

## A Study to Observe the Influence of Exercise in Brief Illness Perceptions on Cardiac Surgery Patients

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### Abstract

*Background and Purpose:* The practice of physical activity is important for improving the health. Several studies suggested that the people who reported that they do not practice physical activity have a greater likelihood of exhibiting symptoms of depression and anxiety when compared with those who reported practicing postoperative physical activity on a regular basis. Therefore our study aims to observe the influence of exercise in illness perception on cardiac surgery patients. *Methods:* A sample of 80 subjects (50 males and 30 females), aged 20-70 years old were selected from large population based on the inclusion and exclusion criteria of the study. The follow-up cardiac surgery subjects were observed for post operative exercise activities, which they were already prescribed. The patients who did regularly exercises taken in Group-1 and those who were non-compliant (unable to do exercises) taken in Group-2. *Results:* The compliant group caused significant positive changes in patients' view of their illness. Patients in the compliant group also reported that they had better recovery and reduced the effect of symptoms of illness at significantly faster rather than the non-compliant group. There is a significant difference in between the two groups. *Discussion and Conclusion:* Altogether, these results suggest that people who do not practice postoperative regular exercise have a higher chance of exhibiting symptoms of distress, anger, fear and depression. So their illness perception is increased as compare to compliant group. However, the illness beliefs are significantly associated with the symptoms. The Brief IPQ could provide an ideal platform to determine illness perception as a part of recovery assessment in cardiac surgery patients.

**Keywords:** Physical Activity; Cardiac Surgery; Exercises; Illness Perceptions; Brief-IPQ.

### Introduction

The aim of cardiac surgery is to prolong life and to reduce illness-associated disability of heart disease patients. Important outcomes from surgery include additional life years and symptoms reduction as well as improvements in the patient's quality of life [1, 2]. So, an alternative approach focuses on patient's perception about their illness [3, 4]. Patients' illness beliefs are closely tied to emotional reactions such as fear, anger, and distress. A person who has a positive illness representation accurately identifies signs and symptoms and the cause of the disease and thinks

that the problem is curable or controllable, that the cause of the disease is intermittent, and that the level of disability or seriousness of the disease is low [5]. Several studies suggested that the people who reported that they do not practice physical activity have a greater likelihood of exhibiting symptoms of depression and anxiety when compared with those who reported practicing postoperative physical activity on a regular basis [6].

### Methodology

#### Sample

#### Sample Size

80 subjects were include in the study.

#### Source of subjects

CTVS department, Safdarjung Hospital, New Delhi.

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*Sample Method*

Convenient Sampling.

*Inclusion Criteria*

- ◆ Age (20 – 70 years)
- ◆ Both male and female
- ◆ Cardiac surgery patients of CABG and Valve replacement (Mitral valve regurgitation, Aortic valve regurgitation)
- ◆ Follow-up cardiac surgery patients
- ◆ No significant complications
- ◆ At least 6 weeks post operatively
- ◆ Hemodynamically stable

*Exclusion Criteria*

- ◆ Psychiatric changes (both pre and post operatively).
- ◆ Patients taking any antidepressant or antipsychotic drug
- ◆ Uncontrolled Diabetes.
- ◆ Severe post operative complications (pneumonia, respiratory failure and bronchospasm etc.)
- ◆ Inability to understand language
- ◆ Serious co-morbid condition (Neurological disorders)

*Method of assigning subjects*

The follow-up cardiac surgery subjects were observed for post operative exercise activities, which they were already prescribed. The patients who did regular exercises taken in Group-1 and those who were non-compliant (unable to do exercises) taken in Group-2.

*Study Design*

Case control prospective study design

*Instrumentation*

Brief Illness Perception Questionnaire (Brief IPQ)

*Variables**Independent variables*

Active Range of Motion (AROM) Exercises

*Dependent variables*

Brief Illness Perception Questionnaire (Brief IPQ and its nine elements of questions)

*Procedure*

Aim and procedure of the study were explained, and how the findings of the questionnaire who were relevant to their prognosis. The total 80 subjects were taken from CTVS department at Safdarjung hospital, New Delhi, according to inclusion and exclusion criteria. Subjects were divided into two uneven groups according to their history on the basis of exercise activity. All the subjects were assessed for illness perception. The subject was made to sit relaxed so as to prevent their distraction from the outside environment. The attendant was made to sit outside in order to avoid any disturbance while answering the questionnaire.

Once the subject becomes relaxed and comfortable with the environment, history regarding the disease, exercise and the demographic details of the subject were taken.

Once all the details were taken subjects were told regarding the significance of the questionnaire that how the information would be useful in improving their social and emotional wellbeing and helps in preventing the worsening of the symptoms and prognosis of the existing illness.

Before the use of questionnaire, it was translated into the subjects' language from English to Hindi.

All nine questions or items were explained to the patients, so that subject was made to familiarize with the questionnaire, and got the questionnaire filled up. Question contained 1 to 9 items, the 9<sup>th</sup> item is subjective in nature and from 1 to 8 items that ranges from 0-10 scores, asked the patient to rate them.

Each item of the Brief IPQ assessed one dimension of illness perceptions.

The consequences score is simply the response to item 1. Item 2 signifies the timeline score. The third item represents the personal control. The treatment control score is the response of item 4. Item 5 is for identity score. Illness concern is measured by item 6, it reflects a combination of emotional and cognitive representations. The coherence score is the response of item 7. Item 8 is for emotional representation.

Item 9 is the casual item. Responses can be grouped into categories such as stress, lifestyle, hereditary, etc., determined by the particular illness studied. Categorical analysis can then be performed, either on just the top listed cause or all three listed causes. Questions were asked from the patients, according to questionnaire and then they were scored.

**Result**

80 subjects of both male (50) and female (30) cardiac surgery patients were participated in this study. The subjects were taken Brief Illness Perception Questionnaire (BIPQ) and divided exercise and non exercise group were compared by using student's unpaired 't' test to estimate the order of significance. The demographic data was analyzed by comparing means of descriptive. The Mean age of Exercise group 37.76±14.52 and Non-exercise group 35.15±12.51 (p=0.405) which was not significant.

*Based on Brief Illness Perception Questionnaire (BIPQ)*

There is a significant difference found in Consequences (CSQ) among Group 1(non-compliant) with the mean and standard deviation ( 8.57±0.83) as compared with Group 2 (compliant) with the mean of (6.02±2.13) {p=0.001}.

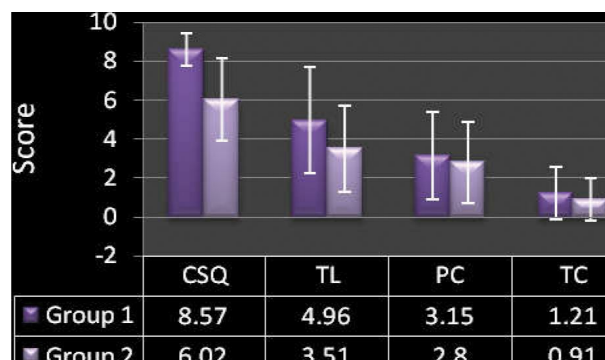
Significant difference found in Timeline (TL) among Group 1(non-compliant) with the mean and standard deviation (4.96±2.73) as compared with Group 2 (compliant) with the mean and standard deviation (3.51±2.23) {p=0.010}.

No significant difference was found in Personal Control (PC) between Group 1 and Group 2 (3.15±2.22 of non-compliant Vs 2.80±2.08 of compliant).

No significant difference was found in Treatment Control (TC) between Group 1 and Group 2 (1.21±1.34 of non-compliant Vs 0.91±1.08ss of compliant).

**Table 1:** Comparison of illness perception in between Group 1 and Group 2

Brief-IPQ	Group 1 Mean±S.D	Group 2 Mean±S.D	'p' value
CSQ	8.57±0.83	6.02±2.13	0.0001
TL	4.96±2.73	3.51±2.23	0.010
PC	3.15±2.22	2.80±2.08	0.466
TC	1.21±1.34	0.91±1.08	0.353



**Fig. 1:** Comparison of illness perceptions in between Group 1(Non compliant) and Group 2 (Compliant)

There is a significant difference found in Identity (ID) among Group 1(non-compliant) with the mean and standard deviation (3.51±2.06) as compared with Group 2 (compliant) with the mean and standard deviation (2.63±1.82) {p=0.04}.

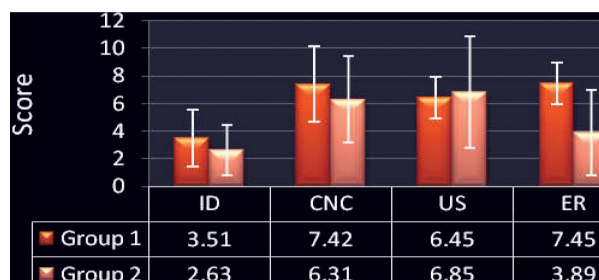
No significant difference was found in Concern (CNS) between Group 1 and Group 2 (7.42±2.71) of non-compliant Vs compliant (6.31±3.11).

No significant difference was found in Understanding (US) between Group 1 and Group 2 (6.45±1.50 of non-compliant Vs 6.85±4.05 of compliant).

There is a significant difference found in Emotional response (ER) among Group 1 (non-compliant) with the mean of 7.45±1.48 as compared with Group 2(compliant) with the mean of 3.89±3.07 (p=0.0001).

**Table 2:** Comparison of illness perceptions in between Group 1 (Non compliant) and Group 2 (Compliant)

Brief-IPQ	Group 1 Mean±S.D	Group 2 Mean±S.D	'p' value
ID	3.51±2.06	2.63±1.82	0.045
CNC	7.42±2.71	6.31±3.11	0.116
US	6.45±1.50	6.85±4.05	0.788
ER	7.45±1.48	3.89±3.07	0.0001

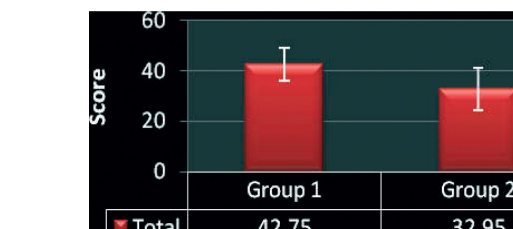


**Fig. 2:** Comparison of illness perceptions in between Group 1(Non compliant) and Group 2(Compliant)

There is a significant difference found in Total among Group 1(non-compliant) with the mean and standard deviation (42.75±6.53) as compared with Group 2 (compliant) with the mean and standard deviation (32.95±8.47) {p=0.0001}.

**Table 3:** Total score of Brief-IPQ between Non-compliant and Compliant group

Brief-IPQ	Group 1 Mean±S.D	Group 2 Mean±S.D	'P'value
Total	42.75±6.53	32.95±8.47	0.0001



**Fig. 3:** Total score of Brief-IPQ between Non-compliant and Compliant group

## Discussion

The current study illustrated that people who reported that they do not practice physical activity have, at least partially, a higher chance of exhibiting symptoms of depression, distress, fear and anger, they had high illness perceptions when compare to those who perform physical activity regularly (as taught in the hospital postoperatively).

Several studies have systematically shown the importance of regular exercise in the improvement of symptoms related to illness perceptions in adult and elderly. Many hypotheses explained that these results are associated with social, behavioral and physiological aspects (Struder and Weicker, 2001) [10]. In the present study, being physically active was inversely associated with symptoms of depression, anxiety and illness perceptions. Although the practice of physical activity is important for improving the health, some studies have shown that, in the majority of health conditions, physical activity cannot be used as the sole form of health care, but it may be employed as an adjuvant strategy in some cases [10].

The illness-perception intervention has a number of differences from conventional approaches to improve recovery after cardiac surgery. Most formal treatment program after cardiac surgery are not theoretically based but tend to comprise a number of fixed components, usually including education about cardiac disease as well as advice regarding exercise and lifestyle changes. It is not always clear what patient attitudes are being targeted and what components are critical to achieve behavior change. In contrast, the illness perception program used the patient's view of his/her illness as a starting point for the intervention and built the material around these existing perceptions. Illness perceptions provide both an initial target for change and a way of evaluating the effectiveness of the intervention, as we know that these beliefs are related to later recovery of function and behavioral change.

Note that reported symptoms like depression, distress, fear, anger and illness perceptions may due to cardiac or non-cardiac origin. Fewer symptoms may be due to the lower level of worry about symptoms in the compliant group or may be associated indirectly through the higher level of confidence and work functioning in this group. The early research identified five dimensions with the cognitive representation of illness: identity- the label, the person uses to describe the illness and the symptoms they view as being part of the disease;

consequences- the expected effect and outcome of the illness; cause- personal ideas about the cause of the illness; timeline- how long the patient believes the illness will last; and cure or control- the extent to which the patient believes that they can recover from or control the illness. The emotional representation incorporates negative reactions, such as fear, anger, and distress [11].

This study shows that, the properties of a new-item scale, the Brief IPQ. The scale measures patients' cognitive and emotional representations of their illness including consequences, timeline, personal control, treatment control, identity, coherence, concern, emotional response, and causes. The Brief IPQ demonstrated good predictive validity in patients recovering from post cardiac surgery. The consequences, identity, concern, understanding, and emotional response were all fairly consistently related to mental and physical functioning at 6 weeks follow-up cardiac surgery patients.

The significance of consequences in the study was that the exercise can improve the effect and outcome of cardiac illness. If the Timeline score is high, it shows that the illness perceptions of patient are higher. However, the present study showed a significance difference between compliant and non-compliant group. In Personal control and the Treatment Control showed no significance result between the compliant and non-compliant group. So there is lower representation of illness perception found among patients of compliant group. The outcome of Identity and Emotional response questions, showed significant improvement in the compliant group as compare to non-compliant group.

The Identity also predicted cardiac rehabilitation, while concern and treatment beliefs predicted speed of return to work. Personal control may be reflecting internal locus of control beliefs, while treatment control may be picking up external locus of control beliefs, and this aspect may be worthy of further research.

When should researchers choose to use the Brief IPQ over the IPQ-R?

The main advantages offered by the Brief IPQ to researchers are brevity and speed of completion for patients, as well as easy interpretation of scores. The Brief IPQ is most useful for ill and elderly populations who would find completion of a long questionnaire difficult. The Brief IPQ also offers advantages when researchers are already using a number of other pencil and paper measures.

Evidence shows the Brief IPQ to be a valid and reliable measure of illness perceptions in a variety of

illness groups. Patients find the Brief IPQ easy to understand and to complete [6, 4]. The significant result shows that the non-compliant group has high illness perception as compare to the compliant group or exercise group.

#### Limitations

- ◆ Study was performed on limited number of subjects.
- ◆ Samples included were only cardiac surgery patient.
- ◆ Only Brief IPQ was measured.
- ◆ Anxiety & depression scale was not measured.
- ◆ Study could have been more effective if prior to surgery and follow-up cardiac rehabilitation.

#### Future Research

- ◆ The study can be further repeated by overcoming its drawbacks more sensitive method can be used for measuring the Brief IPQ.
- ◆ The study can be done with elderly population.
- ◆ Study can be more refined by improving the inclusion criteria, such as Gender wise differentiation and including time also as one of the factor along with treatment.

#### Conclusion

Altogether, these results suggest that people who do not practice regular exercise have a higher chance of exhibiting symptoms of distress, anger, fear and depression. So their illness perception is increased as compare to compliant group.

However, the illness beliefs are significantly associated with the symptoms. The Brief IPQ could provide an ideal platform to determine illness perception as a part of recovery assessment in cardiac surgery patients. Therefore, research hypothesis is accepted.

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