



## EFFECTIVENESS OF AUGMENTED WALKING UPON FUNCTIONAL STATUS AMONG POST OPERATIVE CABG PATIENTS AT SELECTED HOSPITALS, CHENNAI

### Nursing

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### ABSTRACT

**Background:** Coronary artery bypass grafting (CABG) is the commonly performed surgical procedure to reduce the risk of death from coronary artery disease. The incremental physical activity training in the post-operative period aids the recovery process and results in positive consequences. **Methods and Materials:** An experimental study was conducted among post CABG patients to assess the effectiveness of augmented walking for improving their functional status among 70 patients, who were randomized to experimental group and control group (35 in each group) by systematic random sampling technique. Functional status was assessed in both groups on the third post-operative day. Augmented walking was performed by the investigator for the experimental group of patients till the 6th post-operative day, while routine care was followed for control group. Post-test was done for both the groups on the seventh post-operative day. **Results:** Post-operative CABG patients in the experimental group had significantly improved functional status after augmented walking (95%) with the mean score of  $79.14 \pm 8.33$  and  $2.74 \pm 0.66$  for shortness of breath and distance walked, compared to the control group functional status (77.14%) with the mean score of  $44.17 \pm 3.95$  and  $4.83 \pm 0.89$  for distance walked and shortness of breath respectively. **Conclusion:** The present study reveals that augmented walking is considered as a suitable method to objectively improve the functional exercise capacity among post CABG patients. The nurses should be trained on augmented walking to be implemented for the post CABG patients.

### KEYWORDS

Coronary artery bypass grafting, Augmented walking, functional status,

### INTRODUCTION

Cardiovascular diseases are accountable for one-tenth of deaths in people aged less than 35 years, one-third of mortalities in individuals between 35 and 45 years old, and three-quarters of deaths in those over 45 years of age.<sup>1</sup> Coronary artery diseases that cannot be treated with medical treatments require coronary artery bypass graft surgery. According to the World Health Report, circulatory diseases such as heart attack kill more people than any other disease, accounting for at least 35 million deaths every year.<sup>2</sup> The immediate postoperative period for the patient who has undergone cardiac surgery presents many challenges to the health care team. The goal of postoperative care is to ensure that patients have good outcomes after surgical procedures.

Augmented walking is considered as a suitable method to objectively assess the level of functional status and inexpensive way to evaluate physical function of an individual and reflects the ability to undertake day to day activities.<sup>5</sup> The nurses are playing a vital role in encouraging CABG patients to do Augmented walking.<sup>6,7</sup> The present study aimed primarily to determine the effectiveness of augmented walking upon functional status among post CABG patients.

### MATERIALS AND METHODS

A true experimental pre-test post-test research design was adopted in the study. The study was conducted from March 2018 to May 2018 at selected tertiary care centre in Chennai. Based on the study findings of Nery et. al., (2010)<sup>8</sup>, the calculated sample size (using open Epi calculator) was 66 (33 in each group) with power = 0.80 and  $\alpha = 0.05$  with mean difference of 99 m distance walked ( $\mu_1 = 221 \pm 191$  &  $\mu_2 = 384 \pm 63$ ). Considering the attrition rate of 10% the sample size for the current study was rounded off to 70 (35 in each group). After obtaining institutional ethical committee clearance (ECR/37/Inst/TN/2013/RR-16) and setting permission, 70 post CABG patients who were willing to participate in the were selected by making a list of patients undergoing CABG surgery every day and randomized them by systematic random sampling technique i.e patients with odd serial numbers to control group and even serial numbers to the experimental group (35 in each group).

The purpose of the study was explained to the study participants and written consent was obtained from them. The background characteristics such as demographic and clinical variables and the functional status was assessed on the third post-operative day in both groups using the predetermined and pre tested tools. Modified 6 minute walk test recording form developed by American Thoracic society (2002)<sup>9</sup> was used to assess the distance walked by the participants during the augmented walking and interpreted the

functional status as adequate functional status for distance walked > 76 meters, moderate functional status for 56-75 meters and inadequate functional status for 35-55 meters. The shortness of breath was assessed by Borg Scale developed by Gunnar Borg in 1982 ( $r=0.97$ )<sup>10</sup>. Augmented walking was performed by the investigator for the experimental group of patients. The patients were made to walk on a flat hard surface for a period of 6 minutes, once a day, for 6 days a week and the distance walked by them were measured each day [3rd postoperative day to 7th day]. While walking the patients were assisted by the researcher with instructions of do's and don'ts and encouraged through positive reinforcement and also provide feedback of their performance.

The control group was given the routine care. Post-test assessment of the functional status was done on the seventh POD. The collected data was analysed in SPSS-20 using appropriate descriptive and inferential statistics.

### RESULTS

The patients in both the groups differed with respect to age. More than half of CABG patients in control group (51.43%) and majority of patients in experimental group (71.43%) were aged between 51-70 years.

In the experimental group, there was a significant improvement in functional status in the post test with the mean difference of 34.97 (pre-test -  $38.97 \pm 5.66$  and post-test -  $79.14 \pm 8.33$ ) at  $p < 0.001$ , compared to control group mean difference of 3.14 (pretest -  $41.03 \pm 5.29$  and post-test -  $44.17 \pm 3.95$ ) at  $p < 0.05$

In the control group, the difference between pre-test score of shortness of breath ( $5.80 \pm 0.93$ ) with the post test scores ( $4.83 \pm 0.89$ ) was statistically significant at  $p < 0.05$ . Whereas, in the experimental group, the difference was significantly higher between post-test ( $4.83 \pm 0.89$ ) and pre-test score ( $2.74 \pm 0.66$ ) at  $p < 0.001$  (table.3)

Majority of the patients in the control group had inadequate functional status in pre-test (91.43%) and in the post-test (77.14%), whereas, all patients in the experimental group had inadequate functional status (100%) before walking and majority of them had adequate functional status (65.71%) after augmented walking (table.4)

The study results showed there was no significant association between the background variable and the functional status of the post CABG patients in both the groups.

### DISCUSSION

A new training model on augmented walking was developed by the

researcher, which was implemented among 35 patients after CABG.

At the baseline there was no significant difference in augmented walking distance between both the groups in the pre test. (experimental vs control -38.97 ± 5.66 vs 41.03 ± 5.29). The augmented walking was performed by 35 patients in experimental group following CABG from 3<sup>rd</sup> to 7<sup>th</sup> post-operative day. The post-test distance walked was comparable in both the groups (79.14 ± 8.33 vs 44.17 ± 3.95). This contributes good exercise tolerance of the experimental group and effectiveness of the augmented walking exercise. Although the difference in shortness of breath was comparable in both the groups in the pretest, the difference was higher in post-test between the groups.

The study findings shows majority of the patients in the control group had inadequate functional status in pretest (91.43%) and in the posttest (77.14%), whereas, all patients in the experimental group had inadequate functional status (100%) before walking and majority of them had adequate functional status (65.71%) after walking.

Muthukrishnan (2016)<sup>12</sup> also reported a statistically significant difference between the study and control groups with p< 0.01 level during posttest II and with p<0.1 level during posttest III. The 6-min walking test (6-MWT) which is a simple, safe and objective method used to assess exercise capacity<sup>13</sup>

**CONCLUSION**

The present study concludes that augmented walking is effective for maintaining functional status, to improve the wellbeing of post operative CABG patients.

**Table 1: Frequency and Percentage Distribution of Clinical Variables of post CABG patients in the Control and Experimental group.**

Clinical Variables	Control Group (n=35)		Experimental Group (n=35)		Chi-Square for homogeneity
	f	%	f	%	
Body Mass Index (Kg/m2)					2=0.097 df=2
Normal (18.5 - 23)	7	20.00	8	22.86	p = 0.953
Overweight (23.1 - 25)	11	31.43	11	31.43	N.S
Obesity (More than 25)	17	48.57	16	45.71	
Resistance Speed (Walking)					2=0.059 df=1
<2 miles /hr	21	60.00	20	57.14	p = 0.808
<4 miles/hr	14	40.00	15	42.86	N.S
Smoking habit					2=0.927 df=2
Current smoker	16	45.71	20	57.14	
Ex-smoker	13	37.14	10	28.57	p = 0.629
Non-smoker	6	17.14	5	14.29	N.S
Alcohol intake					2=0.069 df=3
Daily	16	45.71	17	48.57	
Weekly	9	25.71	8	22.86	p = 0.993
Occasionally	6	17.14	6	17.14	N.S
Never	4	11.43	4	11.43	
Type of CABG					2=6.100 df=3
On pump	10	28.57	14	40.00	
Off pump	25	71.43	21	60.00	p = 0.107 N.S
Disease					2=1.014 df=1
Single vessel disease	5	14.29	8	22.86	
Double vessel disease	17	48.57	17	48.57	p = 0.314
Triple vessel disease	13	37.14	10	28.57	N.S
Graft done					2=0.066 df=2
Pre-operative ECHO					
75 - 50%	17	48.57	18	51.43	
49 - 36%	14	40.00	13	37.14	p = 0.968
<35%	4	11.43	4	11.43	N.S

**Table 2: Comparison of Mean and Standard Deviation of Pretest and Post Test Functional status among Post CABG Patients in the Control and Experimental Group.**

Functional Status	Control group (n=35)		Paired t test	Experimental group (n=35)		Paired t test
	Mean	SD		Mean	SD	
Distance Walk			7.08			21.62

Pre test	41.03	5.29		38.97	5.66	
Post test	44.17	3.95		79.14	8.33	
Shortness of breath			15.02			30.52
Pre test	5.80	0.93		6.51	0.61	
Post test	4.83	0.89		2.74	0.66	

**Table 3: Frequency and Percentage Distribution of Pretest and Post test level of Functional status among post CABG patients in the Control and Experimental group.**

Parameters	Control group (n=35)				Experimental group (n=35)			
	Pre test		Post test		Pre test		Post test	
	f	%	f	%	f	%	f	%
<b>Functional status</b>								
Inadequate (35 – 55)	0	0	0	0	35	100	0	0
Moderate (56 – 75)	3	8.57	7	20.0	0	0	12	34.29
Adequate (>76)	32	91.43	27	77.14	0	0	23	65.71
<b>Shortness of breath</b>								
Slight (1 – 2)	0	0	0	0	0	0	13	37.14
Moderate (3 – 4)	3	8.57	13	37.14	0	0	22	62.86
Severe Dyspnoea (5 – 6)	32	91.43	22	62.86	35	100	0	0

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**Conflict Of Interest:** Nil

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