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Intervention Effects of the MINDBODYSTRONG Cognitive Behavioral Skills Building Program on Newly Licensed Registered Nurses' Mental Health, Healthy Lifestyle Behaviors, and Job Satisfaction

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OBJECTIVE: The purpose of this study was to evaluate the effects of the MINDBODYSTRONG for Healthcare Professionals Program on stress, anxiety, depressive symptoms, healthy lifestyle behaviors, and job satisfaction on newly licensed RNs (NLRNs) participating in a nurse residency program.

BACKGROUND: The constellation of burnout, depression, and suicide in clinicians is a public health epidemic that affects the quality and safety of healthcare. The National Academy of Medicine's Action Collaborative on Clinician Well-being and Resilience has called for an increase in evidence-based interventions to combat this alarming problem. The MINDBODYSTRONG Program is a novel adaptation of an evidence-based cognitive behavioral skills–building intervention that provides a theory-based approach to improve the mental health, healthy lifestyle beliefs and behaviors, and job satisfaction of NLRNs.

METHODS: A 2-group, cluster randomized controlled trial was used with 89 new nurses participating in a new-graduate nurse residency program. The experimental intervention, MINDBODYSTRONG, consisted of 8 manualized weekly 45-minute sessions. Data were collected at baseline, immediately following, and 3 months after intervention that measured stress, depressive symptoms, anxiety, healthy lifestyle beliefs and behaviors, and job satisfaction. Repeated-measures analysis of variance was used for data analysis.

RESULTS: The intervention group scored significantly better with moderate to large positive effects on the mental health variables as well as healthy lifestyle beliefs and healthy lifestyle behaviors at both follow-up time points compared with the attention control group. Moderate to large positive effects also were found for job satisfaction.

CONCLUSIONS: The MINDBODYSTRONG Program has excellent potential as an evidence-based intervention for improving the mental health, healthy lifestyle beliefs and behaviors, and job satisfaction, in NLRNs.

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The United States is experiencing a healthcare crisis among working adults including lifestyle diseases and poor mental health, resulting in an increase in

absenteeism and lost productivity.[1,2] The healthcare industry is not exempt from this phenomenon. The constellation of burnout, depression, and suicide in clinicians is a public health epidemic that affects the quality and safety of healthcare. Healthcare clinicians, including nurses, have higher rates of substance abuse, depression, and suicide than the national average.[3-5] Nurses are twice as likely to suffer from depression, and greater than 50% report suboptimal physical and mental health.[6,7] Depression and poor health in nurses are linked to medical errors and patient dissatisfaction,[8] with medical errors now being the 3rd leading cause of death in the United States.[9] Newly licensed RNs (NLRNs) report high stress and stress-related illness in their 1st years of practice.[10,11] In 2017, the National Academy of Medicine launched the Action Collaborative on Clinician Well-being and Resilience with an aim to develop evidence-based solutions to reduce this public health epidemic.[12]

Prior to 2004, there was little support for NLRNs within healthcare. As a result, large numbers of NLRNs were leaving their 1st nursing positions costing healthcare organizations between $60 000 and $96 000 per nurse.[13] Understanding the need to decrease turnover and provide support for NLRNs, the Joint Commission, the Institute of Medicine (now the National Academy of Medicine), the Commission on Collegiate Nursing Education, and a report from the Carnegie Foundation recommended the development of nurse residency programs.[13,14] Organizations with nurse residency programs report improved retention, decreased stress, and increased confidence and competence in NLRNs over the 1st year of practice. Many nurse residency programs include components such as mindfulness and resilience training into their curriculum, however; new nurses participating in transition to practice programs continue to report unreasonable workloads, low sense of control, lack of respect, and lack of trust and collaboration with coworkers as major contributors to dissatisfaction and turnover during their 1st year of practice.[13-20] In addition to the anticipated stress of transitioning from student to professional nurse, NLRNs are often met with criticism, bullying, and incivility from coworkers.[15-19] Although the combination of work stress, lack of support, lack of resources, and inappropriate interactions, such as incivility from peers, often results in burnout, physical illness, and absenteeism in our newest nurses,[15-20] there is a paucity of theory-based interventions to improve the mental health and stress reduction skills for NLRNs. Therefore, the purpose of this study was to evaluate the effects of a cognitive behavioral therapy (CBT)–based skills-building program entitled MINDBODYSTRONG for Healthcare Professionals on perceived stress, anxiety, depression, healthy lifestyle behaviors, and job satisfaction in NLRNs participating in a nurse residency program.

Theoretical Framework

The theoretical framework for this study is CBT.[21,22] The central theme of CBT is that an individual's cognitions play a primary role in emotional and behavioral responses to life situations. Cognitive behavior therapy focuses on the thoughts and feelings that drive behavior; thus, it is effective in the treatment of posttraumatic stress disorder, anxiety disorders, addiction, and depression.[23] The overarching goal is to help individuals control the automatic thoughts that exacerbate emotional difficulties, including anxiety and depression.

Based on this model, it was contended that delivery of the MINDBODYSTRONG Program would improve the NLRN's cognitive beliefs about their ability to manage stress, resulting in decreased anxiety and depressive symptoms. In addition, the development of more positive beliefs as a result of the MINDBODYSTRONG Program would positively influence the NLRN's healthy lifestyle choices and sense of well-being. In turn, job satisfaction among NLRNs participating in the MINDBODYSTRONG Program would have increased job satisfaction and decreased absenteeism over the study period.

Methods

Design

A 2-group, cluster randomized controlled trial was conducted using the MINDBODYSTRONG Program. The study was approved by the university's institutional review board, the medical center, and the nurses' union organization. This was a follow-up study to a single-group feasibility and acceptability pilot conducted in the summer of 2017, which provided feedback to inform the current study.

Sample and Setting

The study was conducted in a large, Midwestern academic medical center with an accredited nurse residency program. The medical center consists of 7 hospitals with a total of more than 1200 specialty and acute care beds. More than 250 NLRNs participate in the nurse residency program annually.

Participants were NLRNs hired between July 1, 2018, and September 30, 2018, and placed in 1 of 4 cohorts based on hire date. Two cohorts were randomly assigned to the control group, and 2 cohorts were randomly assigned to the MINDBODYSTRONG intervention group. Inclusion criteria included all NLRNs hired during the study period who signed consent for the study. Exclusion criteria included any NLRN who did not consent to participate in the study.

Recruitment

Written and verbal information about the study was provided during the 1st nurse residency seminar. Potential participants received a letter summarizing the purpose of the study, as well as possible benefits and risks from participation, and emphasizing that participation or nonparticipation in the study would in no way impact their employment or their successful completion of the nurse residency program. Consent was obtained, and baseline data were collected for both the intervention and control groups. In order to prevent any undue pressure, the principal investigator was blinded to the consent process and had no role in supervising or evaluating the NLRNs in the study cohorts.

The MINDBODYSTRONG Program

The MINDBODYSTRONG Program is a novel adaptation of an evidence-based cognitive behavioral skills–building intervention that provides a theory-based approach to improve the mental health, healthy lifestyle beliefs and behaviors, and job satisfaction of NLRNs. The curriculum is manualized into a workbook to ensure consistency of information, allow participants to interact during all skills building/practice activities, and provide a guide for accomplishing goals. The MINDBODYSTRONG Program was adapted from the evidence-based Creating Opportunities for Personal Empowerment Program by Melnyk, which has been shown to decrease depressive, anxiety, and stress symptoms and increase healthy lifestyle behaviors in children, adolescents, and college-age youth in numerous studies.[23-27] Each of the 8 MINDBODYSTRONG sessions (Table 1) focuses on 3 areas: *caring for the mind*, *caring for the body*, and *skills building*. Participants learn CBT concepts, establish weekly goals, and complete skills-building activities weekly. Each session begins with a review of previously learned concepts and a review of skills-building activities.

The Attention Control Program

The attention control group received the usual nurse residency curriculum that included a 30- to 45-minute debriefing session each week where they discussed successes and challenges experienced the prior week while also receiving peer support from other cohort members. Members of the control group were given information on the Employee Assistance Program and other resources available to employees of the organization.

Measures

Perceived Stress

Perceived stress was measured using the Perceived Stress Scale (PSS),[28] a 10-item measure focusing on feelings and thoughts within the past month. Participants indicated how they felt by using a 5-point Likert scale ranging from 0 (never) to 4 (very often). Composite scores range from 0 to 40, with higher scores indicating higher perceived stress. The PSS is the most widely used tool for measuring perceived stress and

Table 1. MINDBODYSTRONG Sessions Content

Session	Content		
	Caring for Your Mind	Caring for Your Body	Skills Building and Goal Setting
1	• Thinking, feeling, and behaving • The ABCs of CBT • Mindfulness	• Nutrition: health and energy	• Positive self-talk
2	• Self-esteem and positive self-talk • Thankfulness • Managing change	• Physical activity	• Self-esteem and positive self-talk
3	• Stress • Healthy coping • Abdominal breathing	• Healthy eating on the go	• Managing stress
4	• Problem solving • Setting goals • Steps to problem solving	• Strength training	• Strategies to overcoming barriers
5	• Sleep	• Wellness WONDER FOODS	• Sleep Diary
6	• Dealing with emotions in healthy ways • Using guided imagery • Coping Strategies • Effective communication	• Flexibility training	• Dealing with emotions • Flexibility
7	• Coping with stressful situations	• Self-determined nutrition and physical activity goals	• Coping with stressful situations
8	Pulling it all together—review		• Establish long-term goals

has adequate reliability with a variety of populations (Cronbach's α = .84).[28]

Anxiety

Anxiety was measured using the Generalized Anxiety Disorder Scale (GAD-7).[29] The GAD-7 focuses on feelings and actions associated with anxiety within the prior 2-week period. Answers were based on a 4-point Likert scale ranging from 0 (not at all) to 3 (nearly every day). Scores range between 0 and 21, with 5 to 9 considered mild anxiety, 10 to 14 moderate anxiety, and 15 or greater considered the range for severe anxiety. The GAD-7 is a widely used tool with good reliability (Cronbach's α = .86).[29]

Depressive Symptoms

Depressive symptoms were assessed using the 9-item Personal Health Questionnaire, which measures depressive symptoms over the previous 2-week period.[30] Scores were based on a 4-point Likert scale ranging

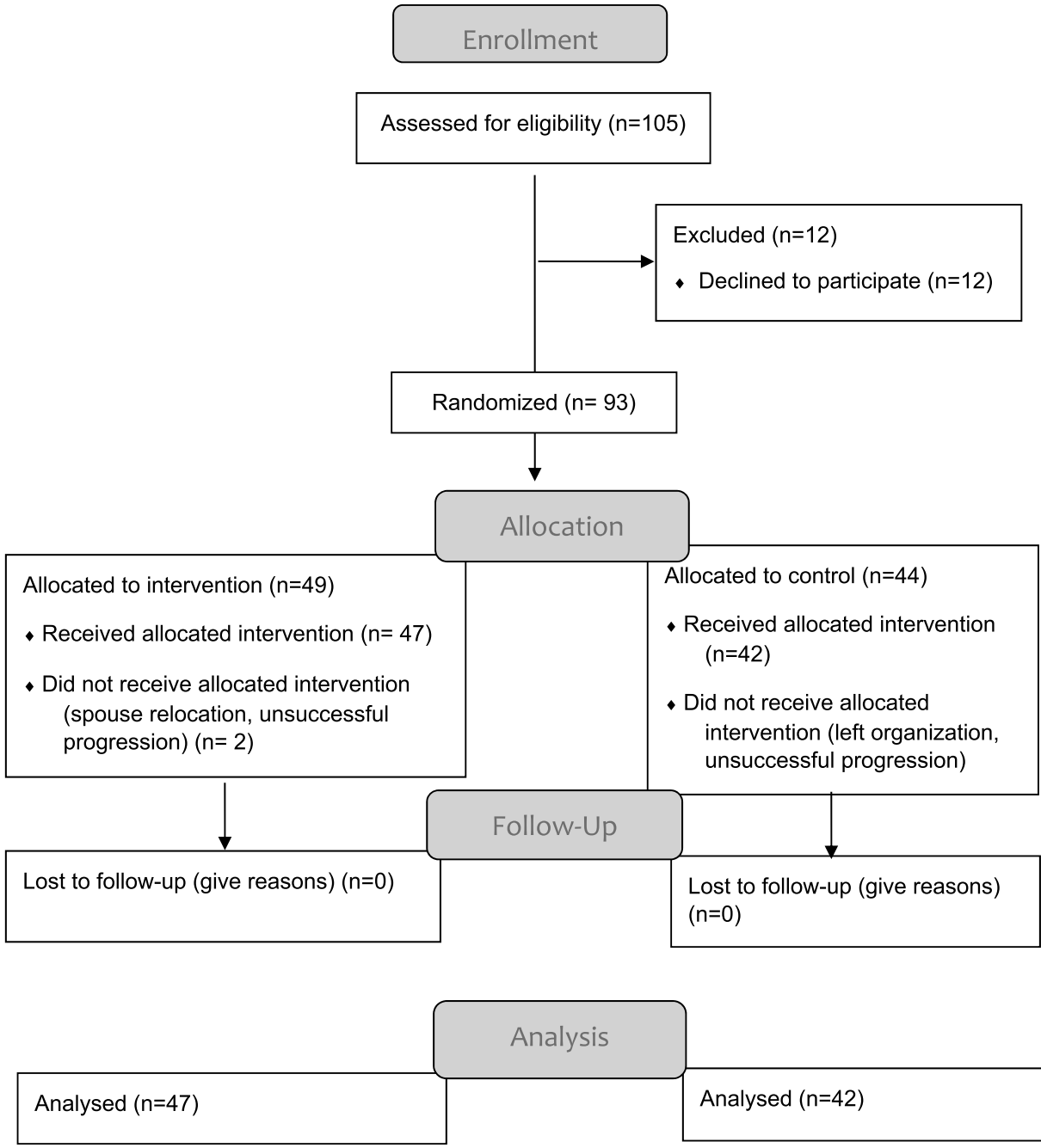

Figure 1. CONSORT (Consolidated Standards for Reporting of Trials) table.

Table 2. Demographics

Variable	Control Group Frequency	%	Intervention Group Frequency	%
Gender				
Female	35	83	41	87
Male	7	17	6	13
Ethnicity				
Hispanic	2	5	0	0
Non-Hispanic or Latino	40	95	47	100
Race				
Asian	2	5	3	1.5
Black or African American	1	2	3	1.5
White	39	93	41	97
Previous mental health diagnosis	11	26	12	26
Type of nursing degree				
ADN	6	14	6	13
BSN	36	86	40	86
Master's	0	0	1	1
Type of nursing unit				
Cardiac	2	2	4	8
Critical care	10	24	14	30
Medical/surgical	21	50	20	43
Neuro/rehab	3	10	5	11
Other	6	14	4	8

from 0 "not at all" to 3 "nearly every day." Composite scores range from 0 to 4, minimal depressive symptoms; 5 to 9, mild depressive symptoms; 10 to 14, moderate depressive symptoms; 15 to 19, moderately severe depressive symptoms; and 20 or greater, severe depressive symptoms. This tool has been validated in multiple studies and shows strong reliability (Cronbach's α = .92 at the cutoff of 3).[30]

Healthy Lifestyle Beliefs

Healthy Lifestyle Beliefs were measured with the 16-item Healthy Lifestyle Beliefs Scale that was adapted from other beliefs scales by Melnyk and colleagues.[31] It focuses on beliefs about living a healthy life. Questions such as "I am sure that I will do what is best to lead a healthy life" are measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's α averages .82.[31]

Healthy Lifestyle Behaviors

Healthy Lifestyle Behaviors were measured with the 16-item Healthy Lifestyle Behaviors Scale that was developed by Melnyk and colleagues.[31] It was scored on a 5-point Likert scale measuring lifestyle behaviors such as "I make healthy food choices" and "I set goals I can accomplish." The Cronbach's α is reported at and greater than .73.[31]

Job Satisfaction

Job satisfaction was measured with the 7-item Job Satisfaction Scale (JSS),[32] which was used to determine participant's satisfaction with their job. Responses such as "I find real enjoyment in my job" were measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Internal consistency reliability ranges from 0.72 to 0.95.[32]

Procedure

Both groups completed a posttest immediately following the 8th session and again at 3 months after intervention. All cohort members in the intervention group received the full MINDBODYSTRONG Program as part of their residency program. Only those who consented to participating in the study completed the study instruments at baseline, immediately postintervention, and at 3 months postintervention.

Data Analysis

A repeated-measures analysis of variance (ANOVA) was conducted to determine the change over time in perceived stress, anxiety, depressive symptoms, healthy lifestyle behaviors, and job satisfaction. A multivariate ANOVA (MANOVA) was used to determine the change in healthy lifestyle beliefs. Cohen *d* was used to determine effect sizes, and Pearson *r* was used to examine the correlations between healthy lifestyle beliefs and healthy lifestyle behaviors, and between beliefs and perceived stress, anxiety, and depressive symptoms.

Results

A total of 105 NLRNs hired between July 1, 2018, and September 30, 2018, were invited to participate in the study (Figure 1). Ninety-three (89%) consented and completed the initial online survey based on their experience over the past 2 weeks. Table 2 displays the characteristics of study participants. Most respondents were between the ages of 21 and 50 years, with a mean age of 24.5 years. The majority were female, white, and non-Hispanic and earned a BSN degree. Twenty-six percent of both the control and the

Table 3. Repeated-Measures ANOVA Multivariate Results

Source	λ	*F*	*P*	η_p^2
Perceived stress	λ = 0.867	4.334	.007[a]	0.133
Anxiety	λ = 0.566	21.73	<.001[a]	0.434
Depressive symptoms	λ = 0.661	14.545	<.001[a]	0.339
Healthy lifestyle beliefs	λ = 0.593	29.473	<.001[a]	0.407
Healthy lifestyle behaviors	λ = 0.876	6.037	.004[a]	0.124
Job satisfaction	λ = 0.984	0.720	.490	0.016
Absenteeism	λ = 0.993	0.322	.725	0.007

[a]$P < .05$.

Table 4. *Repeated-Measures ANOVA Between Groups Results*

Source	*F*	*P*	η_p^2
Perceived stress	5.46	<.022[a]	0.059
Anxiety	17.469	<.001[a]	0.167
Depressive symptoms	15.63	<.001[a]	0.152
Healthy lifestyle beliefs	2.54	.115	0.029
Healthy lifestyle behaviors	2.54	.015[a]	0.029

[a]$P < .05$.

intervention groups reported being previously diagnosed with a mental health disorder.

A total of 4 participants, 2 from the control group and 2 from the intervention group, left the organization prior to completing the 2nd survey, leaving a total of 89 participants completing all 3 time points. The survey took approximately 30 minutes to complete.

There were no missing data, and data met all statistical assumptions. A MANOVA was used to determine group differences at baseline. No significant differences were noted in mean variable scores between the control group and the intervention group for any of the study variables. A repeated-measure ANOVA was then used evaluate the change in mental health scores over time. Table 3 shows the multivariate results of the repeated-measures ANOVA, and Table 4 shows the between-group results. Figures 2-4 show the mean score changes over time for stress, anxiety, and depressive symptoms. Findings indicate that participants receiving the MINDBODYSTRONG Program had significantly improved perceived stress ($F_{1,87}$ = 5.459, P = .022, η_p^2 = 0.059), lower anxiety scores ($F_{1,87}$ = 10.40, P = .002, η_p^2 = 0.107), and lower depressive symptoms ($F_{1,87}$ = 8.59, P = .004, η_p^2 = 0.090) than participants in the control group. In addition, moderate to large positive effects were noted across all time points (Table 5). The intervention group's anxiety scores moved from the mildly anxious range at baseline

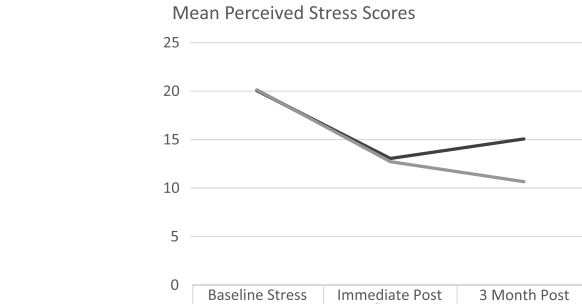

Figure 2. Mean changes over time for perceived stress.

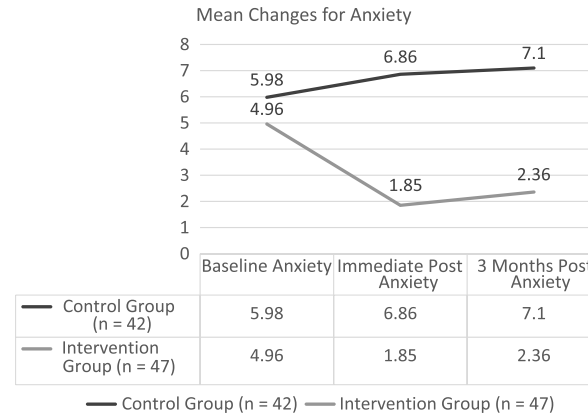

Figure 3. Mean changes over time for anxiety (0-4.99 = normal anxiety, 5-9 = mild anxiety).

to the normal range immediately postintervention and at 3 months postintervention, whereas the control group's scores continued to elevate throughout the study period. Both groups scored in the minimal depressive range at baseline; however, the control group increased to the mild range at time points 2 and 3, whereas the intervention group remained in the minimal depression range throughout the study period.

A repeated-measures ANOVA was conducted to determine the change in healthy lifestyle behaviors over time. There was a significant difference in individual scores across time points for healthy lifestyle behaviors ($F_{1,87}$ = 11.86, P = .001, η^2 = 0.12). In addition, there was a significant between group effect in behaviors ($F_{1,87}$, = 2.54, P = .015, η_p^2 = 0.029). As shown in Figure 5, healthy lifestyle behaviors steadily declined across all time points for the control group, and the intervention group scored significantly higher at all time points following the intervention.

A repeated-measures ANOVA was conducted to determine the change in job satisfaction over time. Although there was not a significant difference in scores

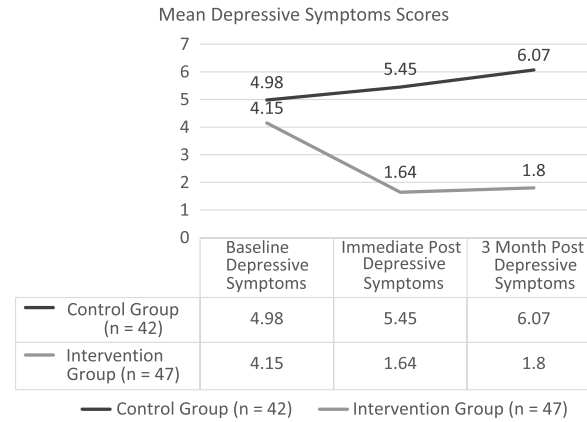

Figure 4. Mean changes over time for depressive symptoms (0-4.99 = normal depressive symptoms, 5-9 = mild depressive symptoms).

Table 5. Effect Sizes for the Intervention

		Mean	SD	*d*	Mean	SD	*d*	Mean	SD	*d*
Perceived stress	Control	7.0	3.04	0.2[a]	–2.02	0.31	5.51[b]	4.98	3.35	1.83[b]
	Intervention	7.41	0.12		2.06	1		9.47	0.87	
Anxiety	Control	0.88	0.28	3.5[b]	0.24	0.66	0.50[c]	–1.2	0.94	3.54[b]
	Intervention	3.11	1.6		–0.51	0.41		2.6	1.19	
Depressive symptoms	Control	0.47	0.80	1.8[b]	–0.62	0.53	0.50[c]	–1.09	0.27	4.72[b]
	Intervention	2.51	2.26		–1.19	1.59		1.32	0.87	
Healthy lifestyle beliefs	Control	–1.14	0.01	5.59[b]						
	Intervention	1.23	0.6							
Healthy lifestyle behaviors	Control	–1.2	2.5		2.10[b]	–0.92	0.16	–2.12		2.39
	Intervention	2.93	1.24	–0.86		0.42	0.19[a]	2.07	0.82	2.35[b]
Job satisfaction	Control	1.19	0.62	0.98[b]	0.24	0.24	1.33[b]	1.67	0.38	0.35[a]
	Intervention	2.34	0.01		2.34	0.01		1.78	0.23	

[a]Small effect size.
[b]Large effect size.
[c]Moderate effect size.

across time points for job satisfaction ($F_{1,87} = 0.034$, $P = .854$, $\eta_p^2 < 0.001$), the intervention group performed better on this variable compared with the control as there was a large positive effect immediately postintervention (Cohen $d = 1.33$) and a small effect 3 months postintervention (Cohen $d = 0.35$).

Discussion

The MINDBODYSTRONG Program improved the mental health, healthy lifestyle beliefs, healthy lifestyle behaviors, and job satisfaction in NLRNs who received the intervention. As a result of learning and applying CBT-based skills in the MINDBODYSTRONG Program, participants were able to improve their anxiety and depressive symptoms by monitoring activating events, reframing negative thoughts, and changing their behaviors. This study provides further evidence to support the positive benefits of CBT and cognitive behavioral skills building using Melnyk's manualized cognitive behavioral skills–building program.[21,22,24-26] The teaching of cognitive behavioral skills to NLRNs strengthened their cognitive beliefs about their ability to manage stress and engage in healthy lifestyle behaviors, which improved their mental health and healthy lifestyle behaviors. Twenty-six percent of both the control and the intervention groups reported being previously diagnosed with a mental health disorder. According to the National Institute of Mental Health, young female adults between the ages of 18 and 25 years have the highest prevalence of mental health disorders (25.8%) compared with other groups, which aligns with our study demographics.[33] Although the findings from this study indicated no significant differences in job satisfaction scores between the control group versus the intervention group, the intervention group's scores on the JSS remained steady throughout all time points. The MINDBODYSTRONG Program was influential in maintaining stable scores for job satisfaction in the intervention group. A larger sample size and additional time points are needed to realize the effect of the MINDBODYSTRONG Program on job satisfaction over a longer period.

The cost of implementing the MINDBODYSTRONG Program into a residency program is nominal because it can be easily integrated into existing program content. There is a small fee for a 4-hour training workshop that can be delivered on site or online. There also is a cost for the MINDBODYSTRONG Program manuals that are provided to each participant. This program can be delivered to other healthcare professionals within healthcare organizations, including experienced nurses, physicians, and other healthcare providers. Considering the financial implications of turnover and the negative consequences of high stress levels and burnout, the MINDBODYSTRONG Program offers organizations a feasible option to provide evidence-based intervention to promote the mental health and healthy lifestyle behaviors of their newest nurses and their established staff.

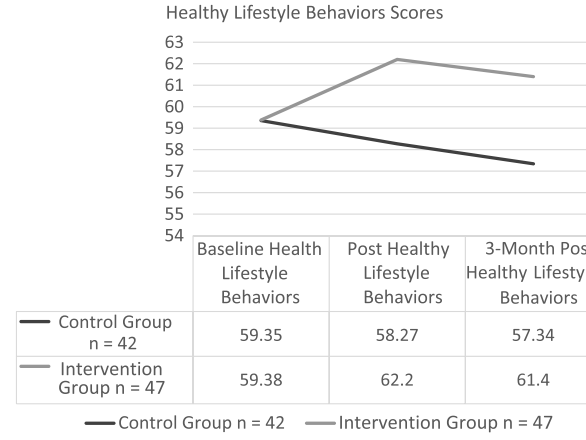

Figure 5. Mean changes over time for healthy lifestyle behaviors.

Limitations and Strengths

Limitations of this study include limited ability to generalize to the larger population of NLRNs because the sample was one of convenience. While the sample size (n = 89) was more than adequate for a pilot study,[30] larger, multisite studies that are fully powered are needed to determine both the short- and more long-term impact of the MINDBODYSTRONG Program on NLRNs across different settings. In addition, this study did not evaluate individual participant's level of resiliency or tendency toward self-efficacy, which may have influenced their mental health scores.

Strengths of this study include the novel approach of using cognitive behavioral skills to improve the mental health and healthy lifestyle behaviors of NLRNs based on a strong theoretical framework. Fidelity of the intervention was maintained through extensive training of the researcher and manualization of the intervention. A randomized controlled trial is considered optimal in research design because it allows for the testing of cause and effect relationships.[34] Another strength of this design was that there was an attention to the control group who received a structurally equivalent program who were in group classes the same amount of time as the MINDBODYSTRONG group.

Conclusion

The MINDBODYSTRONG Program demonstrated potential as a nurse residency–based intervention for NLRNs and is appropriate for healthcare clinicians at all levels within an organization. In addition, this study aligns with National Academy of Medicine's call for evidence-based solutions for clinician well-being.

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