

Physical Capacity and Quality of Life in Post Coronary Artery Bypass Graft and Valvular Surgery Patients**Pijarin Liengarpa¹, Watesinee Kaewkhuntee¹, Chutima Jalayondeja¹ and Wilawan Thirapatarapong²**¹*Faculty of Physical Therapy, Mahidol University, Nakhon Pathom 73170, Thailand*²*Faculty of Medicine Siriraj Hospital, Department of Rehabilitation Medicine, Mahidol University, Bangkok 10400, Thailand*

pijarin.lieng@gmail.com

Abstract

Objective: To determine physical capacity and quality of life after surgery of patients with coronary artery and valvular heart diseases.

Materials and Methods: Six-minute walk test and SF-12 were estimated at the fifth day after coronary artery bypass graft and valvular surgery in cardiac patients (n = 25). Descriptive statistical analysis and Pearson's product-moment correlation was used to evaluate the relationship of parameters.

Results: Mean of six-minute walk distance after five day surgery were 204.25 meters and mean scores of SF-12 were 58.78. The six-minute walk distance and SF-12 showed significantly correlation but fairly correlated ($r = 0.14$, $p < 0.05$).

Conclusion: At the fifth day after surgery, the physical capacity and quality of life of patients were quite low. Therefore, the early post-operative rehabilitation is needed to recover the functional status of patients including physical, emotional and social dimensions.

Keywords: Coronary artery disease, valvular heart disease, quality of life, physical capacity, SF-12, Six-minute walk test

Introduction

Coronary artery disease is the second largest of mortality rate in Thailand. Coronary artery disease (CAD) is a disease caused by atherosclerosis of coronary artery because of structural change and made luminal narrowing. These compression and occlusion made the blood supply to the heart not enough lead to ischemic heart disease or myocardial infarction. Signs and symptoms of patient can be stable or unstable angina.

Valvular heart disease is the disease of pathology with heart valve, whether it is stenosis or regurgitation. The most valve of disease is AV (aortic valve) and MV (mitral valve) that in left side of heart, because the left side acts to pump blood to the body that make it high pressure than right side. Valvular heart disease can be classified into 3 types. Rheumatic heart disease by infection, degenerative, and myocardial infarction. Signs and symptoms of patient can be dyspnea with exertion, murmur, chest pain.

Quality of life and physical capacity of coronary artery disease and valvular heart patients usually limited by chronic illness that lead to physical activity restriction. After coronary artery bypass grafting (CABG), valve repair, or valve replacement, they can improve quality of life and physical capacity by exercise. But in early stage after surgery, quality of life usually limited by musculoskeletal pain, prolong convalescence, or depression. And physical capacity maybe decrease caused by musculoskeletal pain, can't exercise for a long time, or be afraid. In this study can show the data of early stage after surgery such as physical capacity and quality of life.

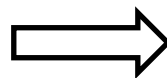
Materials and Methods

Six-minute walk test and SF-12 were estimated at the fifth day after coronary artery bypass graft and valvular surgery in cardiac patients (n = 25). Six-minute walk test was used for evaluating the physical capacity and SF-12 questionnaire was used for evaluating the quality of life consist of 6 questions of physical domain and 6 questions of emotional domain. It consumed 15 minutes for finishing all the questions. Descriptive statistical analysis and Pearson's product-moment correlation was used to evaluate the relationship of parameters.

Participation recruitment

Inclusion criteria

- Are in the age range of 35-80 years old.
- Able to walk \geq 4 METs.
- EF classification in low and moderate risk.
- Ability to understand verbal instruction, read and write in Thai.



Screening
MOCA

Exclusion criteria

- Have complication of heart disease
- Impair cognitive (MoCA scores less than 25)
- Have any neurological deficit or musculoskeletal problems which disrupt walking ability.



5 days post-op

SF-12
6MWT

Results and Discussion

Table 1 showed the demographic data of participants. Participants consist of 20 male and 5 female, mean of ages were 61.64 years old, mean of BMI were 24.03 (over-weight), and mean scores of MOCA were 26.61, which normal scores. The results of BMI in this study showed that the participants had a risk of cardiovascular disease.

Table 1 Demographic data of participants.

	N	Minimum	Maximum	Mean	Std. Deviation
Gender					
- male	20				
- female	5				
Age	25	39	78	61.64	9.53
BMI	25	16.23	33.96	24.03	4.13
MOCA	25	24	29	26.61	1.56

In Table 2, mean of six-minute walk distance after five day surgery were 206.88 meters, less than normal scores which around 460 meters [1]. Mean total scores of SF-12 were 58.78. Mean of physical domain of SF-12 scores were 52.92 and emotional domain were 61.87. All data of SF-12 were in the normal range (more than 50) but the highest score of each domains was 100. In addition the higher scores reflect better quality of life of the patients.

Table 2 Mean score of SF-12 and Six-minute walk distance.

	N	Minimum	Maximum	Mean	Std. Deviation
SF_total*	25	33.93	89.29	58.78	13.04
SF_P**	25	26.92	88.46	52.92	15.79
SF_E***	25	33.33	90.00	61.87	14.01
SixD (meters)****	25	68.80	335.00	206.88	76.65
Valid N (listwise)	25				

* 12-Item Short Form Survey

** Physical domain of 12-Item Short Form Survey

*** Emotional domain of 12-Item Short Form Survey

**** Six-minutes walk distance

From the results, six-minute walk distance after five day surgery were decrease when compared to people of the same age. Most patients after surgery have limited access to life. For example, decrease body performance from long-term illness, pain at incision line of open heart surgery at sternum, pain at incision line at leg from saphenous vein graft. In addition, the patients were in the phase I cardiac rehabilitation that they had to stay in ICU for 1 to 2 days and limited activity for monitoring ECG after surgery. Post coronary artery bypass graft and valvular heart surgery patients were able to stand and walk after the third day after surgery on ward. SF-12 scores were normal but close to the lowest threshold. Physical domain nearly lower than normal maybe because long-term illness that makes people can't work by themselves and activity limitation because of dyspnea and angina pectoris. Emotional domain were low maybe because of anxiety and depression due to chronic illness.

It can be seen that after heart surgery, patients have low quality of life and physical capacity nearly less than normal, measure from six minute walk distance and SF-12 scores. Although the chest pain or dyspnea from pathology of the heart disease will decrease or disappear, but quality of life and physical capacity is require time to improve. Taghipour

HR et al [2] have studied about quality of life one year after coronary artery bypass graft surgery and found the quality of life scores be similar to this study. The mean physical and emotional domain summary scores were 59.5 ± 0.9 and 60.2 ± 0.9 and this study said it could mostly be attributed to unmodified risk factors and progression of existing comorbidities. In 2007, Janne J. Jokinen MD et al have studied about quality of life in mitral valve replacement and mitral valve repair [3]. The results were the participants have lower quality of life scores. Brooks D et al in 2004 [4] founded decreased significantly of physical capacity (six-minute walk distance) of postoperatively coronary artery bypass graft and valvular surgery same the Claudia Fiorina et al in 2007 [5]. The studied of Brooks D et al in 2004, distance walked in 2 minutes decreased significantly postoperatively (from 138 ± 26 m to 84 ± 33 m, $P < .001$) and correlated significantly to SF-36. That said the physical capacity was sensitive to change after cardiac surgery. Claudia Fiorina et al in 2007, the mean distance walked in 1370 patients was 304 ± 89 m.

Conclusions

At the fifth day after surgery, the physical capacity and quality of life of patients were quite low. Therefore, the early post-operative rehabilitation is needed to recover the functional status of patients including physical, emotional and social dimensions.

Early encourage the patient to increase physical activity or exercise can be promote physical capacity and It may help to improve the quality of life as well.

Ethic Committee No.

Project number: MU-CIRB 2017/025.230 Certificate number: 002889

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