

Reducing Stress: An Intervention for Registered Nurses

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Capstone Project

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Abstract

The nursing profession has been described as a stressful profession and prolonged exposure to stressful situations without interference has been known to be injurious to the emotional and physical wellbeing of the individual concerned. This study aims to proffer a solution to this problem and the outcome of this project will serve as a health improvement initiative that may be maintained at the individual level or incorporated into employee health activities. A total of 50 registered nurses were invited to participate in the project. Forty-eight individuals returned their questionnaires while only 38 individuals met the eligibility criteria. This paper presents the pretest and posttest results of the 38 participants that took part in the project divided equally into the study and control groups, respectively. Results showed that the mean score between pre and post-test was significantly different and the mean score between the control and intervention group also was statistically different. Additionally, the mean score of the outcome changed between the pre and post-group, and between the control and the intervention group simultaneously. These findings revealed the significance of stress among registered nurses and the importance of stress-relieving measures to prevent burnout, and the physiological and emotional reactions that result from prolonged unrelieved stress. The incorporation of a stress-relieving intervention could reduce stress-related conditions, reduce the number of sick days, and reduce the amount spent on stress-related diseases among registered nurses.

Keywords: stress, stress intervention, stress-relieving exercise, breathing exercise, registered nurses, questionnaire

Reducing Stress: An Intervention for Registered Nurses

Stress is a feeling of emotional or physical tension arising from any event or thought that elicits frustration, anger, or anxiety. Stress can be a common occurrence in registered nurses' daily lives and result in a negative effect on the body (Yaribeygi, et al., 2017). Prolonged stress has also been known to be a detriment to both emotional and physical wellbeing (Yaribeygi, et al., 2017). Many professionals face stressful situations, and the nursing profession is known as one of the stressful professions among the health care team (Odonkor & Frimpong, 2020). Stress in registered nurses arises from the physical, psychological, and social aspects of the work environment (Moustaka & Constantinidis, 2010). Stressors in the work environment include wrong ventilation, lighting, and temperature, coupled with conflicts in interpersonal and interprofessional relationships, and the emotional nature required when dealing with sick individuals and their relatives. Based on the brief review of these factors alone may point the curious person towards the causes of high stress frequently found in registered nurses, as well as any actions that may be taken to prevent the accumulation of stress that may result in both emotional and physical illnesses (Laschinger, et al., 2001; Moustaka & Constantinidis, 2010). These stress-related illnesses ranging from psychological to physical ailments, if not properly addressed, will not only hinder nurses in the performance of their duties but may also expose patients to accidents and injuries (Melnyk, et al., 2018)).

Overview

Problem Description

Nurses form the largest part of the healthcare profession making them valuable members of the healthcare team. Nurses are exposed to many hazards during their daily activities (Centers for Disease Control (CDC), 2017). Hazards like sharp injuries, harmful exposure to chemicals

and hazardous drugs, back injuries, latex allergy, violence, and stress coupled with the daily experience that emanates from the physical, psychological, and social aspects of their work environment constitute a stressful experience (Sarafis, et al., 2016). Prolonged exposure to stressful situations without interference has been known to be injurious to the emotional and physical wellbeing of the individual concerned, while studies have also shown that stress has been associated with many emotional and physical illnesses (Yaribeygi, et al., 2017; Roberts & Grubb, 2014). Stress remains a problem, especially among nurses in today's ever-changing healthcare environment.

This problem necessitates a project that is aimed at determining how a nurse-led intervention, compared to employer-led intervention, will reduce the incidence of work-related stress and burnout incidence among registered nurses over two months. The population of this study is registered nurses at the hospital where this study was conducted. Intervention for the study was the breathing exercise embarked upon for two months. The stress scores of participants were measured before and after two months of the intervention. Comparison of the scores resulted in a reduction of stress scores among the participants indicating a reduction in their stress levels because of the intervention.

Stress is a common occurrence during the performance of nursing duties and the issue of stress-related illnesses that accompany work-related stress is becoming problematic to the nursing workforce and poses safety issues to patient care. According to Roberts & Grubb (2014), any effort aimed at improving the health of this large group of people will have a direct or indirect effect on the health and wellbeing of the nation. Stress reduction efforts may contribute to the well-being of this category of healthcare workers and increase staff retention. This development may translate into excellent care for patients. This study measured the effects of a

nurse-led stress intervention compared to the employer-led intervention in reducing work-related stress among registered nurses within two months.

Available Knowledge

Population – Registered Nurses

Stress among nurses has been an age-old problem because of the nature of the healthcare environment and the nature of the job (Bardhan, et al., 2019). The healthcare environment imposes physical, psychological, and emotional stress on nurses as they carry out their daily activities. The hospital design presents a unique picture of a home for the sick and injured while the hospital floor presents a unique odor that reminds the visitor of a place of reverence for the nature of man that swings from health to illness or unavoidable death. A hospital is a place of joy and sorrow, for instance, the birth of a newborn baby or a patient discharged from the hospital is a thing of joy, while the death of an individual is seen as a sorrowful event. The nurse in his/her role is expected to be a moderator during these deeply emotional events.

Nursing care requires physical strength for carrying out nursing care of the sick (Hersch, et al., 2016). It also requires emotional involvement as the nurse changes mood from being empathetic with the weak, rejoicing with the cured, and sympathetic with the sorrowful (Roberts & Grubb, 2014). Since nurses render essential services, they do not determine their hours of work. The requirement to work when they are needed and the need to balance work and social life place an additional strain on the nurse who must tend to the sick as well as fulfill other social obligations. Nursing like any other profession has stress as a constant companion and preventing stress build-up becomes a requirement to prevent the burnout that may keep nurses away from their work (Sarafis, et al., 2016).

The issues mentioned above are some of the origins of stress among nurses and the contribution of these factors in the development of stress and burnout can easily be identified. Stress is a normal body response and can be described as both an intrinsic and extrinsic stimulus that brings about a biological response in the body (Yaribeygi, et al., 2017). The compensatory response to stress may enable the individual concerned to cope effectively with the situation at hand, hence stress is assumed to be beneficial. The harmful effects of prolonged and sustained stress are harmful to the body as they produce many changes in the body's homeostasis that may be life-threatening (Yaribeygi, et al., 2017). Stress may also act as triggers or become an aggravating factor in many diseases especially hypertension, diabetes mellitus, and some mental illnesses to mention but a few.

Interventions

Studies have identified nursing as a stressful profession (Bardhan, et al., 2019; Hersch, et al., 2016). Also, many studies have described methods adopted by nurses as they strive to cope with stressors in their daily lives (Sarafis, et. al., 2016; Isa, et al., 2019), while many others described interventions that have been proven to be effective in reducing or eliminating stress among nurses (Alkhaldeh, et al., 2020; Bost & Wallis, 2006; Chesak, et al., 2019). Sources of stress among nurses stem from the nature of the job that makes stress an inevitable encounter among members of the nursing profession. Since stress is inevitable among nurses, some studies make recommendations on how to reduce stress or find relief after stressful situations (Alkhaldeh, et al., 2020; Chesak, et al., 2019). This showcases the importance of preventing a prolonged stressful experience or not allowing stress to the point of burnout. The suggested interventions like mindfulness, massages, yoga, energy therapy, and aromatherapy are meant to

relieve stress thus there must be a time to de-stress the body through interventions that have been proven to be effective (Alkhaldeh, et al., 2020; Bost & Wallis, 2006; Chesak, et. al., 2019).

The importance of self-care by nurses was also identified as a way of coping with stress (Montanari, et al., 2019), but these should not be interpreted as a way of preventing stress because of the physical and psychological causes of stress that are still in existence. A study by Melnyk, et al., (2018), demonstrated the presence of medical errors caused by high work-related stress levels among nurses with optimal physical and mental illnesses. This further supports the issue of patient safety and the relationship between nurses' wellbeing and accident prevention. Another study related the relationship between work environment and occupational stress. According to Laschinger, et al., (2001), a modification of the work-related environment with input from nurses may be able to relieve some of the stress associated with this problem. This study also recommended the empowerment of nurses in their job descriptions and performances as a way of reducing stress. One way of ascertaining the presence of stress is through an assessment using the Perceived Stress Scale (PSS) (Cohen, et. al., 1983) that was implemented in this project. Details were discussed in the intervention section.

Comparison

In general, all the studies consulted agreed that there is a relationship between nurses' jobs and job-related stress among nurses (Alkhaldeh, et al., 2020; Bost & Wallis, 2006; Chesak, et al., 2019; Montanari, et al., 2019). The missing link is on how to eradicate stress by modifying the factors that are responsible for stress, equipping nurses with methods of preventing or reducing stress, and early treatment of stress when they occur in an individual. Comparative studies demonstrated there is an improvement in the level of stress among nurses that undergo stress relieving interventions as compared to those that served as the control (Bost

& Wallis, 2006). This study also revealed a reduction in urinary cortisol levels in the group that is exposed to a 15-minute stress-relief program every week. Most of the studies reviewed revealed a low-stress level among nurses that have personal stress-coping strategies. Also, Mindfulness-Based Stress Reduction (MBSR) interventions revealed the effectiveness of mindfulness in relieving stress (Montanari, et al., 2019).

Observation

It is obvious from the studies consulted that stress is a reality in the life of an average nurse (Alkhaldeh, et. al., 2020; Bost & Wallis, 2006; Chesak, et. al., 2019; Montanari, et al., 2019). It should also be noted that stressful situations are inevitable but modifying the work-related environment may be useful in reducing stress for nurses. One way of achieving this is by receiving and valuing inputs from nurses about how to reduce stress in their work environment. It is also noteworthy to put on record the importance of developing stress-coping strategies and have an opportunity for debriefing after every stressful situation (Roberts & Grubb, 2014). As stated by the research of Alkhaldeh, et al., (2020), nurses should also engage in an effective stress-relieving intervention to prevent the build-up of stress that is injurious to the body while efforts should be made to prevent prolonged exposure to persistent stress.

Rationale

Theoretical Framework

The transactional theory of stress suggests that stress is the direct product of a transaction between individuals and their environment which may tax their resources and thus threaten their wellbeing (Lazarus & Folkman, 1987). In transactional theory, it is the appraisal of this transaction that explains the nature of the underlying psychological and physiological mechanisms that result in the overall process and experience of stress. According to Lazarus &

Folkman (1987), any aspect of the work environment can be perceived as a stressor by the individual doing the appraisal, and this appraisal of demands and capabilities can be influenced by several factors, including personality, situational demands, coping skills, previous experiences, time-lapse, and any current stress state already experienced (Krohne, 2001). This theory serves as a framework for this study because it reviews the sources of the stressor, the perceptions of those stressors concerning the individuals' ability to cope, the psychological and physiological changes associated with the recognition of stress arising, including perceived ability to cope, the consequences of coping, and all general feedback that occurs during this process (Krohne, 2001).

Jean Watson's Theory of Human Caring (Caring Science & Theory, 2020) describes caring as inclusive, circular, and expansive. The theory serves as a framework that provides awareness of how individual values guide his practice and emphasizes how nurses may engage in self-care. Jean Watson contends that caring regenerates life energies and potentiates our capabilities (Cara, 2003). Since nursing is seen as an essential service, self-care is important for nurses as they go about caring for their patients because it improves nurse resilience. This theory supports self-care, mindfulness, and integrative interventions. The benefits of self-care are immeasurable and promote self-actualization on both a personal and professional level (Cara, 2003). In this sense, the nurse realizes her healing potentials and her ability to use this skill for the healing of her patients and herself.

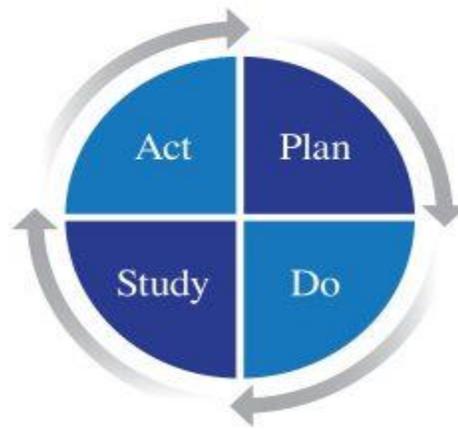
With the issue of stress, a constant companion of registered nurses as they go about their work, the need to reduce the incidence of stress becomes a necessity. This study was aimed at providing a solution to this problem, and this was done through a program that is expected to bring about a solution to the problem of stress among this category of healthcare workers. The

program could serve as a health improvement initiative that may be maintained at the individual level or incorporated into employee health activities. The reduction in the incidence of stress among registered nurses will go a long way in improving their overall health. Healthy nurses will in turn be able to render quality nursing care to the population.

This project was conducted by utilizing the Plan, Do, Study, Act (PDSA) problem-solving initiative. The PDSA is a process for testing a change by developing a plan to test the change (Plan), carrying out the test (Do), observing and learning from the consequences (Study), and determining what modifications should be made to the test (Act) (Institute for Healthcare Improvement (IHI), 2020). The plan was the application of an intervention that will reduce the incidence of stress among registered nurses. The Do of the initiative was the implementation of the intervention. The Study part of the initiative was the comparison of the outcome of the intervention with the stress level before the intervention. This made allowance for the reassessment of the effect of the program and decide on the next line of action whether to continue with the implementation, modify it, or stop it and decide on another alternative. The Act part of the intervention was concerned with the dissemination of the outcome of the project.

Figure 1

The PDSA Cycle



The PDSA Cycle (Deming, n. d.).

Purpose

The purpose of this project was to reduce the incidence of stress through the implementation of a stress intervention program for registered nurses. Stress incidence was compared before and after the implementation of the stress reduction program.

Methods**Context**

This project was conducted at a Healthcare Facility located in the Midwest United States of America. The hospital has two campuses, and this study was conducted at one of the campuses. This campus is an eighty beds hospital that caters to acutely ill patients that require long-term hospitalization. The project was conducted among registered nurses in this hospital and this group of healthcare workers was chosen for the project because the healthcare environment presents a stressful atmosphere because of the physical, psychological, and social

interactions between the sick and those that care for them (Moustaka & Constantinidis, 2010).

Another reason is that nurses form a larger member of the healthcare team that is being exposed to stressful situations daily and a study among them will provide an insight into the situation in the healthcare field.

The hospital management knows about the presence of health hazards in the hospital environment and their effect on the performance of its employees. Because of this, the hospital incorporated an outside agency through its employee assistance program. The agency provides counselors that will listen to staff members and recommend or offer valuable support to those in need. This service is not physically present in the hospital but can be accessed through telephone calls. Unfortunately, this service is seldom used because of the ambiguity involved in the process. The problem and effects of stress persist despite this effort put forward by the hospital management and it becomes necessary to look for an alternative intervention that is readily available and within the reach of individuals that require the intervention. The outcome of this project could add to the available knowledge on the subject and provide an option that applies to the local needs of nurses in this hospital.

Intervention

The intervention consists of a breathing exercise that was carried out by the study group over two months. Participants for this study were recruited among registered nurses working in the hospital where the study was conducted. Recruitment of participants was done through the help of the nursing education department. Emails were sent out to registered nurses with information about the proposed project and interested individuals were advised to reply to the invitation. The eligibility criteria were registered nurses that are above 21 years of age and that

had worked in the hospital for more than 12 months. Those that meet these criteria were recruited to join the first phase of the project.

Project participants were identified only by code numbers and those that answered in affirmative to moderate or severe stress levels were shortlisted to participate in the intervention. The intervention involved the use of a stress-relieving application that is available on both Android and iOS mobile phones. Members of the control group (Group B) were not required to use the application but were allowed to use the application at the end of the study. The participants in the treatment group (Group A) received an introductory education about the application and how to effectively utilize the application. Participants in this group were encouraged to download this application to their mobile phones at no cost to them. They were instructed to devote about 15 minutes or more daily to the use of the application. Participants that cannot use this application daily were advised to use it 3 times a week. Apart from daily use, participants were encouraged to use the application whenever they experience some degree of stress in their daily lives. Weekly email prompts were sent to all participants to remind them of their involvement and responsibilities during the period of the study. The intervention and the use of the application were completed at the end of 4 weeks.

Study of the Intervention

The project commenced with a pretest. The pretest involves the completion of the Perceived Stress Scale (PSS). The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress (Cohen, et. al., 1983). It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes a few direct queries about current levels of experienced stress.

After the 4 weeks of intervention, participants completed another questionnaire to determine their level of stress after exposure to the intervention. Members of the control group were also allowed to complete the questionnaire. After completion of the questionnaire, the results from the two groups were compared with their stress level before the intervention. The difference between the responses determined the outcome of the intervention. The effectiveness of the intervention was determined by a significant reduction in the participants' stress levels as compared with their stress levels before the intervention. The response of those in the control group was not expected to produce a significant change in their stress levels. The data collected were analyzed using descriptive and inferential statistics.

Measures

The pretest and the posttest involved the completion of a demographic questionnaire and the Perceived Stress Scale. The demographic information gave information about respondent's gender as well as the number of years they have been employed in the hospital: 1-2 years; 2-5 years; 6-10 years; more than 10 years. The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress (Cohen, et. al., 1983). The PSS, a form of Likert Scale is a psychometric response scale in which responders specify their level of agreement to a statement in five points: (0) Never; (1) Almost Never; (2) Sometimes; (3) Fairly Often; (4) Very Often. This 10-question scale produced quantitative data that was later analyzed. Several studies on students and adults have confirmed the validity and reliability of the PSS (Baik, et. al., 2019; Reis et. al., 2010; Roberti, et. al., 2006). The Likert scale is very useful in this type of project because we are measuring latent constructs. The issue of stress is unobservable, and the assessment will depend on the subjective opinion of individuals experiencing it.

Analysis

The data were analyzed using Microsoft Excel software. The data were summarized using a Bar Chart for the age distribution and the mean scores plotted on a graph. A Two-Way ANOVA was conducted to analyze the effect of time (pretest vs posttest) and group (control vs intervention) on the outcome variable (Score). The analysis revealed a significant change in the stress levels of the study group that occurs because of the intervention.

Ethical Considerations

The proposal for the conduct of this project at the hospital was approved by the hospital management following the advice from the hospital's Risk Department that the project did not involve the hospitalized patients. The review and approval of the Institutional Review Board (IRB) at Nebraska Methodist College was sought and obtained before the commencement of the project. Participants were required to sign an informed consent before being allowed to participate in the project. Data collection for the project was done while maintaining the confidentiality of participants' personal information. Data was stored in an encrypted form and password protected in a laptop computer designated for this project. The computer was stored in a fire and waterproof locker with keypad security and the key numbers to this lock were known to me only. There was no conflict of interest in this project.

Results

Table 1

Demographic Data

Participants	Pre-test	Control Post-test	Treatment Post-test
Males	8	3	5
Females	30	16	14
Total	38	19	19

Table 2

The Age Distribution of Participants

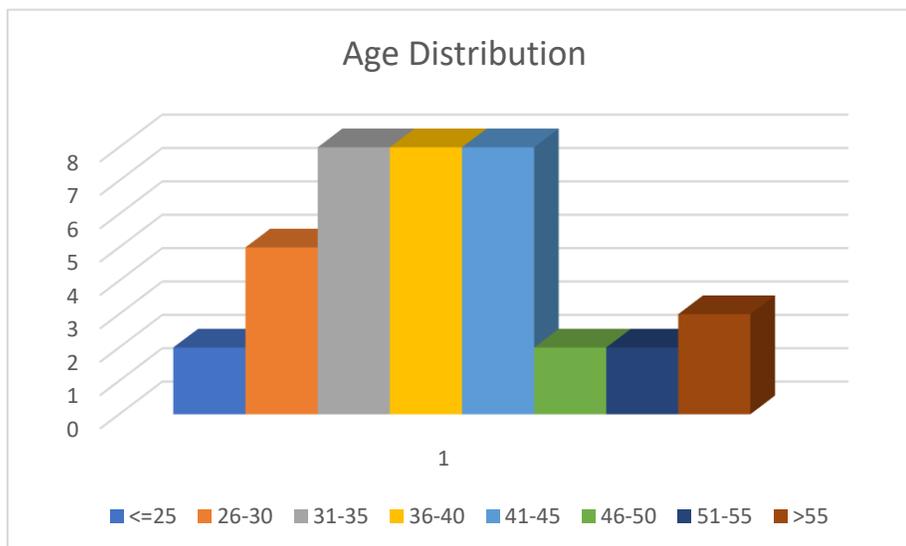


Table 3

Changes in the mean scores between the treatment and control groups.

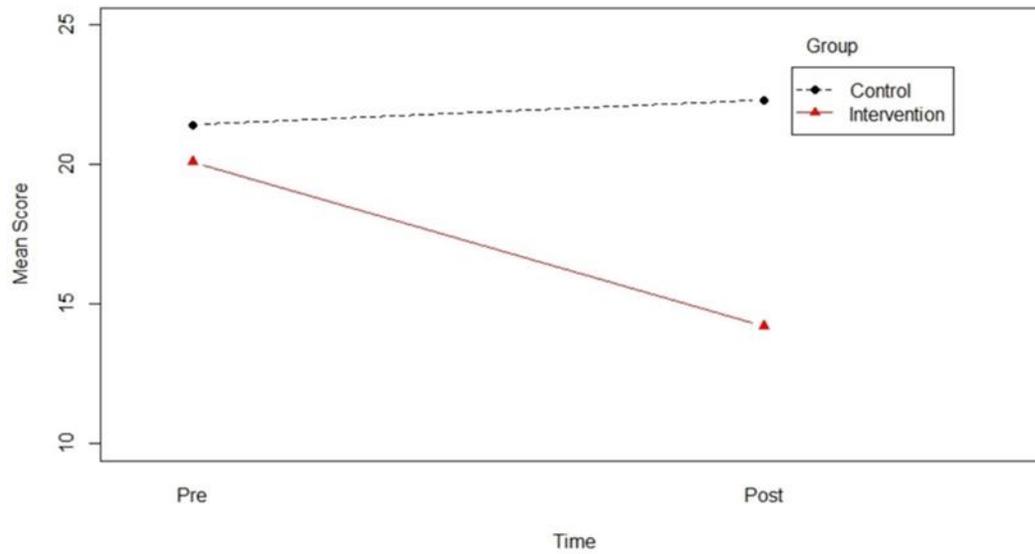


Table 4*Two-Way ANOVA Result*

	Df	Sum Sq	Mean Sq	F Value	Pr(>F)
Time	1	118.8	118.8	4.496	0.04 *
Group	1	421.6	421.6	15.962	0.00 ***
Time: Group	1	219.0	219.0	8.290	0.01 **
Residuals	72	1901.7	26.4		

Signif. Codes : 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ''

Means of Conditions

	Pre	Post	Total
Control	21.42	22.32	21.87
Intervention	20.11	14.21	17.16
Total	20.76	18.26	19.51

Initially, a total of 50 participants ($N=50$) were recruited for the project while 48 of them returned their completed questionnaires. Only 38 ($n=38$) of them made up of 8 males and 30 females met the eligibility criteria while the remaining 10 participants were excluded from the study. The 38 participants were randomly divided into the treatment and control groups through a lucky dip. The lucky dip consists of paper rolls with inscriptions of group A or B respectively and each participant was encouraged to pick one paper roll. The group picked by the participant determined the group that he/she was assigned. The control group consists of 3 males and 16 females while the treatment group was made up of 5 males and 14 females.

A Two-Way ANOVA was conducted to see the effect of time (pretest vs posttest) and group (control vs intervention) on the outcome variable (Score). The ANOVA indicated that there was an effect of both time ($F = 4.496$, $df = 1$, $p = .0374$) and group ($F = 15.962$, $df = 1$, $p < .01$) and that there was a statistically significant interaction between the two ($F = 8.29$, $df = 1$, $p < .01$). The mean score between pre and post-test was significantly different and the mean score between the control and intervention groups was statistically different. Additionally, the interaction means that the mean score of the outcome changed between the pretest and posttest groups, and between the control and the intervention group simultaneously.

Discussion

Summary

Analysis of the scores demonstrated that there is no significant change in the scores of the control group when the scores of both the pretest and the posttest were compared. Noted also is the significant change in the scores of the participants in the treatment group when we compare the pretest and the posttest scores. There is also a significant difference when we compare the posttest scores of the two groups. These changes in scores may be attributable to the intervention

carried out on the treatment group. The reduction in the stress score among the participants in the intervention group is attributable to the stress-relieving exercise. The insignificance of the posttest score in the control group is expected since no intervention was carried out to alter the score by changing the participant's experience.

Interpretation

The reduction in the stress score among the participants in the intervention group is attributable to the stress-relieving exercise. The insignificance of the posttest score in the control group is expected since no intervention was carried out to alter the score by changing the participant's experience. Similar studies conducted by Alkhawaldeh, et al., 2020; Bost & Wallis, 2006; and Chesak, et al., 2019, demonstrated a positive reduction in stress among individuals that performed stress-relieving exercises. A project of this nature is cost-effective and can be practiced by an individual at his or her convenience, even at the place of work. This project can also be incorporated into the employee health initiative of any establishment by encouraging staff members to assess their stress scores monthly or quarterly and applying the stress-relieving measures appropriately. The successful implementation of this program may lead to a substantial decrease in the number of sick days, prevention of stress-induced ailments, and a reduction in health insurance premiums.

Limitations

This study was conducted in one of the campuses of a long-term acute care hospital thus the result of this project may be used to predict the outcome in the sister hospital. However, the result of this project cannot be generalized into short-term acute care hospitals because of the categories of patients seen in these hospitals and their length of hospitalization. Further studies in acute care facilities may be necessary before the results can become generalizable.

Conclusions

The revised standards for quality improvement reporting excellence (SQUIRE 2.0) was used as a framework for reporting this project. In conclusion, this project addressed the problem of work-induced stress among registered nurses in the hospital. The findings of this project may be able to render a solution to the problem of stress among registered nurses in the hospital. It may help us reduce the effects of stress and burnout among registered nurses. The outcome of the project may also be extended to other healthcare workers in a similar situation. Further studies in acute care facilities may be necessary before the result may become generalizable. The outcome of the project will be an addition to the knowledge base about stress.

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