Literature Review

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ISEN 491: Research.

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August 3, 2020

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Submitted to fulfill the requirement for case study one.
ISEN 491, Summer 2020
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Efficacy of Mindfulness-Based Stress Reduction on Burnout, Stress, Anxiety, and depression Endured by Healthcare Professionals

Introduction

Healthcare professionals working directly with the public are more vulnerable to be mentally and physically afflicted due to burnout, stress, anxiety, and depression. This is detrimental for healthcare professionals because not only are they affected by the common mental and physical affliction by the general public, but also by unhealthy work environment such as extensive work shift, the burdens of care, work relationships, expectations, and demands from the patients as well as work.[1,2] Therefore, low job satisfaction, low retention rate, impersonal emotions, and impertinent behavior are common in the healthcare industry.

Nurses are one of the most underpaid professions in the healthcare industry. Due to the income differences between employers, nurses face work overload and tend to work on tasks that they are not competent in. Studies have shown that the burn out rate of nurses is about 70%, and the rate of 50% was shown in physicians, advanced practice nurses, and physician assistants.[32] Moreover, due to the demanding nature of their work, the studies have shown that the nurses deal with emotional disaffection such as stress, anxiety and depression.[33] As a result, the rate of absenteeism for the ICU nurses is high (Surgical 13.8% and first critical care unit 6.9%), the nurses commonly have low job satisfaction (93.5%), impersonal emotions towards patients, depersonalization, rise in blood pressure, impudent behavior, tiredness, and decrease in efficiency.[28,33]

Recent quantitative-analytical research had shown that the high levels of stress of nurses exist in the working environment. The result demonstrated that the total rate of stress was as high as 93.1 %.[14] In view of this issues, several preventative methods have been designed. These methods include implementation of mediation, various relaxation techniques, and muscles and breathing exercises. As a result, numerous of studies have shown that these strategies can improve in cognitive-behavioral skills, physical, and mental problems.[15,16,17] One of the methods specifically focuses on providing guidance in mindfulness.

Mindfulness is an insight meditation that originated from Buddhist traditions. Mindfulness is defined as one's acceptance of the present-moment awareness of stimuli or sensations such as thoughts and feelings in a non-judgmental manner.[1] Since the early 80s, Mindfulness-based interventions (MIs) developed and gained its popularity especially in medical field to improve quality of life as well as well-being of the healthcare professionals. MIs enable the person to positively respond to stressful situations through the practice of focusing on a specific stimulus such as breathing, meditating, and sound.[15,17] Currently, numerous MIs have been developed: mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT), mindfulness-based selfcare and resilience (MBSCR), mindfulness-based cancer recovery (MBCR), mobile MBSR (mMBSR) which will be explained later in this paper.[1,2,18,21]

For healthcare professionals, numerous of studies have shown that mindfulness programs and resiliency trainings have improved healthcare professionals' mindfulness and work performance as well as reduction in stress, depression, burnout, and anxiety.[2] By building resiliency, healthcare professionals are able to handle stress, manage workloads, and maintain self-care in which will lead to improvement in patient care and overall healthier work

environment.[26] Similarly, by improving mindfulness, their psychological and cognitive positivity of well-being can increase which can positively impact burnout as well as emotional and physical health. Also, a brief practice-based mindfulness training had shown to bring positive changes to healthcare professionals compared to the traditional 8-weeks training.[31] Not only mindfulness programs positively impacted healthcare professionals, but also mindfulness programs demonstrated positive results in different fields such as academics, sports, and numerous patients who are dealing with various illnesses.[9,18]

Therefore, mindfulness intervention is an effective tool to improve healthcare professionals' mindfulness, burnout, stress, anxiety, and depression.

Characteristics of the Studies

In this paper, 10 articles of MIs utilized on healthcare professionals were used to evaluate the effects of mindfulness interventions on mindfulness, burnout, stress, anxiety, resiliency, and depression.

Study designs & Participants

Of the 10 studies, three referred to randomized controlled trials[1,2,3], seven referred to non-randomized and controlled trials[1,4,5,6,7,8,10]. Four focused on a single profession: one on medical[1], four on nurses[1,2,4,10]. Other four studies focused on a single medical specialty of: pediatric nurses[3], intensive care nurses[5,6], and oncology[7]. The remaining two studies focused on mixed populations[8] and nursing students[9].

Instruments

The self-report questionnaires are used to evaluate the stress-related outcomes: mindfulness, burnout, stress, anxiety, and depression. The most common instrument used to measure these stress-related outcomes were: Mindfulness Attention Awareness Scale (MAAS)[3,5,8], Maslach Burnout Inventory (MBI)[1,2,5,10], Perceived Stress Scale (PSS)[3,6,10], State-Trait Anxiety Inventory (STAI)[9,10], and Beck Depression Inventory (BDI)[9,10], respectively.

The MAAS is a 15-items assessment with 6-point Likert scales from 1 (almost always) to 6 (almost never). It measures individual's core characteristic of trait, dispositional, and state mindfulness.[6]

The MBI is a 22-items assessment tool with 7-point Likert scales ranging from 0 (never) to 6 (everyday). It measures three dimensions of individuals' burnout: emotional exhaustion, depersonalization, and personal accomplishment. This assessment tool measures individual's perception of their work and its environment.[10]

The PSS is a 10-items assessment tool with 5-Likert scales ranging from 0 (never) to 4 (always). It measures thoughts, feelings, and stressful situations experienced by an individual in the previous month.[10]

The STAI is a 40-items assessment tool with 4-Likert scales ranging from 1 (not at all) to 4 (very much so). This tool measures two distinct types of individual's anxiety: actual levels of intensity and anxiety stress (state) and selective levels of varying anxiety stress with intensity (trait).[9]

The BDI is a 21-items assessment tool with 4-Likert scales ranging from 0 (I do not feel sad) to 3 (I am so sad or unhappy that I can't stand it). This tool measures individual's frequency and intensity of depressive symptoms.[9]

Study	Objective of Study	Study Design & Measurements	Sample/context	Main results	Study Limitations
Klein et al. (2020). The benefits of mindfulness-based interventions on burnout among health professionals: A systematic review	Summarize and evaluate the existing literature on the potential benefits of Mis to minimize burnout risk	Systematic review. Online-database searches: • PubMed • Web of Science • PsycINFO • ScienceDirect Total of 34 articles (9 randomized & controlled, 9 randomized, 13 controlled, six multi-centered, 5 two-centered studies) Eleven 8-week, five 4-week, three 6-week, and one 10-week MBSR programs. Six mobile-MBSR programs with 6 group sessions. Measurements: • Maslach Burnout Inventory (MBI)	Healthcare professionals	Burnout: significantly improved (4 randomized & controlled, 3 non-randomized & controlled, 0 non-controlled studies)	• Small sample size • Female: 67% • The populations studied (17 out of 34) were overall heterogeneous but representatives were not justified. • Results might be influenced by selection bias in NRCT studies. • Overall efficacy of Mis depends on the skills of the instructors • BO measures might not reflect the multifaceted concept of burnout.
Suleiman-Martos et al. (2020). The effect of mindfulness training on burnout syndrome in nursing: A systematic review and meta-analysis	Analyze the effect of mindfulness training on levels of burnout among nurses.	Systematic review and meta-analysis. Online-database searches: • CINAHL • LILACS • Medline • ProQuest, • PsycINFO • Scielo • Scopus Total of 17 articles. (8 RCT,	Sample size of 632 nurses. Four studies on specific hospital units (2 oncology and 2 ICU).	Burnout: decreased by 12-30%.	• Small amount of studies conducted RCT. • Despite using the mindfulness description, have also used reduced session times or several other treatment approaches. • Sample population mainly of females

		9 quasi-experiments, 9 control group, 8 follow up from 1 to 13 months). Fourteen studies used the MBSR program. Six papers of 8 week and 11 papers of short version. Measurement: • MBI • Professional Quality of Life (ProQOL)			
Trowbridge et al. (2017). Preliminary investigation of workplace-provided compressed mindfulness-based stress reduction with pediatric medical social workers.	To investigate the feasibility of a two-day compressed mindfulness-based stress reduction course provided in the hospital workplace.	Exploratory research. Randomized controlled, 6-week MBSR program. Measurements: • ProQOL • Perceived Stress Scale (PSS) • Mindfulness Attention Awareness Scale (MAAS)	Sample size of 43 social workers before completion. 26 participants completed (10 before baseline and 7 before the intervention).	Burnout: small improvement (p = 0.082, ProQOL) Perceived stress: medium improvement (p = 0.052, PSS). Mindfulness: significant improvement (p = 0.002, MAAS).	Inflated type I error with a small sample, use of independent samples t tests with a related sample, inability to match pre-post responses, no follow up.
Hevezi et al. (2016). Evaluation of a meditation intervention to reduce the effects of stressors associated with compassion fatigue among Nurses.	To evaluate whether short (less than 10 minutes) structured mediations decrease compassion fatigue and improve compassion satisfaction in oncology nurses	Pilot study Non-randomized & non-controlled pre- & post-test design. 4-week program with no follow up. Measurements: • ProQOL • Compassion satisfaction (CS)	All female (n = 15) RNs from one unit in hospital.	Burnout: significant decrease (PROQOL, p = 0.003). compassion satisfaction: significant decrease (p = 0.027, CS). A large effect size despite the small sample size. Self-reported enhanced feelings of well-being.	Small sample size, no control group.
Gauthier et al. (2015). An on-the-job mindfulness-	Assess the feasibility of a 5-minute mindfulness meditation	Pilot Study of pre-posttest design.	Total of 38 Pediatric ICU nurses (84% completion rate)	stress: significant decrease from pre to post intervention (p = 0.006, MBI). No difference from post to follow up.	Lack of control group, self-report questionnaires, misunderstanding the guiding principles of mindfulness.

based intervention for pediatric ICU Nurses: A Pilot.	for pediatric intensive care nurses (ICU)	Non-randomized & non-controlled 4-week program of 5-minute mindfulness meditation before each work shift with 1 month follow up. Pre-study survey, Post-study survey, 1 month follow up. Measurements: • MBI • Nursing stress scale (NSS) • MAAS • Self-compassion scale (SCS)	Mostly Caucasian female nurses (95.6 %, 93.3% respectively) under 40 years (75.5%) of age with less than 5 years of nursing experience (64.4%).	Mindfulness: no significant change (p = 0.37, MAAS) Self-Compassion: no significant change (p = 0.26, SCS)	
Lan et al. (2014). The effects of mindfulness training program on reducing stress and promoting well-being among nurses in critical care units.	To evaluate the effectiveness of a brief mindfulness-based training program in reducing stress and promoting well-being among critical care nurses.	Non-randomized quasi-experimental study. Single group with pre & post study design. (5 weeks at two hours per week with practice sessions in between). Measurements: • PSS • Depression Anxiety Stress Scale (DASS) • Subjective happiness scale (SHS) • MAAS	Sample of 41 critical care nurses. (90% completion)	Perceived stress: significant improvement (P < 0.001, PSS). Stress: significantly improved (p = 0.002, DASS-S). Anxiety = significantly improved (p = 0.001, DASS-A). Depression = significantly improved (p = 0.001, DASS-D). Mindfulness = significantly improved (p <0.001, MAAS).	No control group, no follow up, self-report questionnaires, and no measures on productivity, patient-related outcomes, compliance with practice sessions.
Duarte et al. (2016). Effectiveness of a Mindfulness-Based Intervention on Oncology Nurses' Burnout and Compassion Fatigue	To determine the effectiveness of an on-site mindfulness-based intervention for nurses.	Non-randomized, comparison design. 6 – week MBSR program with 6, two-hour group sessions. Measurements: • ProQoL-5 • DASS	Sample of 94 oncology nurses and self-selected into an experimental (n = 45) and wait-list comparison condition (n = 48). Final sample of 29 nurses in experimental	Burnout: significant improvement (p = 0.007, ProQoL – 5). Depression, anxiety and stress: significant improvement in all three. (p = 0.020, 0, 0.09, DASS). Mindfulness (Observing, describing, awareness, non-judging, non-reaction): significant improvement in	Relatively small sample size with mostly being women, non-randomization, lack of follow-up assessment, and low response rate.

Symptoms: A Non-Randomized Study.		• Acceptance and Action Questionnaire – II (AAQ-II) • Five Facets of Mindfulness Questionnaire (FFMQ) • SCS	and 19 in wait-list comparison group. 26 female nurses and 3 male nurses.	all five facets (p = 0.01, 0.07, 0.03, 0.01, 0.03, FFMQ) Self – compassion: significant improvement (p = 0.02, SCS).	
Kemper et al. (2017). Brief Online Mindfulness Training: Immediate Impact.	Analysis of health professionals and trainees who completed self-reflection exercises embedded in online mindfulness training.	Online-mindfulness training between May 2014 – September 2015. (15months) Non-randomized prospective cohort study. Measurements: • FFMQ • MAAS	nurses (34%), physicians (24%), social workers and psychologists (10%), dietitians (8%), and others (25%); 85% were women, and 20% were trainees. 68% completion rate.	Mindfulness: significant improvement (p < 0.001, FFMQ & MASS). No significant differences in improvement in scores by gender of profession.	No replication as well as randomization, and no additional training.
Kang et al. (2008). The effectiveness of a stress coping program based on mindfulness meditation on the stress, anxiety, and depression experienced by nursing students in Korea.	Study the effectiveness of MBSR program on the stress, anxiety, and depression experienced by nursing students in Korea.	A nonequivalent, control group, pre-posttest design. Eight-week program with 90 sessions. Measurements: • Psychosocial wellbeing index – short form (PWI-SF) • State trait anxiety inventory (STAI) • Beck depression inventory (BDI)	sample of 41 nursing students were randomly assigned to experimental (n = 21) and control groups (n = 20).	Stress: significant improvement (p = 0.02, PWI-SF). Anxiety: significant improvement (p = 0.013, STAI). Depression: significant improvement (p= 0.056, BDI).	No replication, unequal pre-intervention values between the two groups, no follow up, and small sample size.
Santos et al. (2016). Positive Effects of a Stress Reduction Program Based on Mindfulness Meditation in Brazilian Nursing Professionals: Qualitative	Evaluate the effects of a mindfulness stress reduction program among nurse professionals.	A pilot study with a mixed model using quantitative and qualitative methods. Quantitative data: pre- and post-intervention (6-weeks) and follow-up (6 weeks).	Sample of 13 nursing professionals (nurses, technicians, and nursing assistant).	Significant reduction between pre & post for perceived stress, burnout, depression, and anxiety: p <0.05, PSS, MBI, BDI, STAI respectively. But no significance between post & follow up. (p > 0.5). No significant change between pre/post and post/ follow up for self-compassion: p = 0.109, p = 0.744 respectively, SCS)	Small sample size, lack of control group.

and Quantitative Evaluation		Qualitative data: post-intervention. Measurements: • PSS • MBI • BDI • STAI • SCS			

Effectiveness of mindfulness training in reducing stress-related factors.

In this study, the effective of the interventions were measured by different versions of training interventions and duration of these interventions.

Types of training interventions

Many types of mindfulness-based intervention have been developed: mindfulness-based stress reduction (MBSR), mindfulness based cognitive therapy (MBCT), mindfulness-based self-care and resilience (MBSCR), meditation-based training intervention, and online-MBSR.

The MBSR is an 8-weeks mindfulness training program that includes 2.5-hrs in-person sessions that involves variety of mediations such as yoga, support-group, and breathing exercises The MBCT and MBSCR are mindfulness training program based on MBSR that also involves cognitive elements. In MBCT, the program involves cognitive elements such as emotions, negative thoughts, and negative actions. It combines the cognitive therapy with meditation practices based on the cultivation of mindfulness. In MBSCR involves cognitive elements such as self-care as well as resiliency. This intervention incorporates both mindfulness and educational self-care component.

The Meditation interventions is a flexible self-learning program that varies between programs. The usual program involves using a CD-guided mindfulness meditation at home for a given

amount of time. The meditations included a body scan, breathing meditation, and walking meditation followed by self-reflection.

The online-MBSR program follows the exact same methods applied in the MBSR training. Though, participants are enrolled and are able to learn the topics related to training in mindfulness skills in on-line.

The studies that analyzed the effect of MBSR training have reported significant improvement on: mindfulness[3], burnout[1,2,3,7,10], stress[3,10], anxiety[10], and depression[10]. In one study, positive correlation between MBSR and patient safety, and negative correlation between MBSR and sick leave were demonstrated from using the MBSR training.[2] In other studies, significant findings with increased life-satisfaction, attentive perception of internal and external experiences, and attention and awareness of actions and attitudes.[7,10]

The study that analyzed the effect of MBSCR training have reported significant improvement on burnout.[2] A negative correlation between burnout and negative emotions, and a positive correlation between mindfulness and resilience as well as mindfulness and job-satisfaction were demonstrated. Similarly, MBCT have shown a significant improvement in the level of perceived stress, stress, anxiety depression, and mindfulness.[6]

The studies used the meditation-based training intervention have demonstrated positive impacts as well.[4,5,9] The studies reported increased feelings of relaxation and well-being[4], significant decreases in stress[5,9], and anxiety[9].

Lastly, the online-MBSR program have shown an immediate improvement in mindfulness, self-reflection, and resilience.[8]

Duration of Mindfulness Interventions

The duration of the interventions varied ranging from 3-weeks to 12 weeks; though improvements were demonstrated in all durations. Two studies analyzed outcomes achieved under the traditional 8-weeks MBSR program.[1,2] The other studies of MBSR used shorter versions lasting 6 weeks[1,2,3,4,7,9,10], and longer versions lasting 12-weeks[1,2]. The shorter versions of MBSR have shown to be as effective as the traditional or longer versions of MBSR to improve individual's mindfulness, burnout, stress, anxiety, resiliency, and depression.

The follow-up training after the intervention varied as well ranging from a 1-month to 12-months[2,5,10]. In one of the studies, the 3-weeks intervention with 6 months follow-up training was shown to reduce burnout and maintained the outcome for 6 months.[2] Similarly, improvement on burnout was shown after the 4-week program and was maintained during the 1-month follow up.[5]

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