THE JOURNAL OF ALTERNATIVE AND COMPLEMENTARY MEDICINE
Volume 13, Number 2, 2007, pp. 000–000

DOI: 10.1089/acm.2006.6117

A PILOT STUDY FOR A RANDOMIZED, CONTROLLED TRIAL ON THE EFFECT OF GUIDED IMAGERY IN HOSPITALIZED MEDICAL PATIENTS

Dear Editor:

Hospitalized patients often experience anxiety and stress, which decrease their quality of life and impede their physiologic functioning. Mind–body techniques, such as guided imagery, may be beneficial for patient relaxation in perioperative[1] and outpatient settings. Guided imagery is the third most commonly used mind–body therapy in the United States.[2] It is designed to guide patients toward a relaxed state of mind and to provide gentle, hypnotic-like suggestions to bring the resources of the relaxed mind back to daily life.[3] The effects of guided imagery among general medical inpatients are not fully known. We performed a pilot study to investigate whether guided imagery by way of audiotape has any psychologic and physiologic effect on general medical patients during their first few days of hospitalization.

Eligible patients were English-speaking, 18–75 years of age, with a hospitalization greater than 48 hours, a Mini–Mental Status Exam score greater than 23,[4] and no isolation precautions. Physicians gave permission to approach eligible patients. Subjects were enrolled and randomized on the second day of hospitalization. They were asked to use guided imagery by way of audiotape or to spend quiet time for at least 20 minutes, twice per day, for 2 days. The date and time of interventions were collected in diaries, and patients were assessed at baseline and at 24 and 48 hours. The imagery audiotape was intended to reduce anxiety by combining relaxation techniques with suggestions of imagery to enhance healing.[3] The tape guided inpatients through a process of recalling personal scenes filled with comforting positive emotions, imagery rehearsals of enhanced outcomes, and recovery of normal activities. Control patients were asked to perform a solitary activity (e.g., reading, listening to music). The study was approved by the Institutional Review Board at Beth Israel Deaconess Medical Center (BIDMC; Boston, MA).

Demographic, comorbidity, and admission data were collected from medical records; medication use and physiological parameters (i.e., blood pressure, heart rate) were obtained from patients' charts; and psychological data were gathered from interviews. We assessed anxiety using the Spielberger State-Trait Anxiety Inventory[5] and a visual analog scale. Mood was measured with the Profile of Mood States[6] and stress with the Perceived Stress scales.[7] We measured sleep quality using the Richards-Campbell Sleep Questionnaire[8]; spirituality with the Spiritual Well-Being subscale[9]; hospital satisfaction with a standard survey; and the burden of illness with the Charlson Comorbidity Index.[10] Efficacy analyses compared changes from baseline to 24- and 48 hour follow-up in the imagery group, compared to the quiet-time group. Analyses were conducted with last values carried forward, if data were missing. Categorical variables were analyzed using the Fisher's exact test and continuous variables using the Wilcoxon rank-sum test. Analyses were conducted using SAS statistical software, version 9.1 for Windows (SAS Institute; Carey, NC).

From the 30 enrolled patients, data from 23 subjects (11 imagery and 12 quiet time) were analyzed (Fig. 1). We did not find any significant difference between the groups' baseline characteristics (Table 1). Thirty-eight (38) guided imagery and 44 quiet-time periods were recorded, and the average number of interventions was similar (imagery 1.3 ± 0.5 vs. quiet time 1.1 ± 0.9 times per day; $p = 0.65$). Each patient liked listening to the tape. There were no significant changes in the psychologic outcomes (Table 2). During the study, fewer patients used anxiolytics in the imagery group (imagery 7/11 vs. quiet time 10/12; $p = 0.37$), and the average number of anxiolytics was smaller (imagery 1.3 ± 1.2 vs. quiet time 1.7 ± 1.4; $p = 0.59$). For the physiologic parameters (Table 2), the heart rate was not different at baseline, but the imagery group had a significantly greater reduction, compared to the controls, for the second follow-up.

The tendency for a decrease in anxiety in the imagery group is consistent with the published literature.[1] We found a significant decrease[3] in heart rate in the imagery group. Anxiety is associated with a reduction in vagal control of the heart, so the decrease in heart rate may be explained by increased vagal activity resulting from imagery therapy. Limitations of this study included the small sample size, and the possibility that our control group received an active intervention—in that quiet time alone may have reduced anxiety among hospitalized patients.

In conclusion, guided imagery by way of audiotape may offer benefits for general medical inpatients. Our protocol, with minor modifications, would be feasible to investigate the effects of guided imagery in hospitalized patients more broadly in larger, randomized, control trials.

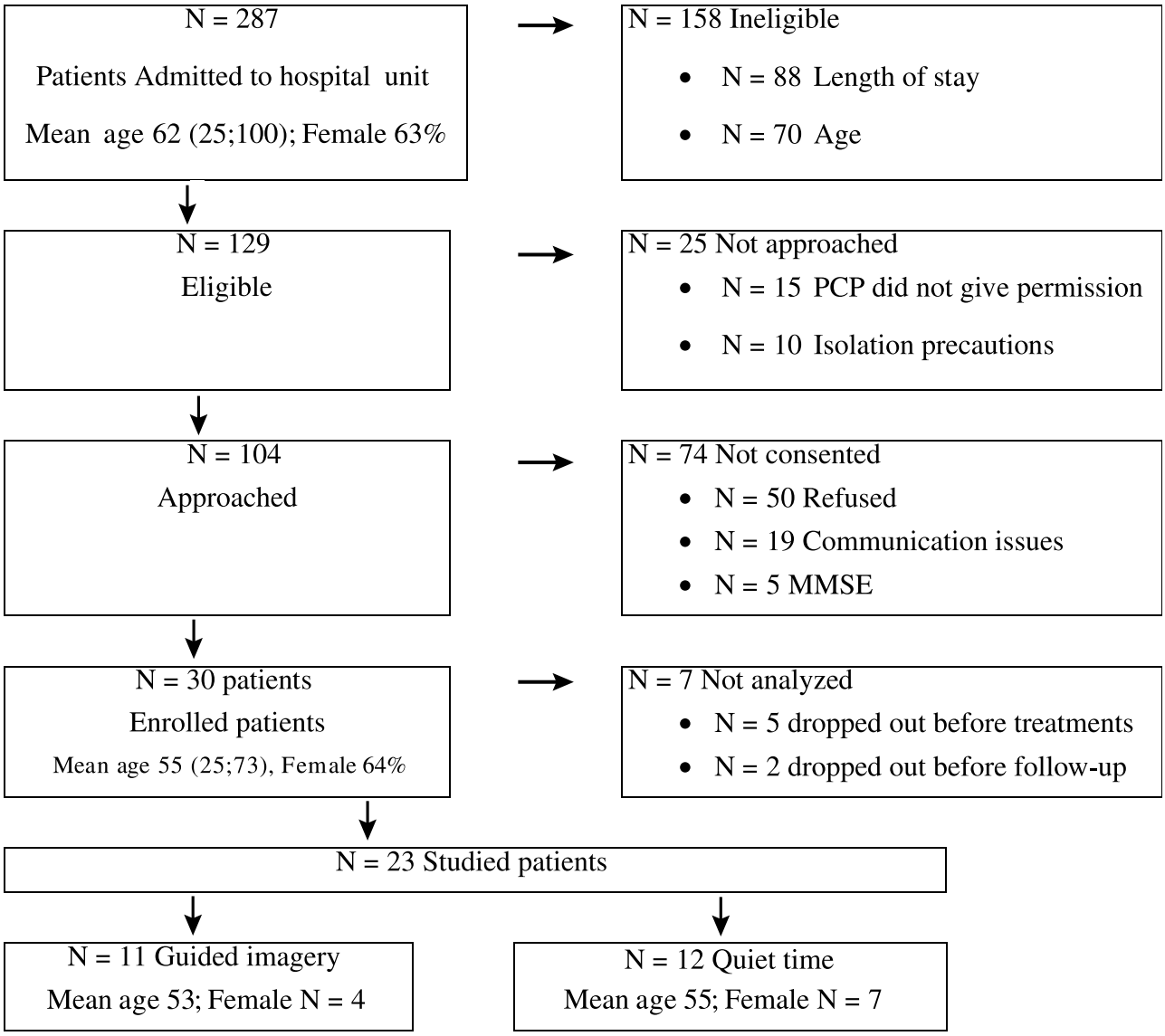

FIG. 1. Enrollment. PCP, MMSE, Mini-Mental Status Exam.

TABLE 1. BASELINE CHARACTERISTICS

Characteristic	*Imagery* (n = *11*)	*Quiet time* (n = *12*)
Age, years (mean ± SD)	53.5 (13.0)	54.8 (9.5)
Gender, female (*N*)	3	7
Race/ethnicity, white not Hispanic (*N*)	10	11
Marital status, married (*N*)	10	6
Education, high school graduate or (*N*)	10	12
Comorbidity, Charlson score (mean ± SD)	4.6 (± 4.2)	3.8 (± 4.7)
Mini–Mental State Exam score (mean ± SD)	28.8 (± 1.1)	28.7 (± 1.8)
Length of stay in hospital (days, mean ± SD)	4.4 (± 3.3)	3.8 (± 2.4)

SD, standard deviation.

TABLE 2. EFFICACY OUTCOMES

Psychological outcomes	*Imagery (n = 11)*	*Quiet time (n = 12)*	p *value*
State Anxiety (mean ± SD)			
Baseline	44.1 ± 9.9	40.7 ± 10.7	0.55
Change at 24 hours	−6.7 ± 8.15	−1.3 ± 9.0	0.26
Change at 48 hours	−8.2 ± 9.5	−1.4 ± 8.4	0.10
Anxiety, mm (mean ± SD)			
Baseline	37.4 ± 18.8	25.6 ± 21.2	0.25
Change at 24 hours	−5.5 ± 25.9	+11.0 ± 16.7	0.25
Change at 48 hours	−9.1 ± 20.6	+10.3 ± 20.4	0.09
Mood Disturbance (mean ± SD)			
Baseline	54.5 ± 13.5	53.7 ± 15.0	0.98
Change at 24 hours	−10.1 ± 9.4	−8.8 ± 15.4	0.98
Change at 48 hours	−12.5 ± 7.9	−10.8 ± 10.5	0.52
Perceived Stress (mean ± SD)			
Baseline	16.0 ± 3.2	18.1 ± 6.5	0.52
Change at 24 hours	0.0 ± 3.6	−1.2 ± 4.2	0.46
Change at 48 hours	−1.4 ± 3.1	−2.7 ± 5.3	0.31
Richardson Sleep, mm (mean ± SD)			
Baseline	56.0 ± 16.7	52.4 ± 17.2	0.56
Change at 24 hours	+4.7 ± 20.4	+13.3 ± 21.7	0.34
Change at 48 hours	+6.7 ± 19.3	+10.4 ± 23.7	0.60
Spirituality (mean ± SD)			
Baseline	46.1 ± 7.4	41.1 ± 10.9	0.32
Change at 24 hours	+0.6 ± 6.4	+1.2 ± 7.1	0.71
Change at 48 hours	+1.6 ± 6.0	+1.3 ± 7.2	0.93
Satisfaction with hospital (mean ± SD)			
At 24 hours	27.4 ± 8.1	34.6 ± 6.7	0.05
At 48 hours	29.1 ± 10.2	34.1 ± 7.9	0.24
Physiological outcomes			
Systolic blood pressure, mmHg (mean ± SD)			
Baseline	124.5 ± 14.7	116.6 ± 11.8	0.22
Change at 24 hours	+2.1 ± 11.5	−2.2 ± 7.9	0.39
Change at 48 hours	+1.6 ± 14.4	−4.6 ± 7.8	0.22
Diastolic blood pressure, mmHg (mean ± SD)			
Baseline	72.8 ± 11.2	69.5 ± 7.5	0.93
Change at 24 hours	+3.8 ± 12.8	−1.5 ± 6.1	0.29
Change at 48 hours	+1.2 ± 13.1	−0.8 ± 5.9	0.76
Heart rate per minute (mean ± SD)			
Baseline	80.5 ± 13.3	80.3 ± 10.5	0.78
Change at 24 hours	−5.9 ± 10.7	+0.5 ± 7.6	0.12
Change at 48 hours	−7.8 ± 8.5	+0.1 ± 7.9	0.05

SD, standard deviation.

Acknowledgments

Dr. Phillips was supported by a Mid-Career Investigator Award (K24 AT00589) from the National Center for Complementary and Alternative Medicine, National Institutes of Health (Bethesda, MD).

The views expressed by the authors are not necessarily the views of the National Center for Complementary and Alternative Medicine, National Institutes of Health.

Margaret M. Huddleston benefits from sales of the guided imagery tape tested in this study. She designed and recorded the guided imagery to be used as a companion to her book, *Prepare for Surgery, Heal Faster: A Guide of Mind-Body Techniques*.

The authors thank Christine Carr, Division Administrator, and Zachary Tofias, Division Program Coordinator, for their help in the completion of this study.

REFERENCES

1. Tusek D, Church JM, Fazio VW. Guided imagery as a coping strategy for perioperative patients. AORN J 1997;6:644–649.

2. Wolsko PM, Eisenberg DM, Davis RB, Phillips RS. Use of mind-body medical therapies. J Gen Intern Med 2004;19: 43–50.
3. Huddleston MM. Prepare for Surgery, Heal Faster: A Guide of Mind-Body Techniques.
4. Folstein MF, Folstein SE, McHugh PR. Mini–mental state: A practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res 1975;12:189–198.
5. Spielberger C. Manual for the State-Trait Anxiety Inventory (Form Y). Palo Alto, CA: Consulting Psychologists Press Inc., 1983.
6. Shacham S. A shortened version of the Profile of Mood States. J Pers Assess 1983;47:305–306.
7. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Beh 1983;24:385–396.
8. Richards KC, O'Sullivan PS, Phillips RL. Measurement of sleep in critically ill patients. J Nurs Meas 2000;8:131–144.
9. Peterman AH, Fitchett G, Brady MJ, Hernandez L, Cella D. Measuring spiritual well-being in people with cancer: The functional assessment of chronic illness therapy—Spiritual Well-being Scale (FACIT-Sp). Ann Behav Med 2002;24: 49–58.
10. Charlson ME, Pompei P, Ales KL, et al. A new method of classifying prognostic comorbidity in longitudinal populations: Development and validation. J Chronic Dis 1987;40:373–383.

Maria Toth, M.D., Ph.D.
Peter M. Wolsko, M.D., M.P.H.
Judy Foreman, Ed.M.
Roger B. Davis, Sc.D.
Tom Delbanco, M.D.
Russell S. Phillips, M.D.
Division of General Medicine and Primary Care
Beth Israel Deaconess Medical Center
Boston, MA
Peter M. Wolska, M.D., M.P.H.
Kaiser Permanente Medical Group
Denver, CO
Margaret M. Huddleston

Address reprint requests to:
Russell S. Phillips, M.D.
Division of General Medicine and Primary Care
Beth Israel Deaconess Medical Center
330 Brookline Ave., Yamins 111
Boston, MA 02215

E-mail: rphillip@bidmc.harvard.edu