

Replication of a Clinical Outcome Study on a Hospital-Based Stress Management and Behavioral Medicine Program Utilizing Flotation REST and Biofeedback

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ABSTRACT

Psychosocial stress is accepted as a known contributor to emotional and somatic illness. This study is a replication of pre-post clinical effectiveness of a medically supervised treatment program for stress disorders. The program is hospital-based and employs biofeedback as an introductory self-regulation, stress reduction method and flotation REST as a primary self-regulation, stress reduction method.

Eighty respondents of 154 out-patients are reviewed statistically assessing change in symptom severity and frequency and secondary symptoms.

The results are reviewed with comparison to an initial clinical outcome study on a similar out-patient group treated in the same program. The results continue to be strongly suggestive of health benefits with the use of this treatment model.

INTRODUCTION

An initial clinical outcome study on a group of 71 out-patients receiving treatment in the Stress Management and Behavioral Medicine Laboratory at St. Elizabeth Hospital (Jacobs et al., 1985) revealed statistical results highly suggestive that a program utilizing biofeedback as an introductory, self-regulation, stress reduction technique and flotation REST as primary self-regulation, stress reduction technique is effective in reduction of psychophysiologic symptoms.

This study reviews the ability of the treatment model as presently applied to maintain consistent therapeutic gains.

Overactivation of the sympathetically mediated fight or flight response has been implicated in the development of several modern stress related health disorders including certain cardiovascular disorders (Friedman and Rosenman, 1974; Pelletier, 1977; Guttman and Benson, 1971; Patel, 1973); anxiety disorders (Gatchel, 1982; Selye, 1956; Pelletier, 1977; Basowitz et

al., 1954); migraine headaches (Pelletier, 1977; Selye, 1956); musculoskeletal headaches (Budzynski et al., 1970) and gastrointestinal disorders (Pelletier, 1977; Selye, 1956). It is hypothesized that these disorders may be prevented or alleviated by either reducing sympathetic activation or increasing parasympathetic activation.

Biofeedback and other self-regulatory techniques are being employed to teach control over sympathetic and parasympathetic functioning.

The Stress Management and Behavioral Medicine Program at St. Elizabeth Hospital received both in-patient and out-patient referrals for a variety of stress-related health disorders. These include generalized anxiety, chronic pain syndromes, muscle tension and migraine headaches, selected gastrointestinal and cardiovascular disorders and other stress-related disorders. Approximately 80% of our patients are physician referred. Prior to self-regulation training, patients complete a detailed lifestyle assessment questionnaire followed by a psychiatry behavioral medicine evaluation and traditional biofeedback stress profile. Patients then participate in a comprehensive self-regulation training protocol including EMG-assisted (J & J model M-53) relaxation training as an introductory method and then flotation REST-assisted relaxation training as a primary form of relaxation training. Training sessions involve point-to-point muscle relaxation, breathing techniques and guided as well as passive visual imagery techniques. The program is a bio-behavioral treatment package utilizing biofeedback and REST which also includes a discussion of symptoms and stressors and instructions for integrating the relaxation skills into the home and work environment.

METHOD

The replication study included 154 out-patients who received treatment utilizing EMG assisted relaxation training as an introductory self-regulation method and flotation REST assisted relaxation training as a primary method between August of 1982 and October of 1984. Ten key quantifiable variables from a pre-treatment questionnaire containing the same 10 variables. The variables included: severity and frequency of the chief complaint and secondary symptoms, cigarettes, alcohol, and medication usage; type A behavioral traits, sleep time, ratings on daily life pressures and the ability to relax along with a subjective rating of improvement by the patient. All measures involved interval scales except symptom frequency

(ordinal scale) and medications (change in daily medication usage). Differences in the pre-post means for the measured variables were examined statistically. Variables with interval scales were examined using a one-tailed Student t-test. Frequency of symptoms was examined using the non-parametric one-tailed Wilcoxon T-test because of the ordinal scale used in its measurement. Medication usage was not examined statistically due to the complexity in evaluating the diversity of medication being used.

RESULTS

Eighty patients returned the follow-up questionnaire, representing 52% of the sample. No significant differences were noted between respondents

TABLE I
CLINICAL OUTCOME STUDY (SECOND SAMPLE)
N=80 - PRESENTING PROBLEMS

<u>PROBLEM</u>	<u>PEOPLE</u>
Generalized Anxiety	23
Musculoskeletal Headaches	22
Pain	11
Migraine Headaches	5
Depression	6
Hypertension	4
GI Disorders	2
Torticollis	2
Blepharospasm	1
Chronic Musculoskeletal Tension	1
Stuttering	1
Type A Behavior/Obsessive Compulsive	<u>1</u>
TOTAL	N=80

and nonrespondents in terms of improvement during therapy, age, sex or number of sessions. The mean number of sessions was 11.1 represented by 3.7 biofeedback assisted relaxation sessions and 7.4 flotation REST-assisted relaxation sessions. The mean follow-up time was 7 months. The treatment

TABLE II
PRE/POST MEANS AND STATISTICAL RESULTS FOR
MAJOR DIAGNOSTIC CATEGORIES

VARIABLE	PRE	POST	T-VALUE	DF
1. <u>Generalized Anxiety:</u>			<u>Wilcoxon</u>	
A. Symptom Frequency	6.97	3.35	0*	22
			<u>Student T</u>	
B. Symptom Severity	2.76	1.65	7.52*	22
C. Secondary Complaints	2.54	2.96	-4.28*	22
D. Relaxation Ability	4.26	2.95	6.06*	22
2. <u>Tension Headaches:</u>			<u>Wilcoxon</u>	
A. Symptom Frequency	6.82	4.05	7.4	19
			<u>Student T</u>	
B. Symptom Severity	2.95	1.92	4.32*	21
C. Secondary Complaints	2.85	3.11	-1.62**	19
D. Relaxation Ability	3.75	2.57	3.94*	19
3. <u>Chronic Pain:</u>			<u>Wilcoxon</u>	
A. Symptom Frequency	9.4	8.5	10*	9
			<u>Student T</u>	
B. Symptom Severity	3.18	2.5	2.09*	10
C. Secondary Complaints	2.94	3.09	-7.04*	9
D. Relaxation Ability	3.66	3.00	1.41*	8
4. <u>Migraine Headaches:</u>			<u>Wilcoxon</u>	
A. Symptom Frequency	3	1.2	0*	4
			<u>Student T</u>	
B. Symptom Severity	2.9	1.6	2.98*	4
C. Secondary Complaints	2.86	3.18	-1.65**	4
D. Relaxation Ability	3.8	2.7	1.97**	4

* Significant $p < .05$

** Significant $p < .10$

TABLE III
 GROUP #1
 71 OUTPATIENTS - 54 RESPONDENTS, JUNE 1981 - JULY 1982

MEANS				
VARIABLE	PRE	POST	T VALUE*	DF
			<u>Wilcoxon</u>	
Symptom Frequency	7.08	3.77	44*	49
			<u>Student T</u>	
Symptom Frequency	3.01	1.63	9.71*	48
Secondary Complaints	2.55	3.02	-5.42*	47
Type A Traits	2.6	2.79	-1.80*	47
Sleep Hours	7.16	7.38	-1.84*	51
Life Pressures**				
Work	3.06	2.58	2.92*	36
No Work	2.88	2.42	1.92*	11
Alcohol	2.92	2.38	4.25*	38
Relaxation Ability	4.13	2.82	7.21*	51
EMG 1-4***	7.43	6.25	3.02*	34
EMG 16-20	5.74	4.78	2.43*	34
Cigarettes	4.0	4.0	0	10

TABLE III - continued
 GROUP #2
 154 OUTPATIENTS - 80 RESPONDENTS, AUGUST 1982 - OCTOBER 1984

MEANS				
VARIABLE	PRE	POST	T VALUE*	DF
			<u>Wilcoxon</u>	
Symptom Frequency	7.078	4.08	108.5*	66
			<u>Student T</u>	
Symptom Frequency	2.90	1.83	10.02*	77
Secondary Complaints	2.75	3.08	-4.67*	76
Type A Traits	2.6	2.9	-2.61*	74
Sleep Hours	7.16	7.38	-1.84*	51
Life Pressures**				
Work	2.78	2.38	4.01*	58
No Work	2.97	2.50	1.72*	10
Alcohol	2.57	2.30	2.73*	57
Relaxation Ability	3.98	2.82	8.80*	74
EMG 1-4***	3.57	2.56	2.75*	39
EMG 16-20	3.23	2.02	2.41*	39
Cigarettes	3.80	3.52	.90	20

* All values significant at $p < .05$

** Since the mean for life pressures represented an average of 3 areas (work, home, personal functioning) and some patients did not work, this variable divided into two groups: work and no work

*** For EMG, two values were calculated: 1) EMG 1-4, representing an average of the first four minutes of each 25 minute baseline session; 2) EMG 16-20, representing the last four minutes of each 25 minute baseline session.

results were highly similar to the initial clinical outcome study (Jacobs et al., 1985) Four percent of the patients rated their condition as completely alleviated, 43% greatly improved, 25% moderately improved, 24% slightly improved and 4% no change. In summary, 96% rated their condition as improved. Statistical analyses of the pre-post measures revealed significant changes for all variables except cigarettes and sleep. The majority of patients fell into four major diagnostic treatment categories: generalized anxiety disorders, tension headaches, chronic pain and migraine headaches. Table II and Table III compare the initial study and replication statistical data.

In each of the four major diagnostic categories, generalized anxiety, chronic pain, migraines and muscle tension headaches, significant changes from pre-test to post-test ($P < .05$) were observed on all four outcome measures (symptom frequency, symptom severity, secondary complaints and subjective ratings in ability to relax). Additionally, 68% showed a decrease in medication usage, 13% increased and 19% showed no change.

DISCUSSION

The results of this replication study show continued support for positive treatment effects for the treatment model in use. This study in conjunction with the initial outcome study strongly suggests that a hospital-based Stress Management and Behavioral Medicine Program which employs biofeedback as an introductory self-regulation technique and flotation REST as a primary self-regulation technique may be effective as a primary or adjunctive treatment modality in the treatment of a variety of stress-related health disorders. This is evident as patients showed significant change from pre-test to post-test on a variety of cognitive and behavioral indicators of stress management, reported a high degree of subjective improvement and showed significant symptom reduction in four major diagnostic treatment categories (general anxiety, tension headaches, migraine headaches and chronic pain). The authors acknowledge limitations in this study in that it is not a controlled study, the return rate of questionnaires is low and longitudinal data are not yet available. Even with these limitations, the treatment program is highly suggestive of clinical effectiveness. In order to assess the role of all the variables contributing to positive outcome, a more formal investigative study with appropriate controls and longitudinal follow-up components is necessary.

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