

## **Behavioural Intervention in Post-operative Coronary Heart Disease Patients**

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### *Abstract*

This study was an attempt to find out the effectiveness of biofeedback induced relaxation and behavioural counselling in reducing the physical symptoms, anxiety and pain in five cases of coronary artery bypass graft surgery. Single case design with pre and post intervention assessments was adopted. 25 sessions of therapy was carried out with each subject over 30 days besides five sessions of pre and post intervention assessments. The results revealed remarkable improvement in their physical symptoms, anxiety and subjective well-being.

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Key words -

**Post-operative,**

**Coronary heart disease,**

**Biofeedback,**

**Behavioural counselling,**

**Coronary artery bypass graft,**

**Single case design**

Cardiovascular disease, particularly coronary heart disease is the leading cause of death and disability in the world [1]. This disease is either triggered or aggravated by the stress that an individual encounters in his day-to-day life. Furthermore, this becomes complicated by the perception of hazards involved in its treatment, especially surgical intervention.

For a person diagnosed as having coronary heart disease and recommended surgery, anxiety will be the first reaction to manifest. Surgery has been widely regarded as a stressor or a stressful life event that requires coping and adaptation for a successful outcome [2], [3], [4]. Numerous studies and relevant clinical literature have documented the presence of raised anxiety levels in surgical patients [5]. A high level of anxiety can adversely affect the patient's physiological status at the time of the surgery, or during the post-operative period [6].

A number of behaviour therapeutic interventions such as meditation, progressive muscle relaxation and hypnosis can be beneficial in relieving anxiety in surgical patients. An underlying physiological response, termed the relaxation response is elicited by these behavioural therapies. The regular elicitation of relaxation response has been shown to reduce

hypertension, decrease anxiety, increase exercise tolerance, improve asthmatic symptoms and reduce chronic pain [6].

Besides anxiety, pain is also a very important aspect of management in the post-operative period. It is well-known that there is a close relationship between anxiety and pain, and one of the cardinal rules of pain relief is that every attempt should be made to reduce the anxiety of those in pain [7].

In a study by Domar et al [6], the efficacy of the regular elicitation of the relaxation response in reducing surgical anxiety and pain in ambulatory surgical patients was studied. It was found that regular elicitation of the relaxation response altered the subjective reports of distress associated with surgery.

Dixhoorn et al [8] conducted a study on the psychic effects of physical training and relaxation therapy after myocardial infarction. It was found that exercise training was effective for some but not all cardiac patients and that the psychic effect of exercise could not be demonstrated. However, relaxation therapy enhanced the physical and psychic outcome of rehabilitation.

Flaherty and Fitzpatrick conducted a preliminary study to find out the effectiveness of relaxation technique to increase comfort level of post-operative patients [9]. It was found that the use of relaxation technique to reduce muscular tension led to an increased comfort level in the post-operative period.

In an in-depth review of relaxation and biofeedback studies, the Health and Public Policy Committee of the American College of Physicians compared the results of 18 biofeedback studies with 25 studies that used a variety of relaxation therapies [10]. Although the variation in procedures across studies suggests caution in drawing definitive conclusions, these results appear to be consistent with reports that relaxation procedures are somewhat more effective when one procedure is compared directly with the other. When the treatments were sequenced in a well controlled counterbalanced design however, the biofeedback-relaxation-therapy sequence, appeared to be more effective than either therapy alone or the reverse sequence [11].

The present study is an attempt to find out the effectiveness of biofeedback induced relaxation in post-operative patients of Coronary Artery Bypass Graft (CABG) surgery.

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## **Material and Methods**

### **Sample**

A sample of 5 subjects who had undergone CABG surgery about one year before and had persistent pain, physical discomfort and anxiety for more than a year were taken from Sri Jayadeva Institute of Cardiology, Bangalore . The selection was made as per the following criteria.

### **Inclusion criteria**

- a) Subjects who had undergone CABG atleast one year prior to coming for the behavioural treatment program.
- b) Age between 30 and 60 years.
- c) CABG being the first and the only surgery of the subject.

### **Exclusion criteria**

- a) Patients who had already been exposed to any kind of psychological intervention.
- b) Patients with other associated psychiatric, neurological or systemic disorders.

### **Design**

Single case design with pre-post assessments was adopted

### **Tools**

- 1) Speilberger's State Trait Anxiety Inventory [12] (STAI).
- 2) Visual Analogo Scale [13] (VAS).
- 3) Symptom Checklist (developed for the study from a list of common symptoms in such patients and rated on a 4-point scale (0-absent, 1-mild, 2-moderate, 3-severe) (see appendix). All these tools were used for the pre and the post therapeutic assessments.

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## **Therapeutic Procedure**

The therapeutic procedure consisted of

- (1) biofeedback induced relaxation (Galvanic Skin Response mode) [14] and
- (2) behavioural counselling [15] to the subjects. Behavioural Counselling was also done for significant others in order to reduce the negative cognitions related to the disorder.

Clinical interview and pretreatment assessments for anxiety and pain were done over three sessions. Following the preassessment, subjects were given biofeedback induced relaxation (Galvanic Skin Response) along with behavioural counselling for 25 sessions. The post-therapeutic assessment was done after completion of the twenty-eighth session of therapy (Table I).

*Table I - Therapeutic program*

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## **Results**

The sample consisted of 5 subjects, all males, who were referred for behavioural intervention. The mean age was 53.6 years. All the subjects were married. They had undergone CABG surgery about one year prior to the referral.

The common symptoms seen in all the five subjects were chest pain at the site of the incision, tightness in the chest, fatigue, anxiety and decreased efficiency. Figure 1 shows the pre and post therapeutic assessment scores on the State Trait Anxiety Inventory. It is seen that all the five subjects showed a decrease in anxiety levels after the intervention.

*State Trait anxiety inventory*

On the Symptom Checklist, pre and post therapeutic assessment symptom scores show a decline in severity and the number of symptoms after behavioural intervention, as depicted in Figure 2. Figure 3 shows the bar diagram of the Visual Analog Scale scores measuring pain at the site of the incision. All the five subjects reported decrease in their pain following the intervention.

*Symptom check-list*

*Visual analog scale*

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## **Discussion**

Many of the problems that are seen in patients with acute coronary heart disease like emotional upset,

disruption of social and occupational network, anxiety and depression persist following the patient's discharge from the hospital [16], [17].

The common symptoms found in our subject, though not completely incapacitating, had proved as a hurdle in the day-to-day functioning of the subjects. Their work efficacy and productivity had decreased. The fear of another attack had made them anxious, with anticipatory anxiety surrounding fear of disability and death. These findings are consistent with those of Nagel et al [18].

It was observed that at the beginning of the behavioral intervention program, the subjects were apprehensive about the treatment as well as its outcome. However, as the treatment progressed giving them relief from their symptoms, their apprehensions came down, self confidence increased and they could resume their normal activities.

The importance of the family in the recovery of cardiac patients is well recognised. Hence in addition to the subjects, significant others of the family were also included in the counselling program.

Each subject was further interviewed and assessed by the cardiologist at the end of therapeutic period and the findings of the study were corroborated by him. The difficulty encountered was by the maintenance of follow-up by the subjects. One subject was followed up for three months during which he maintained improvement.

The findings of the study are quite encouraging in the field of behavioural medicine. The limitations of the study include a small sample size, lack of a matched control group and lack of follow-up record.

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## Conclusion

The results have shown the efficacy of behavioural method of intervention in post-operative coronary heart disease patients. Further, it can be concluded that behavioural intervention can be used as a therapeutic adjunct during post-operative management. In future, studies need to be done on a larger sample, with a matched control group and with adequate length of follow-up.

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## Appendix

### *Symptom Checklist*

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1. White P D, *Heart Disease*. New York. The MacMillan Co 1956
2. Bradley C, Psychological factors affecting recovery from Surgery  
*In: Watkins J and Salo M (eds) Trauma, Stress and Immunity in Anaesthesia and Surgery; Woburn M*  
Page: 335-61, 1982
3. Cohen F, Lazarus R S, Active coping processes, coping dispositions and recovery from surgery  
*Psychological Medicine* Page: 35: 375-89, 1973
4. Sime A M, Relationship of preoperative fear, type of coping and information received about surgery to recover from surgery  
*Journal of Personality & Social Psychology* Page: 34: 717-24, 1976
5. Johnston M, Anxiety in surgical patients

- Psychological Medicine* Page: 145-52, 1980
6. Donar A, Noe J, Benson H, The preoperative use of the relaxation response with ambulatory surgery patients  
*Journal of Human Stress* Page: 13: 101-7, 1987
7. Bond M R, New approaches to pain  
*Psychological Medicine* Page: 10: 195-99, 1980
8. Dixhoorn J V, Divenvoorden H J, Pool J, Verhage F, Psychic effects of physical training and relaxation therapy after myocardial infarction  
*Journal of Psychosomatic Research* Page: 34: 327-37, 1990
9. Flaherty G G, Fitzpatrick J J, Relaxation techniques to increase comfort level of post operative patients: A preliminary study  
*Nursing Research* Page: 27: 352-55, 1978
10. Health and Public Policy Committee, American College of Physicians, Biofeedback for hypertension  
*Annals of Internal Medicine* Page: 102: 709-15, 1985
11. Engel B T, Glasgow M S, Gaarder K R, Behavioural treatment of high blood pressure: Follow up results and treatment recommendations  
*Psychological Medicine* Page: 45: 23-9, 1983
12. Spielberger C D, Gorusch R L, Lushene R E., *RE STAI Manual for the State Trait Anxiety Inventory Palo Alto, Calif, Consulting Psychologists Press* 1970
13. Aitken R C B, Measurements of feelings using Visual Analog Scale  
*J R. Soc Med* Page: 62: 989-93, 1979
14. *Relaxometer, Model Q. Aleph one limited. Cambridge*
15. Krumboltz J D, Thoresen C E (Eds), *Counselling Methods New York: Holt, Rinehart and Winston* 1976
16. Dellepiani A W, Cay E L, Philip A E, Vettar N J, Colling W A, Donaldson R J, McCormack P, Anxiety after a heart attack  
*British Heart Journal* Page: 38: 752-57, 1976
17. Mayou R, The psychiatric and social consequences of coronary artery surgery  
*Journal of Psychosomatic Research* Page: 30: 255-71, 1986
18. Nagel R, Gangola R, Picton-Robinson I. Factors influencing return to work after myocardial infarction  
*Lancet* Page: 2: 454-56, 1971
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