Original Research Article

The quality of life of patients with coronary artery disease before and after coronary artery bypass graft

Dinesh Kumar Rai[1],*, Anu V. Kumar[1]

[1]Dept. of Otorhinolaryngology and Allied Science, Malwanchal University, Indore, Madhya Pradesh, India

A R T I C L E I N F O

A B S T R A C T

Introduction: Heart is one of the vital organs in the human body which is a durable organ and efficient pump. The human heart works tirelessly from the moment of formation and it begins beating until the moment it stops. On an average life time, the human heart beats more than twenty two and half billion times without taking rest. The heart beats continuously and unlike other muscles of the body, it cannot stop to rest when tired and worn from work.

Materials and Methods: Research Approach: This study adopted a non experimental descriptive and comparative survey approach. The study was conducted at the cardio thoracic surgical out patient department of one of the selected hospital at Sahdol. The population comprised of all patients with coronary artery bypass graft attending the cardio thoracic surgical outpatient department of the selected hospital at Sahdol at the time of the study. The sample consisted of 75 patients with coronary artery bypass graft based on the criteria for sample selection. Non probability convenient sampling technique was adopted for the selection of sample.

Result: 64 samples (85.3%) were able to carry out the household activities such as cooking, washing the cloth, sweeping, grinding, ironing, gardening, minor repairing work at home moderately well and 11(14.7%) were able to perform these activities very well before surgery. However after the surgery the percentage of samples who performed the household activities very well increased by 5.3%.cBefore surgery 59 samples (78.7%) showed good interest in reading newspaper and watching TV. However after surgery this number reduced to 51, a reduction of 10.7%. that majority of the samples (84-94.7%) had good social wellbeing before surgery. However after surgery the samples showed moderate quality of life in social wellbeing. Statistically there was no significant difference between the mean score of personal and household activities (t-0.239 and 0.054,df=74,p<0.0) before and after surgery and there was significant difference between the mean score of outdoor and other activities (t-3.17and3.8,df=74,p<0.01) before and after surgery.

Conclusion: The study concludes that the quality of life of patients who had undergone coronary artery bypass graft was better before surgery but after surgery the quality of life was better in physical well being whereas psychological and social wellbeing was reduced.

1. Background of the Study

The heart contracts rhythmically and with every contraction pumps blood into the blood vessels. The primary function of the cardio vascular system is to provide an adequate supply of blood to all cells of the body, the materials needed for their proper function and that carries away the waste products of their metabolism. [1]

Healthy heart can meet the needs of the entire human body and stressful conditions. When the heart does not work

* *Corresponding author.*
E-mail address: dineshrai2050@gmail.com (D. K. Rai).

efficiently that persons life may be threatened. For proper pumping of the heart, cardiac muscle needs adequate blood supply through the coronary arteries. When the coronary artery is unable to supply adequate blood to the myocardium due to the narrowing or blockage, the myocardium becomes ischemic and injured may result in infarction.[2]

It is widely acknowledged that heart disease and stroke are the leading cause of death and disability in the developing countries. We are in the midst of a true global cardiovascular disease epidemic. Cardio vascular disease is responsible for approximately 30% of all deaths worldwide every year. Coronary artery disease is the most common type of cardio vascular disease and accounts for the majority of these deaths.[3] Coronary artery disease results from the development of obliterate atherosclerotic lesions within the coronary arteries that narrow or obstruct these vessels.[4]

Two decades ago coronary artery disease was traditionally associated with advanced age, this association does not seem to hold true any longer and today age is no bar for heart problems. Many young men in their thirties found to have angina and even become victims of a heart attack.[5]

1.1. Need for the Study

Disease can occur in all organs of our body and one of the vital organ heart can also be affected by various disease. One of the important diseases which affect the heart is coronary artery disease. An Individual with cardiac illness will be disturbed physically and mentally. Majority of the patients with coronary artery disease feel a threat to their identity and self esteem and may be unable to fill their usual roles in society. Coronary artery disease can be treated with various treatments such as medications, percutaneous transluminal interventions and coronary artery bypass graft surgery.[6]

During the hospital stay the health care provider mainly focus on the patients physiological changes and after the discharge also the medical team mainly concentrate on the functional assessment of cardiac system. The psychological wellbeing is still a non focused aspect in hospital services. Physical and mental health is considered as both the sides of the coin, one without another is of no value. So the investigator desired to enlighten the importance of psychological support by nurses in reducing post operative anxiety and improvement in activities of daily living.[7]

Also, the literature review revealed that only few studies have been done regarding the psychosocial problems and studies that are focused on health related quality of life among patients who had undergone coronary artery bypass graft. The investigator has felt that a study would help the nursing practitioner to understand and provide the necessary information for promoting the emotional well being and improve their quality of life.[8]

1.2. Statement of the Problem

A study to assess the quality of life of patients with coronary artery disease before and after the Coronary Artery Bypass Graft in a selected hospital at Sahdol M.P.

1.3. Objectives of the Study

1. To assess and compare the level of quality of life of patients with coronary artery disease in different aspects of Physical, Psychological and Social well being before and after the surgery.
2. To assess and compare the level of overall quality of life in Physical, Psychological and Social wellbeing and Overall quality of life before and after the surgery.
3. To associate the selected demographic data with the level of quality of life of patients in Physical, Psychological and Social well being before and after the surgery.

1.4. Hypothesis

1. HO_1 .There is no significant difference in the quality of life score in Physical well being (personal, household, outdoor & other activities) before and after surgery
2. $H0_2$. There is no significant difference in the quality of life score in Psychological well being (positive feeling about self, positive feeling about health & interest) before and after surgery
3. $H0_3$ There is no significant difference in the quality of life score in Social well being (Interaction with family, interaction with friends & Spiritual activities) before and after surgery.
4. $H0_4$ There is no significant difference in the total score of quality of life in Physical Psychological, Social wellbeing and Overall quality of life before and after surgery

1.5. Assumption

1. Individual differs in meeting needs of physical, psychological and social well being.
2. Aim of the surgery is to improve the quality of life.
3. Individual experience will vary after the surgery.
4. Quality of life may be influenced by various factors such as family support, social support and information regarding the disease condition.

1.6. Delimitation

1. Post-operative patients attending the outpatient department of selected hospital.
2. Coronary artery disease patients who are treated only by coronary artery bypass graft
3. Patients with the postoperative period of more than six months.

2. Materials and Methods

2.1. Research approach

This study adopted a non experimental descriptive and comparative survey approach.

2.2. Setting of the study

The study was conducted at the cardio thoracic surgical out patient department of one of the selected hospital at Sahdol.

2.3. Population

The population comprised of all patients with coronary artery bypass graft attending the cardio thoracic surgical outpatient department of the selected hospital at Sahdol at the time of the study.

2.4. Sample size

The sample consisted of 75 patients with coronary artery bypass graft based on the criteria for sample selection.

2.5. Sampling technique

Non probability convenient sampling technique was adopted for the selection of sample.

2.6. Sampling criteria

2.7. Inclusion criteria

1. Coronary artery disease patients treated by coronary artery bypass graft surgery.
2. Patients who were willing to participate.

2.8. Exclusion criteria

1. Coronary artery disease patients treated by percutaneous coronary intervention.
2. Patients with valvular and septal correction procedure
3. Patients with a post operative period of less than six months.

2.9. Pilot study

A pilot study was conducted in a hospital in Sahdol. A formal permission was obtained from the Medical Supritendent and Cardiac Surgeon for pilot study and main study.

Ten patients came to the outpatient department for review, who met the inclusion criteria were selected for data collection. After a self introduction the samples were made to sit comfortably in the interview room. The investigator explained the purpose of the study to the samples individually and after obtaining their rapport and willingness, the data was collected using the questionnaire and rating scale. The duration of pilot study was one week.

The result of the pilot study showed that the tool and the technique adopted were adequate.

3. Result

3.1. CAD – coronary artery disease

Frequency and percentage distribution of sample with regard to different aspects of physical well being, in two levels of quality of life before and after surgery.

All the samples (100%) were able to carryout personal activities such as taking bath, dressing, combing the hair, eating, shaving and moving in and out of bed or chair very well before and after surgery. 64 samples (85.3%) were able to carry out the household activities such as cooking, washing the cloth, sweeping, grinding, ironing, gardening, minor repairing work at home moderately well and 11(14.7%) were able to perform these activities very well before surgery. However after the surgery the percentage of samples who performed the household activities very well increased by 5.3%. 74 samples (98.7%) were able to perform outdoor activities such as going to bank, family shopping and going to places of worship before surgery. However after the surgery those who were able to perform the outdoor activities very well reduced by 9.4%. Other activities such as walking more than a mile, traveling by bus, climbing the flight of stairs, running and lifting heavy objects were moderately performed by 38.7% and very well by 61.3% before surgery but after surgery the number of sample who could do, these activities very well increased from 46 to 61, an increase of 20%.

From this table it could be concluded that all samples were very good at performing the personal activities before and after surgery. Ability to perform the household and other activities slightly improved after surgery. However no further improvement was seen in outdoor activities after surgery. As far as the quality of physical well being is concerned the sample shows a moderate to good quality of life after surgery.

Presents frequency and percentage distribution of sample with regard to different aspects of psychological well being in two levels of quality of life before and after surgery. Majority of the samples 74(98.7%) had good positive feeling about self such as feeling of independency, no feeling of loneliness and helplessness, no feeling of nervousness, anxiety and guilt and had confidence to do work alone. 73 samples (97.3%) had good positive feeling about health such as not worrying about health, had good sleep and took responsibility in family before surgery.

However after surgery there was a reduction in the number of samples (9.4%) in positive feeling about self and 31.4% in positive feeling about health. Before surgery 59 samples (78.7%) showed good interest in reading newspaper and watching TV. However after surgery this number reduced to 51, a reduction of 10.7%.

Table 1: Demographic characteristics of the sample frequency and percentage distribution of samples according to personal characteristics N = 75

S.No	Characteristics	Frequency	Percentage
1	Age in years a) 40- 50 years	05	06.7
	b) 51- 60 years	33	44.0
	c) > 60 yrs	37	49.3
2	Sex		
	a) Male	59	78.7
	b) Female	16	21.3
3	Education		
	a. No Schooling	05	06.7
	b. Primary	26	34.7
	c. Secondary	25	33.3
	d. Higher	19	25.3
4	Occupation		
	a) Laborers	11	14.7
	b) Office worker	04	05.3
	c) Business	13	17.3
	d) Professionals	26	34.7
	e) Un employed	21	28.0
5	Monthly income a) Rs. < 1000	01	01.3
	b) Rs. 1000 - 5000	31	41.3
	c) Rs. 5000- 10000	22	29.3
	d) Rs. > 10000	21	28.0

Table 2: Frequency and percentage distribution of samples according to surgery and medication N= 75

S.No	Surgery & Medication	Frequency	Percentage
1	CAD before surgery (in years) *		
	a) ≤ 2	62	82.67
	b) 2- 4	04	05.33
	c) 4 – 6	01	01.33
	d) Above 6	08	10.67
2	Duration after Surgery		
	a) < 1 year	20	26.67
	b) > 1 year	55	73.33
3	On Medication before surgery		
	a) Yes	24	32.00
	c) No	51	68.00
4	Taking of medication		
	a) Regularly	22	91.67
	b) Irregularly	02	08.33
5	Medication after surgery		
	a) Yes	75	10
	b) No	0	0

Table 3: Frequency and percentage distribution of sample in different aspects of physical well being, in two levels of quality of life before and after surgery N = 75

S. No	Aspects of Physical Well being	Level of Quality of life							
		Moderate		Good		Moderate		Good	
		Before Surgery				After Surgery			
		F	%	F	%	F	%	F	%
1	Personal Activities	-	-	75	100	-	-	75	100
2	Household Activities	64	85.3	11	14.7	60	80	15	20.0
3	Outdoor Activities	1	1.3	74	98.7	8	10.7	67	89.3
4	Other Activities	29	38.7	46	61.3	14	18.7	61	81.3

Table 4: Frequency and percentage distribution of sample in different aspects of psycological well being in two levels of quality of life before and after surgery. N = 75

S.No	Aspects of Psychological Well being	Level of Quality of life							
		Moderate Before Surgery		Good		Moderate After Surgery		Good	
		F	%	F	%	F	%	F	%
1	Positive feeling about self	01	1.3	74	98.7	08	10.7	67	89.3
2	Positive feeling about health	02	2.7	73	97.3	25	33.3	50	66.7
3	Interest	16	21.3	59	78.7	24	32.0	51	68.0

Table 5: Frequency and percentage distribution of sample in different aspects of social well being in two levels of quality of life before and after surgery. N = 75

S.No	Aspects of Social Well being	Level of Quality of life							
		Moderate		Good Before Surgery		Moderate After Surgery		Good	
		F	%	F	%	F	%	F	%
1	Interaction with family	4	5.3	71	94.7	72	96.0	3	04.0
2	Interaction with friends	12	16.0	63	84.0	52	69.3	23	30.7
3	Spiritual Activities	4	5.3	71	94.7	49	65.3	26	34.7

Table 6: Frequency and percentage distribution of samples in the three areas of overall well being before and after surgery in two levels quality of life n = 75

S.No	Areas	Level of Quality of life							
		Moderate		Good Before Surgery		moderate After Surgery		Good	
		F	%	F	%	F	%	F	%
1	Physical wellbeing	15	20	60	80	15	20.0	60	80.0
2	Psychological well being	0	0	75	100	7	09.3	68	90.7
3	Social well being	0	0	75	100	48	64.0	27	36.0

Table 7: Frequency and percentage distribution of samples in two levels of overall quality of life before and after surgery n = 75

S.No	Area	Level of Quality of life							
		Moderate		Good Before Surgery		Moderate After Surgery		Good	
		F	%	F	%	F	%	F	%
1	Overall Quality of life	1	1.3	74	98.7	8	10.7	67	89.3

Table 8: Mean score and standard deviation of various aspects of physical well being before and after surgey and its significance.

S.No	Aspects of physical well being	Max Score	Before Surgery			After Surgery			MD	SD	Paired 't' value at P<0.01,df = 74
			Mean score	SD	Mean Score %	Mean score	SD	Mean Score %			
1	Personal Activities	18	17.33	1.06	96.15	17.29	1.24	96.00	0.04	1.44	0.239 NS
2	Household Activities	24	10.26	4.27	42.78	10.25	0.34	46.72	0.01	2.12	0.054 NS
3	Outdoor Activities	09	08.90	0.53	98.96	08.54	1.30	94.00	0.36	0.98	3.17*
4	Other Activities	15	10.93	3.87	72.00	12.10	1.30	80.00	1.17	2.62	3.87*

NS – Not Significant df = degree of freedom Table Value – 2.660 * - Significant

Table 9: Mean score and standard deviation of various aspects of pyschological well being before and after surgery and its significance.

S.No	Aspects	Max Score	Before Surgery			After Surgery			MD	SD	Paired 't' value at P<0.01,df = 74
			Mean score	SD	Mean Score %	Mean score	SD	Mean Score %			
1	Positive feeling about self	15	14.7	1.4	98	13.2	1	88.0	1.5	1.71	7.56*
2	Positive feeling about health	09	08.6	0.5	95	07.1	0.87	79.0	1.5	1.62	7.97*
3	Interest	06	04.7	1.1	79	04.6	0.65	77.3	0.1	0.66	1.74 NS

NS – Not Significant df = degree of freedom Table Value – 2.660 * - Significant

Table 10: Association between demographic variables and quality of life in physical well being before surgery N=7

S.No	Personal characteristics	Level of quality of life				χ2 value p < 0.05	χ2 table valuep < 0.05
		Moderate		Good			
		F	%	F	%		
1	Age						
	a) < 60 years	7	09.3	31	41.3	0.01 NS	df=1
	b) > 60 years	8	10.7	29	38.7		3.84
2	Occupation						
	a) Professionals	5	06.7	22	29.3		
	b) Others	5	06.7	21	28.0	1.97 NS	df=2
	c) Unemployed	5	06.7	17	22.6		5.99
3	Monthly income						
	a) Rs. 1000 – 5000	7	09.3	23	30.7		
	b) Rs. 5000-10000	4	05.3	16	21.4	0.66 NS	df=2
	c) > 10000	4	05.3	21	28.0		5.99
4	Duration after surgery						
	a) < 1 year	7	09.3	15	20.0	1.48 NS	df=1
	b) > 1 year	10	13.4	43	57.3		3.84

Table 11: Association between demographic variables and physical well being after surgery N=75

S.No	Personal characteristics	Level of quality of life				χ2 value p < 0.05	χ2 table valuep < 0.05
		Moderate		Good			
		F	%	F	%		
1	Age						
	a)< 60 years	6	08.0	32	42.7	0.085	Df=1
	b)> 60 years	9	12.0	28	37.3	NS	3.84
2	Occupation						
	a) Professionals	8	10.7	19	25.3	9.41 *	df=2
	b) Others	3	04.0	23	30.7		5.99
	c) Unemployed	4	05.3	18	24.0		
3	Monthly income						
	a) Rs. 1000 – 5000	10	13.3	22	29.3		
	b) Rs. 5000-10000	2	02.7	21	28.0	4.53 NS	df=2
	c) > 10000	3	04.0	17	22.7		5.99
4	Duration after surgery						
	d) < 1 year	5	06.7	15	20.0	0.43 NS	df=1
	e) > 1year	10	13.3	45	60.0		3.84

Table 12: Association between demographic variables and psychological well being after surgery N=75

S.No	Personal characteristics	Level of quality of lif				χ^2 value p < 0.05	χ^2 table valuep < 0.05
		Moderate		Good			
		F	%	F	%		
	Age						
1	< 60 years	4	05.3	32	42.7	1.50 NS	df=1
	> 60 years	7	09.3	32	42.7		3.84
2	Occupation						
	Professionals	2	02.7	25	33.3		df=2
	Others	1	01.3	26	34.7	3.59 NS	5.99
	Unemployed	4	05.3	17	22.7		
3	Monthly income						
	Rs. 1000 – 5000	6	08.0	27	36.0		df=2
	Rs. 5000- 10000	1	01.3	20	26.7	4.13 NS	5.99
	Rs. > 10000	1	01.3	20	26.7		
4	Duration after surgery						
	< 1 year	2	02.7	15	20.0	0.11 NS	df=1
	> 1 year	10	13.3	48	64.0		3.84

Table 13: Association between demographic variables and social well being after surgery n=75

S.No	Personal characteristics	Level of quality of life				χ^2 value p < 0.05	χ^2 table valuep < 0.05
		Moderate		Good			
		F	%	F	%		
1	Age						
	60 years	26	34.7	12	16.0	0.32 NS	df=1
	60 years	23	30.7	14	18.6		3.84
2	Occupation						
	Professionals	20	26.7	05	06.7		df=2
	Others	14	18.6	12	16.0	3 NS	5.99
	Unemployed	16	21.3	08	10.7		
3	Monthly income						
	Rs. 1000 – 5000	24	32.0	08	10.7		df=2
	Rs. 5000- 10000	11	14.7	08	10.7	2.26 NS	5.99
	Rs. > 10000	14	18.6	10	13.3		
4	Duration after surgery						
	<1 year	13	17.3	07	09.4	0.001	df=1
	> 1 year	36	48.0	19	25.3	NS	3.84

This table concludes that majority of the samples (78.7 – 98.7%) expressed good psychological well being before surgery. However after surgery the percentage of sample that expressed good psychological well being ranged from 66.7% - 89.3%, a reduction of 10.7% to 33.3%.

On the whole the feeling of good psychological well being is seen more before surgery than after surgery. Frequency and percentage distribution of sample in different aspects of social well being in two levels of quality of life before and after surgery.

Majority of the samples 71 (94.7%) showed good interaction with family such as attending family function and visiting relatives before surgery. However after surgery majority of the samples 72(96%) had only moderate interaction with family.

Majority of the samples 63 (84%) had good interaction with friends such as talking with friends and taking part in group gathering before surgery. But after surgery the number reduced to 23 a reduction of 54% in interaction with friends. 71 samples (94.7%) had good involvement in spiritual activities before surgery. However after surgery the number of samples involvement in spiritual activities reduced to 26, a reduction of 60%.

This table concludes that majority of the samples (84-94.7%) had good social well being before surgery. However after surgery the samples showed moderate quality of life in social wellbeing.

The frequency and percentage distribution of samples in three areas of over all well being before and after surgery in two levels quality of life. For majority of the samples 60 (80%) the quality of physical well being was good and for

15 (20%) the quality of physical well being was moderate before and after surgery.

All the samples (100%) had good quality of psychological well being before surgery, but after surgery the number of sample reduced to 68, a reduction of 7 samples (9.33%) to moderate quality of psychological well being.

All the samples (100%) had good quality of social well being before surgery but after surgery the number of sample reduced to 27, a reduction of 48 (64%) to moderate quality of social well being.

This table concludes that the overall quality of physical wellbeing was moderate to good before and after surgery. The quality of the psychological and social. Wellbeing was good before surgery for all patients. However after surgery there was a slight reduction in the number of patients who had quality of psychological well being and a great reduction in the quality of social well being.

Highlights the percentage of level of quality of life in physical, psychological and social well being. Presents the frequency and percentage distribution of samples in two levels of overall quality of life before and after surgery.

Majority of the samples 74(98.7%) had good quality of life before surgery. However after surgery the number of samples in good quality of life reduced to 67, a reduction of 10.7%. From this table it could be concluded that patients with coronary heart diseases experienced good quality of life before surgery. But after surgery while majority of patients 67(89.3%) experienced good quality of life,8 patients(10.7%) experienced only a moderate quality of life. .

Highlights the percentage of overall quality of life before and after surgery. The mean score and standard deviation of different aspects of physical well being before and after surgery and its significance.

Personal and outdoor activities scored very high mean score of 96.15 and 98.96% respectively before surgery. Other activities scored a mean score of 72% household activities comparatively scored a low mean score of 42.78% before surgery.

After surgery the mean score of all the physical activities ranged from 46.72% to 96%,the highest score in personal activities and the lowest score in household activities.

Statistically there was no significant difference between the mean score of personal and household activities (t-0.239 and 0.054,df=74,p<0.0) before and after surgery and there was significant difference between the mean score of outdoor and other activities (t-3.17and3.8,df=74,p<0.01) before and after surgery. So the hypothesis Ho1(Pg-) "There is no significant difference in the quality of life score in physical well being (personal ,household ,outdoor and other activities) before and after surgery" was accepted with regard to personal and household activities and rejected with regard to outdoor and other activities.

Outdoor activities were performed better before surgery than after surgery. Other activities were performed better after surgery than before surgery. The association between demographic variables and physical wellbeing after surgery.

The table shows that there is an association between occupation and physical wellbeing after surgery. Those who belonged to other categories of occupation(Labourers, Officeworkers, Business) had good quality of life than professionals and unemployed.

There is no association between age, income, duration after surgery and physical wellbeing after surgery. Presents the association between demographic variables and psychological wellbeing after surgery.

The table shows that there is no association between age, occupation and income, duration after surgery and psychological well being after surgery. Presents association between demographic variables and social well being after surgery. The table shows that there is no association between age, occupation and income, duration after surgery and social well being after surgery

4. Conclusion

The study concludes that the quality of life of patients who had undergone coronary artery bypass graft was better before surgery but after surgery the quality of life was better in physical well being whereas psychological and social wellbeing was reduced.

5. Source of Funding

None.

6. Conflict of Interest

None.

References

1. Barbara J. Text book of Medical Surgical Nursing. Missouri; 2001. p. 2536.
2. Basvanthappa BT. Nursing research. New Delhi: J.B. Brothers Medical Publishers; 2008. p. 664.
3. Black H. Medical surgical Nursing. 3rd ed. New Delhi; Harcourt; 2015. p. 704.
4. Brunner, Suddhartha. Textbook of medical surgical nursing. 8th ed. Philadelphia, J.B. Lippincott Company; 2007. p. 1440.
5. Susan D. Essentials of Medical and Surgical Nursing. 4th ed. Pennsylvania: W.B. Saunders Company; 2008. p. 1125.
6. Topol EJ. Textbook of Cardiovascular Medicine". and others, editor. W.B. Saunders Company; 2006. p. 1628.
7. Gupta S, Kapoor VK. Fundamentals of Mathematic Statistics. Sultan Chand Publication; 2003. p. 1303.
8. Luckmann. Medical – Surgical Nursing. Philadelphia: W.B. Saunderes Company; 2006. p. 62–70.

Author biography

Dinesh Kumar Rai, Phd. Scholar

Anu V. Kumar, Professor and HOD