

Mind-Over Matter: An Exploratory Case Study of Mind-body Interventions in the Burn Unit

Author(s)

Abby K Anderson, MS, OTR/L

Amanda L Hoffman, MS, OTR/L, BCPR

Karen Adler, PhD, OTR/L

Paula Yuma, MPH, PhD

Heather Hill, MS, OTR/L

Jennifer Pauley, OTR/L

Arlene A. Schmid, PhD, OTR, FAOTA

Recommended Citation:

Anderson, A.K., Hoffman, A.L., Adler, K., Yuma, P., Hill, H., Pauley, J., & Schmid., A.A. (2019). Mind-over matter: An exploratory case study of mind-body interventions in the burn unit. *Journal of Acute Care Occupational Therapy*, 2(3). 1-27

This case study is brought to you for free and open access. It has been accepted for inclusion in Journal of Acute Care Occupational Therapy by an authorized editor for this journal. For more information, please contact journalofacuteOT@gmail.com.

Abstract

Patients in the burn unit are confronted with a life-altering injury and often experience high degrees of pain and psychological distress. Occupational therapists (OT) are concerned with the quality of life and mental health of patients in the burn unit and may offer coping techniques to help manage stressors associated with burn recovery. Within the burn unit, specifically, mind-body practices, including deep-breathing and audio-guided relaxation, have been shown to reduce pain and anxiety in the limited context of wound care (Achterberg et al., 1988; Park et al., 2013). The present study sought to explore the use of mind-body techniques beyond the context of wound care by integrating such practices into routine occupational therapy treatment. Over a three-month period, the patients on the OT caseload were given the option to explore mind-body based occupational therapy (MB-OT). Five patients opted for MB-OT and provided verbal consent to participate. Data from electronic medical records (EMRs) of the five patients were included in the retrospective chart review. Individual responses to mind-body practices were assessed and patient perspectives were included to better understand what MB-OT brought to the recovery process.

Background

There are approximately 40,000 hospital admissions for burn-related injury in the United States each year, and of these hospitalizations, more than 60% are treated in a burn unit, which is a specialized unit equipped to care for complex burns (American Burn Association, 2017). While on the burn unit, most patients advance through multiple stages of recovery, including critical care, acute recovery, and rehabilitation. Patients in the burn unit are confronted with a life-altering injury and often experience high degrees of pain and psychological distress. Patients have commented that the experience of pain in the acute stage of burn recovery is a “living hell” and report high prevalence of at least one DSM Axis I Disorder after injury, most commonly depression, anxiety and post-traumatic stress disorder (PTSD) (Logsetty et al., 2016).

OTs are concerned with the quality of life and mental health of patients in the burn unit and may offer various coping techniques to help patients manage daily stressors, both in the therapeutic context and the broader context of daily life in the burn unit. After sustaining a serious burn injury, a patient’s ability to participate in self-care, mobility, and other daily occupations may be compromised. Occupational therapists (OTs) partner with patients in the burn unit to support their return to independence through a variety of interventions. Interventions such as splinting, stretching, and positioning are used to minimize the functional impairment, while mind-body interventions, such as breathing, meditation, yoga, and relaxation can be used to address the psychological impacts of burn trauma.

Currently, OTs are using mind-body practices to help patients in various settings manage symptoms of anxiety and pain, while simultaneously improving quality of life (Hardison & Roll, 2016). Mind-body practices include an array of techniques, such as yoga, breathwork, and meditation, aimed at connecting one’s mind and body. Within the burn unit, mind-body practices, including deep-breathing and audio-guided relaxation have been shown to reduce self-reported measures of pain and anxiety during daily wound care (Achterberg, Kenner, & Lawlis, 1988; Park, Oh, & Kim, 2013). These findings

suggest that mind-body interventions can reduce patients' experience of distress in the burn unit in the context of wound care. Understanding previous research is limited to wound care, the present study seeks to explore the application of mind-body practices in a therapeutic context by incorporating mind-body practices into routine occupational therapy (OT) treatment.

This exploratory case series describes the physiological responses and personal perspectives of five patients who participated in mind-body based occupational therapy (MB-OT) while in the burn unit. MB-OT introduced patients to various mind-body practices, such as audio-meditation, yoga, and breathwork, designed to enhance everyday coping with life in the burn unit. Patients' personal experiences were detailed to provide insight into how mind-body practices supported their recovery in the burn unit.

Methods

The present study was approved for exemption by the Institutional Review Board at the affiliated hospital. Through retrospective chart review, data for five patients, who participated in MB-OT, were obtained from the electronic medical records (EMRs) to develop this descriptive case study (Savin-Baden & Major, 2013). Multiple sources of information, including descriptive and qualitative data, were obtained from the EMRs and recorded on an encrypted spreadsheet. All five patients were given a pseudonym for data collection and reporting procedures.

Information from a patient's electronic medical record (EMR) was included in the retrospective chart review if the following inclusion criteria included 18 years or older, admitted to the burn unit within the last two years, English speaking; recipient of occupational therapy services, and voluntarily participated in at least one MB-OT session. MB-OT was an opt in intervention— over a three-month period, patients on the OT caseload were offered the option to explore mind-body practices as part of routine care. Patients were excluded from the study if they were unable to provide consent (verbal or non-verbal), unable to remain awake and alert, or declined to participate in MB-OT. Five patients opted for MB-OT and provided verbal consent to participate. Data from the EMRs of the

five participating patients were then included in the retrospective chart review.

MB-OT was delivered by two OTs in the burn unit, one of whom was a student at the time (first author, AKA), and one of whom was a certified yoga teacher (second author, ALH). ALH had previous experience using mind-body interventions in OT practices and properly trained AKA in MB-OT delivery. AKA spent 2 hours training under ALH, which included the creation of a script for educating patients on MB-OT and referral to various resources on progressive relaxation, use of mantras, audio-meditation using a phone app, and video-yoga. All documentation included in the retrospective chart review was written by the AKA and ALH. In attempt to establish a standard of care, the OTs fully documented their novel use of mind-body practices with the five patients who opted to participate in MB-OT.

Data collected from the EMRs included demographics, burn characteristics and SOAP note documentation, written after each MB-OT session. Demographics included age, gender, and race. Burn characteristics were used to describe the total body surface area (TBSA) burned, mechanism of burn, and individual length of stay in the burn unit. The following data were derived from SOAP note documentation, specifically: occupational profiles, physiological responses to MB-OT meditation sessions, pretest/post-test scores on the State-Trait Anxiety Inventory-6 (STAI-6), and subjective statements made during MB-OT.

SOAP notes include subjective statements made by patients, objective measures taken during treatment, an assessment of the session, and plans for follow up. The subjective and assessment sections of documentation were densely written, as the OTs wanted to fully capture what patients said and did during MB-OT. Vital signs and scores on the State Trait Anxiety Inventory-6 (STAI-6) were recorded in the objective section of the SOAP note to monitor patients' objective response to mind-body practices.

Descriptive Data Collection

Vital signs. During MB-OT audio-meditation sessions, specifically, the OTs monitored vital signs, including heart rate, respiration rate, and blood oxygen saturation. Vital signs were obtained from

a pulse oximeter or bed monitor. Vital signs were recorded across three intervals, before, during, and after audio-meditation sessions, and changes were included in documentation. By tracking changes in vitals, the OTs could monitor the safety of mind-body interventions and provide patients with biofeedback during audio-meditation.

The average heart rate for adults falls between 60 to 100 BPM. If a patient experienced a change in heart rate, below 40 BPMs or above 130 BPMs, the MB-OT session paused to allow for recovery. Normal values for oxygen saturation range from 95-100%. If oxygen saturation fell below 88%, appropriate measures were to be taken to restore optimal levels. At rest, normal respiration rate falls between 12-18 RPMs. If a patient's respiration rate were to increase by 20 breaths, treatment stopped, as this is a sign of clinical distress.

STAI-6 (State Trait Anxiety Inventory-6). Two of the five patients reported recurrent feelings of anxiety, so the OTs administered the STAI-6 before and after each MB-OT practice sessions to provide an objective measure for changes in state anxiety. The STAI-6 has good internal reliability (Cronbach's alpha 0.82) and is highly correlated with the long-form STAI ($r= 0.95$), making it a practical assessment to use in a time-restricted environment, such as the burn unit (Court, Greenland, & Margrain, 2010). Using a Likert scale, patients rated the degree to which they felt calm, content, relaxed, tense, upset, and worried (Not at all =1; Somewhat = 2; Moderately = 3; Very much= 4). Positive items (calm, relaxed, content) are reverse scored, and the sum of all scores is then multiplied by 20/6. Total scores on the STAI-6 range from range 20-80. Higher scores correlate a higher degree of state anxiety. Average scores on the STAI-6 for the normal population fall between 34-36, while the average scores for people in stressful situations ranges from 50-61 (Bekker, Legare, Stacey, O'connor, & Lemyre, 2003).

Qualitative Data Collection

MB-OT SOAP Notes. Specific focus was given to the subjective and assessment sections of SOAP documentation. In the subjective section, the OTs recorded all relevant statements made by

the patients during MB-OT. Subjective statements were obtained from the SOAP note, verbatim, to better understand patients' unique experiences and perspectives with MB-OT. In the assessment section, the OTs included a detailed description of the MB-OT session, duration of session, and interpretation of the patient's response. Information found in the assessment section provided insight into how MB-OT was implemented and how patients responded to mind-body practices during therapy, from a professional perspective.

Intervention Procedures: Mind-body Based Occupational Therapy (MB-OT)

MB-OT was entirely client-centered to allow patients to explore and establish a mind-body practice that met their unique needs in the burn unit. If a patient agreed to participate in MB-OT, the OTs would first provide an educational session on mind-body practices and discuss how such practices could support daily life in the burn unit. In subsequent MB-OT sessions, OTs presented patients with a list of mind-body practices (Table 1), adopted from the Walter Reed Mind-Body Medicine Program (Walter Reed National Military Medical Center).

Table 1. MB-OT Practice Options

MB-OT Practice Options
<p>Relaxation & Breathwork: Techniques aimed at reducing stress</p> <ul style="list-style-type: none"> a) Box-Breathing: Four-count inhale, four-count hold, four-count exhale, four-count hold b) Ten-Breaths: Series of 10 mindful breaths with a focus on the sensation of breathing
<p>Meditation: Audio-guided to facilitate relaxation and calm</p> <ul style="list-style-type: none"> a) Progressive Muscle Relaxation: A Structured process of tensing and relaxing muscles b) Self-Compassion: Taking on an attitude of gentleness and care toward self c) Mindful Check-In: Focusing awareness on thoughts and sensations without judgment
<p>Mindfulness: Paying attention to the present moment to reduce stress</p> <ul style="list-style-type: none"> a) Finding Five Things: Grounding exercise that involves opening one's sense and scanning the environment for five things to explore with curiosity
<p>Positive Thinking: Intentionally focusing on positive mind states</p> <ul style="list-style-type: none"> a) Positive/Healing Phrase: Redirecting negative thoughts with a positive phrase b) Resourcing: Focusing on something/someone that creates feelings of joy and security
<p>Yoga: Aimed at restoring the wholeness of the body and mind</p> <ul style="list-style-type: none"> a) Incorporates physical postures, breathing exercises, sensory awareness and meditation

Note. Adapted from the Walter Reed National Military Medical Center Mind Body Program

From this list, patients were asked to select practices of interest, which were then incorporated into OT treatment. MB-OT sought to give patients agency over their developing mindfulness practice and after each session, OTs would provide patients with resources for continued practice outside of therapy. Patients varied in the number of MB-OT interventions they participated in, depending on their perceived needs. Four of the five patients participated in 3 or more MB-OT sessions, while the other patient participated in just one. MB-OT was discontinued when patients reported satisfaction with their mindfulness practice, experienced a change in therapeutic priorities, or were discharged from the OT caseload.

Data Analysis

Descriptive Data

The OTs recorded vitals at the start, middle and end of all MB-OT meditation sessions, found in the EMRs. Percent change for heart rate and respiration rate were calculated between the start and end values, while blood oxygen saturation was simply monitored to ensure patients remained within safe limits. Additionally, percent change was calculated for STAI-6 scores before and after MB-OT practice sessions.

Qualitative Data

Qualitative data for all MB-OT sessions were transcribed into NVivo software for inductive content analysis. Inductive content analysis is recommended when there is limited knowledge of a phenomenon to allow themes to emerge from the available data (Elo & Kyngäs, 2008). Two researchers independently reviewed and coded qualitative data, first looking for themes within subjects, and then looking for themes across subjects. Researchers then compared inductive codes and themes until consensus was achieved. Throughout the coding process, efforts to increase the rigor of the study included frequent debriefing between coders and peer-review (Shenton, 2004). To enhance trustworthiness, the principal investigator maintained an audit trail, detailing all research

activities and analysis procedures (Creswell & Miller, 2000). Lastly, researchers noted personal reflections throughout the data analysis process to enhance reflexivity and minimize bias.

Results

An overview of patient demographics, burn characteristics, and occupational profiles were collected (Table 2). To maintain confidentiality, all patients were given a pseudonym, age was reported as a range, and approximate TBSA was described. An additional overview of all MB-OT sessions, including the description and duration of intervention (Table 3).

Table 2. Demographic and Profile

Patient	Gender	Age	Mechanism of burn	TBSA	Area of burn	Length of stay (weeks)	Race	Reason for ending MB-OT	Occupational Profile
Zack	Male	20-25	Thermal burns from explosion	~47%	2 nd and 3 rd degree burns to face, neck hands/feet BUE, BLE	7	White	Satisfied with independent practice	Strong social support; married; previously active; enjoys hiking and animals; wife practices yoga
Jessica	Female	30-35	Thermal burns from explosion	~17%	2 nd and 3 rd degree burns to face, chest, hands/feet, BUE, BLE	2	White	Discharged	Minimal social support; history of depression, bipolar disorder, trauma, and drug abuse; mother; previous experience with yoga
Liz	Female	35-40	Thermal burns from accident	> 60%	2 nd and 3 rd degree burns to head, face, hands/feet, BUE, BLE, ant/post trunk, buttocks	52	White	Shift in therapeutic priorities	Strong social support; married; previously active and social in community; enjoys music
Chris	Male	45-50	Thermal burns from explosion	~12%	2 nd and 3 rd degree burns to face, hands, BUE	3	White	Discharged	Strong social support; single; history of cannabis abuse; previously lived in RV; nomadic lifestyle; enjoys socializing and outdoors
Rebecca	Female	40-45	Thermal burn from open flame	~18%	2 nd and 3 rd degree burns to feet, back, BUE, BLE	2.5	White	Discharged	Strong social support; married; history of trauma; mother; previous experience with yoga

*Note. TBSA: Total Body Surface Area *BUE: bilateral upper extremities *BLE: bilateral lower extremities*

Table 3. Summary of Client-Centered MB-OT Sessions

Patient	Intervention Content	Length
Zack	Session One: - Education on mind-body techniques; resources provided	38 minutes
	Session Two: - 8-minute guided meditation (self-compassion) - Creation of manta	35 minutes
	Session Three: - Breathwork and stretching	25 minutes
	Session Four: - 12-minute yoga video; Standing and seated poses	40 minutes
Jessica	Session One: - Education on mind-body techniques; resources provided	30 minutes
	Session Two: - Worksheet to set an intention for MB-OT - Creation of mantra - 10-minute guided meditation (mindful check-in)	60 minutes
	Session Three: - 12-minute yoga video seated on a mat; poses targeting wrists/legs - Educated on iPhone meditation app for independent practice	40 minutes
Liz	Session One: - Education on mind-body techniques; resources provided	55 minutes
	Session Two: - 10-minute audio meditation (stress-relief) - Creation of mantra	20 minutes
	Session Three: - 17-minute audio meditation (relaxation)	30 minutes
Chris	Session One: - Education on mind-body techniques; resources provided - 10-minute meditation (self-compassion) - 10-minute yoga video; Standing and seated poses	35 minutes
Rebecca	Session One: - Education on mind-body techniques; resources provided - 10-minute audio meditation (stress-relief)	50 minutes
	Session Two: - 10-minute audio meditation (stress-relief) - Breathwork and stretching	35 minutes
	Session Three: - 11-minute yoga video with children - Seated poses targeting upper and lower extremities	44 minutes

Note. Chris and Rebecca were provided education in session one with the addition of an audio-meditation

Quantitative Findings

Across all five patients, vital signs were available for a total number of eight MB-OT audio-meditation sessions (Table 4). Patients experienced a reduction in heart rate during seven of the eight sessions, with one session showing no change. Changes in respiration rates were documented for six of the eight sessions. Four sessions showed a reduction in respiration rate, while one showed an increase in breathing and the other showed no change.

Table 4. Vital Signs During Audio-Meditation

Vital Signs		Heart Rate			Respiratory Rate			Oxygen Saturation	
Patient	Session	Start	End	Start/End % decrease	Start	End	Start/End % decrease	Start	End
Zack	1	105	99	5.7%	13	9	30.7%	99	99
Jessica	1	91	89	2.1%	16	19	-18.9%	97	96
Liz	1	89	85	4.4%	18	18	0%	97	98
	2	76	74	2.6%	15	11	26.7%	99	100
Chris	1	105	87	17.1%	NA	NA	NA	97	96
Rebecca	1	77	68	11.7%	NA	NA	NA	97	94
	2	105	91	13.3%	22	14	36.4%	91	93
	3	86	86	0%	23	16	30.4%	99	95

Note. HR = heart rate, recorded in beats per minute RR= respiration rate, recorded as breaths per minute O2= blood oxygen saturation, recorded as percent of oxygen in blood, NA = if a patient's ICU monitor was not measuring the associated vital sign at the time or there was an irregular reading of the vital sign

mentioned, the STAI-6 was administered before and after each MB-OT practice session for two of the five patients. Both patients experienced a reduction in STAI-6 scores after completing MB-OT, and reported increased feelings of calm, contentment and relaxation (Table 5).

Table 5. Self-reported Scores on the State-Trait Anxiety Inventory-6 (STAI-6)

Patient	Time	Calm	Tense	Upset	Relaxed	Content	Worried	Score	Decrease
Liz (S1)	Pre	2	3	1	2	2	4	56.67	41.18%
	Post	4	1	1	4	3	4	33.33	
Liz (S2)	Pre	2	3	1	2	2	2	50	13.34%
	Post	2	2	1	2	3	2	43.33	
Rebecca (S1)	Pre	1	2	4	1	1	4	73.33	63.63%
	Post	4	1	1	4	2	1	26.67	
Rebecca (S2)	Pre	1	2	4	1	1	4	70	52.38%
	Post	4	1	2	4	2	2	33.33	
Rebecca (S3)	Pre	2	4	1	3	2	4	56.67	17.64%
	Post	2	3	1	2	3	2	46.67	

Note. (S)= Session; STAI-6 Scale: 1= Not at all; 2= Somewhat; 3= Moderately; 4=Very much; Scoring: Inverse scoring of positive items (calm, relaxed, content); sum of all scores is multiplied by 20/6 to achieve total score. Total scores range from 20-80. Higher scores correlate with a higher level of state-anxiety. The average population score ranges from 34-36, while populations under stress range from ~50-61 (Bekker, Legare, Stacey, O'connor, & Lemyre, 2003).

Qualitative Findings

Qualitative analysis occurred on two levels, first on the individual level and then across subjects for broader themes. Results from the first level analysis are provided as detailed case descriptions, recounting individual experiences with MB-OT. Further examination revealed that each patient self-generated a focus for their MB-OT intervention sessions. Examples of the self-generated focuses included: self-compassion, self- acceptance, conscious relaxation, purposeful movement, and stress management. The case descriptions below come from the patients' EMRs and include the following: prior experience with mind-body interventions; the self-generated focus of MB-OT; mind-body interventions provided (Table 5); and perceived outcomes.

Level I: Individual Case Descriptions and Self-Generated Focuses of MB-OT

Patient 1. Zack was an otherwise healthy young adult who enjoyed his family, hiking with his

dogs, and going to concerts with his wife. Zack had no previous experience with mind-body practices, but his wife was experienced with yoga and supported his participation in such interventions. He had strong social support but struggled to move beyond feelings of self-criticism. Zack chose to focus MB-OT sessions on fostering feelings of self-compassion through meditation, tearfully sharing, “I’ve been horrible to myself”, his wife added, “He didn’t use to be so hard on himself. He’s always been confident and self-aware.” He participated in four MB-OT sessions, which consisted of: education on mind-body interventions; the creation of a positive mantra “I’m alive. I am loved”; self-compassion meditations; mindfulness practices, such as Finding Five Things; and video-yoga in the gym. The OT provided resources for independent practice, which Zack and his wife explored outside of therapy. Participation in MB-OT resulted in a perspective change for Zack, illustrated by the following quote:

Last week, and before all of this (referring to MB-OT), I felt like I was walking down lousy street. I was pessimistic about everything, would sometimes wake up at night crying...But I feel like I’ve turned a corner. I’ve had some back and forth days...last week was hard. But I like to be happy. I’m on my way there. Being able to tell myself ‘you are loved’ and this is a good thing, things like that...relieving tension in my body, Finding Five Things, and looking at all of my pictures set me on a positive path.

Patient 2. Jessica was a mother who had struggled on and off with addiction. She had experienced a traumatic loss, which caused her to relapse, and ultimately, lose custody of her children. In MB-OT sessions, Jessica shared that her mind was often preoccupied with feelings of guilt surrounding her relapse and anger towards the negative relationships in her life, which she blamed for her burn injury. Jessica shared that, prior to her burn, she attended yoga classes and found them to be a helpful tool in maintaining sobriety. Jessica’s personal emphasis for MB-OT was self-acceptance, stating, “My intention is to create a new ‘safe’ atmosphere for myself in relationships...I want to start paying attention to my negative attributes that attract the wrong people, and not judge them, but accept them and make an effort to change.” Jessica completed three MB-OT sessions, which consisted of: education on mind-body techniques; the creation of a positive mantra, “give me the courage to accept the things I cannot change”; mindfulness practices such as Finding Five Things; mindful meditation

focused on adopting an attitude of self-acceptance and non-judgment; and video-yoga in the gym. After completing an audio-meditation, Jessica reflected on the meditation narrative, “The line that hit me was when she (meditation narrator) talked about, *even while I am talking, it doesn’t change that other things are going on, the sound of a car, and the sound of the person next to you.* Just another reminder to accept things as they are...especially in here (referring to the burn unit)”. The OT provided Jessica with resources for independent practice, which she reported using daily. When reflecting on MB-OT, Jessica emphasized that sessions helped guide her towards a place of emotional readiness, to share her story, and accept her situation. Jessica’s personal goal of adopting an attitude of acceptance was realized in a burn support group meeting, evidenced in the following quote:

I could feel my heart speed up. Before I talked, I used the Finding Five Things and stared at a light fixture and noticed the paint was different colors. It had a screw loose. I stared at that light for like 30-45 seconds before I started talking. Then I took some breaths. Before sharing, I thought, accept what happened, I can say things in such a way and share without judgment. Our conversation definitely helped frame a mindset of acceptance for that moment. I was visualizing a tsunami crashing on me, but then I shared, and everything felt calmer. I felt empowered.

Patient 3. Liz was a resilient woman who had endured a challenging recovery and relied on her husband for support. She had a sense of humor, which persevered throughout her time in the burn unit. Her injury had left her with bilateral below-knee amputations and limited use of her upper-extremities, which significantly altered her ability to engage in occupations. Liz had no prior experience with mind-body interventions but was receptive to MB-OT, stating, “I’m open to all of this. Anything could help.” Liz had recently felt overwhelmed by her perceived loss of control in the burn unit, tearfully stating, “I just feel like I don’t have control over anything. I woke up at 3 a.m. and they (nurses) had put a mask on me, and I didn’t go to bed with that. It just scared me. And I couldn’t reach for my call-light...Everyone keeps changing discharge plans on me and I just don’t know anymore.” Managing her phantom limb pain was an additional challenge for Liz, stating, “I can’t stop feeling the pain in my arm. It’s always there and it just feels like the pain is directly connected to my brain so I can’t not think about it.” To better manage anxiety and pain, Liz wanted to focus MB-OT sessions on conscious relaxation through

breath work and meditation. Liz participated in three MB-OT sessions which included: education on mind-body techniques; creation of the mantra, “I surrender”; progressive muscle relaxation; breathing exercises; and relaxation meditation. Though resources were provided for independent practice, Liz relied on the OT to facilitate mind-body practices.

For Liz, the MB-OT sessions targeted anxiety and pain. For example, Liz would panic when sitting upright in therapy because the tightness of her skin limited her breathing. After learning MB-OT, Liz was guided through deep-breathing exercises during therapy to manage her anxiety during treatment. The OT documentation noted, “Patient able to manage rising stress through breath work, however, required cues to do so.” Additionally, when Liz fixated on her phantom limb pain, she was cued to take 10 controlled-breaths, which led to a calmed state and cessation of crying during two MB-OT sessions. MB-OT sessions allowed Liz to practice having a mindful reaction to stress and pain as opposed to an automatic reaction.

Patient 4. Chris was an outdoorsman who led a nomadic lifestyle that granted him year-round access to nature. Chris had minimal experience with mind-body interventions, but offered relevant insight, sharing, “I have a disciplined mind. My brain knows what my body can handle, and I realize that I’m in control of my reactions...I do live my life with a positive perspective and work to keep my mind and body in unison.” Chris opted to focus MB-OT session on purposeful movement. He completed one MB-OT session which included education on mind-body techniques, mindfulness meditation, and video-yoga in the gym. The yoga video was selected to meet his goals of increasing arm extension, which had been limited by his upper extremity burns, and incorporating core strength for his return to mountain biking and climbing upon discharge.

Chris seemed to enjoy the holistic aspect of the MB-OT, commenting, “I liked the session today. It definitely felt like my core was more involved than yesterday which is key for mountain biking and climbing...It felt like a connection of the mind, body, and spirit. It was a good balance of work and relaxation, which you definitely need here”. Following MB-OT, Chris perceived a sense of opening, both

emotionally and physically, offering, “I want to give love. I’ve been overwhelmed by the amount I’ve received since this happened. It speaks to the concept of you get back what you give.” The next day, Chris reflected on the MB-OT session, explaining, “It was amazing the difference just moving can make. I felt like once I got back to my room yesterday, my chest was open, my shoulders were back...I felt confident for the first time here.”

Patient 5. Rebecca was a mother to young children who relied on the support of her family and friends. She previously practiced yoga before moving to a new state. Rebecca was struggling to manage her anxiety about wound care, reporting, “I can’t do wound care. It is terrifying. I panicked yesterday because they just came and got me. I felt like I had no time to prepare.” Rebecca wanted to focus MB-OT interventions on establishing a stress-management routine prior to wound care, asking the OT, “Is there any way you could help me with meditations before my wound care?” This request was met, and after collaboration with the wound care team, MB-OT was offered prior to daily debridement. Rebecca participated in four MB-OT sessions, which included: education on mind-body interventions; creation of a positive mantra, “this is temporary”; breathing exercises relaxation meditation; and a yoga-video in the gym. Though resources were provided for independent practice, Rebecca relied on the OT to facilitate mind-body practices. MB-OT was used to create a routine to help Rebecca emotionally prepare for wound care, illustrated in the OT documentation, noting, “Patient continues to demonstrate increased anxiety during wound care, so OT provided the preparatory task of a 10-minute meditation to help her manage anxiety prior to wound care.” Rebecca appeared grateful for the MB-OT interventions and the temporary relief mind-body practices provided. After completing audio-meditations, Rebecca made comments such as, “That was nice. Very helpful” and “That was magnificent. Wow, I feel good. Thank you for that.”

Level II: Themes Across Patients

The second level of analysis spanned across subjects to generate broader themes about the patients’ experiences and perceptions of MB-OT. Four main themes emerged across patients, including

an eagerness to explore mind-body practices, feelings of appreciation for the MB-OT intervention, MB-OT provided a sense of calm, and MB-OT supported daily occupations in the burn unit.

Theme 1: Eagerness to explore mind-body practices. OT documentation suggested that all five patients were eager to engage in MB-OT, evidenced by phrases such as, “patient eager to learn mind-body techniques”, “patient open and eager to use guided meditation as preparatory method”, “patient is eager to continue meditation practices”. Patients seemed to experience a collective sense of enthusiasm about adding something novel, like mind-body practices, to their daily routine in the burn unit and greeted MB-OT with an open attitude. For example, when Jessica was asked about her interest in practicing meditation, she said, “I think that would be *super* helpful. I'm interested to try.” Liz and Zack expressed a similar sentiment. Liz stated, “I think that would be helpful. Let's try,” while Zack said, “I'd like to try yoga. I like to try new things.” Rebecca had identified yoga as a meaningful occupation from her past and found the idea of practicing yoga in the burn unit to be highly motivating, telling the OT, “That (a yoga-video) would be amazing. Oh, that sounds wonderful right now.” Some patients continued to explore mind-body practices on their own and regularly asked for more resources, while others relied on the occupational therapist to facilitate exploration directly. Zack, Jessica, and Chris utilized resources provided in MB-OT and reported downloading meditation applications on their phones for independent practice. Liz and Rebecca however, reported having difficulty practicing independently, Liz confessed, “We tried doing a meditation this weekend, we wanted too but things got a little crazy.” Rebecca asked, “Is there any way you could help me with meditations before my wound care? I am just feeling out of it and it's hard for me to remember where to find them.”

Theme 2: Feelings of appreciation towards MB-OT. OT documentation suggested that all five patients were appreciative of the MB-OT intervention, seen in the following statements, “patient expressed appreciation for time and discussion”, “patient continues to show interest and appreciation for recurring meditations”, “patient is appreciative of opportunity to do guided meditation”. All patients had been described as “tearful” during at least one MB-OT session, as these sessions were often

emotionally charged as patients talked through negative thoughts and daily stressors. Zack, who had been struggling with blame, expressed feelings of gratitude for the MB-OT intervention, sharing, “You guys helped me focus on the good things. I just appreciate it”. Rebecca frequently expressed appreciation for the routine MB-OT provided, thanking the OT each time meditation was provided before wound care.

Theme 3: MB-OT provided a sense of calm. During meditation practices, patients often experienced a decrease in heart rate and respiration rate, suggesting a calmer physiological state (Table 4). Liz and Rebecca, specifically, commented on how meditation relieved tension in their body and increased feelings of relaxation and contentment, demonstrated through a change in their scores on the STAI-6 (Table 5). Rebecca found a momentary escape from the unit through mind-body practices. Following meditation, she told the occupational therapist, “I feel like I went somewhere else. Like I really felt like I was at home. I don't know if you noticed this, but my fingers started moving because I was imaging myself at home shuffling through papers on my table. That's crazy. Didn't feel like I was here for a minute (referring to the burn unit.)” Both Rebecca and Liz noted a change in their emotional state immediately following meditation. Rebecca frequently commented on feeling “better” while Liz explained, “I always find something to worry about, but I feel relaxed now. I feel like I am calm and not as stressed for however long the meditation was...so what was that, 10 minutes? I felt calm for about 10 minutes afterward.”

Theme 4: MB-OT helped support daily life in the burn unit. Patients commented that the mind-body practices learned in MB-OT supported their daily routines and activities in the burn unit. Zack used the technique of Finding Five Things and relieving tension to get back to sleep when nursing staff woke him up. He also reported independent use of audio-meditations before physical therapy sessions and again before surgery to, “calm my nerves and get a good mindset.” Jessica felt better-prepared for wound care after MB-OT, saying, “I'm glad we are doing this before wound care. Helps me stay calm.” Jessica reported independent carryover of mind-body techniques to wound care, saying,

“I used the Finding Five Things first in wound care, and once I felt better, I focused on breathing.” She also incorporated audio-meditation into her nightly routine, stating, “I’ve been meditating before bed every night and it really helps me relax.” Chris, who had participated in video-yoga during MB-OT, independently practiced yoga poses in his room, telling the OT, “I was doing my own Zen stretches by the window this morning before you came to get me. It’s so nice to move around in my room on my own now.” While Rebecca attempted to use techniques learned in MB-OT during wound care, she found it difficult when her pain increased, and shared, “I was doing the square-breathing in the tub room and it helped, but as soon as the pain became excruciating it is near impossible to control your breath. Everyone in there tells you to breathe, but they have no idea what the pain is like.”

Discussion

The case study aimed to explore the incorporation of mind-body practices into OT plan of care for patients in the burn unit. Further, this study detailed the perspectives of patients about the value mind-body practices brought to recovery. This case study provides an example of how mind-body practices can be incorporated into individual care plans for patients in the burn unit. In previous studies on mind-body and relaxation techniques in the burn unit, the provided interventions were prescribed to patients, offering minimal to no choice about the content of intervention (Achterberg et al., 1988; Park et al., 2013). MB-OT, however, reflected the professional philosophy of OT, in that treatment was directly informed by the patient’s preferences and individual needs (Tickle-Degnen, 2002). The present study demonstrated how to deliver client-centered care and help patients explore – and establish a mindfulness practice that their met their individual needs in the burn unit.

Overall, patients made statements that reported perceptions of MB-OT to be a positive and meaningful experience that provided a sense of calm. During audio-meditation sessions, patients seemed to experience a calmed physiological state, expressed as a reduction in heart rate and respiration rate. Of note, measurable statistics were only available for MB-OT audio-meditation sessions. A reduction in heart rate was reported 87.5% of the time, with all patients experiencing a

reduction in heart rate at some point during audio-meditation. A reduction in respiration rate was reported 66.7% of the time, however these measures were only available for four of the five patients. These findings are similar to those of Provancha-Romeo et al. (2019), in which a single case study noted a reduction in heart rate and respiration following yoga and breathwork in the intensive care unit (ICU). In addition to a calmer physiological state, qualitative data suggests that mind-body practices supported daily life in the burn unit, while reductions in the STAI-6 suggest that mind-body practices may help reduce state-anxiety. Related to these findings, Schmid et al. (2015), found that patients in inpatient rehabilitation perceived that mind-body practices enhanced psychological well-being by improving their ability to cope and manage stress and anxiety. While patients in the present study did not explicitly report that mind-body practices enhanced coping, their independent use of such practices during stressful procedures, like wound care and support group, suggests they used mind-body practices to cope with daily stressors.

As patients demonstrated in this study, mind-body practices may become a new activity to explore in a hospital bed, the rehabilitation gym, tub room, or support group. Three of the five patients expressed independent use of the mind-body practices learned during MB-OT outside of their therapy sessions. Jessica reported adding meditation to her nightly routine and using breathwork during wound care, Zack used Finding Five Things when his sleep was disturbed and meditated before surgery, while Chris reported completing a “Zen stretching” routine independently in his room. While there is no data supporting the long-term carryover of mind-body techniques learned in the burn unit, future research could seek to better understand the carry-over effects of mind-body interventions learned in the acute phase of burn recovery.

While mind-body interventions may offer tools for coping with recovery, an additional benefit of using mind-body practices with patients in intensive care settings, such as the burn unit, is that these techniques may promote feelings of control by allowing patients to control their breath, their thoughts, and their responses to the highly stimulating environment. Patients in the present study commented on

the stressful aspects of everyday life in the burn unit, ranging from managing pain, having difficulty sleeping, feeling fearful about procedures, and perceiving a loss of self-control. These stressors are congruent with those identified by patients in the intensive care unit (ICU)—with lack of control being the main psychological stressor (Novaes, Aronovich, Ferraz, & Knobel, 1997). Through MB-OT, however, patients used mind-body practices to control their responses to anxiety, the environment, and daily stressors. While some patients used meditation to alter the context of wound care, others used deep-breathing to control their physiological response to pain.

While not reported in the results, documentation revealed that the OTs in the study included various medical disciplines in the MB-OT experience. For example, two nurses sat in on a patient education-session of mind-body practices and provided additional opportunities for patients to explore the techniques learned in MB-OT. Coordination with the wound care team occurred on several occasions and enabled some patients to develop a meditation routine prior to the procedure. Additionally, wound care technicians were provided information about the patients preferred mind-body practices and encouraged to incorporate breathing cues, calming music, and audio-meditation into wound care, as appropriate. This suggests an opportunity for OTs to educate other disciplines on the benefits of mind-body practices and disseminate resources to promote continuity of care. Further exploration is needed to fully understand the impact of this intervention and whether other clinicians used the intervention during other aspects of burn care. Informed OTs can facilitate the exploration of mind-body practices and support the development of a personal mindfulness practice that reflects individual coping needs. Mind-body interventions can target various physical and emotional needs of patients in the burn unit, including pain and anxiety, and may improve individual participation in the recovery process.

Limitations and Future Research

It is important to note the first and second authors' direct involvement with the five patients in the case series, as they delivered and documented all MB-OT sessions. However, efforts to minimize

researcher bias were taken. Such efforts included the maintenance of an audit trail during the data analysis processes and the use of secondary coders and a peer reviewer who were uninvolved in MB-OT delivery. The administering OTs adhered to ethical and professional protocol when documenting MB-OT sessions and included objective-third parties throughout the data analysis process. Given the nature of exploratory case study research, the present study cannot show causality, nor can findings generalize to the broader population. While the MB-OT intervention followed a semi-structured format, it is in the early stages of development and is not yet a formalized intervention.

Although the STAI-6 measure was only administered before and after MB-OT with two patients, results demonstrate that this may be a practical way to objectively measure changes in state anxiety. While this study supports the use of mind-body practices to support client-centered care, further research is needed to understand the influence of such practices on patients' tolerance for rehabilitative procedures in the burn unit. In addition, the present case study is limited to context of the acute and rehabilitative phases of burn recovery, and future research should seek to understand the long-term carry over of mind-body practices learned in the burn unit.

For practitioners looking to incorporate mind-body practices in acute care settings, such as the burn unit, it is important to note logistical barriers. Individual MB-OT sessions, for example were supported technology, in that all five patients had a personal smart phone which allowed for independent exploration of audio-meditations. Additionally, the providing OTs had access to a portable device to complete video-guided yoga with patients. Time may serve as another possible barrier. MB-OT education sessions averaged 40 minutes while practice sessions averaged 35 minutes. Practitioners should consider individual therapeutic goals and emotional needs to prior to prioritizing mind-body techniques

Conclusion

This case study highlights the unique experience of five patients in using mind-body practices while in the burn unit. The MB-OT intervention provided client-centered care, aimed at enhancing the

physical and emotional well-being of patients. Findings suggest that patients perceived the MB-OT intervention to be a valuable experience that supported their daily life in the burn unit. Further, patients experienced a reduction in heart rate and respiration rate, suggesting a calmer state, while two patients demonstrated a reduction in state-anxiety, as measured by the STAI-6. At the time of this study, there was no other known publications exploring the use of a client-driven, mind-body intervention in the burn unit. Further research is needed to assess the effectiveness of mind-body practices in the burn unit to optimize care for patients experiencing distress in their recovery.

Practice Implications

1. Mind-body practices can complement client-centered rehabilitation services. However, these practices are not for everyone and may be better-suited to those with a personal interest. It is possible that patients who declined MB-OT did so due to personal disinterest, however additional research is needed to understand the influence of individual perceptions and beliefs on participation in such techniques.
2. Four of the five patients participated in at least one yoga session during MB-OT. Yoga can be used to promote purposeful movement of the affected joints and may help increase range of motion. It is ideal for the OT to be a certified yoga teacher, if not, appropriate channels should be used to facilitate.
3. Mind-body techniques can be modified to meet a variety of OT interventions, including preparatory tasks, education and training, and advocacy (Hardison & Roll, 2016).
4. OTs can educate other disciplines on the use of mind-body practices and provide resources for continuity of care. This may require additional coordination and scheduling with the burn care team.

References

- Achterberg, J., Kenner, C., & Lawlis, G. F. J. (1988). Severe burn injury: A comparison of relaxation, imagery and biofeedback for pain management. *Journal of Mental Imagery, 12*(1), 71-87.
- American Burn Association. (2017). Burn Incidence Fact Sheet. Retrieved from <https://ameriburn.org/who-we-are/media/burn-incidence-fact-sheet/>
- Bekker, H. L., Legare, F., Stacey, D., O'connor, A., & Lemyre, L. (2003). Is anxiety a suitable measure of decision aid effectiveness: a systematic review? *Patient Education and Counseling, 50*(3), 255-262. doi:10.1016/S0738-3991(03)00045-4
- Court, H., Greenland, K., & Margrain, T. H. (2010). Measuring Patient Anxiety in Primary Care: Rasch Analysis of the 6-item Spielberger State Anxiety Scale. *Value in Health, 13*(6), 813-819. doi:10.1111/j.1524-4733.2010.00758.x
- Creswell, J. W., & Miller, D. L. (2000). Determining Validity in Qualitative Inquiry. *Theory Into Practice, 39*(3), 124-130. doi:10.1207/s15430421tip3903_2
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing, 62*(1), 107-115. doi:10.1111/j.1365-2648.2007.04569.x
- Hardison, M. E., & Roll, S. C. (2016). Mindfulness Interventions in Physical Rehabilitation: A Scoping Review. *American Journal of Occupational Therapy, 70*(3). doi:10.5014/ajot.2016.018069
- Logsetty, S., Shamlou, A., Gawaziuk, J. P., March, J., Doupe, M., Chateau, D., . . . Leslie, W. D. (2016). Mental health outcomes of burn: a longitudinal population-based study of adults hospitalized for burns. *Burns, 42*(4), 738-744.

- Novaes, M., Aronovich, A., Ferraz, M., & Knobel, E. (1997). Stressors in ICU: patients' evaluation. *Journal of Intensive Care Medicine*, 23(12), 1282-1285.
- Park, E., Oh, H., & Kim, T. (2013). The effects of relaxation breathing on procedural pain and anxiety during burn care. *Burns*, 39(6), 1101-1106.
doi:10.1016/j.burns.2013.01.006
- Provanca-Romeo, A. F., Schmid, A. A., Hoffman, A., Malcom, M., Coatsworth, D., Laxton, L., & Freeman, K. (2019). Mind-Body Interventions Utilized by an Occupational Therapist in a Medical Intensive Care Unit: An Exploratory Case Study. *WORK*.
- Savin-Baden, M., & Major, C. H. (2013). *Qualitative research : the essential guide to theory and practice*. Milton Park, Abingdon, Oxon: New York : Routledge.
- Shenton, A. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for information*, 22(2), 63-75.
- Tickle-Degnen, L. (2002). Client-centered practice, therapeutic relationship, and the use of research evidence. *American Journal of Occupational Therapy*, 56(4), 470-474.
- Walter Reed National Military Medical Center. Mind-Body Medicine Practices. Retrieved from
<http://www.wrnmmc.capmed.mil/Health%20Services/Medicine/Medicine/Internal%20Medicine/MindBody/Shared%20Documents/Mind-BodyPractices.pdf>