

Research

Yoga Influences Recovery During Inpatient Rehabilitation: A Pilot Study

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Abstract

Purpose: The purpose of this study was to add yoga therapy to inpatient rehabilitation and assess whether patients chose to engage in yoga therapy in addition to other daily therapies, to describe patients' perceptions of how yoga therapy influenced recovery, and to assess and describe patient satisfaction with the program.

Methods: This was a single-arm pilot study, adding yoga therapy to ongoing inpatient rehabilitation. Yoga therapy was offered as group yoga or individual yoga twice a week. Semi-structured interview questions were completed via telephone post-discharge.

Results: A total of 55 of the 77 (71%) people contacted about the study engaged in yoga therapy in the inpatient rehabilitation setting for this study and 31 (56%) of these completed the semi-structured interview questions. Qualitative data support that participants perceived that yoga therapy improved breathing, relaxation, and psychological wellbeing. Overall, participants were satisfied with the program, although they often indicated they would like increased flexibility or frequency of yoga. Almost all participants (97%) said they would recommend the yoga therapy program to others in inpatient rehabilitation.

Conclusion: We were able to add yoga therapy to ongoing inpatient rehabilitation and participants perceived benefits of having the yoga therapy in their rehabilitation stay.

Introduction

Complementary and alternative medicine (CAM) is becoming increasingly popular and includes different therapies and products not currently recognized as a part of conventional medicine or rehabilitation (Hadi, 2007). Interestingly, CAM use is increasing at a faster rate among individuals with functional limitations and multiple neurological conditions compared to people without any medical problems or limitations (Okoro et al., 2011; Wells et al., 2010). Individuals may be more likely to choose CAM approaches because of the holistic approach to improve overall health and wellbeing and the perception of relief from symptoms and side effects associated with a variety of illnesses, medications, and treatments. CAM approaches have been classified into two primary domains by the National Center for Complementary and Alternative Medicine (NCCAM), natural products or mind-body practices (NCCAM, 2012). Yoga practice, a common CAM approach, is housed under the mind-body domain.

The combination of breath, physical postures, and meditation, as used in yoga practice, may be more beneficial and therapeutic than some traditional forms of exercise (Cameron, 2006; Kirkwood et al., 2005). As yoga becomes more prevalent, therapists (occupational, physical, recreation, and speech therapists) are more commonly using therapeutic yoga as a complement to ongoing rehabilita-

tion. However, at this time, there is limited evidence to support the use of yoga in rehabilitation settings (Mailoo, 2005).

There is existing evidence supporting yoga therapy (“yoga” throughout the rest of the text) as an intervention that improves many rehabilitation-oriented outcome measures in older adults (Hakim et al., 2010; Schmid et al., 2010; Van Puymbroeck et al., 2011b) as well as people with disability due to chronic neurological pathologies such as spinal cord injury (SCI) (Cardenas & Jensen, 2006; Zwick, 2006), traumatic brain injury (TBI) (Schmid et al., in press), and stroke (Bastille & Gill-Body, 2004; Garrett et al., 2011; Lynton et al., 2007; Schmid et al., 2012, 2014; Van Puymbroeck et al., in press). These and other diagnostic populations, such as people with amputations, cancer, falls, organ transplants, and motor vehicle accidents, are commonly seen in rehabilitation on a more acute basis. Collectively, these populations may have the potential to benefit from yoga. In a recently completed study of yoga for people with chronic stroke, the qualitative data indicated that individuals wished they had learned about yoga during their post-stroke acute rehabilitation (Schmid et al., 2011). Based on the literature and these findings, we designed the current study to add yoga as a complement to traditional therapeutic disciplines during acute inpatient rehabilitation for any diagnostic group present during the study. Therefore, our objectives were to: (1) assess whether patients chose to engage in yoga in addition to other daily therapies, (2) describe patients' perceptions of how yoga influenced recovery, and (3) assess and describe patient satisfaction with the program.

Methods

Design

We completed a single-arm pilot study, adding yoga to ongoing inpatient rehabilitation. Quantitative demographics and qualitative data were included. Yoga was delivered via (1) small group or (2) individually.

Recruitment and Participants

All study participants were recruited from one of two hospitals that provide acute inpatient rehabilitation. An acute inpatient rehabilitation hospital provides intense and multidisciplinary rehabilitation programming and patients are required to complete at least three hours of therapy a day at least 6 days a week. This is in contrast to a sub-acute inpatient rehabilitation setting; in this setting, the frequency and duration of rehabilitation is less intense and less significant gains are expected. Rehabilitation therapists and nurses referred prospective participants to the study, regardless of diagnosis. Inclusion criteria included being an admitted

patient in acute inpatient rehabilitation; ability to speak and understand English; scoring > 4 on the short 6-item Mini-Mental State Examination performed by the study team (Callahan et al., 2002; Paveza et al., 1990); and being >18 years old. Participants were excluded if they reported serious cardiac conditions, oxygen dependence, drug or alcohol abuse, or were participating in another research study. All participants gave written consent to participate.

Intervention

Eligible participants chose to engage in group yoga sessions, individual yoga sessions, or both group and individual sessions. Group and individual yoga sessions were each offered twice a week and were added to the participants' rehabilitation schedules. Participants were able to choose a total of four sessions a week if they chose to do both group and individual sessions. A certified yoga therapist led group and individual yoga sessions; yoga was modified as necessary per participant and included seated yoga postures and breathing exercises. Group yoga sessions included bi-weekly 45-minute sessions; individual yoga included bi-weekly 30-minute sessions. Yoga sessions were completed while seated in a chair, wheelchair, or bed, as appropriate. Some people could not participate in physical postures due to injury; thus, their yoga focused on breathing techniques for the entire session. Under the guidance of the yoga therapist, research assistants were available to modify physical postures as needed.

Data Collection

Demographic data such as age, gender, and the primary diagnosis for the hospitalization were retrieved from the medical chart. Standardized tests or measurements were not used. Trained research assistants recorded the number of people offered yoga; number who participated in yoga; choice of group or individual yoga sessions, and number of sessions completed.

A semi-structured interview guide was developed by rehabilitation scientists, clinical therapists, and a yoga therapist and was based on a review of the yoga therapy research literature and clinical experience. The semi-structured interview was administered within one month of discharge via telephone. (See the Appendix for a copy of the interview). Participants were asked multiple yes/no questions, including whether they continued yoga after discharge and if they would recommend yoga to others during rehabilitation. Open-ended items addressed the influence of yoga on recovery; experience with the yoga program; satisfaction with the program; likes and dislikes about the program; most and least useful aspects of the program; and suggested changes to be made to the program. Phone interviews were not audio-recorded, but all calls were completed with a

speakerphone and two research assistants typed the answers verbatim into a word processing document at the time of the phone call. Participants were asked to repeat any information if it was missed and to clarify any words or sentences as necessary.

Data Analysis

Descriptive statistics, including means, standard deviations, frequencies, and proportions as appropriate were used to describe sample demographics and to assess the number of people who chose yoga; the type of yoga; the number of sessions completed; and the yes/no questions from the follow up semi-structured interview.

The qualitative data were analyzed using conventional content analysis, where themes emerged from the content of the text (Hsieh & Shannon, 2005). Content analysis is a qualitative approach that focuses on the content of the qualitative data and classifies the data into themes with similar meanings. Five researchers independently reviewed the transcripts and identified common content themes that emerged from the data. All co-investigators met to decide on content themes. Primary themes were those that were highly prevalent and discussed in-depth; secondary themes were less prevalent but still considered relevant. Definitions of each of the content themes were developed. Using the content themes and an iterative consensus-building process, the five researchers developed an agreed-upon set of content themes and definitions for coding the data. Each researcher then used NVivo software (NVivo QSR International) to code data segments into content themes using constant comparison methods. Data were coded into more than one theme as appropriate. Coded data were synthesized and discussed as needed for consensus regarding coding of each segment to ensure trustworthiness of the analysis. Exemplar quotations were identified to illustrate themes. Our objectives were to detect patterns in the data that characterized perceptions of how yoga influenced recovery and evaluate patient satisfaction with the yoga program.

Results

Demographic Data

Overall, 77 people were contacted regarding inclusion into the study over a three-month period and 55 (71%) individuals chose to engage in yoga in addition to their other daily therapies and were enrolled into the study. Reasons for declining to participate in the yoga intervention included lack of interest, feeling too tired from therapy and being too close to discharge date. Of the 55 people who engaged in yoga and were included in the study, a total of 31 (56%) of

these participants completed the post-intervention semi-structured interview questions. Table 1 includes basic demographics. Of the 31 individuals who completed the yoga intervention and the post-intervention interview questions, 14 (45%) were female, 17 (55%) were male, and the average age was 57 ± 13 years with a range of 20-90 years. A wide variety of diagnoses were included such as stroke, spinal cord injury, and traumatic brain injury. On average, participants attended three sessions total, including group and/or individual, with an overall attendance rate of 85% when considering the possible number of sessions each participant could have attended. However, the range of completed yoga sessions varied from 1 to 9 sessions, depending on rehabilitation length of stay. There were no statistical differences between individuals who did and did not complete the post-intervention interview questions (See Table 1). Additionally, Table 1 includes data regarding whether participants who completed the interview questions practiced yoga prior to the studies and which aspects of the yoga practice they continued at home. The majority of participants who continued yoga after discharge (81%) reported a combination of breath work, physical postures, and relaxation at home (92%). No adverse events were reported during the study.

Qualitative Data: Patients' Perceptions of Yoga-Influenced Recovery

Qualitative data analyses focused on patients' perceptions of how yoga influenced recovery as well as patient satisfaction with the yoga program. Upon review of the data, perceptions of how yoga complemented ongoing rehabilitation and influenced recovery were categorized into three primary themes: *breathing*, *relaxation*, *psychological wellbeing*. Each theme has multiple secondary themes (Table 2). We described each theme including salient quotations that represent the theme.

Breathing

Many participants (71%) identified that engaging in the yoga program helped with their breathing. The improved breathing seemed to have different implications for different participants. Some individuals discussed how yoga affected an individual breath and the capacity to take that breath, such as decreasing shortness of breath (SOB) and increasing breathing capacity. Others noted secondary themes as the idea of improving their ability to engage in functional activities due to a general improvement of breathing and/or the calming effect from controlled breathing learned in yoga.

Variable	All (n=55)	Completed interview n=31 (56%)	Did not complete interview n=24 (44%)	P-value
Age (years)	56.78±14.19	57.19 ± 13.06	56.25 ± 15.81	.809
Gender (female)	25 (46%)	14 (45%)	11 (46%)	.960
Race (African American)	10 (18%)	6 (19%)	4 (17%)	.547
Race (white)	43 (78%)	24 (77%)	19 (79%)	
Race (other)	2 (4%)	1 (4%)	1 (4%)	
Marital Status (married or coupled)	23 (42%)	14 (45%)	9 (38%)	.536
Education (high school or less)	21 (39%)	11 (36%)	10 (44%)	.604
Diagnosis:				
Stroke	12 (22%)	4 (13%)	8 (33%)	.069
Orthopedic	10 (18%)	6 (19%)	4 (17%)	1.00
Spinal Cord Injury	8 (15%)	5 (16%)	3 (13%)	1.00
Traumatic Brain Injury	1 (2%)	1 (4%)	0 (0%)	1.00
Other*	25 (46%)	15 (48%)	9 (38%)	1.00
Yoga				
Mean number of sessions offered	3.2±1.9	3.3±1.9	3.0±1.9	.644
Mean number of sessions attended	2.6±1.8	2.7±1.8	2.5±1.9	.667
Group yoga	11 (20%)	6 (19%)	5 (21%)	.303
Individual yoga	13 (24%)	7 (22%)	6 (25%)	
Combination of group and individual yoga	30 (55%)	19 (61%)	11 (46%)	
Practiced yoga before this study? (no)	na	22 (71%)	na	
How helpful was yoga to your recovery	na		na	
Not helpful	na	1 (3%)	na	
Somewhat helpful	na	6 (19%)		
Somewhat or very helpful?	na	24 (78%)	na	
Any yoga at home since discharge? (yes)	na	25 (81%)	na	
Which aspect of practice continued at home? (n=25)	na		na	
Breathing	na	19 (76%)	na	
Movement, physical postures	na	7 (28%)	na	
Relaxation	na	18 (72%)	na	
Combination of breath, postures, relaxation	na	23 (92%)	na	

Table 1: Descriptive Data for Those who Did and Did Not Complete the Semi-Structured Interviews.

Note: P-values are Chi Square, t-test, or Fisher's exact test as appropriate.

*'Other' included: motor vehicle accidents, bacterial infections, amputations, joint replacements, locked in syndrome, cancer, brain tumor, Parkinson's Disease, falls, multiple sclerosis, organ transplants, congestive heart failure, cerebral palsy, and ataxia

Primary Theme	Secondary Theme
Breathing	Shortness of Breath and Breathing Capacity
	Functional Activity
	General Benefits
Relaxation	Managing Frustrations with Diagnosis
	Enhancing Recovery
Psychological Wellbeing	Stress and Anxiety
	Coping
	Attitude and Confidence
	Pain
	Focus

Table 2: Primary and Secondary Themes Regarding Perceptions of How Yoga Influenced Recovery.

Shortness of Breath and Breathing Capacity and General Benefits of Improved Breathing. Some individuals expressed how practicing breath techniques were helpful to overcome shortness of breath and increase breathing capacity. Other useful aspects of breathing were identified in the following quotations that are focused on the importance of breathing as a vital skill to calming oneself. One participant with a complete cervical SCI injury talked about being able to control his breathing and how powerful and important that was as he was not able to control any other part of his body.

"I feel better even after two practice sessions. My breathing capacity has increased."

"Focusing on breathing... it changed everything."

"After my injury (SCI), I thought I lost all control over my body, but with you I learned I can control (my) breathing. This was very important to my mindset and rehabilitation program."

"Helped me to realize when I get short of breath because of my trach... and that I can think about it and manage it... helps me relax."

Functional Activities. Other participants expressed how the yoga-based breathing techniques helped during functional mobility, activities of daily living, and typical hospital testing and procedures. For example, one man who had sustained a stroke talked about his fear of having an MRI. He integrated the yoga-based breathing techniques during the MRI, allowing him to successfully complete this necessary medical evaluation; this was also seen in his interview after discharge and is exemplified by the following quotations:

"The breathing is helping me, especially during transfers and when taking my medicines."

"I used that breathing you showed me when I had to have an MRI at the hospital yesterday."

Relaxation

Relaxation emerged as a prominent theme in the qualitative data. Participants discussed the high stress and anxiety levels while in rehabilitation, as well as dealing with a new body and abilities after an injury or new diagnosis. It appeared that the use of physical yoga postures and a focus on breathing helped many people improve their ability to relax during a stressful situation. Many individuals talked about relaxation using a variety of words; we coded relaxation as any mention of "relaxation," "relaxing," "help me relax," "ease," "calm down," and "slow down." Two secondary themes are included.

Managing frustrations. Participants identified relaxation to be useful, specifically in dealing with the many problems and frustrations associated with their diagnoses, hospitalization, and recovery. They noted that yoga-induced relaxation reduced stress, tension, and apprehension. The perceived benefits of relaxation techniques in this sense are exemplified in the following quotations:

"I found it (yoga) was very relaxing and it helped reduce stress in a very stressful situation."

"It's help[ed] me deal with some of the frustrations due to recovery. It's taught me to breathe and relax better."

Enhancing recovery. Participants perceived that the relaxation techniques enhanced recovery during rehabilitation. Example salient quotations included the following:

"It is a helpful way of healing your body, by using breathing techniques and relaxation."

"It makes you feel relaxed and eases the apprehension in your need of help in your quest to get well."

Psychological Wellbeing

We interpreted the primary theme of psychological wellbeing as anything related to emotional health. Many secondary themes emerged related to stress reduction, anxiety, and pain. Other secondary themes were related to improved ability to cope with conditions or diagnoses, increased attitude and confidence, and the ability to focus on the recovery process.

Stress Reduction and Anxiety. Engaging in the yoga program helped participants reduce or better manage stress, anxiety, or worry. The following salient quotations represent these changes:

"Participating in yoga has taught me to reduce the amount of stress on my body."

"[Yoga] calmed me down and made me less anxious."

"I now do that quite often. It feels good. I didn't know it was a yoga move. It's a good way to get rid of stress; it has eased my apprehension."

Coping. During the yoga sessions, the yoga therapists talked about breaking the pattern of circular thinking, the idea of 'why me?' or 'if I had done x instead of y' that led to an accident or injury. Discussing the idea of circular thinking and using breathing to break the pattern may have improved individuals' abilities to cope with their new injury or diagnosis. The yoga therapy also helped participants cope with issues and problems related to recovery. This was indicated by the following exemplar quotations:

"[Yoga] keeps you from dwelling on your problems."

"It's helped me deal with some of the frustrations due to recovery."

"I like the relief that the techniques provided. It helps you relax. You learn to cope better with things."

"I was always wondering why this happened to me and I couldn't focus on my therapy or on getting better. [Yoga] just helped me think about what I had to think about now."

Attitude and Confidence. In responding to the interview, participants mentioned that the yoga program increased confidence to overcome disability and improved overall attitude. This was indicated by the following salient quotations:

"Well, you can, it helps you get over things quicker... and gives you confidence or attitude to move on."

"100% mind over matter. Being able to control my breathing and the meditation has increased my confidence to overcome my disability."

Pain. Some participants reported pain on an ongoing or daily basis during their rehabilitation stay, and in some instances, participants discussed how the yoga program helped regulate their pain. Examples of quotations that support the relationship between pain management and yoga include:

"Uh, well, I actually was surprised you offered it given the injuries I had. Everything hurts since the car accident. I still have pain, but it's [yoga] helped me live with pain."

"Anybody in pain can benefit. It's not just to relax."

Focus. Some participants identified that engaging in the program enabled them to think more clearly and concentrate on important tasks related to recovery, rather than the 'why me' often associated with a new injury or diagnosis. This was indicated by the following exemplar quotations:

"It relieves [me] and help[s] [me] think clear."

"Yoga makes you feel more comfortable and helps you focus."

"It's pretty good. Breathing helps you focus on any task."

Satisfaction with the Program

Overall, data showed that 15 (48%) participants felt that there was nothing to change about the inpatient yoga program. Participants mentioned that the program was too short or that they were disappointed that they were unable to attend many sessions. Others mentioned that they would have preferred the sessions at different times or would have liked yoga to be incorporated into their fixed three hours of daily therapy.

Dosage. Yoga therapy was offered twice a week. Participants could choose if they wished to participate in group or individual yoga and some chose to do both (55%). The majority of comments regarding dosage of the yoga therapy indicated that individuals wished for yoga to be offered more often. Others discussed that they were not able to participate as often as they wished due to other appointments, fatigue, or an early discharge. Some quotations addressing dosage include the following:

"I wish we had more time, especially some of the positions she showed me the last time. Wish we could have another session. Nothing to dislike."

"I wish it was more often; however, with all the therapy appointments I was occasionally too tired to participate."

Program Flexibility. Yoga was offered in the afternoon twice a week. Some individuals discussed that it would be advantageous to offer yoga on the weekends or at night to be able to offer more flexibility. Fatigue and busy therapy schedules added to the need for increased schedule flexibility.

"Do it in combination with therapy instead of waiting until you are very tired after all your therapy. They should be able to make it in your three hours of therapy."

"Time—I would have preferred it after dinner."

Recommend to Others?

Finally, we asked about patient satisfaction with the yoga program and if individuals would recommend the yoga therapy program to others (yes/no). The majority of the individuals who completed the semi-structured interview indicated there were no dislikes regarding the program as a whole; many individuals mentioned that they liked the entire program. Study participants discussed specific aspects of the program that they enjoyed, such as going outside, social interaction, and feeling comfortable with practicing yoga in front of others and with the research team. Overall, 30 out of 31 (97%) participants said they would recommend the program to others in the inpatient rehabilitation setting. Exemplar quotations illustrating participants' dislikes, likes, and recommendations to others include the following:

Dislikes of Yoga Therapy Program

"I didn't like that it took place at the end of the day."

"Really, I think my only complaint... I think there was not enough yoga, not offered on enough days or enough times, I would want to see more in the future."

Likes of Yoga Therapy Program

"I can't think of anything I disliked. I enjoyed the days we went outside."

"It was nice to do activities with other people and help me relax."

Recommend Yoga Therapy Program to Others?

"Absolutely. It's just another type of treatment that can help heal you."

"Because it was beneficial and I think I am a hard person to please."

"Just simply the little bit of yoga I had helped me, and if someone needs help they should participate."

Summary of Qualitative Data

Overall, it appears that people who participated in the yoga program perceived that the addition of yoga was helpful and positively influenced recovery. Likewise, the majority of participants were satisfied with the program and 97% would recommend it to others, with the primary complaint being that they would like to receive additional yoga programming while in the inpatient rehabilitation setting.

Discussion

Although there have been many studies conducted to examine the benefits of yoga across different diagnoses (e.g., back pain (Cramer et al., 2013; Sherman et al., 2005), diabetes (de GR Hansen & Innes, 2013), cancer (Culos-Reed et al., 2006; Levine & Balk, 2012; Van Puymbroeck et al., 2011a), arthritis (Haaz & Bartlett, 2011; Kolasinski et al., 2005)) and in healthy populations, to our knowledge this is the first study of yoga therapy as a complement to ongoing acute inpatient rehabilitation. The results of this study suggest that adding yoga as a complement to traditional therapy during acute inpatient rehabilitation is acceptable to patients and is potentially beneficial during recovery. People who participated in the study discussed that yoga was associated with improved breathing, relaxation, and general psychological wellbeing. Study participants indicated satisfaction with the program and requested additional sessions and more flexibility to be able to attend more sessions.

Due to the lack of reported yoga programs in acute inpatient rehabilitation, we based this study on our prior work with people in the chronic stage post-stroke who were finished with all structured rehabilitation. Results of this prior work suggested that people wished that yoga had been offered during structured inpatient rehabilitation to help with relaxation and stress management (Schmid et al., 2011). However, we were unsure whether patients would choose to add yoga to the intensive daily therapy schedule during acute inpatient rehabilitation, which requires three hours of daily scheduled therapy at least six days a week. While stress, anxiety, depression, and fatigue have been studied in chronic populations (generally at least six months post-event), surprisingly, there is little evidence regarding patients' levels of stress, anxiety, depression, fatigue, or ability to relax during acute inpatient rehabilitation. It is also not well understood whether or not these variables influence recovery trajectories. One can assume that patients in the acute inpatient rehabilitation setting experience stress, anxiety, depression, and/or fatigue due to the catastrophic nature of many of the diagnoses for which patients are admitted to acute inpatient rehabilitation. In addition, their stay in inpatient rehabilitation settings is likely accompanied with additional life stressors including a new body or new abilities; time away from work, family, and friends; chemical changes in the brain; new medications; new routines and expectations; and the desire to make gains in order to meet eligibility to continue receiving services in the inpatient settings. Therefore, providing patients with tools to better manage stress, anxiety, depression, and/or fatigue may enhance recovery and promote better functional independence after rehabilitation.

Even though three hours is considered an intense therapy schedule, there is still a large percentage of each patient's day without therapeutic activities. Yoga may be an ideal complement during the downtimes to engage patients in mind-body activities to further enhance recovery without exacerbating the profound fatigue experienced after catastrophic neurologic insults such as stroke (Miller et al., 2013), SCI, and TBI. While patients might talk about fatigue or being over-scheduled, when considering stroke in the inpatient setting, we know that patients actually only spend a small percentage of their day engaging in activities and that they are alone and inactive for the majority of the day (Bernhardt et al., 2004). Perhaps adding yoga to the rehabilitation schedule or providing training on how to independently complete yoga/meditation may allow people to better engage in mind-body activity that may further enhance recovery and therapeutic outcomes.

Breathing

Our results related to breathing parallels the literature. For

example, Makwana et al. (1988) established that yoga has beneficial results on the respiratory system in healthy individuals. Though we did not measure forced vital capacity or functional expiratory volume in our study, our participants reported increased breathing performance after as little as one session. Additionally, Visweswarajah and Telles (2004) assessed the impact of group yoga (6 sessions per week for 8 weeks) on people with tuberculosis. Participants in the yoga group benefited with an increase in forced vital capacity and functional expiratory volume compared to the control group.

Silverthorne et al. (2012) found that breath-focused yoga improved 4 out of 6 breathing measures for 10 participants who had a severe TBI, whereas the control group ($n = 4$) only improved on 2 of the 6 breathing measures. Pulmonary function testing should be included in future research; however, it should be noted that such testing among various populations has mixed results (Spruit et al., 2013). Combined with the literature, our results indicate that breathing is a common benefit gained from participating in yoga interventions.

Relaxation

Patients in this study frequently discussed relaxation as a beneficial and fundamental component of the yoga program. This is consistent with Nayak and Shankar (2004; p. 783) who stated that yoga “includes meditation, relaxation, control of breathing, and various physical postures... it teaches the art of relaxation.” In another study for older adults, Chen et al. (2007) found that participants in a yoga program rated relaxation as not very difficult to perform as part of yoga, but an extremely feasible and most helpful aspect of the program. The yoga sessions allowed participants to be mindful and take time to sit quietly and focus on themselves and their recovery.

Psychological Wellbeing

Through our review of current literature, we found that many studies discuss the impact of yoga on psychological wellbeing. Although these studies were not implemented in acute inpatient rehabilitation, much of this current literature parallels our findings.

Gupta et al.'s findings were consistent with our study regarding perceived decreases in stress and anxiety following the yoga intervention (2006). Gupta et al. stated that anxiety decreased following yoga in individuals with a variety of diagnoses. Similarly, Da Silva et al. (2009) found that yoga had positive effects on anxiety. This is important to note as some participants in our research study in acute inpatient rehabilitation settings expressed feelings of anxiety as a result of their diagnoses. For example, one participant in our research study indicated that he was in a very stressful

situation due to his recent diagnosis and that the yoga program helped in reducing stress at that time.

Garrett et al. (2011) found that increased confidence and concentration (focus) experienced after yoga practices led participants to believe that yoga programs had a positive influence on mood and coping skills in individuals who had experienced a stroke. This evidence strongly parallels our research findings regarding increased confidence, ability to focus, and coping skills and decreased pain following the implementation of a yoga program in an inpatient rehabilitation setting.

Satisfaction with the Yoga Program and Program Evaluation

In addition to the perceived impact of yoga on recovery, participants were satisfied with the program and 30 out of 31 participants recommended our yoga program to future individuals in the inpatient facility. In general, participants in our study described participation in the therapeutic yoga in positive terms. Cohen et al. (2007) received similar feedback and high satisfaction rates in their study on the impact of yoga on hot flashes in 13 postmenopausal women. Due to the limited number of studies on participants' satisfaction with yoga interventions, future research is needed to develop a client-centered therapeutic yoga program. Additionally, future studies should use quantitative outcome measures to complement qualitative feedback to better address satisfaction and possible issues to address.

In contrast to many of the quantitative studies examined in the literature review, we were interested in the participants' perceived impact of yoga rather than the measurable physiological and physical outcomes. With this, participants in our study reported several perceived benefits and an overall positive experience with an average of only three sessions of individual yoga sessions, group yoga sessions, or a combination of the two. Likewise, some participants perceived benefits after attending only one yoga session. Therefore, while people may wish for increased dosing of yoga, it is unknown how many sessions are truly needed to maximize patient benefit.

Limitations

As in any research, there are limitations to this pilot study. First, this study was implemented in two acute inpatient rehabilitation settings in Indianapolis; thus, the results cannot be generalized to all acute inpatient rehabilitation settings. Second, while we recruited 55 people in only three months, overall, this is a small sample size and included multiple diagnoses; results therefore cannot be generalized to the overall population. Additionally, approximately 50% of the participants completed the survey. The other study participants who did not complete the survey may have not

found the yoga helpful or may have had a negative experience, but that information was not recorded. Third, this study was not blinded as researchers and participants were educated on the purpose of the study prior to participation. Fourth, there was no control group of individuals in this study. Any future study should include a control group to better tease out the impact of the addition of yoga on recovery versus typical rehabilitation results and lengths of stay. The number of sessions, type of therapeutic yoga (group, individual, and/or relaxation training), and the types of yoga practices (i.e., breathing, postures) varied depending on the schedule, needs, and abilities of the individual. Individuals experienced a range between one and nine sessions. This resulted in some participants attending more sessions and practicing yoga in a different manner than others. Finally, we do not know the overall length of stay for individuals or final rehabilitation outcomes. All of these factors could lead to potential biases in obtaining data, could have affected our results, and are noted limitations to our study. Such limitations must be addressed in future studies.

Conclusion

Participants perceived benefit from the addition of yoga as a complement to traditional therapies during acute inpatient rehabilitation. It appears that there is a need to help patients in this setting better manage stress and worry that may be a part of the recovery process during rehabilitation. Many participants provided suggestions to improve the implementation of the yoga program in an acute inpatient rehabilitation setting. This study demonstrates that it is feasible to teach adapted yoga to individuals in an inpatient rehabilitation setting. We hope that with further research, therapeutic yoga can be integrated to complement inpatient rehabilitation.

Acknowledgments and Declaration of Interest:

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Appendix

RA - Turn the recorder on and ask the following qualitative questions:

1. Have you practiced yoga before this?
 Yes
 No
2. How helpful was yoga practice to your recovery?
 Not helpful
 A little helpful
 Somewhat helpful
 Very helpful
3. Have you used any of the yoga practices learned during rehabilitation on your own at home?
 Yes
 No
4. Which yoga practices have you used at home?
 NA
 Breathing
 Movement
 Relaxation
5. How are the yoga practices you are using at home helpful to you?
 NA
 Reduce pain
 Reduce stress
 Make me feel better
 Help with sleep
 Easy to perform
 Soothe my emotions
 Other
6. Did you get a copy of the recorded relaxation program "Relaxation to Enhance Your Recovery?"
 Yes
 No
7. How helpful has the recorded relaxation program been to you?
 NA
 Not helpful
 A little helpful
 Somewhat helpful
 Very helpful
8. How is the recorded relaxation program helpful to you?
 NA
 Reduce pain
 Reduce stress
 Make me feel better
 Help with sleep
 Soothe my emotions
 Other

(continued on page 152)

