were held for an average of nine weeks (See Appendix A, Table 2) where a short timeline of the trials poses a risk of reliability. Outcomes were measured by utilizing different methods such as questionnaires, PHQ-9, and data extraction. The most used instruments were the behavioral instruments (see Appendix A), including the BASC-2, PHQ-9, and PSI. The evidence from the methods concluded positive

improvements in psychological well-being indicating, that mindfulness plays a crucial role in improving overall mental health.

The findings indicate mindfulness, a stress-management intervention improves youth's psychological well-being. According to these data, we can infer that these problems include but are not limited to adaptive skills, emotional symptoms, aggressive behavior, stress, and depression. Mindfulness-based interventions have been shown to have many benefits for behavioral problems. Stress, the ability to cope, depression, and physical well-being positively correlate in response to mindfulness-based cognitive programs. In every study, positive improvements have been shown in every behavioral aspect. However, due to the damage of prolonged stress, it is vital to make changes with the younger population.

Mindfulness-based programs should be implemented in grade schools, especially in areas with adverse childhood experiences or lower socio-economic status. It is important to note that no risk was associated with implementing these programs. It is cost-effective yet produces effective results in decreasing stress. The skills that the participants are learning can be applied long-term to the individual to achieve lifelong benefits. That being the case, incorporating these interventions can benefit youth and significantly impact their young adulthood.

Theoretical Framework

Research suggests that interventions related to cognition can be incredibly beneficial. Albert Bandera's social cognitive theory achieves behavioral changes through self-efficacy (Firth et al., 2019). This theory claims that individuals can control their actions by self-regulation. For example, if individuals believe in themselves positively, self-behavior increases. Bandura's theory is broken up into three subcategories; behavior, cognitive, and environmental (See Appendix B Figure B1). He stresses the importance that motivation has on the mental state. This

theory considers past experiences and environmental factors to determine if a specific behavior will occur (LaMorte, 2019).

The social cognitive theory focuses on how cognitive and environmental factors influence learning and behavior. Mindfulness-based interventions have decreased negative symptoms such as depression and PTSD by increasing motivation. Both self-efficacy and mindfulness have an essential role in coping with stress increasing positive behavioral changes such as increased self-esteem. The cognitive or personal factors include an individual's knowledge, attitudes, and expectations, whether positive or negative. While stress increases behaviors such as anger, anxiety, and sadness, there are coping mechanisms people can learn to maintain a healthy mindset, such as taking care of the body, meditation, and connecting with others (CDC, 2021). The environmental factors include the schools' setting during mindfulness sessions. The physical environment may affect how an individual will react to new learning. Ensuring a safe, familiar environment for the participants will allow for better trust and motivation for participation. The behavioral aspect of the model will be focused on reducing stress and improving mental health through mindfulness meditation. Once the individual learns coping mechanisms through mindfulness, they can apply them to future stressful circumstances. The social cognitive theory is forecasted to be efficient between mindfulness and behavior.

Implementation Framework

The design and implementation of this project will be strongly guided by a model that supports practice changes derived from qualitative and quantitative evidence. The model chosen to guide the implementation project is the Rosswurm and Larrabee. The model is based on the change theory and helps practitioners guide the way through implementing evidence-based change (Rosswurm & Larrabee, 1999). This six-step model was developed to implement

evidence-based changes into practice (See Appendix B, Figure B2). These steps include assessing a need for change by comparing internal with external data, linking the problem with interventions and outcomes, researching for the best evidence for change, developing a change in practice, implementing the change, evaluating, and integrating to maintain changes in future practice (Rosswurm & Larrabee, 1999).

The first step is to assess the need for practice change. Youth who have ACEs are associated with a higher increase in stress. The program where the project will be executed has a need for an enhanced curriculum related to mental health. Evidence shows that mindfulness-based interventions create rewarding end results on one's behavior. With the successful incorporation of cognitive activities in the program, this change can be evaluated, revised, and implemented in future students.

This model is significant when implementing mindfulness in school-age youth to improve mental health. This model also has a feedback loop that allows the opportunity to backtrack to previous steps and revise as needed. After the evaluation of the project, the results will be evaluated, and necessary changes will be implemented for future students to come. Therefore, Rosswurm and Larrabee is the quintessential model for this project.

Methods

After extensive search and synthesis, cognitive-based therapies have decreased stress and depression while increasing positive relationships significantly. Based on evidence-based practice and the social cognitive theory, it is suggested that mindfulness-based programs are promising for help youth manage stress and promote mental health. Behavioral changes can be achieved through self-efficacy.

Ethical Considerations

To This project was approved by the Institutional Review Board (IRB) to ensure ethical conduct prior to implementation.

The target participants were those between 12-21 years. Parental consent for those under 18, and youth assent were obtained before participation. The informed consent and assent addressed that the project has no harm or risks to the participant; data were collected anonymous and adequate procedures were implemented to ensure confidentiality. Participants were aware that their participation were voluntary, and they could withdraw at any time without penalty.

Participants and Setting

The mindfulness education was performed over a 2-week period. There are 9 participants with ages range from 12-21. The project was presented during an allotted hour-long elective class at the school.

Project Description and Intervention

In a span of two weeks, there was weekly on-site with the intent of content to continue working at home. Activities included exercises focusing on breathing, mindful movement, coloring, touch, and journaling. Activities were split up into two weeks with two different activities each day. Students were sent home with resources on how to continue their mindfulness journey at home. Each activity varied from week to week with the intent of self-directed daily interventions incorporated. During the first week, the students was educated on what mindfulness is, the benefits, and how to incorporate it in daily life. The first week included two activities focusing on mindful breathing and touch. Participants were distributed bubbles for the breathing techniques and a grow-your-own-plant kit for the mindfulness touch education. The second week consists of reiterating what was learned from the first week. The activities for the second week focused on movement, directed coloring, and journaling. Participants were

guided on how to practice chair yoga moves. The directed coloring was led by me, and the journals all came with prompts.

At the beginning of the 1st class, students filled out a pretest survey consisting of demographic's questionnaire and PSS.

Instruments

The instrument used in the project was the Perceived Stress Scale (PSS), created by Cohen in 1983 to help measure stress in individuals (See Appendix B). The scale consists of a ten-item questionnaire that focuses on feelings and thoughts within the last month, with an anticipated completion time of five to ten minutes (Cohen, 1994). The scale uses reverse scoring to determine stress levels. If a participant scores 0-13, it would be considered low stress. Scores 14-26 would be considered moderate stress and scores 27-40 would be considered high stress. The PSS is a reliable and valid measurement tool that has been used for years. This tool is directly related to Bandera's social cognitive theory by individuals' ability to self-regulate their actions (Firth et al., 2019).

There have been many studies that have observed the validity and reliability of the PSS. Liu et al., evaluated the factor structure, reliability, and validity of the Perceived Stress Scale among Chinese students (2020). In this article, 1574 Chinese students completed the PSS, and a confirmatory factor analysis was conducted. The students answered questions on the PSS and the Adolescent Self-Rating Life Events, ASLEC, to evaluate the convergent validity. It was noted that both PSS and the ASLEC were significantly related, and that the PSS has concurrent validity in predicting anxiety and depression (Liu et al., 2020). The authors used Cronbach's alpha coefficients and two subscales that proved reliable at 0.79, 0.80, and 0.71 (Liu et al., 2020).

Data Analysis Plan

Descriptive analysis and non-parametric statistics were conducted to describe the distribution of the variables and examined the changes of PSS over time; effect sizes were also calculated. Data were captured using the Statistical Package for Social Sciences (SPSS, IBM).

Budget and Financing

The breakdown of the budget for the project is presented in appendix C. The student provided funding for materials needed in this project, including traveling to the site. The budget included print material, bubbles, plant items, journals, pens, crayons, and incentives for the participants. There was no overhead cost.

Results

The sample consists of nine students (66.6% female, 22.2% male, 11.1% other gender) with a mean age of 16. The study was completed with a total of nine youth over the age of 12. The average age was 16 (SD =2.06) (see appendix D, table 2). Over half (55.6%) of the students were Hispanic/Latino, following by other race/ethnicity (n=3, 33.3%) and Black (n=1, 11.1%) (see appendix D, table 3). Majority of the students lived with parents (n=8, 88.9%) with only 1 student (11.1%) lived with either grandparents or relatives (see appendix D, table 4).

The most frequent observed primary language was English (n=6, 66.7%). Spanish was the second most frequent primary language (n=3, 33.3%). All students received reduced-price or free lunch (n=9, 100%).

Non-parametric statistics was used to compare T0 and T1 stress score over time due to the small sample size. The average stress score for T0 is 16.56 (SD = 6.77), suggesting a moderate level of stress before the education (See appendix E, table 1).

After the education, the mean stress level was 15.89 (SD= 7.04), suggesting a moderate level of stress (see appendix E, table 2). The PSS among participants reduced after the education although the changes did not reach statistical significance.

In the three evaluation questions at the end of the project, all participants agreed that the content and activities were appropriate. There mean score was 3.44 (SD = 0.53). For knowledge improvement, 77.8% reported agree or strongly agree after the education. The mean score was 3.11 (SD= 0.78). Regarding if students had a better understanding of how to reduce stress after the education, 88.9% of them agreed or strongly agreed. The mean score was 3.33 (SD= 0.71) (see appendix F, table 1-3).

Sustainability

The PowerPoint slides created for the project, including each week's objectives and goals, and directions and instructions on how to lead the mindfulness-based intervention were sent to the project site champion. Information on where items for the interventions were purchased was provided; a list of references on the evidence-based research compiled and used to create the project was also included to enhance replication. This project was budget-friendly, easy to replicate, and may help vulnerable youth better manage stress and prompt their mental health and well-being.

<p align="center">**Discussion**</p>

This study demonstrated mindfulness-based education and its effect on stress in youth. The study results showed that through mindfulness, youth better understand how to recognize their stress and learn how to cope with it. The average sum stress score for the pretest was 16.56, indicating moderate stress levels. After interventions, the average sum stress score for the post-test was 15.89 indicating moderate stress. However, the score was less than the pretest. A 95%

confidence interval contains the true mean score of the pre and post-test. Through the mindfulness-based activities, there is a decrease in stress even though the results were minimal.

The evaluation questionnaire was given to each participant at the end of the second week, showing significant improvement. Mindfulness activities have proven to make a positive impact in reducing stress scores. Two weeks of activities decreased stress scores by 0.67. If a more extended program was added regularly into the curriculum, there would be a wider difference between the pre and post-test stress scores.

Limitations/Challenges

There were a couple of limitations to this project. First, the sample size was small, and the actual program was short in length and time. Due to time constraints, the project was cut from a 4-week program into a 2-week program. The program was only two weeks long but demonstrated a positive change in the stress scale. If the program was longer, it is possible that the stress scale score could further decrease. Therefore, the study cannot be generalized to all youth.

<center>**Conclusion and Recommendations**</center>

This project aims to explore mental health challenges' barriers to youth and determine if cognitive interventions will help improve stress. Evidence shows that mindfulness-based interventions create rewarding results in one's behavior. With the program's successful incorporation of mental activities, this change can be evaluated, revised, and implemented in future students. Ideally, the high school will regularly add mental health or mindfulness into the curriculum for prospective students. The program coordinator can include cognitive interventions based on what works best for their students. Since there are many different types of mindfulness interventions, the curriculum must be created based on the needs of the students.

This program is cost-effective and has previously been shown to have worthwhile outcomes, making adding the program very feasible. By adding a mindfulness-based program into the curriculum, students can learn how to deal with stress, create better relationships, improve communication, and have a better quality of life.

Many of the youth in the program come from low socioeconomic status, which is associated with impaired cognitive and emotional development. The youth in the program are also affected by adverse childhood experiences. These impairments can continue to affect their lives as they develop into adults. The ability to handle stress and maintain positive relationships with peers and family will benefit these youth in the long run. Ideally, the principal will be fond of the mindfulness-based program, see the improvement of stress, and add mental health to their future curriculum. This quality improvement is an iterative process, and after graduation, the program can easily replicate the project in the coming years.

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Appendix A
Evaluation and Synthesis Tables

Table A1

Evaluation Table for Quantitative Studies

Citation	Theoretical/ Conceptual Framework	Design/ Method/ Purpose	Sample/Setting	Variables	Measurement/ Instrumentation	Data Analysis	Results/ Findings	Level of Evidence; Application to practice; Generalization
Malboeuf-Hurtubise et al., (2021), Philosophy for youth and mindfulness during COVID-19: Results from a randomized cluster trial and impact on mental health in elementary school students **Country**: Canada **Funding**: Bishop's University **Bias**: None	Self-determination theory	**Design:** Randomized cluster **Purpose:** Compare the impact of MBI and P4C interventions on mental health	**Sample:** (n=37) **Demographics:** Average age 8.18 57% boys 43% girls 2 different schools Grades 1-5th **Setting:** Urban school in Quebec **Exclusion:** Only those who completed pre-intervention a week after end of intervention **Attrition:** None	**IV:** Students **DV1:** MBI group **DV2:** P4C group **Definitions:** MBI: mindful stopping, body scan, mindful walking, mindful gratitude P4C: Why go to school, sadness, personal freedom, being old, death	**Tools:** P4C- 5 weekly 1 hr. sessions MBI- 5 weekly 1hr. sessions **Validity/ Reliability:** Reliable source	**Statistical Tests Used:** ANCOVAs, Paired t tests	**DV1:** P4C p =.01 BPN- Pre- test 9.73 Posttest 9.38 Mental Health difficulties- Pretest 5.21 Posttest 3.87 **DV2:** MBI P= 0.24 BPN- Pretest 10.43 Posttest 11.64 Mental health Pretest 4.30 Posttest 5.00 MBI was more beneficial than P4C	**Level of Evidence**: 1 **Strengths**: RCT, easily accessible **Weakness**: Short duration, small sample size, technical issues **Feasibility**: MBI and P4C can be easily implemented online/real time **Application**: MBI had more effect than P4C. MBI should be incorporated in schools to decrease mental health
Lassander et al., (2021), Effects of school-based mindfulness	Social Cognitive Theory	**Design:** Cluster randomized controlled trial	**Sample:** (n=3519) **Demographics:**	**IV:** Mindfulness Intervention **DV1:** Physical well being	**Tools:** Questionnaires and tests, KINDL-R instrument	**Statistical Tests Used:**	**DV1:** Baseline- 69.56(21.96)	**Level of Evidence:** 1 **Strengths:** Strong research

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intervention on health-related quality of life: moderating effect of gender, grade, and independent practice in cluster randomized controlled trial **Country:** Finland **Funding:** University of Helsinki **Bias:** None		**Purpose:** To investigate the impact of a mindfulness program vs active control program	12–15-year students from 56 schools 6th-8th grade **Setting:** Finnish comprehensive schools **Exclusion:** No exclusion criteria. Participants may drop at any time. **Attrition:** 5.9%	**DV2:** Emotional well being **DV3:** Self-esteem **Definitions:** Control- 9 wk. relaxation program **Intervention group:** 9 wk. mindfulness 45 min group sessions/home practice 5-6x/week	**Validity/reliability:** Statistically significant- p estimated at $p<0.001$, $p<0.01$, and $p<0.05$.	Multilevel linear models	9 wk.-70.91(20.86) 26 wk.-71.88(20.26) **DV2:** Baseline-75.85(15.74) 9 wk.-75.88(15.66) 26 wk.-75.95(15.85) **DV3:** Baseline-62.84(20.04) 9 wk.-65.03(201.16) 26 wk. 65.57(19.31) KINDL-R scores for intervention group increased from baseline to 9 and 26 weeks	design, active/inactive control group, randomization at school level, participants were blinded **Weakness:** Had attrition of 5.9%, inactive group was smaller than control group, control group had varying backgrounds **Feasibility:** recommended due to + outcomes/low cost **Application:** More beneficial for girls or older students, mindfulness has + outcomes for anxiety, depression, poor HRQoL
Vohra et al., (2019), Mindfulness-based stress reduction for mental health in youth: cluster randomized controlled trial **Country:** Canada	Neuman's Systems Model	**Design:** 2-arm mixed method, cluster-controlled trial, blinded analysis **Purpose:** To determine if MBSR	**Sample:** (n= 85) **Demographics:** 12–18-year-old with hx of not responding to previous mental health interventions. Excluded: those	• Gender • Grade • Primary dx • Ethnicity • Residence • Household income • Education	**Data Collection:** Questionnaires, self-reporting from teachers, self, and parents. Behavior Assessment for Youth 2nd edition (BASC-2)	**Statistical Tests Used:** Linear mixed model	PSS MBSR: p 0.870 3 mo.- 17.05 Control: 3 mo.- 19.50 ERQ cognitive: P 0.330 MBSR3 mo.- 18.40	**Level of Evidence:** 1 **Strengths:** Significant results, no bias, low cost **Weakness:** Small sample size, parents,

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Funding: Lotte and John Hecht Foundation and Stollery Youth's Foundation, Lois Hole Health Research Institute **Bias:** None		programs with usual care are more effective than usual care itself	diagnosed with psychosis **Exclusion:** if anybody had a diagnoses of psychosis **Setting:** CASA house-voluntary treatment program **Attrition:** 0	• Household structure **Definitions:** MBSR sessions: 2hr/wk. + 3hr retreat for 8 sessions.	**Validity:** Is valid because reported improvements favoring MSBR were p <0.5		Control 3 mo.-17.93 ERQ expressive: P 0.473 MBSR 3 mo.-10.05 Control 3 mo.-10.79	teachers, and participants were not blinded to the study intervention. Mainly Caucasians. **Feasibility:** Time constraints, reporting from parents, did not account for any MBSR outside of sessions **Application:** This can be used in future programs in decreasing stress using MBSR
Daniel et al., (2020), Resilience in the setting of adverse childhood experiences: a cross-sectional study **Country:** USA **Funding:** Donald E. and Delia B. Baxter Foundation **Bias:** None	Psychoanalytic theory	**Design:** Cross-sectional study **Purpose:** To determine if youth with higher ACEs scores will have lower resilience measures	**Sample:** (n=61) **Demographics:** 18-25 who could speak or write in English/Spanish, Female Race/ethnicity US born Lives with parents Survey in Spanish **Exclusion:** incarcerated patients, pregnant patients, and employees **Setting:** general inpatient/surgical	**IV:** Resilience **DV1:** ACEs 4+ **DV2:** ACEs <4	**Data Collection:** ACES questionnaire CYRM-12 questionnaire CRAFFT screening PHQ-2 screening **Validity:** Yes, study may be repeated with larger sample size, no bias, low reliability due to small sample size	**Statistical test used:** Wald test in R Project for Statistical computing	ACEs and resilience are inversely related. Those with >4 ACEs scores had lower CYRM-12. **DV1:** ACEs 4+: p= .003 **DV2:** ACEs <4: p = .009	**Level of Evidence:** 4 **Strengths:** use of multifaceted validated resilience measure, **Weakness:** small sample size, self-selection bias, cross-sectional does not allow exploration of casual relationship, recall/self-

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			wards of LA/USC Medical Center **Attrition:** 0.02					selection **Feasibility:** Can be replicated due to setting of study **Application:** This can be used as a resource to show that ACEs comes with lower resilience outcomes
Dunning et al., (2018), Research review: The effects of mindfulness-based interventions on cognition and mental health in youth and youth- a meta-analysis of randomized controlled trials **Country:** UK **Funding:** Grants from Wellcome **Bias:** Yes. Many authors failed to report an accurate assessment of risk for bias	Mindfulness to Meaning Theory	**Design:** Random controlled trials **Purpose:** To evaluate the efficacy of using MBI for improving mental health and well being	**Sample:** (n=33) RCTs **Demographics:** 18 years or younger **Setting:** No specific setting due to having 33 RCTs to analyze **Attrition:** None inferred	**IV:** Mindfulness based interventions **DV1:** Social behavior **DV2:** Negative behavior **DV3:** Depression **DV4:** Anxiety/Stress **DV5:** Attention **DV6:** Executive functions	**Data collection:** Extraction of age of sample, total number of participants, type of control conditions, hours of MBI training, types of MBS **Validity:** Yes	**Statistical test used:** Chi squared	Overall effect size for all studies was 0.19. All studies show significant improvements to variables with mindfulness intervention. **DV1:** Social behavior $p = 0.70$ (d)-0.07 **DV2:** Negative behavior $p = 0.26$ (d)0.22 **DV3:** Depression $p < 0.01$ (d)0.47 **DV4:** Anxiety/Stress $P < 0.01$ (d)0.18 **DV5:** Attention $p = 0.14$ (d)0.10 **DV6:** Executive functions $p = 0.06$ (d)0.13	**Level of Evidence:** 1 **Strengths:** Highest level of evidence, big sample size of articles, cost effective **Weakness:** Heterogeneity, bias **Feasibility:** Feasible, but hard because time consuming and need for newer articles **Application:** Can be applied in future practice

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IMPROVING MENTAL HEALTH BY DECREASING STRESS IN CHILDREN

Marie-Mitchell and Kostolanksy, (2019), A systematic review of trials to improve child outcomes associated with adverse childhood experiences **Country:** USA **Funding:** No financial disclosures **Bias:** Possible influenced by publication bias	Bronfenbrenner's ecological theory	**Design:** Systematic literature review **Purpose:** To summarize evidence from RCTs for efficacy of interventions involving pediatric health care to prevent poor outcomes in youth with ACEs	**Sample:** (n=22) **Demographics:** Articles must have conducted an RCT, had a pediatric population, and had exposure to ACEs **Setting:** RCTs from 1990-2017 **Attrition:** None inferred	**IV:** Youth who experienced ACEs and had access to primary healthcare **DV1:** Developmental function **DV2:** Physical/chronic health problems **DV3:** Behavioral/mental health problems	**Data collection:** Data extraction using databases, MEDLINE, PsycInfo, Web of Science Cochrane, and SocINDEX. Search terms included: youth, ACEs, and pediatric primary. Data was separated into two categories; those directly involved with a pediatric provider and those not involved but had pediatric services. Results were then uploaded to EndNote to individually screen. **Validity:** Yes, wide range of articles taken from 1990-2017 and multiple databases utilized	**Statistical test used:** Meta-analysis	Interventions that utilized parenting education, mental health counseling, social service, or social support can reduce the impact of ACEs and improve child-parent relationships. Longitudinal primary care, including mental heal professionals have the largest effect on child health outcomes.	**Level of Evidence:** 1 **Strengths:** Wide range of databases used/ years for articles **Weakness:** Gaps in literature. Only 3 had pediatric primary care screening. Few studies with youth ages 6 and over. Only limited to RCTs. **Feasibility:** Yes, time consuming/ small sample size **Application:** Knowledge from review shows that with continued support, pediatric primary care, youth with ACEs can be positively affected
Volanen et al., (2020), Healthy learning mind-effectiveness of a mindfulness program on mental health	Neuman's model	**Design:** Randomized controlled trial **Purpose:** To determine if MBI has a	**Sample:** (n=3519) **Demographics:** 6th-8th graders, ages 12-15	**IV:** 9-week MBI Relaxation group **DV1:** Resilience **DV2:** Depressive symptoms	**Data collection:** self-report questionnaire, RBDI, SDQ, RS14 **Validity:** Yes, stated to be	**Statistical test used:** Multi level linear	9-weeks and 26-weeks MBI shows slight benefits over a relaxation program/teaching	**Level of Evidence:** 1 **Strengths:** RCT, wide ranging

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compared to a relaxation program and teaching as usual in schools: cluster-randomized controlled trial **Country:** Finland **Funding:** Signe and Ane Gyllenberg Foundation, Juho Vaino Foundation, Mats Brommels Foundation, Yrjo Jahnsson Foundation, Ministry of Social Affairs and Health **Bias:** None		positive impact on resilience, depression, and socio-emotional functional than with the relaxation program alone	**Setting:** schools in Southern Finland **Exclusion:** None stated **Attrition:** none stated	**DV3:** Socio-emotional functioning **Definitions:** MBI- 45 min weekly with home practices Relaxation: program to focus on sleep, screen time, stress management	comparable to similar trials	modeling, Wald tests	**DV1:** 9wk: -0.831(0.665) 26wk: 0.875(0.782) **DV2:** 9wk: -0.300(0.213) 26wk: -0.465(0.245) **DV3:** 9wk: -0.430(0.286) 26wk: -0.922(0.340)	characteristics, cost-effective **Weakness:** control group was smaller than intervention group **Feasibility:** yes, can be recreated for more data statistics **Application:** Can be useful due to MBI having positive outcomes
Lo et al., (2019), Applying mindfulness to benefit economically disadvantaged families: a randomized controlled trial **Country:** China **Funding:** Early Career Scheme, Research Grants Council, Hong Kong Special Area Region **Bias:** Potential bias because of personal experiences from parents which may influence changes in their youth/relationships	Family Stress Theory by Conger & Elder	**Design:** Two-arm RCT **Purpose:** To evaluate effects of FMBI to promote stress management in disadvantaged families	**Sample: (**n=51) **Demographics:** youth ages 5-7, receiving social security/textbook allowance an **Setting:** 8 primary schools or integrated service centers **Exclusion:** youth with developmental disorders **Attrition:** 3.92% for intervention group, 19.61% for waitlist group, 11.76% for all groups	**IV:** FMBI **DV1:** Total stress **DV2:** Aggressive behavior **DV3:** Anxious/depressed **DV4:** Internalizing problems	**Data collection:** PSI ANT CBCL PHQ9 **Validity:** Yes	**Statistical test used:** ANOVAs	**DV1:** $t(1,50)=2.56$, $p<0.05$ **DV2:** $t(1,50)=4.07$, $p<0.001$ **DV3:** $t(1,50)=4.57$, $p<0.001$ **DV4:** $t(1,50)=4.44$ $p<0.001$	**Level of Evidence:** 1 **Strengths:** Positive feedback, randomized **Weakness:** small sample, short design, had a waitlist **Feasibility:** Able to recreate with more participants **Application:** May apply to future studies and as an intervention to positively effect stress

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Hayes et al., (2019), Promoting mental health and wellbeing in schools: examining mindfulness, relaxation and strategies for safety and wellbeing in English primary and secondary schools study protocol for a multi-school, randomized controlled trial **Country:** England **Funding:** Department of Education **Bias: N**one	Neuman's Systems Model	**Design:** Randomized controlled trial **Purpose:** To determine benefits of mindfulness practices and relaxation as effective interventions to improve mental health	**Sample:** (n=2289) **Setting:** Secondary school's years 4/5 ages 8-13 **Exclusion:** Non-mainstream specialist schools, part of similar trials, outside of England, parents do not sign consent, are not in specific year groups **Attrition:** not inferred	**Themes:** Mindfulness practice, relaxation, SSW **Definitions:** Relaxation- deep breathing, progressive muscle relaxation SWW- 8 sessions for 40mins/week. Training focusing on psychoeducational content Mindfulness: exercises consisting of focusing on mind, world, body	**Data collection:** Qualitative face-face interviews, phone interviews, pre/post tests SMFQ GHSQ **Validity:** Yes, use of standardized questionnaires and use of randomization	**Statistical test used:** Mixed Model	**Themes:** There was significant improvement in the HRQoL after 9 weeks of intervention and again at the 26-week follow-up compared to the control group. 7th graders benefited more from the mindfulness than 6.8th graders. 4% of students practiced every day for 6 months after and had the most significant gain.	**Level of Evidence:** 2 **Strengths:** Cost effective, large sample size, effective trial, high potential for widespread use **Weakness:** Long study, 3-6 months, then again at 9–12-month evaluation **Feasibility:** Yes, due to cost effectiveness **Application:** Due to effective trial, this can be easily used in future research
Sapthiang et al., (2019), Health school-based mindfulness interventions for improving mental health: a systematic review and thematic synthesis of qualitative studies **Country:** UK **Funding:** None **Bias:**	Model of mindfulness	**Design:** Systematic review **Method:** Databases used: PubMed, Web of Science, Scopus, ProQuest, Google Scholar **Purpose:** To conduct a systematic review and synthesis to	**Sample:** (n= 82) **Demographics:** Primary/secondary schools, utilized qualitative data collection **Setting:** School **Exclusion:** Did not have responses directly from students, did not have mindfulness intervention, theoretical papers, only reported	**Themes:** Stress reduction, improved coping, attentional process to regulate emotions. calming/relaxation improvements	**Data Collection:** Questionnaires. Studies had to have MBI lasting at least 1 session, students attending secondary/primary education, utilization of qualitative data, report findings relevant to mental health, did not elicit responses directly from students	Content analysis	Themes that were improved in studies included improved stress reduction, improved coping, attention to regulate emotions, and calmer.	**Level of Evidence:** 1 **Strengths:** high level of evidence, cost-effective **Weakness:** possible lack of reporting, bias **Feasibility:** yes **Application:** this can be applied to future studies and implementation

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Possible when selecting groups		evaluate school based MBI	findings relevant to academic performance **Attrition:** Not stated		**Data Dependability:** Out of 4102 papers, it was narrowed to 82. Information was put in software for coding and data searching. Then a synthesis was created noting certain themes.			of MBI in schools

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Table A3

Synthesis Table

Study (Author, year)	Daniel et al., 2020	Dunning et al., 2019	Hayes et al., 2019	Lo et al., 2019	Lassander et al., 2021	Marie-Mitchell and Kostolansky, 2019	Malboeuf-Hurtubise et al., 2021	Sapthiang et al., 2019	Vohra et al., 2019	Volanen et al., 2019
Design LOE	Cross-sectional/4	RCT/1	RCT/2	RCT/1	RCT/1	Systematic review/1	Randomized cluster/1	Systematic review/1	Cluster-controlled/1	RCT/1
Sample										
N>50	X		X	X	X			X	X	X
Youth under 18	X	X	X	X	X	X	X	X	X	X
ACEs	X					X		X		
Setting										
Schools			X	X	X		X	X		X
Facility	X								X	
Interventions										
MBI		X	X	X	X		X	X	X	X
Relaxation			X				X			X
Family program					X	X				
At home sessions					X					X
Themes										
Social behavior	X	X	X	X	X	X	X	X	X	X
Improved stress		X		X			X		X	
Anxiety/Depression	X	X		X			X		X	X
Improved physical well being		X	X	X	X	X	X	X	X	
Internalizing problems		X	X	X	X	X	X	X	X	
Measurement Tools										
Questionnaires	X	X	X		X			X		X
PHQ-9				X						
Data extraction						X				

Key: **LOE** Level of Evidence **RCT** Randomized controlled trial **ACEs** Adverse childhood experiences **MBI** Mindfulness based interventions **PHQ-9** Patient health questionnaire **BASC-2** Behavior assessment system for children **PSI** Perceived stress index

Study (Author, year)	Daniel et al., 2020	Dunning et al., 2019	Hayes et al., 2019	Lo et al., 2019	Lassander et al., 2021	Marie-Mitchell and Kostolansky, 2019	Malboeuf-Hurtubise et al., 2021	Sapthiang et al., 2019	Vohra et al., 2019	Volanen et al., 2019
Behavaorial instruments (ex: BASC-2/PSI)	X		X	X	X				X	

Key: **LOE** Level of Evidence **RCT** Randomized controlled trial **ACEs** Adverse childhood experiences **MBI** Mindfulness based interventions **PHQ-9** Patient health questionnaire **BASC-2** Behavior assessment system for children **PSI** Perceived stress index

Appendix B
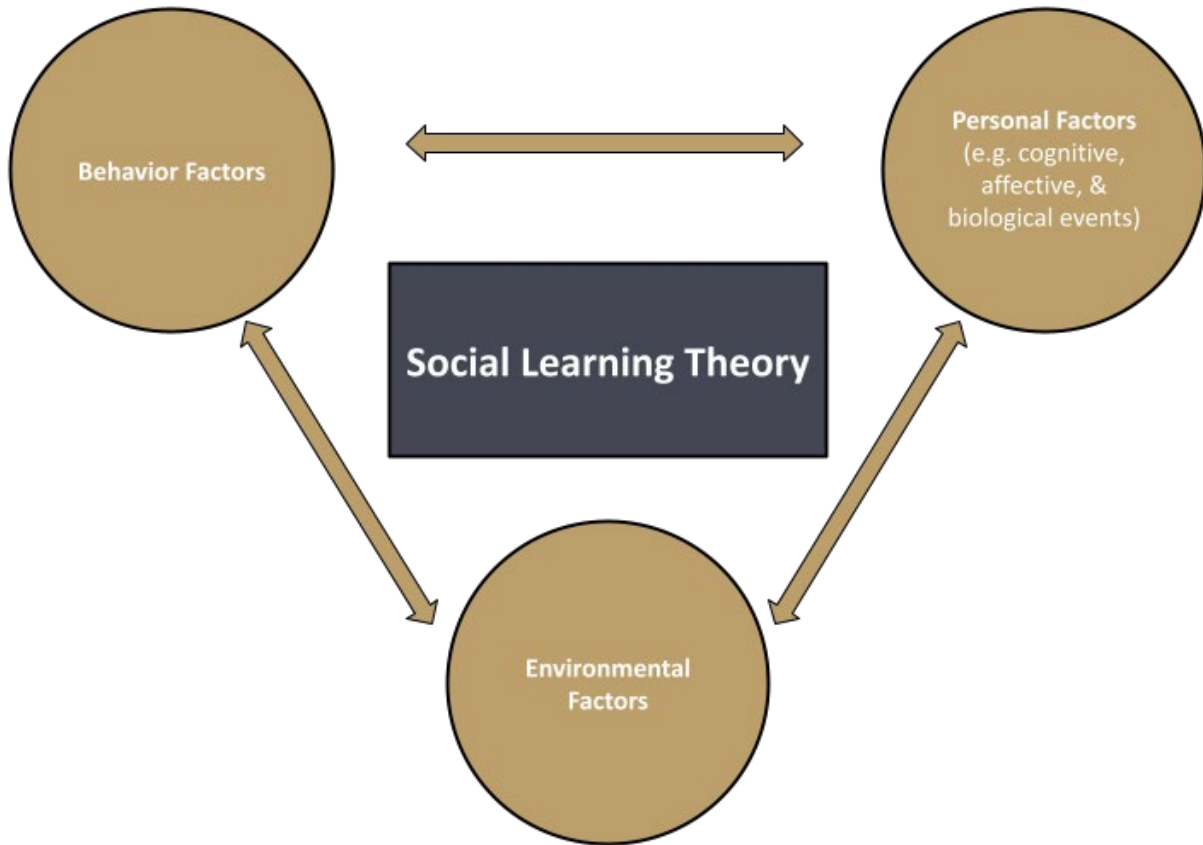**Models and Frameworks**

Figure B1
Albert Bandura's Social Cognitive Theory

This model indicates that the determinants of human behavior is affected by behavioral factors, environmental factors, and cognitive factors.

(Sutton, 2021)

Figure B2
Rosswurm and Larrabee Model for Change

Hamilton Health Sciences nursing model for implementing
evidence-based practice

ASSESS need for
change in practice

EVALUATE
practice

ASK an answerable
research question

IMPLEMENT
practice change

SYNTHESISE
best evidence

DESIGN change
in practice

STIMULATE
inquiry
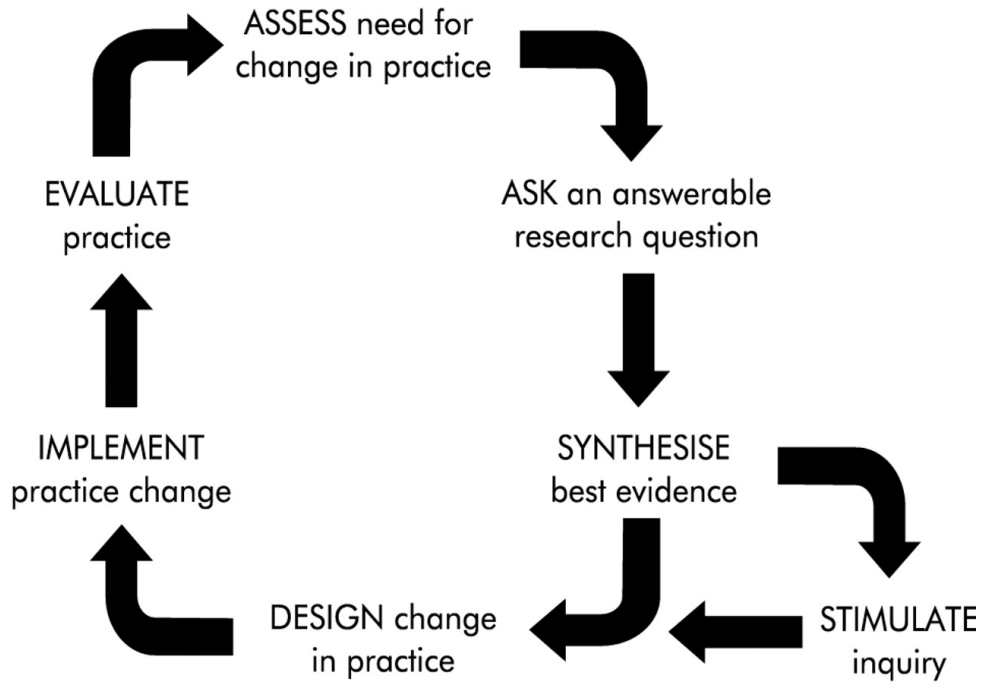
Adapted from Rosswurm ML and Larrabee JH. *Image J Nurs Sch* 1999; **31**: 317-22.   *the model here*

*This model shows the steps and process on how to implement evidence-based practice change. The
first step of the model is to assess then follow the model in a clockwise manner to implement the
change.*

(Mohide, 2003)

Appendix C
Budget Assignment

Phase	Activities	Cost	subtotal	Total
Preparation	Design, print materials on mindfulness, consents	$20	$20	$20
	Buy plant project items	$42.99	$42.99	$62.99
	Material for mindfulness movement- printing out worksheets	$10	$10	$72.99
Delivery	Overhead	$0	$0	$72.99
	Buy bubbles for mindful breathing/worksheets for mindful breathing at home	$16/$10	$26	$98.99
	Buy items for mindful journaling and coloring	$36 for journals, $10 dollars for crayons	$46	$144.99
Evaluation	Print more PSS scale for students to fill out	10 cents/24 students	$2.40	$147.39
	Incentives for youth (ASU stickers, buttons, and pins)	$92.58	$92.58	**$239.97**

Budget Justification: The following is justification for the items budgeted

1. Operations:

    a. Materials and Supplies:

        i. Writing utensils for subjects to answer questionnaires

    b. Printing and duplicating:

        i. Duplicates of all questionnaires and consent forms x 24 students

        ii. Mindfulness breathing worksheets x 24 students

        iii. Mindfulness yoga exercises worksheets x 24 students

        iv. Mindfulness journals x 24 students

        v. Mindfulness coloring pages for students to take home

    c. Overhead:

        i. No overhead expenses are needed because the program is hosted in the
        auditorium in the school with no cost associated

    d. Incentives

        i. ASU stickers buttons, pencils, and pins as a thank you for all 24 students

** Funding for this project will be taken care of by the NP student solely as well as other costs such as travel to and from the project site**

** Revenue savings include the zero cost for overhead**

Appendix D

Sample Demographics

Table 1

Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	2	22.2	22.2	22.2
Female	6	66.7	66.7	88.9
Other gender	1	11.1	11.1	100
Total	9	100	100	

Table 2

Age

	Frequency	Percent	Valid Percent	Cumulative Percent
14	1	11.1	11.1	11.1
15	4	44.4	44.4	55.6
16	2	22.2	22.2	77.8
17	1	11.1	11.1	88.9
21	1	11.1	11.1	100
Total	9	100.0	100.0	

Table 3

Race/Ethnicity

	Frequency	Percent	Valid Percent	Cumulative Percent
Black	1	11.1	11.1	11.1
Hispanic/Latino	5	55.6	55.6	66.7
Other race/ethnicity	3	33.3	33.3	100.0
Total	9	100.0	100.0	

Table 4

Living Situation

	Frequency	Percent	Valid Percent	Cumulative Percent
Living with parents	8	88.9	88.9	88.9
Living with grandparents or relatives	1	11.1	11.1	100.0
Total	9	100.0	100.0	

Table 5

Primary Language Speaking at Home

	Frequency	Percent	Valid Percent	Cumulative Percent
English	6	66.7	66.7	66.7
Spanish	3	33.3	33.3	100.0
Total	9	100.0	100.0	

Table 6

Reduced/Free Lunch at School

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	9	100.0	100.0	100.0

Appendix E

Non-Parametric Statistics

Table 1

Sum Stress Score (pretest)

	Frequency	Percent	Valid Percent	Cumulative Percent
2.00	1	11.1	11.1	11.1
11.0	1	11.1	11.1	22.2
13.00	1	11.1	11.1	33.3
18.00	1	11.1	11.1	44.4
19.00	1	11.1	11.1	55.6
20.00	1	11.1	11.1	66.7
21.00	1	11.1	11.1	77.8
22.00	1	11.1	11.1	88.9
23.00	1	11.1	11.1	100.0
Total	9	100.0	100.0	

Figure A

Histogram Sum Stress Score (pretest)

Mean = 16.56
Std. Dev. = 6.766
N = 9
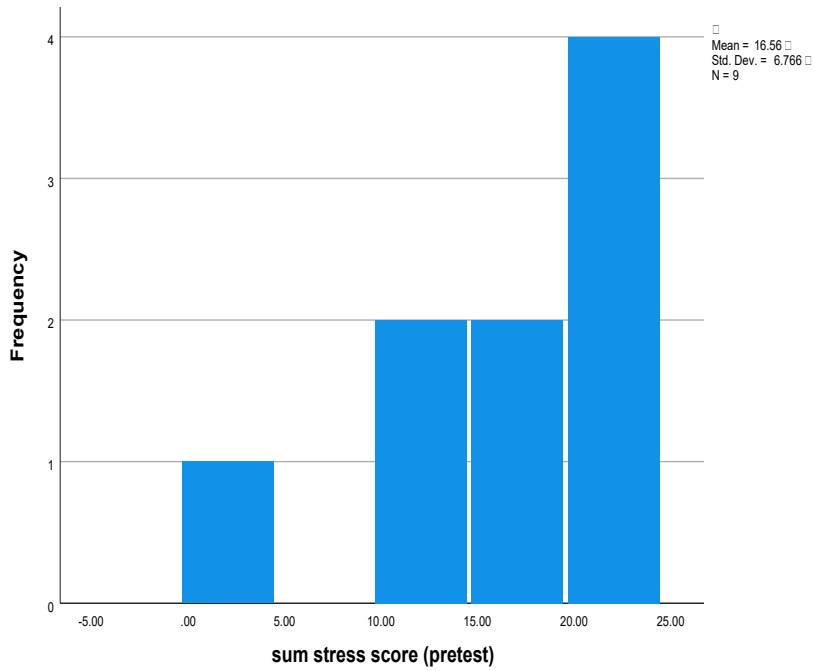
Table 2

Sum Stress Score (posttest)

	Frequency	Percent	Valid Percent	Cumulative Percent
3.00	1	11.1	11.1	11.1
9.00	1	11.1	11.1	22.2
12.00	1	11.1	11.1	33.3
14.00	1	11.1	11.1	44.4
17.00	1	11.1	11.1	55.6
19.00	1	11.1	11.1	66.7
22.00	1	11.1	11.1	77.8
23.00	1	11.1	11.1	88.9
24.00	1	11.1	11.1	100.0
Total	9	100.0	100.0	

Figure B

Histogram Sum Stress Score (posttest)

Mean = 15.89
Std. Dev. = 7.044
N = 9
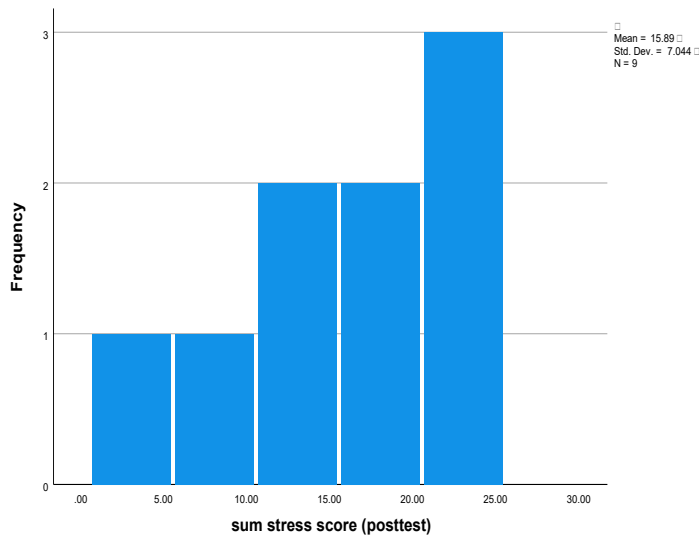
Appendix F

Evaluation Questions

Table 1

The content and activities were appropriate for me

	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	5	55.6	55.6	55.6
Strongly Agree	4	44.4	44.4	100.0
Total	9	100.0	100.0	

Table 2

My knowledge about stress has improved

	Frequency	Percent	Valid Percent	Cumulative Percent
Not sure	2	22.2	22.2	22.2
Agree	4	44.4	44.4	66.7
Strongly Agree	3	33.3	33.3	100.0
Total	9	100.0	100.0	

Table 3

I have better understanding about how to reduce stress

	Frequency	Percent	Valid Percent	Cumulative Percent
Not sure	1	11.1	11.1	11.1
Agree	4	44.4	44.4	55.6
Strongly Agree	4	44.4	44.4	100.0
Total	9	100.0	100.0	

Table 4

Descriptive Statistics of Evaluation Questions

	N	Minimum	Maximum	Mean	Std. Deviation
The content and activities were appropriate for me	9	3	4	3.44	.527
My knowledge about stress has improved	9	2	4	3.11	.782
I have better understanding about how to reduce stress	9	2	4	3.33	.707
Valid N (listwise)	9				