

## Relationship between post operative quality of recovery after 72h and quality of life 3 month after coronary by pass

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**Abstract:** The main objective of coronary bypass is quality of life improvement ,so, it is necessary to identify and control the factor that effect on it. This study aimed to identify relationship between post operative quality of recovery after 72h and quality of life 3 month after coronary by pass. This descriptive correlational study was conducted on 72 patients underwent coronary bypass at Mashhad Imam Reza hospital. Data were collected 24h before surgery and 72 and 3 month after surgery using demographic data form and short form 36 for quality of life assessment and Quality of recovery 40 for quality of recovery assessment. A direct significant correlation was found between quality of recovery 72h after surgery and quality of life 3 month after surgery ( $p<0.001$   $r=0.91$ ). General linear model result showed that quality of recovery 72h after surgery was the most important predictive index for quality of life level 3 month after surgery ( $p<0.001$   $r=0.78$ ) quality of recovery 72h after surgery was an important predictive index for next months quality of life after operation so, recovery care improvement could be a proper approach for quality of life improvement after surgery.

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### Introduction:

Coronary artery disease is of the most common diseases and main cause of death in recent centuries (1-2). They cause quality of life diminish due to its effect on different physical and mental aspects of patients' life (3,4). Of the best treatment for these patients is coronary bypass operation. A successful surgery enables patients to restart their lives as completely much as possible. Numerous studies have confirmed positive effect of surgery on cardiac patients' quality of life. (5, 6, 7, 8, 9). Previously, results of these surgeries were reported as mortality,

but when results are presented as quality of life, it provides an opportunity to consider psychological result beside physical ones (7).Multidimensional concept of quality of life causes this structure affected by different factors, which should be controlled for quality of life improvement. According to studies, besides psychical factors such as lack of social support and emotional monotony, improper health in the days immediately after surgery also could decline quality of life in patients underwent coronary surgery (10). Coronary surgery patient spend their recovery at hospital in coronary intensive care unit and post

intensive care unit. As to studies, postoperative care and post intensive care unit care could be highly effective on patient's health and recovery and on the next phases of quality of life; Lager crank et al (2010) stated that long post ICU retention time conducive to quality of life decrease in physical and emotional aspect of quality of life one year after operation (11). Shelling et al (2003) emphasized on the effect of severe stress of intensive care unit on quality of life 6 month after operation (7). Redeker et al (2002) showed that postoperative sleep disorder is an important contributing factor in next phases quality of life (10). Myles et al (2001) in their study entitled "Relationship between hospital recovery and quality of life 3 month after surgery", realized that third day quality of recovery is the most important indicative factor for quality of life. Their findings showed high quality of life, 72h after operation (9). Patients are cared by nurses postoperatively in recovery and ICU. In most countries including Iran, graduate nurses acquire knowledge and skills, for caring patients who spend their recovery period, even NANDA approved nursing diagnosis of "postoperative recovery delay" (12). So, nurses play the crucial role in recovery care and patients' quality of life could be affected by recovery care. As nurses are high ranked educationally nowadays, this is questioned if post operative recovery care quality is high.

On the other hand, although several studies have been conducted on coronary patients' quality of

care, a few studies were found in data banks which studied relationship between quality of care and quality of life; they were done in different social cultural atmosphere, where the other different factors such as sociocultural, economic, etc., could be effective on recovery quality and quality of life. So, it is questioned that is there any relationship between recovery quality and quality of life 3 month after coronary surgery.

### **Materials and methods:**

This descriptive correlational study was conducted by one-group, in which 71 patients underwent coronary bypass in cardiac surgery Dept of Mashhad Imam Reza hospital were introduced into study. Sample size was estimated 62 based on Myles et al (2001) and using correlation coefficient formula. However, 80 patients were selected for higher precision, and sub-item analyses, of which four patients were excluded 72h after surgery (because of unconsciousness and inability to answer questions; 5 patients were excluded 3month after surgery (due to death of close relatives (2) and sever disease (3)). Subjects were selected by non probable objective based sampling. Inclusion and exclusion criteria were considered for phases, at the beginning (24h before surgery), 72h and 3month after surgery (Table1). Insert

**Table1:** Inclusion and exclusion criteria for different steps of study

<p><b>A: 24h before surgery</b></p> <p><b>Inclusion criteria:</b></p> <ul style="list-style-type: none"> <li>• Candidate for CABG</li> <li>• Desire to participate in study</li> <li>• Complete familiarity with Farsi</li> <li>• Physically ability to answer questions and to be conscious</li> <li>• Aged 25-65</li> <li>• Lack of disability or deformity</li> <li>• No severe stressful events such as divorce, death of close relatives or functional failure in recent 6 weeks</li> <li>• No history of psychiatric diseases or taking psychotic drugs</li> <li>• No history of opium addiction or alcohol</li> </ul> <p><b>B: Exclusion criteria 72 h after surgery</b></p> <ul style="list-style-type: none"> <li>• Inability to interview and answer the questions (physical ability and consciousness)</li> <li>• Using on pump technique for surgery after cardiac surgery</li> </ul> <p><b>C: Exclusion criteria 3 months after surgery</b></p> <ul style="list-style-type: none"> <li>• Underwent cardiac or non cardiac surgery in recent 3 month</li> <li>• No severe stressful events such as divorce, death of close relatives or functional failure in recent 3 months</li> <li>• Severe disease such as pneumonia, gastrointestinal bleeding in recent 3 month</li> <li>• Lack of following medical regimen in recent 3 months based on patient report</li> <li>• Extra source for instruction about cardiac disease besides routine hospital instruction in recent 3 month</li> </ul>
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**Study tools:**

A: Demographic data questionnaire and disease and treatment data were related to before and after surgery. Its validity was confirmed by face and content validity and it was reliabled using similar study.

B: SF-36 for quality of life assessment which include 36 questions in eight aspects of physical function, role performance limitation due to physical problems, physical pain, social function health, role performance limitation due to emotional problems, energy and fatigue and general perception of health during recent 12 month. Validity was confirmed by face and content validity and it was reliabled using similar study, (r=0.89)

C: QOR=40 for recovery quality assessment include 40 questions in five aspects of physical comfort, emotional status, physical comfort, emotional status, physical independency, emotional support and pain. Myles etal (2000) designed this questionnaire specifically for post anesthetic and postoperative health assessment;

they confirmed its validity and reliability (13). After getting the questionnaire, it was translated to Persian and its validity was confirmed by face and content validity. A similar study was used for its reliability (r=0.09)

**Data collection:** After preliminary phase, MUMS and Imam Reza authorities permission for sampling, subjects were selected regarding inclusion criteria; all patients were got consent and informed that whenever they would like, they could stop their participation. They assured that their information were kept confidential and presented just as an overall result. Demographic data form was completed 24h before surgery by interview and referring patient file.

SF-36 questionnaire also was completed at the same time. Demographic data form was completed 72h after surgery for intra operative and post operative data using patient's file. QOR-40 also was completed at same time. SF-36 was completed 3 month after surgery by a telephone interview. It should be mentioned, an expert co-researcher collected data during 8-12 a.m.

**Statistical Analysis:** Data were analyzed by SPSS: 11.5; descriptive statistical tests were used for demographic preoperative and postoperative data and the results were presented as mean, standard deviation and percent.

Pearson correlation coefficient was used for correlation between recovery quality 72h after operation and quality of life 3 month after operation. General linear model was used for determining the most effective factor on quality of life 3 month after surgery. Independent t-test was used for comparing means of quality of life 24h before surgery, 3 month after surgery and quality of life alterations by recovery quality

classes 72h after surgery. Confidence coefficient was 95% for statistical tests.

**Findings:**

Most of subjects (77.5%) were female and married (98.6%). They aged  $54.6 \pm 8.2$  years with most frequency of 45-66 years old (54.9%) (Table 2)

Most subjects showed good quality of recovery (81.7%) and the rest, were at average level (Table2)

**Table2:** Patients' characteristics before and after surgery

<b>Demographic data</b>		<b>Demographic data</b>	
Sex: female/male(female percent)	55/16(77.5)	<b>Postoperative complication number</b>	(Table 3)
Age(year)	55.5±8.2	Systolic blood pressure 72h after surgery(SD): mmHg	82(14)
Marital status: married/single (married percent)	70/1(98.6)	Pulse rate 72h after surgery (SD): beat/min	80(13)
<b>Pre operative characteristics</b>		Mean of hospitalization (day)	8.2(10-5)
Preoperative EF		Need for postoperative blood transfusion: yes/no (percent)	39.4/60.6
< 35 (percent)	15(21.1)	Need for intra operative blood transfusion: yes/no (percent)	81.7/18.3
35-50 (percent)	41(57.7)	<b>Postoperative characteristics:</b>	
> 50 (percent)	15(21.1)	ICU intubation time (Hours, mean(range))	3(2-10)
Systolic blood pressure 24h before surgery(SD): mmhg	93(18)	ICU retention time:	
<b>Past medical history (yes/no)</b>		<48h (percent)	59(83.1)
Diabetes mellitus	26.1/76.1	48-60 (percent)	3(4.2)
Hypertension	53.5/46.5	>60h (percent)	9(12.7)
COPD	5.6/94.4		
CVA	2.8/97.2		

70.3% of subjects experienced 1-3 postoperative complications whose most frequency was related to respiratory complications (53.5%) (Table 3)

**Table3:** frequency of postoperative complications

Frequency		Number	Percent
<b>The number of complication</b>			
No		21	29.57
	1	23	32.39
Yes	2	22	30.98
	3	5	7.04
Total		71	100.0

Based on Pearson correlation coefficient, there was a significant linear relationship between quality of recovery, 72 h after surgery and quality of life 3 month after surgery (Table 4).

**Table4:** correlation between recovery quality 72h after surgery and quality of life 3 months after surgery

Quality of life (time of assessment)	24h before surgery		3 month after surgery		Quality of life alteration	
	r	p	r	p	r	p
Index						
Quality of life 72h after surgery	0.69	P<0.001	0.91	P<0.001	0.45	P<0.001

There was a significant difference between quality of life 3 month after surgery by different classes of quality of recovery, 72h after operation using independent t-test; mean of quality of life, 3 month after surgery in average quality of recovery group was less than good quality of recovery one, (Table 5)

**Table5:** comparing quality of life 24h before surgery to 3 month after surgery and quality of life alteration by recovery quality classes 72 h after surgery

quality of Recovery 72h after surgery	Average: M(SD)	Good: M(SD)	Independent t-test result
Quality of life 24h before surgery	34.69(16.98)	65.60(19.51)	t= -5.76 , p<0.001
Quality of life 3 months after surgery	39.69(11.20)	84.75(20.38)	t= -7.68 , p<0.001
Alteration between 24h before surgery and 3 month after surgery	14.32(4.84)	19.15(17.31)	t= -3.12, p<0.005

No significant difference was shown between quality of life score 3 month after surgery and none of observed variables considering quality of recovery 72 h after surgery and quality of life 24 h before surgery using covariance analysis.

Finally, general linear model results after excluding effect of some qualitative and quantitative variables showed that recovery quality 72h after surgery has the most effect on quality of life 3 month after operation. Quality of life 24 h before surgery and post operative

transfused blood bag number and lack of intra operative transfusion rather than intra operative

blood transfusion showed significant effects as well. (Table 6)

**Table 6:** General linear model for identifying effective factors on quality of life 3 month after surgery

Statistical test		F	$\beta$	P
Variable				
Recovery quality 72h after surgery		156.574	0.781	<0.001
Recovery quality 24h before surgery		11.841	0.235	0.001
Transfused blood bags after surgery		3.55	-1.206	0.064
Need for intra operative blood transfusion	No	9.05	8.585	0.004
	Yes			

### Discussion:

According to the result, there was a direct significant correlation between quality of recovery 72h after surgery and quality of life, 3month after surgery based on Pearson coefficient test. Higher recovery quality 72 h after surgery led to higher quality of life 3 month postoperatively. Thus, although post anesthetic awaking time, pain, vomiting, confusion, and the other recovery indexes were usually transient, they were regarded as the major patients' concerns which affected negatively on their postoperative health and led to long time recovery and ICU retention time, postoperative complications and prolong hospitalization; finally, they were effective in their future health and quality of life (14). In present study, Pearson correlation coefficient test showed higher post operative complications relationship with lower recovery quality 72h after surgery. This finding was similar to Myles etal (2001) results (9). They reported average correlation between recovery quality 72h after surgery and quality of life 3 month after surgery, while in the present study, there was a high correlation between variables, it seems it was related to selected patients. In Myles' study, patients underwent valvular surgery, coronary bypass and/or both of them, they used off pump and/or on pump technique, while in the present study subjects were exclusively coronary bypass and underwent off-pump technique. As different cardiac disease and their surgery treatment are effective on post operative quality of life alteration, and intra operative technique (on

pump/off pump) influences on post operative recovery indexes.

this could be effective to use general lineal model in order to identifying the most important predictive factors for quality of life 3 month after surgery. Based on the result after omitting the effect of some important qualitative and quantities variables, recovery quality 72h after surgery was the most predictive index for quality of life 3 month after surgery as well as quality of life 24h before surgery which played an important role. These findings were in agreement with Myles etal (2001) which introduced recovery quality 72h after surgery as the most important predictive index for quality of life 3 months after surgery. Myles etal (2006) showed significant relationship between recovery quality of third post operative day with quality of life 3 years after surgery. In the present study, internal consistency was reported between SF-36 and QOR 40. In present study most patients (81.7%) had good recovery quality and just 18.3% showed poor recovery quality similar to Myles et al (2006) study (1) in which just 20% of patients had poor recovery quality in third post operative day. It seems high patients' satisfaction of anesthetic and surgical techniques and nursing care were contributed to high recovery quality. Nurses of present study were at least BSc of nursing who implemented special nursing care planes for patients. Myles etal (2000) reported post anesthetic and post operative satisfaction, more than 85%, likely due to technology progress, surgical and anesthetic advance. (16) FF Bucharan etal (2011) reported high recovery quality in third

post operative day which was similar to this study (17).

According to general linear model of the other contributing factors in quality of life level, 3 months after surgery were, number of transfused blood bags after surgery, need for transfusion during surgery rather than no need for intra operative transfusion. It seems patients who need intra operative or post operative blood transfusion, either experienced intra operative hemorrhage or they were anemic, which affected on brain blood supply especially during surgery; so, the cognitive defects would be increased and consequently it was effected on post operative quality of life. Future studies are needed for justification because, no study could be accessed in this field.

#### Conclusion:

As to the result, there was high correlation between recovery quality and quality of life 3 month after surgery in patients experienced coronary operations. The higher level of physical emotional and psychosocial level of health led to higher post operative quality of life, so, as to the earlier and considering the most important aim of surgery is post operative quality of life from view points of the health care team, especially patients and their families, and as it is possible to decrease weakening factors of recovery quality by anesthetic and surgical and especially nursing care advances; and as patients spent their first post operative days in hospital and directly supervised by health care team, it is possible to use advanced technology and holistic care for recovery quality improvement and consequently achieve to the important operation goal i.e. quality of life improvement.

Limitation: Results could not be generalized due to none randomize sampling which was impossible in this study. Individual differences and their emotional status which could be effective on their answering were out of control as well.

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