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An Evaluation of MINDSTRONG™ Implementation with Graduate Nursing Students

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The Graduate School at the University of Missouri-St. Louis

in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice with an emphasis in

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Abstract

Problem: Nursing graduate students are at increased risk of greater stress, anxiety, and depression (Hoying, 2020; Melnyk et al., 2020). Cognitive Behavioral Therapy is the gold standard in the treatment of anxiety and depression (Hoying et al., 2020; Melnyk et al., 2015; Melnyk et al., 2020). MINDSTRONG™, a CBT-based training program, has been proven in many studies to be effective in helping individuals prevent or cope with these issues (The Ohio State University College of Nursing, 2020).

Methods: This Quality Improvement (QI) project was a descriptive-observational, pre-post design. Sample and setting were nursing graduate students from a Midwestern, middle-sized urban, public university. Descriptive statistics and the Wilcoxon signed-rank tests were used to compare pre-and post-intervention results.

Results: The sample for this project consisted of six graduate nursing students. The results indicate no statistically significant difference in pre- post Perceived Stress Scale (PSS) and Generalized Anxiety Disorder-7 (GAD-7) scores, though results were clinically significant, with 83.3% ($n = 5$, $N = 6$) participants with improved stress and anxiety. There was a statistically significant difference in pre-post Patient Health Questionnaire-8 (PHQ-8) scores with a $p = .043$. Overall, 83.3% ($n = 5$) of participants had decreased depression symptoms with the two participants rated with ‘severe’ depression scores having the greatest improvement.

Discussion: Though the sample size was small, the results in this QI project are consistent with that of other studies on the MINDSTRONG™ program. This QI project supports the continued use of MINDSTRONG™ to improve the mental health of graduate nursing students.

An Evaluation of MINDSTRONG™ Implementation with Graduate Nursing Students

Mental health problems were a concern in our nation prior to the COVID-19 pandemic, and since the COVID-19 pandemic mental health problems have only intensified. The prevalence of depression in the United States (U.S.) has increased significantly in the past two decades and continues to trend upwards, and depression will be the leading cause of illness worldwide by 2030 if current trends do not change (Mathers & Loncar, 2006; Weinberger et al., 2018). Anxiety disorders are the most prevalent of the mental disorders in the U.S. and affect one in three adults (Bandelow & Michaelis, 2015). The American Psychological Association (2020) reports that 78% of Americans state that the COVID-19 pandemic has been a substantial stressor in their lives. With pre-pandemic stressors remaining present, the new stressors related to the COVID-19 pandemic compound and increase the risk for mental health issues (American Psychological Association, 2020).

Studies have shown that college students with mental health problems earn lower grades, have lower graduation rates, have less involvement in campus life, and social skills with peers and college staff are less effective (Keyes et al., 2012; Melnyk et al., 2015; Salzer, 2012). In the National College Health Assessment III, graduate students reported percentages of stress, anxiety, and depression around 50% (American College Health Association, 2021). Another study with graduate nursing students found that stress was a significant predictor for both depression and anxiety (Hoying, 2020). Graduate nursing students reported that since the COVID-19 pandemic, overall stress has increased in all areas surveyed, including course work, clinical rotations, Doctor of Nursing Practice projects, job, family, finances, and fear of their own or loved ones' potential illness (Nodine et al., 2021; Rosenthal, 2021). Additionally, 25% of these students expressed moderate to extremely severe levels of negative emotional states.

Sleep, health, and other lifestyle behaviors can be a good indicator of and contribute to mental health, and multiple studies have shown that graduate students have lifestyle factors that contribute to mental health issues. Graduate students reported in the National College Health Assessment III that 40% are in the overweight to class III obesity categories, 31% have trouble falling asleep, and 37% get less than seven hours of sleep per night (American College Health Association, 2021). Other surveys report significant numbers of university students with hazardous drinking patterns, poor or no exercise habits, and poor nutritional choices (FitzGerald & Boland, 2018; Graves et al., 2020; Nugent et al., 2020).

Graduate students in health science programs face a unique risk for adverse mental health concerns due to high stress and burnout of jobs and other life responsibilities along with the demands of their academic programs (Hoying, 2020; Melnyk et al., 2020). Nursing graduate students in particular face challenges in addition to that of other healthcare graduate students as they are encouraged to gain work experience before or while pursuing a graduate degree. This often means having to balance the responsibilities of home, parenting, job, school, and, at times, the needs of aging parents.

Effective education and interventions for managing stressors and mental health issues are needed in school curriculum for nursing graduate students due to their higher risk for stress, depression, and anxiety. The purpose of this quality improvement project was to implement MINDSTRONG™, a Cognitive Behavioral Therapy (CBT)-based, evidence-based seven-session educational program, with graduate nursing students to evaluate its effectiveness on reduction of stress, anxiety, and depression symptoms. The aim of this QI project was to reduce stress levels, anxiety symptoms, and depression symptoms in 70% of graduate nursing students who complete MINDSTRONG™.

The program was voluntarily offered to all graduate nursing students at an urban, public university in the Midwestern U.S. The study questions used for this project were:

1. What were the rates of moderate or severe stress, anxiety, and depression in graduate nursing students before program implementation?
2. What, if any, changes occurred in stress, anxiety, and depression levels post-implementation of the program in graduate nursing students?
3. What is the optimal time in a graduate nursing student's course progression to implement MINDSTRONG™?

The conceptual framework for this quality improvement project was Continuous Quality Improvement (CQI), and the Institute of Medicine's Plan Do Study Act (PDSA) Cycle framework is the most common CQI approach in healthcare (Moen & Norman, 2010; Varkey et al., 2007). This implementation was the second PDSA Cycle of the program. The primary outcome measures used were Patient Health Questionnaire-8 (PHQ-8) to assess depression, Generalized Anxiety Disorder-7 (GAD-7) scale to assess anxiety, and the Perceived Stress Scale (PSS) to assess perceived stress. Secondary outcome measures were demographic data including age, race/ethnicity, gender identity, level of graduate program completed, type of degree currently being pursued, and work information.

Literature Review

A literature search was conducted using CINAHL, MEDLINE, Health and Psychosocial Instruments, APA PsycArticles, APA PsycInfo, Google Scholar, and Cochrane Library databases. Search terms included *mental health, nursing graduate students, depression, anxiety, stress*, with Boolean operator AND. The terms *MINDSTRONG™, COPE, and Healthy Lifestyles*

TEEN were also searched with no date parameters. A total of 6,958 articles resulted from this search. The search was refined using inclusion criteria including adults, college undergraduate and graduate students, studies from any country published in English, studies related to mental health, mental illness or stress, studies related to interventions for mental health issues or stress and published between 2016 and 2021. Exclusion criteria were studies published before 2016, except those with search terms stated above, studies in a language other than English, and any studies that did not include mental health issues. After search refinement 21 studies were reviewed, and 12 studies were retained for use after deletion of duplicates.

Cognitive-behavioral therapy (CBT) is considered the gold standard first-line treatment for many mental health disorders, including depression and anxiety, in both adults and adolescents (Hoying et al., 2020; Melnyk et al., 2015; Melnyk et al., 2020). An important part of CBT includes developing healthy coping skills and behaviors and self-care activities. Research shows that healthy lifestyle behaviors correlate with measures of depression and anxiety in adults, and physical activity and dietary habits are related to both motivation and perceived barriers in college students (Melnyk et al., 2020). In medical and nursing graduate students, physical activity is associated with positive physical and mental health outcomes, and there is a significant correlation between poor sleep and multiple physical and mental health risks (FitzGerald & Boland, 2018). One study demonstrated that students with higher emotional intelligence can perceive stressors in a healthier way, and therefore develop and use healthy coping skills (Enns et al., 2018). In a systematic review of evidence-based self-care interventions for coping with perceived stress, Stillwell, Vermeesch, & Scott (2017) found that each study's intervention demonstrated a reduction in perceived stress at post-intervention. Interventions included a variety of techniques, from a stress management course to mind-body-stress-reduction

techniques such as yoga, deep breathing, meditation, and mindfulness exercises. Though CBT has proven to be effective to treat stress, anxiety, and depression, a paucity of mental health providers in the U.S. limits access to those that need it (Hoying et al., 2020; Melnyk et al., 2015; Melnyk et al., 2020).

Knowing the benefits of CBT and the difficulty of accessing mental health providers, a series of CBT-based treatment programs was created to be delivered in short, manualized sessions by professionals other than mental health providers. There are specific programs with different titles that target different age groups that have content specific to that population's needs, but the concepts, principles, and basic format are the same for all programs. The first of these programs developed was for adolescents and young adults and is called COPE (Creating Opportunities for Personal Empowerment) (Hoying et al., 2016). A program add-on to COPE adds nutrition and physical activity elements for adolescents and young adults, and is called Healthy Lifestyles TEEN (Thinking, Emotions, Exercise, Nutrition) (Hoying et al., 2016; Cope2Thrive LLC, 2020).

MINDSTRONG™ is a newer program, adapted from COPE. It was developed specifically for younger adult and adult populations and has courses specific for healthcare clinicians, college students, adults, and can also be offered as a one credit hour college course (The Ohio State University College of Nursing, 2020). The MINDSTRONG™ program consists of seven sessions that are 45 to 60 minutes long and can be delivered virtually or in person. The maximum number of participants is 15 for in-person session and 25 for virtual sessions. Only trained and certified MINDSTRONG™ facilitators can conduct sessions. There are a total of 20 studies on COPE, Healthy Lifestyle TEEN, and MINDSTRONG™ that demonstrate that these brief and focused CBT-based programs are effective to reduce stress, anxiety, depressive

symptoms, and suicidal ideation in participants. These programs have also been shown to improve healthy lifestyle behaviors and academic performance (The Ohio State University College of Nursing, 2020).

There were significant decreases in anxiety and depressive symptoms post-intervention in students participating in MINDSTRONG™ programs as opposed to the control group students (Melnyk et al., 2014; Melnyk et al. 2015; Hoying et al., 2016; Hart-Abney et al., 2019; Melnyk et al. 2020). Additionally, greater improvements were made with students with more severe symptoms. Melnyk et al. (2014) reported significant decreases in depressive and anxiety symptoms for students participating in the program whose baseline scores were elevated. Melnyk et al. (2015) reported students participating in the program with severe anxiety at baseline had a mean reduction in anxiety by 6.5 points (from severe to moderate) and a three-point decrease in depression. Melnyk et al. (2020) reported that students experiencing severe depression or suicidal ideation from baseline to a three-month follow-up reported a 4.9-point decrease in depression and a 7.9-point decrease in anxiety, a significantly higher improvement than students with less severe symptoms. Hoying et al. (2016) reported students participating in the program had improved self-concept, and Hart-Abney et al. (2019) reported that students participating in the program had reported a change in the way they perceived triggers for stress and anxiety.

Increased healthy lifestyle behaviors were reported of students participating in MINDSTRONG™ programs as opposed to the control group students (Melnyk et al., 2013; Melnyk et al., 2014; Hoying et al., 2016; Melnyk et al., 2020). In the Melnyk et al. (2013) and Melnyk et al. (2014) studies, students participating in the program had a significant increase in physical activity, with students participating in the program reporting having a greater number of steps per day in the former study. Additionally, in the Melnyk et al. (2013) study students

participating in the program had a lower mean BMI, significantly lower alcohol use, and there was a lower proportion of overweight students.

Numerous improvements in coping and social skills were reported of students participating in MINDSTRONG™ programs as opposed to the control group students. Melnyk et al. (2013) reported higher average scores on all Social Skills Rating System subscales, an assessment of students' social behaviors objectively rated by teachers. In Melnyk et al. (2015), the results of students participating in the program indicated a 3-point increase in belief in the ability to cope with stress. Parents of the Hoying et al. (2016) study reported less disruptive behavior in students participating in the program, and 92% of the students found the program to be beneficial and identified new coping skills, how to think positively, and healthy ways to deal with emotions. Most students of both the Hart-Abney et al. (2019) and Melnyk et al. (2020) studies found the program to be beneficial or helpful. Additionally, students of the Hart-Abney et al. (2019) study also reported that the program taught different ways to cope with life's challenges and offered a different way to look and react to challenges.

In the Melnyk et al. (2013) study, students participating in the program had higher health course grades as compared to the control group. Melnyk et al. (2014) showed a higher college retention rate than students who did not take the course. In the Melnyk et al. (2015) study, the grade point average of students participating in the program was higher than the comparison group at the end of the academic year (3.58 vs. 3.28).

MINDSTRONG™ is an efficient and effective way for non-clinical, but trained, professionals to deliver CBT skills in an environment with a shortage of mental health providers. The literature review of the six MINDSTRONG™ program studies found that stress, anxiety, and depression symptoms were improved after the use of the program, and in fact, showed a

greater improvement with individuals having more severe symptoms. Healthy lifestyle behaviors, coping/social skills, and academic skills also improved after the use of the program.

Methods

Design

The design of this QI project was a descriptive-observational pre-post design. Pre- and post- tests was completed electronically via a Qualtrics survey. The intervention is the MINDSTRONG™ program which was delivered virtually utilizing the Zoom platform.

Setting

The QI project occurred at a medium-sized, urban, public university in the Midwestern region of the U.S., specifically in the College of Nursing graduate programs. There were approximately 300 students that were eligible to participate in the QI project. The MINDSTRONG™ program was conducted virtually via the Zoom platform with a secured, password-protected virtual room.

Sample

The project used a convenience sample of nursing graduate students who elected to participate voluntarily and who were recruited via an e-mail recruitment process. Participants created a unique identifier upon enrolling for deidentification of pre/post test data. Inclusion criteria included being enrolled in any of the university's graduate nursing programs at any stage in their educational progression. The exclusion criterion was not being enrolled in any of the university's graduate nursing programs.

Data Collection/Analysis

Data collection occurred using an electronic Qualtrics survey that participants completed in the beginning of the first MINDSTRONG™ session at the beginning of the spring semester

and then 11 weeks later at the end of the semester and after all MINDSTRONG™ sessions had concluded. The pre-intervention survey included demographic items including age, sex/gender, race/ethnicity, data on home life, data on work-life, and data on school life. Questions included current mental health activities such as therapy services or medications used, if any, by participants. To obtain data on stress, anxiety, and depression, the following evidence-based surveys were used at pre-and post-intervention: The Perceived Stress Scale (PSS), the Generalized Anxiety Disorder Scale-7 (GAD-7), and the Personal Health Questionnaire-8 (PHQ-8). A few additional questions were asked in the post-intervention survey to inquire about their perceptions and opinions of the MINDSTRONG™. Wilcoxon signed-rank tests were used to compare pre-and post-intervention results, and descriptive statistics were used to describe the sample. Results were reviewed to identify any statistically significant difference in pre-and post-intervention results.

Approval Processes

The project protocol was evaluated and determined not to be human subjects research. Approval for this project was obtained from the University of Missouri-St. Louis (UMSL) Institutional Review Board (IRB) before implementation.

Results

In total, six ($N = 6$) graduate nursing students volunteered to participate in this QI project. All participants completed the MINDSTRONG™ program, two participants attended all sessions, two participants were absent for one session, and two participants were absent for two sessions.

All six participants were female. Eighty-three percent ($n = 5$) of participants were in the 24-34 age group range, and 17% ($n = 1$) was in the over 55 age range. Sixty-seven percent ($n =$

4) of participants were Caucasian, 17% ($n = 1$) was African American, and 17% ($n = 1$) was Hispanic. Sixty-seven ($n = 4$) of participants were married, and 33% ($n = 2$) were single. Eighty-three percent ($n = 5$) of participants had no children living in the home, and 17% ($n = 1$) had one child (of any age) living in the home (see Appendix A).

Sixty-seven percent ($n = 4$) of the participants had 6-8 years of nursing experience, 17% ($n = 1$) had 3-5 years of experience, and 17% ($n = 1$) had over 16 years of experience. Eighty-three percent ($n = 5$) worked 25-40 hours per week, and 17% ($n = 1$) worked 13-24 hours per week. Sixty-seven percent of participants ($n = 4$) were part-time students, and 33% ($n = 2$) were full-time students. Sixty-seven percent of participants ($n = 4$) were in their fourth year of graduate school, 17% ($n = 1$) were in their fifth or more year, and 17% ($n = 1$) were in their third year (see Appendix B).

Regarding mental healthcare, only 17% ($n = 1$) participant was seeing a mental healthcare provider, and again only 17% ($n = 1$) participant was seeing a counselor or therapist. 67% ($n = 4$) participants were prescribed medication for mental health conditions (see Appendix C).

Of the six participants recruited to the MINDSTRONG™ program, no statistically significant median improvement was found between pre- and post-tests for stress using the PSS with the Wilcoxon signed-rank test of $z = 3.00$, $p = .116$. However, the changes in the PSS scores from pre- to post-test were clinically significant as 83.3% ($n = 5$) reported improvements in stress ranging from one point to eight points though one participant (16.7%) reported worse perceived stress by four points.

Additionally, there was no statistically significant median improvement found between pre- and post-test for anxiety using the GAD-7 with a Wilcoxon signed-rank test of $z = 1.50$, $p =$

.058. There were clinically significant results in this scale as 83.3% ($n = 5$) participants reported improvements ranging from two points to six points, though one participant (16.7%) reported worse anxiety by two points.

The results show a statistically significant median decrease in depression using the PHQ-8 with a Wilcoxon signed-rank of $z = .00$, $p = .043$. These results were also clinically significant as 83.3% ($n = 5$) of participants reported a decrease in depressive symptoms ranging from two points to 15 points. One participant (16.7%) reported no change in depressive symptoms (score of 1, minimal depression).

Discussion

The purpose of this quality improvement project was to implement the MINDSTRONG™ program with graduate nursing students in a medium-sized, urban, public university and to evaluate its effectiveness on reduction of stress, anxiety, and depression symptoms. Although the results for stress and anxiety were not statistically significant due to the small sample size, clinically significant improvements in stress and anxiety were found. For the PSS measuring perceived stress, participants having the highest scores pre-program showed the largest improvements post-program. Two participants scored into the highest category of perceived stress at pre-program, and at post-program scored into the lowest category of perceived stress (see Appendix D). Of the five participants showing improvements in anxiety symptoms, two participants scored into the moderate category at pre-program, and into the lowest category at post-program (see Appendix E).

The results reported in depression symptoms were both statistically and clinically significant. The only participant not showing an improvement had a score of 1, indicating none to minimal depression, at pre- and post-program. The other five participants all reported

improvements in depression symptoms, with the participants rating their depression at ‘severe’ showing the greatest improvement (see Appendix F).

Another study question for this QI project was to explore if there was an optimal time to implement MINDSTRONG™ in a graduate nursing student’s course progression. In the post-program survey, participants were asked to give feedback on the program (see Appendix G). All six participants felt the program should be offered at the beginning of a graduate nursing program. In addition, all participants felt that they learned new skills to cope with or prevent stress, anxiety, and depression symptoms, and four participants would recommend the program to other graduate nursing students. One participant indicated that he or she would not recommend the program, and another commented that MINDSTRONG™ did not get to the root of any problems and only offered a ‘band-aid’. Still another participant indicated a desire to see this program offered to undergraduate nursing students. Two participants specifically commented that they found the program beneficial and that they learned practical skills that they will use.

Conclusion

Literature has shown that nursing graduate students have multiple stressors and are at increased risk of having mental health problems, particularly increased stress, anxiety, and depression. CBT is the preferred treatment for a multitude of mental health disorders including stress, anxiety, and depression. MINDSTRONG™, a CBT-based training program, has been proven to be effective in helping individuals prevent or cope with these symptoms. While the overall sample size of this quality improvement project was small, the results are consistent with the results found in other studies conducted on MINDSTRONG™.

This QI project does support the continued use of MINDSTRONG™, or research for another customized CBT-based training program, to guide and support nursing graduate students

in attaining positive mental health goals. A customized approach may benefit the specific needs of the graduate nursing population, as alluded to by the one comment stating that MINDSTRONG™ was a ‘band-aid’ solution. Regardless, further research would be needed with a larger sample size to better ascertain the statistical significance of the pre- and post-program results.

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Appendix A

Table 1

Social Demographics of MINDSTRONG™ Participants

Age	Number (n)	Percentage
25-34	5	83%
> 55	1	17%
Gender	Number (n)	Percentage
Female	6	100%
Male	0	0%
Ethnicity	Number (n)	Percentage
Caucasian	4	67%
Hispanic	1	17%
African American	1	17%
Marital Status	Number (n)	Percentage
Married	4	67%
Single	2	33%
# of Children living in home	Number (n)	Percentage
None	5	83%
One	1	17%

Appendix B

Table 2

Work and Education Demographics of MINDSTRONG™ Participants

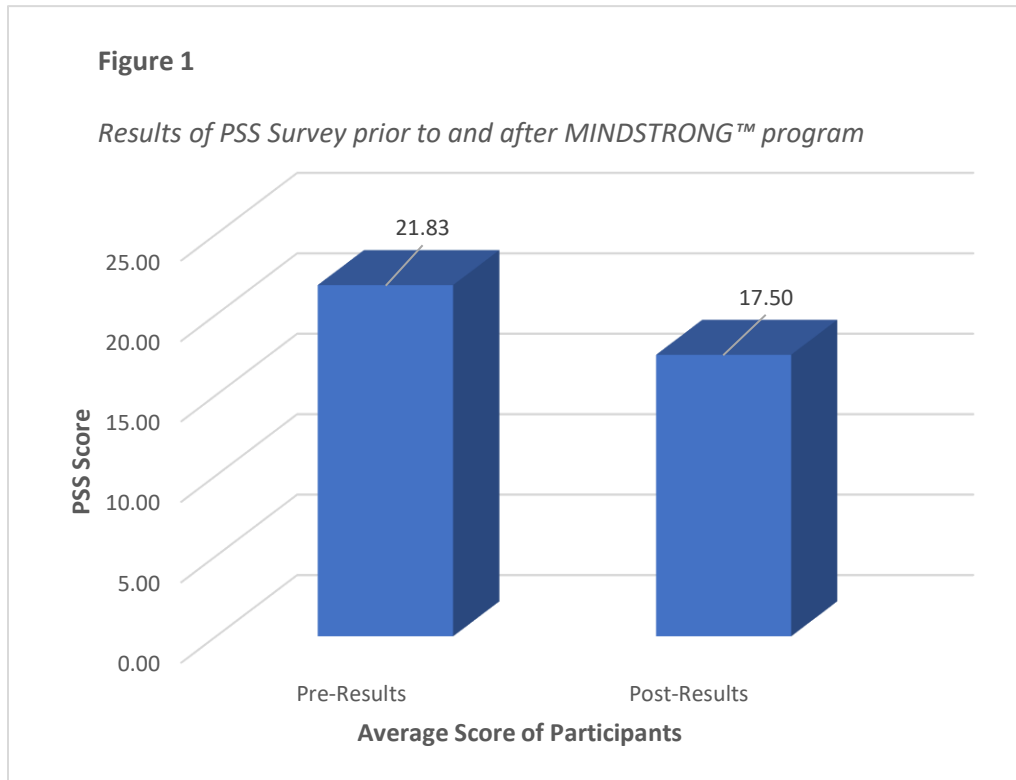
Nursing Experience (Years)	Number (<i>n</i>)	Percentage
6-8	4	67%
> 16	1	17%
3-5	1	17%
Hours worked/week	Number (<i>n</i>)	Percentage
25-40	5	83%
13-24	1	17%
Year of Grad School	Number (<i>n</i>)	Percentage
Fourth	4	67%
Fifth or more	1	17%
Third	1	17%
Full- or Part-time Student	Number (<i>n</i>)	Percentage
Part-time	4	67%
Full-time	2	33%

Appendix C

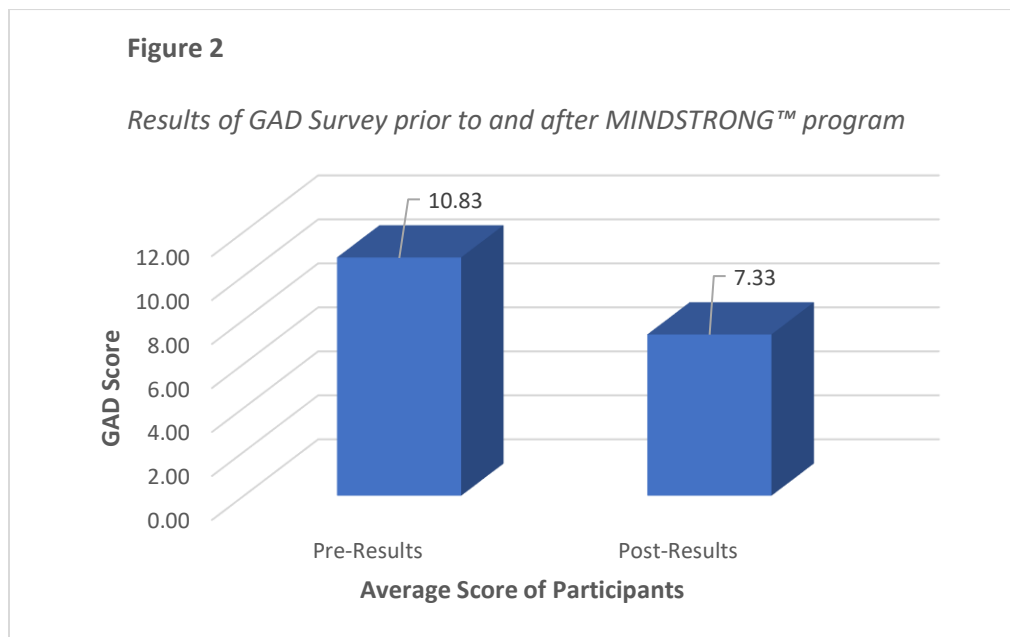
Table 3

Mental Health Demographics of MINDSTRONG™ Participants

Seeing a psych provider?	Number (n)	Percentage
No	5	83%
Yes	1	17%
Seeing a counselor/therapist?	Number (n)	Percentage
No	5	83%
Yes	1	17%
On Mental Health Meds?	Number (n)	Percentage
Yes	4	67%
No	2	33%

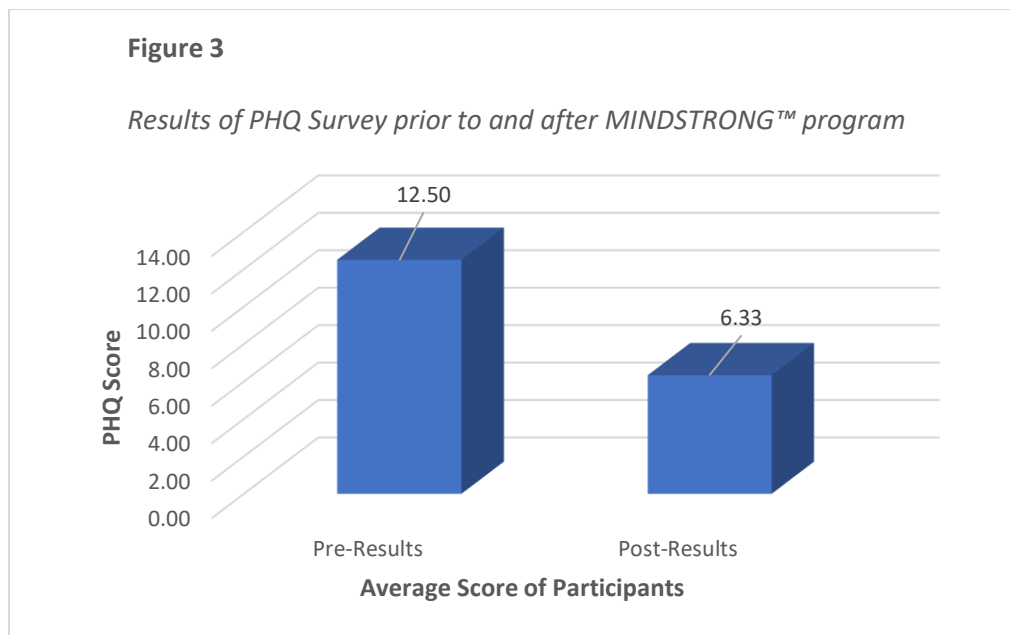
Appendix D

Note. The interpretation of the survey scores are as follows: 0 – 13 indicates low perceived stress, 14 – 26 indicates moderate perceived stress, and 27 – 40 indicates high perceived stress.

Appendix E

Note. The interpretation of the survey scores are as follows: 0 – 4 indicates none to minimal anxiety, 5 – 9 indicates mild anxiety, 10 – 14 indicates moderate anxiety, and 15 – 21 indicates high anxiety.

Appendix F



Note. The interpretation of the survey scores are as follows: 0 – 4 indicates none to minimal depression, 5 – 9 indicates mild depression, 10 – 14 indicates moderate depression, 15 – 19 indicates moderately severe depression, and 20+ indicates severe depression.

Appendix G

Table 4

Post-MINDSTRONG™ Program Participant Feedback Questions

Post-Survey Question	Responses			
Did you learn new skills to cope with or prevent stress, anxiety, and depression symptoms?	Yes = 6	No = 0		
Would you recommend MINDSTRONG™ to other graduate nursing students?	Yes = 4	No = 2		
At what point in a graduate nursing student's education progression would MINDSTRONG™ be the most beneficial?	Beginning of program = 6	Midway through program = 0	Towards end of program = 0	No preference/N/A = 0
Additional comments and suggestions	<p style="text-align: center;">“I felt like mindstrong provided a bandaid didn't get to the root of the problem.”</p> <p style="text-align: center;">“I believe so much in mental health awareness and caring for the mind is as important as caring for one's physical health or even more. I think this is really a helpful outlet to learn how to cope with life stressors especially for grad students. I found it really beneficial!”</p> <p style="text-align: center;">“Would love to see this in undergrad”</p>			