ORIGINAL RESEARCH

Educating psychiatric mental health didactic and clinical nursing students on mindfulness activities utilizing the calm mobile application

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ABSTRACT

Background and aim: Stress can develop when an individual becomes overwhelmed with appointed tasks and nursing students are not exempt from this reaction when experiencing academic pressure. Nursing students can learn appropriate ways to decrease stress through coping strategies. The study aimed to educate nursing students about the coping strategy mindfulness through the utilization of the Calm mobile application (Calm), decreasing stress, and increasing the awareness and utilization of mindfulness.
Methods: The purpose of the Quality Improvement (QI) project was to educate nursing students on mindfulness as a coping strategy through supplemental resource videos and the usage of Calm. Students completed a pre-/post-survey modeled after the Mindful Attention Awareness Scale with an addition of three qualitative questions.
Results: At the start of the project, 99% of students practiced mindfulness through Calm, 0-15 minutes a week while at the end of the project, 46% of students practiced mindfulness through Calm, 15-60 minutes a week. Pre-project implementation, 19% of students agreed that Calm is useful in the practice of mindfulness while post-project implementation, 44% of students agreed that Calm is useful. A Paired *t*-test was conducted regarding mindfulness awareness and showed 95% confidence with a pre-mean of 3.2 and a post-mean of 3.6. A difference of 0.4 between both pre-/post-means resulting in a significant increase after intervention.
Conclusions: The QI project was successful in increasing the awareness and utilization of mindfulness and in educating nursing students about the coping strategy mindfulness which can decrease stress.

Key Words: Calm mobile application, Mindfulness, Nursing student, Nursing school, Stress, Meditation

1. INTRODUCTION

1.1 Overview

An academic career is demanding and provokes different emotions. Approximately 47% of college students reported academics to be traumatic or exceedingly difficult to handle.[1] Stress has also been identified as an issue for college students. About 55% of college students expressed more than average stress over 12 weeks.[1] Nursing students experience stressful situations from the beginning of their academic careers.[2] Nursing programs consist of didactic and clinical learning environments. Nursing students are monitored and evaluated throughout their academic career contributing to increased levels of stress for nursing students.

1.2 Clinical demands of nursing students

While nursing school is stressful for some, the clinical component can heighten these stress levels. Clinical includes psychosocial and interactive components and teaching and learning elements.[3] During clinical students are faced with

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the responsibility of patient care, time pressures and those issues are exacerbated by an inability to cope and a lack of professional skills.[4] Clinical generates emotions such as helplessness, anger, disgust, despair, and sorrow which affect the nursing student's motivation to learn.[3] These inducing stimuli are experienced more frequently in nursing programs than other undergraduate college programs with clinical practice.[3] Nursing education is one of the more stressful programs compared to other undergraduate programs.[5]

1.3 Stress and coping strategies

The inability to cope with the demands of nursing school can play a role in the professional nursing career after graduation. Nurses experience elevated levels of stress which contributes to negative outcomes such as lost productivity.[6] Nurses report leaving their jobs due to burnout which is attributed to stressful work environments.[7] Low professional efficacy and burnout equal nursing shortages. When nurses experience burnout, it increases the turnover rate and costs can range from $10,098 to $88,000 per person/year.[8] Applying coping strategies in a prompt manner, can reduce burnout amongst nurses and increase productivity and the nurse's quality of life.[9]

Teaching nursing students coping strategies is needed to combat stress and burnout. Coping strategies consist of adjusting to changes and difficulties through psychosocial behaviors. Teaching nursing students coping strategies will bridge the gap between theory learned and real-life experiences.[10] Proper education and implementation of coping strategies in nursing school can better prepare nursing students during their professional career when managing stress.[9] Nursing students will be able to employ learned coping strategies during their academic and professional careers.

Educating and promoting mindfulness is effective for the management of academic stress, the ability to develop self-awareness, and increase clinical performance in nursing students.[11] Mindfulness is the awareness that occurs when one pays attention on purpose, in the present moment, and non-judgmentally.[12] Mindfulness is a coping strategy that can be utilized in pressured situations allowing individuals the ability to have healthy relationships when challenges arise.[13] In a systematic review of 22 studies focused on the effects of mindfulness on stress amongst college students, 16 studies reported a significant decrease in stress.[14]

Technology increases the dispersal of mindfulness education and promotion.[15] A study proved practicing mindfulness enhanced 71.6% of students' commitment to practice mindfulness via a mobile application.[11] In this QI project un-

dergraduate nursing students undergoing psychiatric mental health didactic and clinical were educated on mindfulness activities utilizing the Calm mobile application. Calm has been reported as being effective in reducing stress and improving mindfulness and self-compassion in stressed college students.[14] This QI project aimed to educate nursing students about the coping strategy mindfulness through the utilization of Calm, decreasing stress and increasing the awareness and utilization of mindfulness.

2. METHOD

2.1 Search strategy

A review of the literature was conducted in July 2022 and November 2023. CINAHL and the University of Cincinnati Library databases were utilized in the search. Both databases were chosen due to their enormous range of literature. Key terms utilized in searching the literature included: "Calm mobile application," "mindfulness," "nursing student," "nursing school," "stress," & "meditation." Inclusion and exclusion criteria were created to aid in locating literature that was pertinent to the topic. Studies were included that referred to mindfulness and its coalition in decreasing stress among nursing students. Studies were excluded that did not include nursing students or the practice of mindfulness and literature that was published over 7 years ago.

2.2 Team, participants, and setting

The team of this project included the writer who is a Doctor of Nursing Practice (DNP) prepared nurse, an Assistant Professor of Nursing who teaches the didactic course the participants were enrolled in, and the Director of a Nurse Educator Program. Criteria for recruiting participants consisted of junior nursing students enrolled in the didactic course, NBSN 3130C Patient-Centered Care in Mental Health Nursing and the clinical component of the didactic course at the University of Cincinnati, College of Nursing, during the Spring 2023 semester. The project posed minimum risk to the nursing student participants considering identifying information was not used. An 8-digit identifier was created by each nursing student to complete the pre-survey and to allow for comparability of their completed post-survey. Verbal consent of participants was obtained.

2.3 Intervention and data collection

Nursing students were educated on mindfulness through supplemental resource videos by Dr. Jon Kabat-Zinn, a professor and founder of the Mindfulness-Based Stress Reduction Clinic, and the Center for Mindfulness in Medicine, Health Care, and Society.[16] The videos are titled Defining Mindfulness,[17] How Mindfulness Can Increase our Resilience to Stress,[18] and the 9 Attitudes of Mindfulness.[19] These

resource videos were chosen due to the knowledge and experience of the presenter and the depth of the evidenced-based content presented. The first two videos were presented to nursing students during week 1 of the project and the third during week 6. Students' understanding of mindfulness was assessed through a question-and-answer session after the presentation of the videos which revealed success. The nursing students were asked to utilize Calm for at least 1-hour a week over a 12-week period. Nursing students could use all

features of Calm to practice mindfulness. Nursing students were also able to utilize Calm more than 1-hour a week if they desired.

All nursing students completed an anonymous pre-/post-survey that was voluntary and did not present any repercussions if not completed. Both surveys were modeled after the Mindful Attention Awareness Scale. Figure 1 shows the questions of the pre-/post-survey.

1 Please type your unique 8-number identifier that you created.						
2 What is your current year of college?	Freshman	Sophomore	Junior	Senior		
3 How often do you practice Mindfulness?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
4 Is the Calm application useful in the practice of Mindfulness?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
5 How many hours a week do you utilize the Calm application?	0-15 minutes a week	15-30 minutes a week	30-45 minutes a week	60 or more minutes a week		
6 Do you experience some emotion and not be conscious of it some time later?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
7 Do you break or spill things because of carefulness, not paying attention, or thinking of something else?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
8 Do you find it difficult to stay focused on what's happening in the present?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
9 Do you tend to walk quickly to get where you're going without paying attention to what you experience along the way?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
10 Do you tend not to notice feelings of physical tension or discomfort until they really grab your attention?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
11 Do you forget a person's name almost as soon as you've been told it for the first time?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
12 Does it seem like you are "running on automatic," without much awareness of what your doing?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
13 Do you rush through activities without being really attentive to them?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
14 Do you get so focused on the goal you want to achieve that you lose touch with what you're doing right now to get there?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
15 Do you do jobs or tasks automatically, without being aware of what you're doing?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
16 Do you find yourself listening to someone with one ear, doing something else at the same time?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
17 Do you drive places on 'automatic pilot' and then wonder why you went there?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
18 Do you find yourself preoccupied with the future or the past?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
19 Do you find yourself doing things without paying attention?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never
20 Do you snack without being aware that you are eating?	Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never

Figure 1. Pre-/post-Survey
*Description: Includes qualitative questions and questions from the Mindful Attention Awareness Scale*

The Mindful Attention Awareness Scale is in the public domain and does not require permission for use for clinical or research purposes. The pre-/post-surveys also included three qualitative questions regarding Calm. The questions were as follows; How often do you practice mindfulness? Is the Calm application useful in the practice of mindfulness? and How many hours a week did you utilize the Calm mobile application? The pre-/post-surveys were created through REDCap, a free web-based data collection tool.[20] Students completed the pre-survey at the beginning and the post-survey at the end of the project. The data was analyzed using a paired *t*-Test. The data was analyzed for educational purposes only to measure the nursing student's awareness of mindfulness. The data is stored on the secured University of Cincinnati OneDrive and in REDCap where all server data is encrypted. Data will only be shareable or accessible by the project team. Data will be destroyed and shredded 1 year after the project's completion.

3. RESULTS

The project began with 84 junior nursing students but concluded with a total of 70 junior nursing students (83%) considering 14 students did not complete the project. Students were educated and assessed on their knowledge of mindfulness and were asked to complete at least 1-hour of mindfulness per week over a 12-week period. The pre-/post-mean of

mindful awareness was compared. A Paired T-Test was run and showed 95% confidence with a pre-mean of 3.2 and a post-mean of 3.6. The pre-/post-means showed a difference of 0.4 between the two resulting in a significant increase after intervention. The resulting p-value was less than 0.001 indicating the p-value < .05. The p-value was set before as the measure. Time allocated to practicing mindfulness through Calm was also evaluated. Pre-project implementation, 99% of students practiced mindfulness through Calm, 0-15 minutes a week while post-project implementation, 46% of students practiced mindfulness through Calm, 15-60 minutes a week. While all students did not practice mindfulness for at least 1 hour a week, there was an overall increase in Calm utilization. Figure 2 shows a decrease of utilization of Calm for 0-15 minutes a week, with an increase of utilization of Calm in every succeeding category that represents over 15-minutes a week.

The usefulness of Calm in the practice of mindfulness was examined. Before commencement of the project, 19% of students agreed that Calm is useful in the practice of mindfulness. After consummation of the project, 44% of students found Calm to be useful. Figure 3 shows there was a neutral thought that Calm was useful pre-project implementation which decreased post-project implementation.
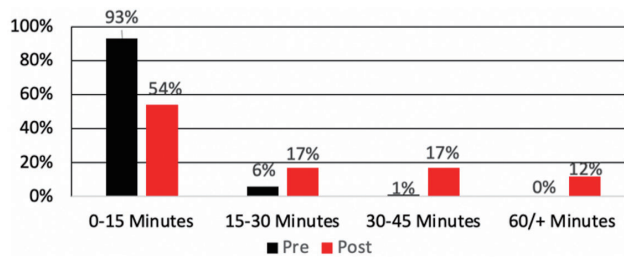
Figure 2. Students' utilization of Calm per week
Description: Students' utilization of Calm per week were evaluated before and after a 12-week period
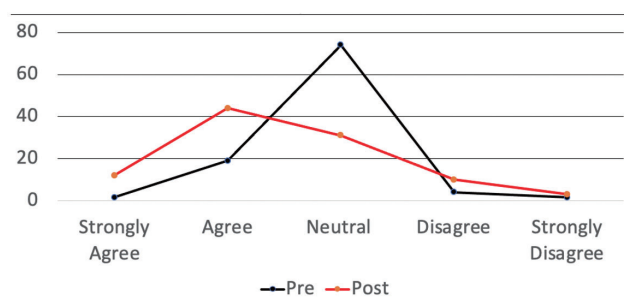
Figure 3. Usefulness of Calm evaluated by students
Description: Students evaluated if the utilization of Calm was useful before and after a 12-week period

4. DISCUSSION

Statistical evidence supports the aim of this QI project proving nursing students undergoing psychiatric mental health didactic and, clinical knowledge about mindfulness was increased over a 12-week period. The projects key findings showed an increase in knowledge of mindfulness through the combination of mindfulness education and usage of Calm over a 12-week period. Mindfulness awareness also increased after the education of mindfulness and utilization of Calm. The QI project sought to educate psychiatric mental health didactic and clinical nursing students on mindfulness activities using the Calm mobile application. Studies have shown nursing students find academic and clinical demands to be a main source of stress.[21] The findings of this QI project are encouraging and prove there is a solution for nursing students in learning the coping strategy mindfulness to combat academic stress.

A limitation of the project included one question of the pre-/post-survey which asked, "How often do you practice mindfulness?" This question yielded conflicting results. Pre-project, 31% of students practiced mindfulness somewhat frequently while post-project, 47% of students practiced mindfulness somewhat infrequently. The question contradicted other results that proved there was an increase in the Calm mobile application's use, increasing the practice of mindful-

ness. Also, the pre-survey data of the 14 nursing students who did not complete the project were excluded from the project results. That data would have skewed the comparison of the projects pre-/post- data considering the 14 students did not complete the post-survey. The QI project also cannot be generalized other than to the University of Cincinnati. Education and pre-/post-surveys were conducted in-person during the didactic course. This setting promoted data collection and is an important aspect of the success of the QI project.

5. CONCLUSION

The findings of this QI project suggest Calm can be useful in one's awareness and practice of mindfulness. This QI project adds to the evidence-based literature regarding the stresses of academic and professional careers of nursing and how to combat those stressors. Increasing the knowledge and use of mindfulness as a coping strategy can be used to combat stress. Increasing the usage of Calm can increase the practice and usefulness of mindfulness. Uncovering these findings is advantageous to nursing students' academic career and professional career as a registered nurse. Nursing students can utilize the knowledge gained from the project throughout their academic and professional career.

The participation of nursing students was needed to sustain this QI project. Considering 83% of junior nursing students completed the entire project, results were lucid. Nursing students' willingness to learn played a huge role in the ability to educate. Nursing students' understanding of what was being taught and honesty propelled the project. The implications of this QI project are to continue educating nursing students about mindfulness and to encourage the practice of mindfulness among nursing students to increase their coping strategies for the purpose of decreasing stress. More projects with a wider population from various settings are needed. Additional projects are important to add to the growing body of evidence surrounding the utilization of the coping strategy mindfulness among nursing students. Benefits of the coping strategy mindfulness can be seen forthwith and long-term.

possible.

AUTHORS CONTRIBUTIONS

Dr. Danielle Martin Charles was responsible for project proposal and design, conducting the project, collection and statistical analysis of data, and drafting and revising the manuscript. Dr. Melanie Kroger-Jarvis and Dr. Amber Irwin were responsible for critiquing, editing and critically revising the project and manuscript and editorial assistance of the manuscript.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

INFORMED CONSENT

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

DATA SHARING STATEMENT

No additional data are available.

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REFERENCES

[1] Drew BL, Motter T, Ross R, et al. Care for the caregiver: Evaluation of mind-body self-care for accelerated nursing students. Holistic Nursing Practice. 2016; 30(3): 148-154. PMid:27078809 https://doi.org/10.1097/HNP.0000000000000140

[2] Uysal N, Çalışkan BB. The effects of mindfulness-based stress reduction on mindfulness and stress levels of nursing students during first clinical experience. Perspectives in Psychiatric Care. 2022; 58(4): 2639-2645. PMid:35488858 https://doi.org/10.1111/ppc.13104

[3] Cho J, Cho O, Hwang K. "Untold and unexpected clinical practice stress," nursing students' experience of disgust: A phenomenological approach. Nurse Education Today. 2023; 129: 105899-105899. PMid:37454582 https://doi.org/10.1016/j.nedt.2023.105899

[4] Gurkova E, Zelenikova R. Nursing students' perceived stress, coping strategies, health and supervisory approaches in clinical practice: A slovak and czech perspective. Nurse Education Today. 2018; 65: 4-10. PMid:29522963 https://doi.org/10.1016/j.nedt.2018.02.023

[5] D'emeh WM, Yacoub MI. The visualization of stress in clinical training: A study of nursing students' perceptions. Nursing Open. 2021; 8(1): 290-298. PMid:33318836 https://doi.org/10.1002/nop2.629

[6] Boren JP, Veksler AE. The stress of nursing: Exploring communicatively restricted organizational stress (CROS), effort-reward imbalance, and organizational support among a sample of U.S. working nurses. Journal of Occupational Medicine and Toxicology (London, England). 2023; 18(1): 1-22. PMid:37784075 https://doi.org/10.1186/s12995-023-00390-6

[7] Shah MK, Gandrakota N, Cimiotti JP, et al. Prevalence of and factors associated with nurse burnout in the US. JAMA Network Open. 2021; 4(2): e2036469-e2036469. PMid:33538823 https://doi.org/10.1001/jamanetworkopen.2020.36469

[8] Kurnat-Thoma E, Ganger M, Peterson K, et al. Reducing annual hospital and registered nurse staff Turnover—A 10-element onboarding program intervention. SAGE Open Nursing. 2017; 3: 237796081769771. https://doi.org/10.1177/2377960817697712

[9] Zakaria N, Zakaria NH, Bin Abdul Rassip, et al. Burnout and coping strategies among nurses in malaysia: A national-level cross-sectional study. BMJ Open. 2022; 12(10): e064687-e064687. PMid:36216421 https://doi.org/10.1136/bmjopen-2022-064687

[10] Admi H, Moshe-Eilon Y, Sharon D, et al. Nursing students' stress and satisfaction in clinical practice along different stages: A cross-sectional study. Nurse Education Today. 2018; 68: 86-92. PMid:29894915 https://doi.org/10.1016/j.nedt.2018.05.027

[11] McVeigh C, Ace L, Ski CF, et al. Mindfulness-based interventions for undergraduate nursing students in a university setting: A narrative review. Healthcare (Basel). 2021; 9(11): 1493. PMid:34828538 https://doi.org/10.3390/healthcare9111493

[12] Mindful Staff. Jon Kabat-Zinn: Defining mindfulness. Mindful. 2022. Available from: https://www.mindfu

l.org/jon-kabat-zinn-defining-mindfulness/#:~:
text=Mindfulness%20is%20awareness%20that%20arises,
there's%20someone%20to%20take%20seriously

[13] Oh VKS, Sarwar A, Pervez N. The study of mindfulness as an intervening factor for enhanced psychological well-being in building the level of resilience. Frontiers in Psychology. 2022; 13: 1056834-1056834. PMid:36619105 https://doi.org/10.3389/fpsyg.2022.1056834

[14] Huberty J, Green J, Glissmann C, et al. Efficacy of the mindfulness meditation mobile app "calm" to reduce stress among college students: Randomized controlled trial. JMIR mHealth and uHealth. 2019; 7(6): e14273-e14273. PMid:31237569 https://doi.org/10.2196/14273

[15] Taylor G, Alpert J, Waddell TF, et al. Streaming mindfulness: Well-being and mindfulness among subscribers to a video streaming service. Internet Interventions: The Application of Information Technology in Mental and Behavioural Health. 2021; 25: 100419-100419. PMid:34401378 https://doi.org/10.1016/j.invent.2021.100419

[16] About Jon Kabat-Zinn-Jon Kabat. Zinn. 2023. Available from: https://jonkabat-zinn.com/about/jon-kabat-zinn/

[17] NourFoundation. Can Mindfulness Increase Our Resilience to Stress? [Video]. Youtube. 2013a. Available from: https://youtu.be/ALjF1yb-VLw

[18] NourFoundation. Jon Kabat-Zinn Defines Mindfulness [Video]. Youtube. 2013b. Available from: https://youtu.be/wPNEmxWSNxg

[19] Recovered Mindfully. 9 Attitudes Jon Kabat Zinn [Video]. Youtube. 2015. Available from: https://youtu.be/2n7FOBFMvXg

[20] Redcap. REDCap. (n.d.). 2022. Available from: https://projectredcap.org/about/

[21] Bartlett ML, Taylor H, Nelson JD. Comparison of mental health characteristics and stress between baccalaureate nursing students and non-nursing students. The Journal of Nursing Education. 2016; 55(2): 87-90. PMid:26814818 https://doi.org/10.3928/01484834-20160114-05