



Effectiveness of Mindfulness: Bodyscan therapy on Anxiety and Hemodynamic parameters among postoperative cardiac patients

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ABSTRACT

Anxiety precipitates cardiac decompensation owing to higher autonomic arousal thus delaying healing and recovery. Mind and body interventions aim to harness the "relaxation response", reduce stress, and improve quality of life. The present study aimed to evaluate effectiveness of Mindfulness: Bodyscan therapy on anxiety and hemodynamic parameters (Heart rate, respiration, Blood pressure) among postoperative cardiac patients. Participants included 40 postoperative cardiac patients from which 20 received Mindfulness Bodyscan therapy including whole Body scanning and awareness for 7 days. Modified Hamilton anxiety rating scale and Baseline hemodynamic parameters assessed by researcher before and after therapy for 7 consecutive days. Significant reduction in the level of anxiety among postoperative cardiac patients was observed. Significant improvements were also observed for Hemodynamic parameters (Heart rate, Respiration, Blood pressure). Paired *t*-test value regard to level of Anxiety ($t=7.958$), Heart rate ($t=8.071$), Respiration ($t=7.258$) & Systolic Blood pressure ($t=4.154$) was found significant at 0.05 level in experimental group. Repeated measures ANOVA *F*-test was found significant showing difference in level of Anxiety, Heart rate, Respiration & Systolic Blood pressure between experimental and control group in post-test. The Mindfulness: Bodyscan therapy is effective in reducing anxiety and stabilizing hemodynamic parameters (Heart rate, Respiration, Systolic blood pressure) among postoperative cardiac patients. Hence it can be used as a baseline supportive data to conduct further research on large scale for longer period of time.

"Keywords:" Effectiveness, Mindfulness: Bodyscan therapy, Anxiety, Heart rate, Blood pressure, Hemodynamic parameters, Postoperative cardiac patients.

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INTRODUCTION

Coronary artery disease is the leading cause of morbidity and mortality worldwide. For more than 15 years, WHO (world health organization) has been sounding an alarm on the rapidly rising burden of cardiovascular disorders. CABG (coronary artery bypass grafting) is the commonest surgical method of management of CAD in India. Over the years, refinement of surgical and anesthetic procedures has led to significant reduction in mortality and morbidity. However, still a significant number of patients do have associated psychological morbidity which is disabling and distressing. It is important to note that psychological illness when comorbid with cardiac illness generally leads to poorer outcomes [1]. Neuropsychiatric complications following CABG are ranges from anxiety, depression, neurocognitive deficits, delirium, and cerebrovascular accident. Following CABG, anxiety precipitates cardiac decompensation owing to higher autonomic arousal thus delaying healing and recovery [1].

Mind and body interventions aim to harness the "relaxation response", reduce stress, and improve quality of life, which is important in the search for more holistic treatment approaches in cardiovascular medicine [2]. Bodyscan meditation is one type of mindfulness meditation which promotes greater awareness of the physical body. The beneficial effects of mind-body practices on such diverse factors as blood pressure, autonomic function, response to stress, inflammation, mood, interpersonal relationships, lifestyle, and telomere length will result in reduced cardiovascular events and cardiovascular mortality. [3], [4], [5]. Anxiety is more expected in preoperative patients due to fear of surgery and anesthesia and postoperatively about length of stay, financial burden and complications [6]. Anxiety stimulates sympathetic nervous system and that may cause imbalance in hemodynamic stability. So it is necessary to reduce and control the anxiety in patients to prevent complications.

A concise review of current scientific evidence shows that both higher levels of trait mindfulness as well as mindfulness training are associated with better psychological well-being, coping, and quality of life. Effects on objective measures of disease, however, are often non-significant or await replication. Larger trials with active control groups, clear diagnostic criteria, objective outcome measures, and longer-term follow-up are needed to generate better quality evidence. Yet, many studies do support integrating mindfulness into health care as part of self-care and disease management [4].

The present study evaluated the effectiveness of Mindfulness: Bodyscan therapy on anxiety and selected hemodynamic parameters (Heart rate, Respiration, Blood pressure) among postoperative cardiac patients in tertiary care hospital. Outcomes of the Mindfulness: Bodyscan therapy were examined with subjective measures (i.e. Modified Hamilton Anxiety rating scale) as well as objective measures (Heart rate, Respiration, Blood pressure) administered pre and post-intervention. Researcher hypothesized that after Mindfulness: Bodyscan therapy, post-operative cardiac patients show reduction in anxiety levels and improvement in objective measures.

MATERIAL AND METHODS

The quasi-experimental study was conducted with post-operative cardiac patients at Bhanubhai and Madhuben Cardiac centre, Karamsad. The Mindfulness: Bodyscan intervention implemented by the researcher who was certified to do that. Post-operative patients whose age were between 18-80 years; able to understand Gujarati, English, Hindi and well oriented were included in the study (n=40). Post-operative patients who on mechanical ventilator; unconscious; mentally unstable or practicing other relaxation therapy were excluded. Power analysis was used to calculate sample size. Verbal as well as Written informed consent was taken from participants. The study was conducted according to Institution Ethical Review Board guidelines. Study approval obtained from institutional ethical committee dated on 29/10/2021. Approval from the Head of the department of organization obtained prior to data collection. 40 postoperative cardiac patients met inclusion criteria were allocated in two groups: Experimental and control using Nonprobability: Purposive sampling technique during April-June, 2022. The researcher introduced self to each subject and explained the purpose of the study, benefits, harm, and intervention to be given to samples as well as 1st degree relative of samples. Participation information sheet was provided. The written consent was obtained from each participant. The tool of questionnaire containing demographic variables (age, gender, education status, occupation, total family income, previous knowledge regarding Mindfulness: Bodyscan therapy, duration of treatment) and Modified Hamilton anxiety rating scale filled by patients themselves. This 5-item rating scale measured symptoms of Anxious mood, Tension, Insomnia, Depressed mood and autonomic symptoms. Postoperative cardiac patients rated the anxiety before and after intervention in experimental group and before and after routine care in control group. Each item was scored by the rater from 0 to 4. Total scored calculated and classified. (No anxiety: 0 score, Mild anxiety: 1-6 score, Moderate anxiety: 7-13 score, Severe anxiety: 14-20 score). Baseline selected Hemodynamic parameters (Heart rate, Respiratory rate, Blood pressure) were measured by researcher from digital monitor for 7 days. Experimental group led by researcher in Mindfulness: Bodyscan therapy including sequential steps of Getting comfortable, taking deep breaths, Awareness to breaths, Being awareness to whole body, scanning of entire body and relaxation with duration of 15 min for 7 consecutive days. Posttest conducted on 8th day. Anxiety level and Hemodynamic alteration analyzed in both groups.

Statistical methods: All the collected data were analyzed using SPSS Software. Continuous data were represented as mean and standard deviation and categorical data were represented in frequency and percentages. Independent T test was used to compare between group (intervention and control) to anxiety score. Paired t test and Repeated measures ANOVA F test was used to compare pre and post anxiety score and hemodynamic rate in groups. Probability *p*-value less than 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

Demographic Assessment

The study population comprised postoperative cardiac patients (n=40) between the age of 18- 80 years of which Majority of patients belongs to age group >57 years, Male patients' ratio was higher, Monthly family income was between € 5000-15000 and Previous knowledge regarding therapy was poor. (Table no:1)

Anxiety assessment and comparison between groups

On the Modified Hamilton anxiety rating scale, Pretest scores showed higher anxiety level in both groups whereas posttest assessment suggested reduction in anxiety in experimental group. Control group showed no major changes in anxiety level. Patients rating indicated a significant reduction in anxiety from

pre- to post-intervention in experimental group. Result found significant at 0.05 level in experimental group. (Table no:2)

Hemodynamic parameters assessment and comparison between groups

On the Multiple response hemodynamic parameters scale, Pretest scores of Heart rate, Respiration rate, Blood pressure showed hemodynamic imbalance in both groups whereas posttest assessment suggested stability of parameters in experimental group. Result found significant at 0.05 level in experimental group. (Table no:2)

Table no: 1 Demographic variables in experimental and control group

Sr. No.	Demographic variables	Experimental Group n=20	Control Group n=20
1	Age in years		
	18-27	00	00
	28-37	05	05
	38-47	05	05
	48-57	35	15
	>57	55	75
2.	Gender		
	Male	70	60
	Female	30	40
3.	Monthly family Income		
	<5000	10	15
	5000-15000	45	40
	15000-25000	30	30
	>25000	15	15
4.	Previous Knowledge		
	Yes	20	05
	No	80	95

All measures are presented as percentage for experimental and control group.

Table no: 2 Clinical profile of Anxiety and Hemodynamic parameters among postoperative cardiac patients at baseline and post intervention

Variables	Pre-test		Post-test		t(p)	
	EG	CG	EG	CG	EG	CG
Anxiety	3.70(0.47)	3.75(0.44)	2.70(0.73)	3.50(0.95)	7.958(0.00*)	1.157(0.262)
Heart Rate	90.60(8.58)	91.85(9.40)	77.05(8.61)	87.00(8.09)	8.071(0.00*)	3.446(0.003)
Respiration	30.10(4.75)	30.10(6.37)	22.25(3.52)	27.90(5.51)	7.258(0.00*)	1.976(0.063)
Systolic BP	129.10(13.29)	129.70(15.20)	117.35(5.75)	125.20(9.23)	4.154(0.01*)	1.744(0.097)
Diastolic BP	79.30(16.25)	82.95(13.59)	75.00(4.62)	79.55(6.07)	1.509(0.048*)	1.498(0.150)

All measures are presented as mean (standard deviation) for the experimental and control group with t-test value (p-value). Anxiety mean calculated from the sum of item rating, ranging from 0 to 4 (not present to very severe). Heart rate, Respiration rate, Systolic BP, Diastolic BP reflects raw data. * $p < 0.05$

DISCUSSION

Anxiety (relative risk: 1.41) is the important risk factor for the development and perpetuation of cardiovascular disease, as well as independent risk factor of cardiovascular morbidity and mortality [2]. So it is necessary to reduce and control the anxiety in patients to prevent complications. Mindfulness therapy is a natural treatment for the anxiety, fear and insomnia that related to surgery [6]. Body scan meditation condition reported greater effects [7], [8].

The objective of the present study to evaluate effectiveness of Mindfulness: Bodyscan therapy on anxiety and hemodynamic parameters among postoperative cardiac patients. Our findings, comparing pre to posttest evaluations revealed improvements associated with intervention across anxiety, Heart rate, Respiratory rate and Blood pressure. The patients rating on the Modified Hamilton anxiety scale, all subscales showed highly significant improvement across time points. The broad range of improvement in anxiety and hemodynamic stability observed for this study is consistent with findings from recently published investigations on the efficacy of MMI for cardiovascular disorders patients and other patients like cancer patients, non-communicable diseases patients. All the findings provide positive impact about Mindfulness therapies [9], [10].

The data suggested that there was significant difference between pretest and posttest scores of anxiety

and hemodynamic parameters in both experimental and control group. From the above shred of evidences, we can say that regular demonstration of Mindfulness: Bodyscan therapy helps in reducing the anxiety level and relax the mind which ultimately going to stabilize the hemodynamic parameters by regulating the central nervous system.

CONCLUSION

The Mindfulness: Bodyscan therapy is effective in reducing anxiety and stabilizing hemodynamic parameters (Heart rate, Respiration, Systolic blood pressure) among postoperative cardiac patients. Hence it can be used as a baseline supportive data to conduct further research on large scale for longer period of time.

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Author Contribution

DJ collected data, conducted data analysis and wrote research paper. Development of study design and Implementation of the Mindfulness: Bodyscan therapy to postoperative cardiac patients. RC assisted with data analysis and writing. Assisted with study design.

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Ethics Approval

Research ethics approval was obtained from the Ethical Institutional Committee. Approval from the Head of the department of organization obtained prior to data collection.

Informed consent

Participation information sheet was provided before study. The written consent was obtained from each participant.

Conflict of interest Authors have no relevant financial or non-financial interests to disclose.

REFERENCES

1. Chaudhury, S., Saini, R., Bakhla, A. K., & Singh, J. (2016). Depression and Anxiety following Coronary Artery Bypass Graft: Current Indian Scenario. *Cardiology Research and Practice*, 2016, 1–6. <https://doi.org/10.1155/2016/2345184>
2. Lurz, J., & Ladwig, K. (2022). Mind and body interventions in cardiology. *Herz*. <https://doi.org/10.1007/s00059-022-05104-y>
3. Newberg, A. B., & Olex, S. (2016). Mind–Body Practices for the Prevention and Treatment of Cardiovascular Disease. *Psychotherapy for Ischemic Heart Disease*, 173–186. https://doi.org/10.1007/978-3-319-33214-7_12
4. Sadooghiasl, A., Ghalenow, H. R., Mahinfar, K., & Hashemi, S. S. (2022). The Effectiveness of Mindfulness based Stress Reduction Program in Improving Mental Well-being of Patients with COVID-19: A Randomized Controlled Trial. *Indian Journal of Critical Care Medicine*, 26(4), 439–445. <https://doi.org/10.5005/jp-journals-10071-24164>
5. Marino, F., Failla, C., Carrozza, C., Ciminata, M., Chilà, P., Minutoli, R., Genovese, S., Puglisi, A., Arnao, A. A., Tartarisco, G., Corpina, F., Gangemi, S., Ruta, L., Cerasa, A., Vagni, D., & Pioggia, G. (2021). Mindfulness-Based Interventions for Physical and Psychological Wellbeing in Cardiovascular Diseases: A Systematic Review and Meta-Analysis. *Brain Sciences*, 11(6), 727. <https://doi.org/10.3390/brainsci11060727>
6. Velayee, M. (2017, October 1). *Effectiveness of Mindfulness Therapy on Anxiety among Pre Operative Cardio Thoracic Clients in Cardio Thoracic Surgery Ward at Government Rajaji Hospital, Madurai*. Repository-Tnmgrmu.ac.in. <http://repository-tnmgrmu.ac.in/id/eprint/7175>
7. Kropp, A., & Sedlmeier, P. (2019). What Makes Mindfulness-Based Interventions Effective? An Examination of Common Components. *Mindfulness*, 10(10), 2060–2072. <https://doi.org/10.1007/s12671-019-01167-x>
8. Howarth, A., Smith, J. B., Perkins-Porras, L., & Ussher, M. (2019). Effects of Brief Mindfulness-Based Interventions on Health-Related Outcomes: a Systematic Review. *Mindfulness*, 10(10), 1957–1968. <https://doi.org/10.1007/s12671-019-01163-1>
9. Rice, L. C., Deronda, A., Kiran, S., Seidl, K., Brown, K., Rosch, K. S., James, M., & Mostofsky, S. H. (2023). Mindful Movement Intervention Applied to at Risk Urban School Children for Improving Motor, Cognitive, and Emotional-Behavioral Regulation. *Mindfulness*, 14(3), 637–647. <https://doi.org/10.1007/s12671-022-02063-7>

10. Nijjar, P. S., Connett, J. E., Lindquist, R., Brown, R. W., Burt, M., Pergolski, A., Wolfe, A. G., Balaji, P., Chandiramani, N. V., Yu, X., Kreitzer, M. J., & Everson-Rose, S. A. (2019). Randomized Trial of Mindfulness-Based Stress Reduction in Cardiac Patients Eligible for Cardiac Rehabilitation. *Scientific Reports*, 9(1).<https://doi.org/10.1038/s41598-019-54932-2>

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