

A COMPARATIVE STUDY OF RELATIVE EFFECTIVENESS OF BIOFEEDBACK AND SHAVASANA (YOGA) IN TENSION HEADACHE*

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In recent years, a great amount of interest has been generated by the potential treatment application of biofeedback techniques in various psychosomatic disorders. The possibility of using it in the treatment of tension headache was first advanced by Budzynski *et al.* (1970). Subsequently various workers demonstrated a similar encouraging result in uncontrolled studies (Wickramasekera, 1972; McKenzie *et al.*, 1974; Epstein *et al.*, 1976; Reeves, 1976; Epstein and Abel, 1977). In the first controlled study Budzynski *et al.* (1973) demonstrated superiority of biofeedback over verbal relaxation procedure.

Several attempts have been made to compare the efficacy of EMG biofeedback and verbal relaxation method particularly progressive muscular relaxation. While Cox *et al.* (1975) and Haynes *et al.* (1975) found the two methods equivalently successful in reducing headache when compared to controls, Kumariah (1980) found that EMG biofeedback combined with progressive muscular relaxation was inferior as compared to EMG biofeedback or progressive muscular relaxation alone in the treatment of tension headache. In tension headache as compared to other key muscles (temporalis, neck muscles, trapezium and frontalis) significantly elevated tension has been observed in frontalis muscle (Phillips, 1977a). Contraction of this muscle has been shown to be related to headache (Dalessio, 1972). Application of EMG

biofeedback on frontalis muscle to control its tension has been reported by Budzynski and Stoyva (1969); Budzynski *et al.* (1970); Budzynski *et al.* (1973); Epstein *et al.* (1974); Raskin *et al.* (1973); Wicramasekera (1972, 1973). Phillips (1977) reported the effects of EMG biofeedback on the modification of three components of tension headache (a) muscular tension levels, (b) intensity/frequency of headache and (c) muscular medication frequency.

In India, Yoga has been practised for a long time to relieve various somatic ailments. Vahia *et al.* (1972) investigated the clinical application of Patanjali Yoga in certain psychosomatic disorders and reported a promising future for such a therapy (Vahia *et al.*, 1972). After a series of scientific studies, done on the meditating Yogis and Maharishis, it has been observed that they are able to control various muscular and autonomic activities of the body by relaxation (Varma, 1979). Shavasana (Yoga) is one of the techniques for obtaining relaxation of body and mind. While relaxation technique aims at decreasing tension of a gross muscle group with focussed attention (Jacobson, 1938). Borkovec and Hennings (1978) reported that relaxation without physiological attention focussing was unexpectedly superior to other relaxation methods in reducing tension. A controversy exists with regard to contributions of two components, mind and body in reduc-

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ing tension. Therefore a proper resolution of this controversy may be provided by a systematic study of comparison of biofeedback muscle relaxing procedure with Shavasana which involves both the mind and yoga in proucing relaxation.

Relevance of such a study is evident also by the observation that in a country like ours western psychotherapy and behaviour therapy—biofeedback fails because of (a) Illiteracy which makes it hard for acceptance of a sophisticated measure (b) poverty, which prevents the application of a prolonged and extensive therapy. Thus it is necessary to evaluate various ancient yogic and meditating techniques for their therapeutic efficacy (Neki, 1975).

Fraitful results from such a comparative study of biofeedback and shavasana would provide an additional therapeutic technique in the armamentarium of the psychiatrists.

Sample :

32 patients were referred to us as cases of headache from the departments of Neurology, Neurosurgery, Ophthalmology a ENT of K. G.'s Medical College, Lucknow during a period of 3 months (1st June, 1980 to 31st August, 1980). These patients were evaluated by obtaining a clinical history and then conducting a detailed cardiovascular, neurological, ENT, Ophthalmic examinations. Of the 32 only 21 patients were selected for the study. Rest were excluded because of their headache being secondary in character. Following inclusion criteria were utilized for the purpose of this study :

- (1) Age range 16-45 years.
- (2) Education up to High School.
- (3) Resident of Lucknow city so as to be able to attend our clinic regularly.
- (4) Should have no associated major physical disorder (CVS, Neurological, ENT, Ophthalmic).
- (5) Should be cooperative and suffi-

ciently motivated to undergo treatment sessions for 3 months.

- (6) Should have presented with headache as the main complaint and the clinical picture should be consist with the diagnosis of muscular contraction headache.
- (7) Further the patient should have headache intensity score of 0.2 on Budzynski scale (Budzynski *et al.*, 1970) and a frequency of more than 2 bouts of headache per week for more than a year.

Thus selected, 16 subjects were randomly assigned to one of the two groups i.e EMG biofeedback and Shavasana.

EMG Biofeedback Group :

These patients before being placed on EMG Biofeedback, were trained for 4 sessions so as to familiarize them with relaxation by Jacobson relaxation technique (Jacobson, 1938). In the meanwhile they were observed at base line period for frequency and severity of headache.

Patient was made to lie comfortably on a couch in a noise free room and electrodes were applied on his forehead. One in the centre of the forehead served as earth electrode, the other two were placed on a line, about 4"-5" apart on the forehead. Auditory feedback was provided by the instrument's internal loudspeaker in the form of a series of click sounds. The frequency of the clicks was proportional to the integrated EMG level. Sensitivity control was used to set the meter reading to an appropriate range and it helped in setting optimal rate of clicks for the patient to discriminate small changes of EMG level. Mode 1 was used for this purpose and sensitivity level for each patient was noticed. Thus each patient was helped to achieve relaxation or reduce muscle tension with the help of auditory feedback. These patients were given half an hour session twice a week for 10 weeks.

Shavasana (Yoga) Group :

Patients taken up on this programme were trained for shavasana by a well trained yoga therapist for 4 sessions. This served as a base line period during which frequency and severity of headache was also observed. Subsequently the patient exercised shavasana repeatedly for half an hour at each session with a rate of twice per week for 10 weeks. Subjects were told that they would relax by this procedure and it would help them unburden stressful thoughts.

Assessment :

Progress of a treatment method was evaluated on a 5 point rating scale for headache and for social adjustment (For headache : 0=No headache, 1=mild 2=moderate, 3=severe, 4=incapacitating and For social adjustment: 0=No trouble, 1=mild adjustment problem, 2=moderate adjustment problem, which are somehow coped with, 3=severe adjustment problem difficult to cope with, 4=total inability for social adjustment). These ratings were obtained at the beginning of treatment and after every 4 sessions. In case of EMG biofeedback group patient's first reading was at the beginning, second after 4 session of relaxation exercises and then as described.

RESULTS

Out of 16 subjects, 3 dropped out, 2 from group one, after 7th and 10th sessions respectively, and one from group two after the 6th session. 13 subjects completed all the periods. Age and Sex distribution of these subjects were as follows

Out of 13 subjects 6 subjects could achieve zero score either during or at the end of 12 weeks' treatment programme. 4 subjects improved moderately and had a score of 1 at the end, while 2 patients did not demonstrate any significant improvement. One patient became worse compared to his score at the beginning.

TABLE—I

	Biofeedback N=6	Shavasana N=7
Sex :		
Male ..	2	4
Female ..	4	3
Age (in yrs):		
16—25 ..	3	3
26—35 ..	2	3
36—45 ..	1	1

TABLE II—Score for Headache

Group	No. of pts.	Initial score						Final score					
		0	1	2	3	4	0	1	2	3	4		
EMG-BF ..	5	4	3	1	0	0	1	0	0	0	0	0	
N=6 ..	1	3	0	0	0	0	1	0	0	0	0	0	
Shavasana	6	4	3	3	0	0	0	0	0	0	0	0	
N=7 ..	1	3	0	0	0	0	0	0	0	0	0	1	
Total ..	13	6	4	0	1	2							

TABLE III—Score for Social Adjustment

Group	No. of pts.	Initial score				Final score					
		0	1	2	3	4	0	1	2	3	4
EMG -BF ..	4	3	2	1	1	0	0	0	0	0	0
N=6	2	2	0	1	1	0	0	0	0	0	0
Shavasana	1	4	0	1	0	0	0	0	0	0	0
N=7 ..	3	3	2	0	1	0	0	0	0	0	0
..	3	2	1	2	0	0	0	0	0	0	0
Total ..	13	..	5	5	3	0	0	0	0	0	0

Table-III shows improvement in social adjustment. 5 out of 13 patients showed total or complete improvement and had no difficulty at the termination. While another 5 patients had mild difficulty. One patient had no improvement. Comparative evaluation of two methods showed no significant change.

TABLE IV

Groups	No. of patients having received complete remission	Average no. of sessions
EMG BF ..	3	16
Shavasana ..	3	13

Above Table shows that average number of sessions taken for shavasana was lower than that for EMG biofeedback.

Frequency Score :

Patient	Initial week fre- quency four/ week	Assessment						
		1st	2nd	3rd	4th	5th	6th	7th
A	4	4	4	2	1	0	0	0
B (All on EMG-BF).	2	2	2	2	2	2	2	2
C ..	8	6	4	2	0	0	0	0
D ..	10	8	4	4	2	2	0	0
E ..	12	10	10	8	8	4	2	2
F ..	8	8	5	4	4	4	3	3
G ..	8	8	8	8	8	6	8	8
H (All on Yoga).	12	10	7	4	0	0	0	0
I ..	8	6	4	4	0	0	0	0
J ..	6	6	2	0	0	0	0	0
K ..	4	4	2	2	1	1	1	1
L	6	6	2	2	2	1	0	0
M	6	6	4	2	1	1	1	1

DISCUSSION

Results show that both groups, EMG Biofeedback and Shavasana are equally effective in the treatment of tension headache. No significant difference could be observed on 5 point scale for headache between two groups. Although not exactly with Shavasana Cox *et al.* (1975) and Haynes *et al.* (1975) comparing progressive muscular relaxation and EMG biofeedback, also found two methods to be equivalently successful in reducing headache,

but Chesney and Shelton (1976) found both relaxation instruction alone, or in combination with EMG biofeedback to be superior to feedback alone. Thus EMG biofeedback appears to be no better than relaxation or Shavasana which evidences relaxation. Similar observations about the status of EMG Biofeedback have been made by Masur (1976) and White and Alaxender (1976) that feedback treated patients do no better than placebo. Our results are also in conformity with findings of Kumaraiah (1980) in that there was no significant difference between EMG biofeedback and progressive muscular relaxation.

Present study also shows that social adjustment improved almost proportionately to improvement in tension headache. This finding needs no clarification.

Another interesting finding emerging from this study is that more patients of younger age group (16-25 yrs.) showed significantly (83.3%) successful response to both modes of treatment than patients of relatively higher age group (26-35 yrs.) and 36-45 yrs.) although number of patients of other age group was quite low.

Average no. of sessions required by patients on EMG biofeedback for complete remission were 16, compared to only 13 sessions taken by patients on Shavasana. This observation further supports our finding that Shavasana is no less efficacious than Biofeedback.

Thus present study makes an attempt to support the efficacy of our old yoga system and shows that this is as effective as biofeedback in tension headache. But could same be applied to other psycho physiological disorders? Further research may reveal more definitive findings. Our age-old system need not be discarded as inferior.

COMMENTS

1. Results show that both groups, i.e. EMG Biofeedback and Shavasana are

equally effective in the treatment of tension headache. No significant difference could be observed on a 5 point scale for headache between 2 groups. On biofeedback 50% patients attained complete remission while on shavasana 43% did.

2. Our results show that social adjustment also improved almost proportionately to improvement in tension headache.

3. Another interesting finding emerging from this study is that more patients of younger age group (16-25 yrs.) exhibited significantly (83.3%) successful response to both modes of treatment than patients of relatively higher age group (26-35 yrs. and 36-45 yrs.).

4. Average number of sessions required by patients on EMG biofeedback for complete remission were 16, compared to only 13 sessions taken by patients on Shavasana (Yoga).

5. Thus the present study makes an attempt to support the efficacy of our old yoga system and shows that this is as effective as biofeedback in tension headache. But whether the same could be applied to treatment of other psychophysiological disorders only, further research would reveal. Our age old systems deserve a definite recognition.

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